Nonregulatory Approaches to Environmental Protection for Cuba: Lessons from the United States and Chile

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I. INTRODUCTION

The authors embarked on our exchange visit to Cuba in August 2002 with two broad purposes. One, overtly normative and prescriptive, was to see how lessons learned during the past thirty-five years of environmental protection efforts in the United States and Chile might be applied to improve environmental law and environmental conditions in Cuba. The other, more reflexive but still normative, was to try to understand the unique characteristics of the economic, social, and political experience of post-revolutionary Cuba and to learn from Cuba's own environmental law development what works, might work, or does not work for environmental protection and restoration, particularly in developing countries.

At the very start, we want to be perfectly clear about our approach to both purposes, particularly the first one. It is tempting to come into a country and say, "In my country we did it like this." We do not want to condescend in this way, particularly when most of our experience comes from countries with market economies. Most emphatically, we do not pretend to judge Cuba's performance or the premises of its approach to environmental law and policy. After all, no country—developed or developing, free-market or centrally planned—has fully responded to the multiple challenges of environmental protection. There are no "right" answers. Rather, we think that the conclusion of one comparative economic policy study applies equally well to environmental policy: "Differing but equally effective systems of corporate and other institutions within national societies limit the need for [policy] convergence to achieve particular objectives."[1] Our modest goal, therefore, was to look for similarities between the observed situations and cases in Cuba and in the countries in which we have experience, to describe shortcomings in some strategies and offer an insight on how Cuba might avoid such mistakes, and to identify policy successes that we think are transferable to the Cuban context.

In our exploration of the situation of Cuban environmental law, each of us, separately, chose to focus on the potential application of some recent environmental law innovations that have de-emphasized direct regulation through publicly determined standards in favor of more flexible, adaptive approaches that seek to mobilize the self-interest of private businesses and persons to take steps to protect the environment.

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1. ROBERT GILPIN, GLOBAL POLITICAL ECONOMY: UNDERSTANDING THE INTERNATIONAL ECONOMIC ORDER 186 (2001).

Such "second-generation"[2] environmental strategies offer substantial opportunities to reduce social costs for environmental protection, thus allowing a society to achieve more extensive or more demanding environmental goals. In pursuing this line of inquiry, we recognized from the outset that concepts underlying many of these approaches, such as "economic incentives," "market-based mechanisms," and "information disclosure" might need substantial modification in both theory and practice for an economy and social system in which the state is pervasive and, in many sectors, is the sole economic actor.[3] For decades, Cuba has deliberately suppressed the free-enterprise "market culture" while pursuing its revolutionary vision of collective, cooperative effort to build a public-spirited and equitable society. We think that some of our learning might apply in Cuba nevertheless, as some Latin American countries (Chile in this case), also have a long history of governmental management of the economy.

What we gleaned about Cuba and Cuban environmental law from a week of presentations, discussions, and field trips revealed a complex social and environmental policy context.[4] On the one hand, avenues are opening in the domestic sector of the economy for individual entrepreneurs,[5] while foreign investment has assumed a substantial role

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2. *See generally* Dennis D. Hirsch, *Symposium Introduction: Second Generation Policy and the New Economy Law*, 29 CAP. U. L. REV. 1, 1-5 (2001). An alternative moniker is "next-generation" policy. *See generally* Daniel C. Esty & Marian R. Chertow, *Thinking Ecologically: An Introduction*, *in* THINKING ECOLOGICALLY: THE NEXT GENERATION OF ENVIRONMENTAL POLICY (Marian R. Chertow & Daniel C. Esty eds., 1997).

3. *See* CLIFFORD S. RUSSELL & PHILIP T. POWELL, CHOOSING ENVIRONMENTAL POLICY TOOLS: THEORETICAL CAUTIONS AND PRACTICAL CONSIDERATIONS (1996). In addition, economic tools require certain kinds of institutional capacity (for example, a functioning exchange mechanism and a functioning insurance system for tradable permits) and administrative capacity, and therefore should not be imported wholesale without selecting them or fitting them for the local context. *Id.*

4. The general observations that follow are based on presentations that we received on Cuban environmental law and policy from Cuban officials, from informal conversations with those officials, and from our personal observations during our week in Cuba in August 2002. Ramón Pichs Madruga, CIEM, Speech on the Socio-Economic Context for Sustainable Development in Cuba (Aug. 12, 2002); Norman Medina, Ministry of Tourism (MINTUR), Speech on Sustainable Development of Tourism in Cuba (Aug. 12, 2002); Raúl Garrido Vazquez, CITMA, Speech on Economic Instruments in Cuba (Aug. 15, 2002). Also long and productive discussions were sustained with Teresita Viches of the Ministry of Science, Technology and Environment (CITMA) and Carlos Rodriguez of the Physical Planning Institute (IPF). Without their insights, this work would not have been possible. For a useful overview of the basic legal elements, see CUBAN ENVIRONMENTAL LAW 1-19 (Jerry Speir ed., 1999).

5. Vazquez, *supra* note 4. Since the loss of major trade inputs from the Soviet Union in 1989, Cuba has undertaken economic reforms that include new allowances for self-employment.

in the national economic development program.[6] These recent reforms mean that "market" ideas are no longer unfamiliar or altogether inappropriate. On the other hand, Cuba's strict observance of egalitarian principles[7] and its quiet but insistent belief in the responsibility of public officials to discern and implement policies that are in the public interest[8] render the state-controlled sectors of the economy less susceptible to economic incentive approaches than we had expected.[9] Consequently, even though foreign direct investors from market economies are attuned to read and respond to "market" signals, the relationship of the Cuban government to foreign investors is geared towards stimulating foreign (not domestic) demand for the services provided by those investors.[10] The tourism industry, where much of the foreign investment is directed,[11] could thus be aptly described as a "centrally managed market," suggesting the persistent tensions in Cuba between market-based thinking and planning-based thinking.[12]

This Article represents our effort to come to grips with this complex, but still state-dominated, context in considering prospects for

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6. Orlando Rey Santos, *Reflections on the Legislative Process of the New Environmental Law*, *in* CUBAN ENVIRONMENTAL LAW, *supra* note 4, at 11, 12-13. In 1995, the Cuban government enacted the Foreign Investment Law, Law No. 77. Ley de la Inversión Extranjera, LEY NO. 77 [Foreign Investment Law, LAW NO. 77] (1995) (Cuba).

7. Madruga, *supra* note 4 (commenting on the lack of equitable allocation in the neoliberal policies followed by most Latin American countries in recent decades).

8. *Id.* (commenting on the role of the state in designing social policy); *see also* Orlando Rey Santos, CITMA, Speech on the Legal Framework for Environmental Protection in Cuba (Aug. 12, 2002) (noting the practice in Cuba that Cuban citizens are expected to channel their complaints or concerns through local and state public agencies, not through independent organizations and actions).

9. Underlying and reinforcing these views on the role of the state, Law No. 81, the framework environmental law, recalls article 27 of Cuba's Constitution, which declares that "[t]he State protects the nation's environment and natural resources" consistent with sustainable development and specifies that "[i]t is the responsibility of the proper governmental agencies to apply this policy." Ley del Medio Ambiente, LEY NO. 81 [Environmental Law, LAW NO. 81] (1997) (Cuba), *translated in* CUBAN ENVIRONMENTAL LAW, *supra* note 4, at 21.

10. Foreign investment in Cuba is subject to a licensing process administered by the Ministry of Planning. *See* Reglamento del Proceso Inversionista, DECRETO NO. 5 [Investment Process Regulations, DECREE NO. 5] (1977) (Cuba). From 1990 to 2001, Cuba increased the number of hotel rooms for foreign tourists more than 400%, and increased the number of tourist visits per year by nearly five times. Medina, *supra* note 4. Cuban policy maintains a sharp distinction between the modern hotels and luxury resorts for the use of foreign tourists on the one hand and the much more modest facilities available for vacation or recreational use by Cuban nationals on the other. In fact, Cuban nationals, other than hotel workers, are not permitted onto the premises of the tourist hotels. *Id.*

11. Oliver A. Houck, *Environmental Law in Cuba*, 16 J. LAND USE & ENVTL. L. 1, 42 (2000) (quoting Iraida Calzadilla Rodriguez, *El Turismo es el Corazón de la Economía*, GRANMA, Feb. 28, 1998, at 3).

12. *Id.*

the evolution of nonregulatory environmental law instruments and institutions in Cuba. As a result, this Article is more in the nature of an essay than a traditional legal analysis. It will give our assessment of where such nonregulatory instruments may be appropriate and where not, and offer some proposals for particular instruments or types of instruments, based in part on the success and failure of analogous environmental reforms in Chile and the United States.

II. INSTRUMENTS FOR ENVIRONMENTAL PROTECTION

A. Some Criteria for Evaluation of Regulatory and Nonregulatory Instruments

This Article is not the occasion to develop or argue for a comprehensive normative framework for environmental law and policy. Nevertheless, because we will be reviewing experiences with a variety of policy instruments, both regulatory and nonregulatory, it seems useful to set forth some basic considerations for policy evaluation that are broadly accepted as normatively desirable, yet touch on factors that vary substantially from one country to another and from one environmental policy context to another.

In an important sense, the considerations that follow are all secondary considerations. Environmental law and policy should, primarily and always, be grounded in scientific understanding of the nature of the environmental harm to be ameliorated and the human activities that have or can either contribute to that harm or help alleviate or remedy the harm. Regardless of the economic, social, or political context, environmental law and policy that is ascientific should be avoided, and environmental policy that contradicts science should be removed or reformed. That said, there is often room for differences of opinion among scientists about the proper course of action, and policymakers must frequently address matters where our scientific understanding is incomplete or leaves us with substantial uncertainties about causes and effects. For present purposes, we do not prefer any particular approach to these scientific imponderables. One commentator has offered three concepts that are applicable in this domain: connectedness, complexity, and compassion.[13] Connectedness and complexity are fundamental elements of environmental sciences; compassion conveys the recommendation that it is the humanities, rather than the sciences, that are the source of guidance about how law and policy should cope with

13. Robert R.M. Verchick, *Steinbeck's Holism: Science, Literature, and Environmental Law*, 22 STAN. ENVTL. L.J. 3, 7-8 (2003).

the unavoidable connectedness and complexity of the natural environment.[14]

1. Economic Efficiency and Effectiveness

Our first criterion for policy instruments is that they should be economically sound. Most environmental protection efforts touch on economic activity, and sustainable development teaches both that economic deprivation contributes to environmental harm and that the sustainability of environmental protection measures depends, in part, on sustaining the economic foundations of the societies affected. Economic efficiency emphasizes that instruments that encourage economic actors to include environmental protection measures in their business or production planning are generally preferable to instruments that distort economic decisions or tend to impose environmentally unnecessary, and thus inefficient, investments. Cost-effectiveness is another part of the economic criterion. Instruments that can achieve the desired environmental quality objective at lower cost to the society as a whole are to be preferred over instruments that have higher costs.

2. Equity and Social Fairness

The economic analysis of environmental policy is often criticized for paying insufficient attention to the distributional effects of certain environmental instruments or approaches. Again, sustainable development emphasizes the importance of equity considerations in two respects—equity within and between today's societies (intragenerational equity), and equity between those living today and those who will inherit the earth tomorrow (intergenerational equity).[15] At a more concrete level, other equity or fairness considerations should also be kept in mind. Does a certain policy favor one sector of the economy, or one region, over another? Will an economic instrument, such as an environmental tax, cause a redistribution of income or wealth, and if so what corrective measures could be applied to offset that effect?

3. Political Acceptability

Perhaps it goes without saying, but an environmental policy instrument must be politically acceptable. A number of economic instruments that have been advocated for decades by academic

14. *Id.*

15. *See* Sheila Foster, *From Harlem to Havana: Sustainable Urban Development*, 16 TUL. ENVTL. L.J. 783, 784 (2003).

economists, especially various environmental taxes or fees, have failed to be implemented because they have proven to be politically unacceptable. Active education campaigns may help change public attitudes, but instruments that lack political legitimacy should not be applied, however elegant and effective they may be in theory.

4. Time Frame

Some environmental problems may require urgent preventive or remedial action, which would favor direct governmental intervention or regulation. Other problems (global climate change being the best example) are developing so gradually, and will take so long to resolve completely, that economic instruments or other policies that are effective only in the long term may be appropriate.

5. Design and Implementation Considerations

A number of considerations should be evaluated in selecting a policy instrument or its specific design, and they often need to be considered in combination. For example, a number of analysts of emissions trading systems have concluded that they should only be considered when (1) there is a fixed regulatory upper limit (cap) on the amount of pollution; (2) the pollution problem is one that effects a broad area and there is little or no reason to worry about localized pollution "hot spots"; (3) there is a large enough number of regulated entities to allow a true "market" of willing buyers and sellers to form and establish a floating "market price"; (4) the actual emissions of all the regulated parties can be reliably measured and reported to public authorities to assure that the total emissions stay within the "cap"; (5) there is capability and willingness by the government to monitor private behavior and enforce the law against violators so that the integrity of the emissions market is maintained and the environmental objective is achieved; and (6) the environmental goal is reasonably well-defined and does not need to be changed frequently, so that the emission trades, and the investments on which they are based, have adequate longevity for business planning purposes.[16]

16. *See generally* Dallas Burtraw & Byron Swift, *A New Standard of Performance: An Analysis of the Clean Air Act's Acid Rain Program*, 26 Envtl. L. Rep. 10, 411 (1996).

B. First-Generation Environmental Law: Statutes and Regulations

1. A Recapitulation of the U.S. Experience

Environmental law in the United States emerged rapidly in the late 1960s and early 1970s around two major themes. First, courts and legislatures charged government agencies to exercise more responsibility for the environment, whether in their direct actions and programs or in granting licenses or permits to private parties.[17] Second, the pollution and environmental contamination caused by private industry and government operations was brought under legal control through an aggressive campaign to formulate and enforce new standards for polluting products such as automobiles or pesticides, and new standards of performance for manufacturing, waste treatment, power generation, and other operations.[18] Through new doctrines of standing[19] and statutory provisions for citizen suits,[20] the public was invited to be an active participant in both judicial and regulatory processes as a vigilant force to

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17. *See, e.g.*, Calvert Cliffs Coordinating Comm. v. U.S. Atomic Energy Comm'n, 449 F.2d 1109, 1128 (D.C. Cir. 1971) ("[The National Environmental Policy Act] establishes that consideration of environmental matters must be more than a *pro forma* ritual. Clearly, it is pointless to 'consider' environmental costs without also seriously considering action to avoid them. Such a full exercise of substantive discretion is required at every important, appropriate, and non-duplicative stage of an agency's proceedings."); Scenic Hudson Pres. Conference v. Fed. Power Comm'n, 354 F.2d 608, 620, 624 (2d Cir. 1965) ("[T]he right of the public must receive active and affirmative protection at the hands of the Commission. . . . The Commission's renewed proceedings must include as a basic concern the preservation of natural beauty and of national historic shrines, keeping in mind that, in our affluent society, the cost of a project is only one of several factors to be considered.").

18. *E.g.*, Clean Air Act (CAA), § 101-618, 42 U.S.C. §§ 7401-7671q (2000) (providing limits on air emissions from various stationary sources, emission control standards for motor vehicles, and specifications for vehicle fuels and additives); Federal Water Pollution Control Act (CWA), §§ 101-607, 33 U.S.C. §§ 1251-1387 (2000) (providing permit requirements and discharge limitations on industrial point sources, municipal sewage treatment plants and storm drains, and controls on dredging and filling of wetlands); Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), §§ 2-34, 7 U.S.C. §§ 136-136y (2000) (requiring licensing ("registration") of all pesticides and authorizing the Environmental Protection Agency to deny or cancel registrations for pesticides presenting "unreasonable adverse effects on the environment").

19. *See, e.g.*, Sierra Club v. Morton, 405 U.S. 727 (1972) (confirming standing of organizational plaintiffs if individual members were "injured," and embracing the view that effects on "'scenery, natural and historic objects and wildlife'" could constitute legal injury). "Aesthetic and environmental well-being, like economic well-being, are important ingredients of the quality of life in our society, and the fact that particular environmental interests are shared by the many rather than the few does not make them less deserving of legal protection through the judicial process." *Id.* at 734.

20. *E.g.*, CAA § 304, 42 U.S.C. § 7604 (granting certain civil litigation rights to "any person . . . on his own behalf"); CWA § 505, 33 U.S.C. § 1365 (granting virtually identical rights as the CAA).

keep the government itself on track and to supplement government enforcement against private industry.[21]

In a market economy such as the United States, it goes without saying that "greening" modes of production and service delivery, which are predominantly under private ownership, presents a different challenge to law and institution building than "greening" the government. In keeping with approaches to the imposition of new public norms on private persons and enterprises that emerged in the New Deal and persisted in the post-war decades, the initial wave of U.S. environmental law of the 1960s and 1970s specified detailed new objectives, imposed specific mandates in statutes, established new administrative agencies to prescribe detailed rules of behavior designed to meet the statutory objectives, and made it unlawful for private parties to violate the rules, with the government tasked to inspect and monitor private facilities and bring legal actions to compel compliance and punish violators.[22] This system has come to be known, if somewhat inaccurately,[23] as "command-and-control" regulation.

For all its virtues, the command-and-control regulatory system has significant limitations. Among them are the heavy investment of administrative time and public money to develop regulations, the pressure to develop single, uniform rules that exclude consideration of local factors, the long life of rules based on certain technologies that have the effect of "locking in" those technologies and stifling innovation, and the tendency of regulatory programs to target selected major activities and to exempt or ignore other activities.[24] Moreover, as environmental law matured, the desired changes in the environmental performance of private parties became more numerous and diverse and intruded more into production processes, new product development, and business

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21. *See, e.g.*, ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 1056-57 (3d. ed. 2000) (identifying three types of citizen lawsuits authorized by environmental statutes: for enforcement against private parties; to compel government officials to perform mandatory duties; and to obtain judicial review of government actions).

22. Robert V. Percival, *Regulatory Evolution and the Future of Environmental Policy*, U. CHI. LEGAL F. 159, 164-67 (1997).

23. Samuel P. Hays, *The Future of Environmental Regulation*, 15 J.L. & COM. 549, 564 (1996) ("And how about that current chestnut, 'command and control.' . . . The real world of environmental administration involves choices made by various sectors of the regulated community as well as choices made by the agencies. We could get at all this more fully if we would replace the sound-bite 'command and control' with the more real world context of regulatory initiative and regulated response.").

24. *See* Richard B. Stewart, *United States Environmental Regulation: A Failing Paradigm*, 15 J.L. & COM. 585, 587-91 (1996) (presenting a succinct catalogue of defects in command-and-control regulation).

adaptation to meet changing market conditions.[25] The limitations of direct regulation became apparent, and research suggested that in some cases rigid rules might hamper, rather than promote, real improvement in environmental conditions.[26]

2. First-Generation Environmental Law in Chile

During the 1960s and 1970s, most Latin American countries (indeed, most countries in the world) were very proud of their smokestack industries, modern roads, and urban development projects—the bigger and more monumental, the better.[27] In this naive era of industrialization of economies, neither governments nor private developers took into consideration the possible environmental and quality of life impacts of these activities.[28] This was not for a lack of foresight; it was the standard approach of the day.[29]

When increased population, urbanization, and industrialization led to obvious pollution problems such as untreated residential sewage, air pollution from buses and cars, aging oil refineries, industrial wastewater, and solid waste, environmental awareness arose in society. Latin American governments were confronted with a combination of factors

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25. *See, e.g.*, Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 33-36 (2001).

26. ROBERT WILLIAM HAHN, RISKS, COSTS, AND LIVES SAVED: GETTING BETTER RESULTS FROM REGULATION (1996); Charles W. Powers & Marian R. Chertow, *Industrial Ecology: Overcoming Policy Fragmentation*, *in* THINKING ECOLOGICALLY, *supra* note 2, at 19, 22-23. Another weakness in the U.S. regulatory approach—its halting and incomplete control over government-owned sources of pollution—is pertinent to the discussion of the Latin American experience that follows, as well as to the unique circumstances in present-day Cuba. But in this regard, the weakness stems from internal contradictions of governmental policy and the need for coordination of executive and legislative power to address environmental deficiencies. *Id.* Nonregulatory approaches, the focus of this Article, are generally inappropriate to modify government behavior, with the exception of conditions on the allocation of public funds in order to influence the environmental actions of subordinate units of government such as states and municipalities.

27. J.R. MCNEILL, SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD 347 (2000) (noting that in former colonies the proclivity for "big projects carried on the tradition of colonial environmental manipulation").

28. *Id.* at 347-55. "Such regimes had encouraged pollution-intensive economies and ecologically heedless resource extraction in their quests to build state power and economic growth." *Id.* at 348. Specifically with respect to Chile, see Joseph G. Block & Andrew R. Herrup, *Addressing Environmental Concerns Regarding Chilean Accession to NAFTA*, 10 CONN. J. INT'L L. 221, 247-67 (1995); Scott C. Lacunza, *From Dictatorship to Democracy: Environmental Reform in Chile*, 19 HASTINGS INT'L & COMP. L. REV. 539, 542 (1996).

29. MCNEILL, *supra* note 27, at 336 ("The overarching priority of economic growth was easily the most important idea of the twentieth century."). McNeill also observes that, "[i]n the struggles for survival and power, in the hurly-burly of getting and spending, few citizens and fewer rulers spared a thought for the ecological impacts of their behavior or ideas." *Id.* at 356.

that made environmental protection solutions technically difficult, economically expensive, and politically unpalatable.[30]

To begin with, most of the relevant activities to be controlled were government-owned and in poor economic condition. Technologies used in the industrial facilities were normally old and not environmentally friendly. Their workers were organized in unions that were politically strong and reluctant to accept changes that they feared could result in lost jobs. Public and private transportation systems widely used vehicles or engines that developed countries deemed unsuitable and therefore sold as scrap or gave away as foreign aid.

Subsidies and price controls for services such as electricity, drinking water, sewage, and waste management were common throughout the continent. Because eliminating those subsidies would result in steep price increases affecting mostly poor people, governments were understandably reluctant to make such reforms.

Confronted with this situation, Chile and other Latin American nations set emission standards for specific manufacturing activities or technologies,[31] just as the United States had done in the 1970s.[32] This approach can be extremely efficient for reducing emissions and therefore for improving environmental quality, but the speed at which it works depends substantially on the capacity of regulatory agencies and judicial enforcement, and on the capacity of the regulated entities to install control devices or introduce process changes necessary to comply with the standards. In the early years of the environmental law movement in Latin America, most of the regulated activities (public transport and electricity generation, as well as industry) were operating so inefficiently that significant reduction in emissions came with costs savings. This was the fun part of the story, but the fun lasted only for a short while. Because of the factors just outlined, as late as 1990 Chile had weak and poorly organized government environmental agencies and very few duly promulgated and legally binding standards–be they limitations on

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30. Juan Escudero & Ricardo Katz, Department of Industrial Engineering, Universidad de Chile, Lectures in Gestión Ambiental (First semester 2001) (on file with author).

31. Lila Katz de Barrera-Hernandez & Alastair R. Lucas, *Environmental Law in Latin America and the Caribbean: Overview and Assessment*, 12 GEO. INT'L ENVTL. L. REV. 207, 225-27 (1999).

32. United States regulations were specifically designed to control existing sources almost on a case-by-case basis—the regulations were divided into existing and new source performance standards. Also the regulations were very detailed and specific in terms of different standards for different technologies and processes. *See* CONAMA, EMISSION STANDARDS ANALYSIS FOR IMPLEMENTING THE SEIA REGULATIONS (1996).

environmental releases or ambient environmental quality norms.[33] The issue of environmental regulations and institution creation became a priority during the 1990s, due in part to external pressures as well as heightened domestic demand for better environmental quality.[34] Support from the Inter-American Development Bank and the World Bank resulted in the creation of environmental ministries (with direct executive powers) or commissions (with coordination powers) in a number of countries in Latin America.[35]

Simultaneously, most countries (including Cuba) promulgated their first comprehensive environmental laws.[36] These laws normally tried to integrate the disparate existing environmental legislation, streamline the number of institutions with environmental powers, create the environmental impact assessment system, and either promulgate different kinds of environmental regulations or design the system through which these regulations could be created.[37] In this latter respect, "capacity building" became an important element. Chile and other countries did not have the institutional capacity for developing detailed, technical environmental regulations, much less for assuring their implementation and enforcement. To begin with, they confronted a serious shortage of highly trained environmental scientists and engineers in both the private and public sectors. Thus, the young government agencies established to take charge of public environmental management had very limited capacity to carry out the many tasks facing them.

The change in economic policies in the 1990s confronted the young environmental agencies with a second, deeper challenge–to create a transparent and efficient administration of environmental requirements so as to attract private investment as well as to define the environmental conditions or prerequisites for the privatization of publicly owned enterprises. Private investors the world over demand stable and transparent environmental regulations that allow them to design and operate their projects under clear rules and to limit the environmental liabilities that could arise later from past activities of public enterprises

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33. Juan Giaconi, *Estándares primarios de calidad ambiental en Chile*, MEDIO AMBIENTE EN DESARROLLO (Centro de Estudios Públicos, 1992); *see also*, de Barrera-Hernandez & Lucas, *supra* note 31, at 211 ("Throughout the region, there are no mature examples of codification—the rational and systematic organization of the rules that embody distinct principles of application to environmental and natural resource matters.").

34. Interview with Rafaél Asenjo, first Director of CONAMA (1991).

35. Interview with Leonel Sierralta, Chief of Staff, CONAMA (1996).

36. *See* Felipe Páez, *Environmental Framework Laws in Latin America*, 13 PACE ENVTL. L. REV. 625, 676-82 (1996).

37. Gabriel del Favero & Ricardo Katz, *Modernizaciones Pendientes*, GESTIÓN AMBIENTAL EN CHILE ch. 4 (Centro de Estudios Públicos, 1992).

operated for years with little or no environmental control. Most Latin American countries, however, lacked a tradition of predictable legislative and executive policies, honest and effective administration, and an impartial judiciary, the necessary ingredients for effective and predictable public administration.

Chile began the process of creating environmental laws, building environmental administrative capacity in the government, and giving the judiciary a proper role in the legal system during the 1990s.[38] The process of environmental law development in Latin America has, therefore, been slow. Human and monetary resources have not been enough, and global economic problems have taken away the already limited political support for environmental institutions. Nevertheless progress has been made; most Latin American countries now have public environmental management systems in place and the environmental regulatory framework has slowly taken shape.

3. Common Problems with Regulatory Systems

The principal difference between the Latin American and U.S. experiences with the first generation of environmental law is that the United States implemented its basic regulatory regime in the 1970s, whereas the Latin American countries did not achieve a comparable level of environmental control until the 1990s. In many other respects, however, the Latin American experience with direct regulation mimics that in the United States, with differences only in degree. Two factors inherent in a regulatory regime tend to complicate its implementation and diminish its effectiveness. First, the regime imposes new costs on regulated entities, leading inescapably to political choices about how to limit or redistribute those costs. Second, the difficulty in agreeing on precise environmental quality objectives, combined with the inordinate difficulty in measuring environmental quality, tend to drive regulatory systems toward limits on pollution output rather than achieving environmental quality objectives.[39]

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38. Jennifer Anne Scott, Comment, *Environmental Watchdogs Take a Bite Out of Chilean Foreign Investment: Mandatory Environmental Impact Statements May Affect Foreign Investment*, 11 TRANSNAT'L LAW. 245, 252-59 (1998) (describing Chile's environmental framework law of 1994, government reorganization, and a decision of a chamber of the Chilean Supreme Court overturning an administrative decision to permit an environmentally harmful investment).

39. See WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 259-62 (2d ed. 1994), for a short essay on the tension between the "absolutist" philosophy of prohibiting discharges to water and the "relativist" philosophy of trying to achieve water quality standards.

On the cost side, individuals, businesses, and the government alike face shortages of capital to finance the improvements in plants, equipment, and technology that are necessary to make even the first serious reductions in pollution or other environmentally harmful activities, especially among small and medium industrial enterprises and at the household level. The financial challenge is formidable enough in the United States; for developing countries in Latin America it is profound and chronic.[40] It is not surprising, then, that the statutory and regulatory system makes accommodations to economic considerations. Among the accommodations in both regions:

– Different emission standards were issued for existing and new activities. The standards for existing sources were normally much less stringent than those for new sources.

– Personal experience as consultants has shown us that although some existing activities could comply through simple improvements in efficiency or modification of their processes, investments in end-of-pipe controls (scrubbers, electrostatic precipitators, water treatment plants, etc.) generally occurred only if there was a production need such as an increase in capacity.

– Most existing sources could not comply with the schedules, and enforcement capacity was inadequate. Compliance was substantially delayed for most sources. Some existing sources were legally excused from compliance altogether.

– Schedules and standards were changed to accommodate the noncomplying sources, especially state enterprises, thus diminishing the credibility of environmental programs.

Another characteristic of most environmental regulation systems is that they set different levels of control for different types of activities. Developing countries, even more than developed ones, have limited resources for enforcing environmental regulations. Authorities concentrate their efforts on big, notorious sources,[41] imposing a disproportional reduction burden on those types of sources and

40. RICARDO KATZ & GABRIEL DEL FAVERO, EL SISTEMA DE GENERACIÓN DE NORMAS DE CALIDAD AMBIENTAL Y DE EMISIÓN (Revista Estudios Públicos, 1998).

41. *See* JOHN QUARLES, CLEANING UP AMERICA: AN INSIDER'S VIEW OF THE ENVIRONMENTAL PROTECTION AGENCY 14-36 (1976) (describing the U.S. Environmental Protection Agency's deliberate decision to focus early enforcement attention on big industries like the steel industry in order to impress upon all of U.S. industry the serious resolve of the new agency and the importance of the new environmental mandates).

neglecting small, dispersed ones, which have grown more and are now contributing importantly to pollution.[42]

Another troublesome aspect of rules-based regulatory systems is the inconsistency between emission standards and ambient environmental quality standards. Scientific or engineering theory suggests that emission standards should be designed with an environmental (ambient) goal in mind. In a perfect world, the sum of all pollutant releases will result in ambient levels that comply with the ambient standard or goal, and a system to allow new activities will be devised so as to allow overall economic activity to grow without allowing for pollution growth. In reality, though, there is ambiguity and disagreement about where to set the ambient goal, and ambient conditions can be difficult to measure. There is also a moral/political component to the issue that emphasizes pollution prevention as a goal in itself, regardless of its environmental effects. For these and other reasons, most developed countries' systems have numerous emission or discharge standards, and developing countries have normally copied those standards without specific reference to local ambient conditions or their economic and technical feasibility in the local context.

The application of technology-based standards yields significant environmental improvements, but when they fail to result in the desired ambient environmental quality, awkward adaptations are needed to achieve (or at least strive for) the ambient standards, and those adaptations have their own economic and institutional costs.[43] One such cost is repeated ratcheting of the emissions standards over time to accommodate new-comers as well as to meet the demands for better environmental quality.[44] This approach can impose high control costs if new equipment is required before the source has been able to depreciate the cost of the previously required equipment. It also shifts the environmental responsibility from the polluters to the regulators; if most sources are complying with the emission standards and ambient environmental quality is still unacceptable, it is the regulators' fault, not

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42. *See, e.g.*, CWA § 404, 33 U.S.C. § 1342 (2000). In the United States, the most notorious example of this effect is the unwillingness to address nonpoint sources of water pollution such as farms and sprawling residential development.

43. In the United States, there has been enormous controversy, for example, over the trouble and expense of the as-yet unsuccessful efforts since 1970 to bring urban air quality within the health-based limits of the National Ambient Air Quality Standards. CAA § 109, 42 U.S.C. § 7409 (2000). *See generally* Whitman v. Am. Trucking Assoc., 531 U.S. 457 (2001).

44. In the CAA, for example, new stationary sources of pollution in nonattainment areas can be permitted only if their emissions are "offset" by corresponding reductions at existing sources. CAA § 173(c)(1), 42 U.S.C. § 7503(c)(1) (2000).

the polluters'. Finally, the system needs some way of apportioning the reduction in excess emissions. Like most countries faced with this problem, Chile has adopted a proportional emissions reduction approach—each source is called upon to reduce emissions by the same percentage.[45] While seemingly fair because each source is asked to bear its "fair share" of the necessary reductions, uniform reduction strategies in fact raise questions of equity across sources with differing circumstances. They are also economically inefficient.[46] Without emissions trading among the affected sources, reductions are obtained from all sources, regardless of the costs to each source.[47]

C. Second-Generation Environmental Law: Nonregulatory Instruments

It is our observation, guided and reinforced by the observations of others,[48] that recent developments in environmental law in Cuba emphasize the reorientation of government agencies toward environmental considerations and some corresponding opening of agency decision making to greater public input. Such legal developments are important, indeed essential, in laying the foundations of a national system of environmental law and administration, especially in a nation like Cuba where the government has a much larger role in society and the economy than in capitalist nations. The greening of the government in Cuba required many of the same reforms of substantive law and of the procedures of public administration that marked the early stages of U.S. environmental law. In both cases, government reformed itself by specifying requirements and internal procedures for research, analysis, and coordination with respect to the environmental consequences of government actions, and by reorganizing government or

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45. Some elements of U.S. environmental law adopt a planning-based approach rather than a uniform reduction approach. *See generally* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION (2d ed 2002).

46. BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL/DIRTY AIR OR HOW THE CLEAN AIR ACT BECAME A MULTIBILLION DOLLAR BAILOUT FOR HIGH-SULFUR COAL PRODUCERS AND WHAT SHOULD BE DONE ABOUT IT 13-58 (1981) (presenting a classic critique of one uniform-reduction approach).

47. *See* U.S. ENVTL. PROT. AGENCY, CLEAN AIR MARKETS—PROGRAMS AND REGULATIONS (Oct. 25, 2002), *at* http://www.epa.gov/airmarkt/arp/overview.html (referring to a U.S. General Accounting Office study of the economic benefits of emissions trading). The sulfur dioxide emissions trading system in Title IV of the CAA has helped electric generating facilities and major industrial facilities achieve the environmental goal of reducing sulfur dioxide emissions by 10 million tons per year at approximately one-half of the cost to the nation that a straight proportional reduction would have imposed.

48. Houck, *supra* note 11, at 69-79.

creating new agencies and officials charged with environmental responsibilities.[49] Monitoring and enforcement of these self-imposed obligations comes primarily from within the government itself, through executive mandates and political directives, oversight by legislative or other bodies outside the administrative bureaucracy, and ultimately through some systems for public accountability. Cuba, like many other countries around the world, borrowed ideas and approaches from those who have undertaken these governmental reforms, including the United States and other developed countries.[50] Environmental impact assessment requirements are an obvious and leading example.[51] It appears that Cuba has carried out this element of environmental law development with an admirable level of sophistication, determination, and support from the political leadership.

Our interest in nonregulatory approaches to environmental protection, however, does not pertain to the theme of environmental self-reform of the government in the exercise of its ministerial duties. Government agencies, after all, are not susceptible to economic incentives or other market-based instruments. Rather, we are thinking of nonregulatory approaches as substitutes or complements to a system of regulation addressing the behavior of production units, enterprises, and individuals. So our interest lies in the second theme of environmental law development, the formulation of systems of control of pollution or other environmentally harmful consequences of productive activities of all kinds, including manufacturing, transportation, mining, construction, and agriculture.

Recognizing the limitations of the standard regulatory systems described in Part II.B. above, environmental policy analysts and policymakers developed alternative legal devices designed to steer private actors in the direction of environmental protection by engaging their day-to-day interest in ways to reduce costs of production and improve product quality. The basic idea is to make it worthwhile as a business or personal matter for the target party to undertake desired measures for environmental improvement. If such motivational strategies are effective, the society may be able to avoid or reduce the rigidities, legalities, and bureaucratic superstructures of the command-and-control regime. These nonregulatory variants can be grouped in

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49. *Id.* at 18-25.

50. Santos, *supra* note 6, at 11-15 (emphasizing international and Latin American sources).

51. Houck, *supra* note 11, at 25-38.

three broad categories: economic instruments, information devices, and management mechanisms.[52]

1. Economic Instruments

The theory behind most economic instruments is to implement the polluter-pays principle by imposing directly on the producer the social costs of its environmental pollution, which are ordinarily external to market-calculated costs of production because they are borne by the public at large or the victims of pollution. Because markets routinely fail to internalize costs automatically, cost-internalization requires governmental intervention to impose or assign the cost to the producer.[53] As surveyed some years ago by the Organization for Economic Cooperation and Development (OECD), economic instruments can take a variety of forms.[54] The most obvious possibility is to set a tax or a fee on the amount of pollution, or on the environmentally offending product.[55] Subsidies or rebates for good environmental performance are the obverse of taxes. Subsidies are disfavored in theory because they are inconsistent with cost internalization, but they are much more popular among politicians than taxes or fees. Another economic device, especially suitable to prevent environmentally harmful disposal of products by the end user, is the deposit-refund system, or its more ambitious variant, the take-back requirement that holds the original manufacturer responsible for the ultimate disposal, reuse, or recycling of the product. Economic instruments that are styled "market-based" mechanisms include transferable (tradable) emission rights or transferable resource quotas. Explicit or implicit exposure to financial liability for personal or environmental harms or damage to natural resources also creates economic incentives, and the complementary

52. Other commentators classify nonregulatory options somewhat differently. For a similar classification to the one in the text, see Robert Stavins & Bradley Whitehead, *Market-Based Environmental Policies*, *in* THINKING ECOLOGICALLY, *supra* note 2, at 105, 106-09 (listing as "market mechanisms" pollution charge systems, tradable permits, deposit-refund systems, reducing market barriers, eliminating government subsidies, and providing public information); *see also* Stewart, *supra* note 25, at 94-99 (dividing the world of economic instruments into five groups: economic incentive systems (of which he lists four types), market-based information strategies, liability for environmental damage, "free-market environmentalism" (property rights), and pure subsidies).

53. *See* Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, *in* ECONOMICS OF THE ENVIRONMENT: SELECTED READINGS 50, 52-58 (Robert N. Stavins ed., 4th ed. 2000) (providing a readable, succinct summary of environmental economic theory).

54. OECD, ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL PROTECTION (1989).

55. Maureen L. Cropper & Walker E. Oates, *Environmental Economics: A Survey*, 30 J. ECON. LITERATURE 675, 679 (1992). This is often referred to as a Pigouvian tax because the idea was first developed by the French economist A.C. Pigou.

requirements for mandatory insurance coverage, such as for oil spills, also serve to impose costs on the polluter (while at the same time perhaps limiting that liability).[56] Some economic measures affect producing enterprises directly, while other measures serve to reduce pollution or environmental harm indirectly by changing the absolute or relative price of goods for the consumer.

2. Information Devices

Market theory lies behind most environmental information devices as well. Some information devices, such as eco-labels or warning labels, are oriented toward the consumer. In this case, the theoretical assumption is that if purchasers of a product or service are fully informed about the environmental or health harm (or benefit) associated with the product (or service) and any competing product, they can exercise their consumer preference for environmentally friendly goods, which will stimulate demand and prompt producers to make more. Other information devices are designed to compel producers to disclose certain kinds of environmental information.[57] In these cases, the expectation is that the disclosure will put public pressure on the producer to reduce the environmental releases or other environmental harms that are now publicly known. A third kind of information device, hazard warnings or labels, is not directly market-based, but springs from concepts of tort law that the maker or seller of a dangerous product should make the dangers known so that workers or others who might use the product or come in contact with it will take appropriate steps to prevent or reduce their exposure.

Among the consumer-oriented environmental information devices, some relate to product characteristics and some relate to the processes or production methods used to make the product. For example, consumers may prefer a product with a particular characteristic, such as "phosphate-free" detergent so as to reduce their personal contribution to eutrophication of lakes and rivers, or paper that is "100% post-consumer recycled fiber" to help reduce waste and promote recycling. The labels relating to processes or production methods raise more complex

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56. Protocol to the International Convention on Civil Liability for Oil Pollution Damage 1969, Nov. 19, 1976, 16 I.L.M. 617 (entered into force Apr. 8, 1981). Civil liability and insurance has been part of the international oil spill regime for many years, but international and national regimes also includes ship design and operational standards. *See* International Convention for the Prevention of Pollution from Ships, Oct. 21, 1980, 94 Stat. 2297.

57. The U.S. Toxic Release Inventory is the best known example. Emergency Planning and Community Right-to-Know Act § 313, 42 U.S.C. § 11023 (2000).

questions about how to judge different kinds of environmental effects, because the use of the label usually depends on meeting a set of environmental criteria determined by public or private authorities, criteria that usually cover more than one type of environmental harm or benefit. Thus, there was substantial controversy in the United States recently about the criteria for carrying the marking "organic" on food products.[58] Even more controversial are so-called "eco-labels," very common in Europe, which try to reflect an overall environmental assessment of means of production.[59] This controversy spills over into international trade policy when the eco-labels are applied to products manufactured in other countries; developing countries are generally opposed to eco-labeling for fear that it will be too costly to meet the criteria and because it intrudes into local choices about environmental controls on production facilities.[60]

The category of information devices for enterprise reporting or disclosure covers a variety of legal programs. At the most basic level, environmental regulation systems can require regular, public reporting of environmental releases such as emissions of air pollution and discharges of wastewater.[61] These reports can then be compared to the legally permitted rates of release, putting the public spotlight on facilities that are not complying with legal requirements. A more creative use of reporting that represents the kind of nonregulatory approaches we are emphasizing is the Toxics Release Inventory in the United States.[62] By law, manufacturing facilities are required to disclose the quantities of certain listed toxic chemicals that they release each year to the air, to the water, or on land as part of waste disposal.[63] The environmental releases are allowed by law, but they must be publicly reported.[64] The result of this requirement of publication has been dramatic. Companies do not want to be publicly identified as "toxic polluters," so they immediately took steps to reduce or, if possible, completely eliminate their releases of

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58. *See* Candy Sagen, *The New Standards: What Does "Organic" Really Mean?*, WASH. POST, Oct 21, 2002, at F1 (noting that "it took more than a decade for the new standards to be hammered out").

59. Ellen Margrethe Basse & Sanford E. Gaines, *How Thinking About Trade Can Improve Environmental Performance: Trade Issues in Environmental Labeling Systems*, 8 ENVTL. LIABILITY 71, 73-77 (2000); James Harding, Business and the Environment: Sticking Point for Fresh Green Products—The EU Ecolabel Has Irked Some Manufacturers, FIN. TIMES (London), Mar. 29, 1995, at 16.

60. Basse & Gaines, supra note 59, at 77-84.

61. *See* CAA § 114, 42 U.S.C. § 7414; CWA § 308, 33 U.S.C. § 1318.

62. *See* 42 U.S.C. § 11023 (requiring the implementation of the Toxic Release Inventory).

63. *Id.*

64. *Id.*

these chemicals.[65] In just a few years, many companies voluntarily reduced their reported releases by 90% or more.[66]

A similar, though less dramatic, effect has come from the development of national systems to report environmental releases, known as the Pollutant Release and Transfer Registry (PRTR). In recent years, the North American Commission for Environmental Cooperation, a trinational commission including Canada, the United States, and Mexico, has published annual reports of the PRTR data for Canada and the United States, broken down by provinces or states and by the types of industry.[67] The data have revealed that the province of Ontario is generating far more pollution than expected, and this has created public pressure on Ontario and the businesses within to reduce those releases.[68] Moreover, Mexico is now under serious pressure to institute a legal requirement for all pollution sources to report their releases.[69]

3. Management Mechanisms

Management mechanisms constitute another diverse category of nonregulatory measures. Management mechanisms are intended to ensure that companies have management systems in place that include a high-ranking officer with environmental responsibility for the company. These mechanisms also develop information within a company about its environmental performance and bring environmental problems or other issues to the senior officers of the company. Management approaches began about twenty years ago with the first efforts by several large corporations to conduct environmental audits of their own operations.[70] By identifying situations in which a company is not meeting its legal requirements with respect to environmental performance or where it could take simple steps to enhance its performance, the environmental

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65. Sidney M. Wolf, *Fear and Loathing About the Public Right to Know: The Surprising Success of the Emergency Planning and Community Right-to-Know Act*, 11 J. LAND USE & ENVTL. LAW 217, 249-307 (1996).

66. Bradley C. Karkkainen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257, 259 (2001).

67. N. AM. COMM'N FOR ENVTL. COOPERATION, TAKING STOCK 1999: NORTH AMERICAN POLLUTANT RELEASES AND TRANSFERS 1-4 (2002), *available at* http://www.cec.org/takingstock/index.cfm?varlan=english.

68. *Id.* at 12-17.

69. N. AM. COMM'N FOR ENVTL. COOPERATION, PUBLIC ACCESS TO GOVERNMENT-HELD ENVIRONMENTAL INFORMATION 124-33 (2d 2003), *available at* http://www.cec.org/files/PDF/LAWPOLICY/NAELP10_en.pdf (discussing public access to government-held environmental information).

70. The European Union institutionalized environmental auditing with its Eco-Management and Audit Scheme (EMAS). Commission of the European Community Council Regulation (EEC) No. 1836193, 1993 Official J.L. 168.

audit allows company management to reduce or avoid legal liability for environmental violations.

Environmental audits are also useful for investment transactions, including all those related to the privatization of government enterprises. The audit allows the purchaser or investor to be sure that the particular company or property is not encumbered with old contamination or inadequate pollution control systems. The private sector generated its own system based on environmental due diligence audits and private contractual agreements between the parties.[71] Later, the World Bank and other lending institutions developed their own guidelines for environmental audits.[72] As audits and private agreements started to be common, even if projects were privately financed the benchmark became: "Does the project comply with World Bank guidelines and standards?"

A further basic condition for projects financed through multilateral institutions such as the Inter-American Development Bank (IDB), the World Bank, the International Finance Corporation (IFC), and others, is that the environmental impact of projects is to be controlled and mitigated, and that local institutions are to be capable of monitoring the projects and enforcing the local regulations.[73] Similar requirements were imposed on projects financed through private banks and investors.[74] This was so much so, that most projects prepared an environmental impact study to comply with local in-country regulations and another to be presented to the project financiers. Lately this has ceased to happen as projects just prepare one environmental impact assessment that fully complies with World Bank standards. This situation has also helped with transparency (one of the most important issues for the World Bank) as well as with social themes. Multilateral institutions include social impacts as an integral part of their evaluation. Governments tend to consider through separate channels the environmental and social aspects of a project.

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71. In the Bolivian "capitalization process," the privatization of the pipeline system included a clause stating that certain environmental liabilities will be assumed by the Bolivian government. The job itself had to be carried out by the new owner/operator, but costs were paid by the government.

72. WORLD BANK, THE WORLD BANK OPERATIONAL POLICIES (OP 4.01) (1999), *available at* http://Inweb18.worldbank.org/ESSD/essdext.nsf/47ByDocName/PolicyOperationalPolicy.

73. Ricardo Katz, personal experience as consultant to IDB and the World Bank in numerous environmental and social due diligence projects in Chile, Bolivia, Peru, and Argentina.

74. Ricardo Katz, personal experience as consultant for mining and pulp and paper projects in Chile during the late 1990s and early 2000s.

As the years went by, and experience accumulated, project managers, as well as investors, started to realize that it was one thing for the project to comply with World Bank guidelines and standards during the design and construction phase and another for those projects to be operated under those same guidelines and standards. This situation resulted in most financing contracts including environmental auditing clauses, by which projects take the commitment of being independently audited on a routine basis by private consulting companies that report to the financing institution, even though they are paid by the project itself. Installment disimbursements are tied to the results of these audits. This is a very powerful incentive to comply with regulations, although nonregulatory in that it is contractually based.

An ambitious environmental management standard has been developed in recent years by the International Organization for Standardization (ISO).[75] To meet the ISO-14001 standard, a company must have a complete environmental management system in place that reports to senior company management and the board of directors, and systems for gathering internal information about environmental performance and criteria for deciding on corrective measures.[76] Independent auditors will inspect a company and "certify" that it meets the ISO standard.[77] The sole enforcement mechanism under this program is through private contracts–a company may require that other companies from which it buys be "ISO-14001 certified" so that its own products can carry that certification.[78] Some governments will give certain benefits to ISO certified companies, such as a reduced number of environmental inspections by the government.[79] The Cuban government's National Standards Office is working with the ISO-14000 system and studying how it might be applied in such sectors as tourism, investment, and industry.

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75. INT'L ORG. FOR STANDARDIZATION, ENVIRONMENTAL MANAGEMENT: THE ISO 14000 FAMILY OF INTERNATIONAL STANDARDS 2-3 (2002), *available at* www.iso.org/iso/en/prods-services/otherpubs/iso14000/index.html [hereinafter ISO 14001].

76. *Id.*; *see* C. Foster Knight, *Voluntary Environmental Standards vs. Mandatory Environmental Regulations and Enforcement in the NAFTA Market*, 12 ARIZ. J. INT'L & COMP. L. 619, 622-29 (1995).

77. *Id.*

78. *Id.*

79. *Id.*

III. LESSONS

A. General Observations

By definition, economic instruments for environmental protection can be effective only when the behavior of the targeted actor—be it the production unit, the consumer of the product, or the party disposing of waste material—is likely to be influenced by changes in cost or price of a single behavior or by the opportunity to change behavior based on comparisons between the cost of two alternative behaviors. It is difficult at best to make economic instruments effective for much of the Cuban economy because the administrative system of rewards does not foster changes in environmental behavior by individual units of production. The Cuban government is experimenting with modest departures from the uniform administrative model, such as revised systems of pricing for water and electricity under which rates increase with increasing use, but those departures are the exception rather than the rule.[80]

As we understand the production system in Cuba and its relationship with government authorities, production units are not rewarded or compensated in profit-and-loss terms, so a particular production facility has no incentive to respond to measures like a pollution fee that would raise the cost of production. Even if the production unit were self-motivated to reduce environmental harms by installing pollution controls or investing in process changes, it can neither generate nor borrow the capital resources for such investments. Rather, planners in the government decide which facilities or which projects will receive public funding.[81] Moreover, at this point in the development of the Cuban economy, such capital resources are very scarce in any event, so the capacity to make changes in response to incentives of any type—be they social, economic, or managerial—is severely constrained.

The egalitarian structure of personal compensation for workers appears to allow almost no economic incentives to encourage Cuban workers to initiate environmental improvement measures on their own, though some worker initiative can be expected through ideas of social solidarity and personal or group desire to improve environmental quality. In terms of economic instruments targeted at consumers rather than producers, the same egalitarian pay structure and the prevailing low

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80. Vazquez, *supra* note 4. The water-rate reform does not apply to agricultural users, the largest users of water. *Id.*

81. The presentations we heard from Cuban officials repeatedly emphasized the planning approach and the importance of the planning agencies in directing economic activity and environmental protection efforts.

levels of personal income leave consumers with few chances to express environmental preferences in their purchasing, and thus almost no capacity to influence producer behavior by shifting consumption to environmentally preferable products or services.[82]

The more likely opportunity for using economic instruments in the Cuban context is for government planners to think strategically about how to improve environmental performance through allocation of capital resources to producer facilities and through government pricing of goods and services such as energy or consumer products to steer consumption patterns in desired directions. The Chilean experience, described below, offers some useful lessons in this regard. Nevertheless, it must be acknowledged that for the domestic sectors of the Cuban economy, the scarcity of government-controlled investment capital seriously limits the opportunity for strategic resource allocation, and the high proportion of personal consumption that is determined by quotas rather than free consumer choice among competing goods further limits the immediate application of economic instruments.

The foreign direct investment sector, though, presents an entirely different picture, where there is significant room for more active deployment of economic instruments to steer investment preferences and to modify the behavior of both tourist facility managers and the tourists themselves. The Cuban authorities appear to be well aware of the opportunities here, and are discussing and, to some degree, implementing incentive or penalty systems to foreign investors. Already, somewhere in the range of 6% to 14% of all foreign investment moneys go in one way or another to environmental measures.[83] On the other hand, despite the long-standing existence of legislative authority to impose taxes for environmental protection and the rational use of resources,[84] the finance ministry has apparently not yet approved any such taxes.

Based upon our experience in having dealt with these issues in a number of countries in Latin America and in the United States, we will summarize some of the regulatory problems that have arisen in our countries and make suggestions for Cuba to avoid the same mistakes. Lastly, we will discuss some environmental issues in privatization of

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82. For example, many daily staples are distributed to citizens through quota systems rather than through an open market. *Id.*

83. *Id.*

84. Ley del Sistema Tributario, LEY NO. 73 [Taxation System, LAW NO. 73], art. 50 (1994) (Cuba) (establishing the taxing authority, though article 52 delegates to the finance ministry the authority to establish the basis and rates of such taxes).

production facilities, as this is a topic likely to form part of discussions in Cuba in the nearby future.

B. Direct Control Policies vs. Holistic Approaches

A common situation that arises in environmental policies in Latin American countries is the tug between the desire to control all possible situations through holistic programs versus the use of simple, direct policies aimed at specific problems one at a time. The direct regulation approach tries to create a set of border conditions that will result in the eventual internalization of the environmental externalities generated by different activities. This cost internalization will then result in an optimum environmental and economic situation as all costs will be considered by the parties involved. Such a task is too enormous and complex to work effectively in most situations, and no government has fully implemented the polluter-pays principle.[85] Our proposal is that government environmental planners, through an environmental impact assessment process, should try to identify specifically the negative impacts (or externalities) that they most want to avoid and design tailor-made regulations to internalize those particular costs. For example, if the impact to be avoided is health effects for urban residents from automobile emissions, then a combination of regulations and other instruments can be applied to limit tailpipe emissions from each vehicle, the total number of vehicles, and, ultimately, the number of kilometers allowed.[86]

It is only at this final stage of specific regulation that nonregulatory measures should be considered. For example, if the objective is to reduce automobile emissions, a government-promulgated emission standard for the automobile may be part of the strategy, but other nonregulatory devices can be included, such as gasoline taxes, road use charges, registration fees, parking fees, and perhaps quotas on the number of registrations.[87] They should be designed specifically to control the undesired negative effects, and to evolve in view of the results

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85. Sanford E. Gaines, *The Polluter-Pays Principle: From Economic Equity to Environmental Ethos*, 26 TEX. INT'L L.J. 463, 463-96 (1991) (discussing the evolution of the polluter-pays principle, including the many exceptions that have always been part of its application by European and other OECD governments).

86. Total vehicle emissions are compossed of the product between individual vehicle emissions, times the total number of vehicles, times the total number of kilometers traveled. If one of those variables is left uncontrolled then the total emission is not going to be controlled.

87. *See, e.g.*, Lye Lin Heng, *Environmental Pollution Control Act of 1999*, SING. J. LEGAL STUD. 1, 1-32 (2000). Singapore has made aggressive use of such a combination of measures to keep air pollution in the densely populated city-state within tolerable limits.

(prices can change and therefore adapt more easily to unexpected results than other kind of regulations). In our experience, more thoroughly regulatory and planning approaches based on urban design and localization of activities in special areas, with the expectation of minimizing travel requirements will not give such certain results because they depend on the decisions of many people in the future and thus contain too many variables to be able to control the outcome.

C. Opportunities

What we observed in Havana during our August 2002 visit was an environmental situation in terms of air pollution, solid waste, and water pollution that resembled what we saw in countries like Chile during the late 1970s.[88] Due to its economic isolation, however, Cuba is far behind in its manufacturing, transport, and other technologies. The combination of old technology and environmental awareness could be very powerful if correctly harnessed. The possibility, if resources become available, of making significant gains in pollution control by completely replacing out-moded equipment, planning appropriate public transportation systems, and exploiting other opportunities for modernization, is highly seductive.

Cuba has the professionals to identify and capture such opportunities, and its people are highly educated and therefore susceptible to understanding the benefits of greener development. For this purpose, and based on the issues presented in the previous pages, it will be relevant for the Cuban people to start taking actions now. These actions should take into consideration the new opportunities that loom ahead, as well as the chances to improve the existing factories and facilities. No doubt, privatization or joint ventures between the state and the private sector are going to be relevant. Environmental restoration and improvements will have to be considered during this process. Sunk environmental costs derived from inefficient public companies could (and if the past history of developed countries tell us something, this is going to be the case) be potentially large.

Taking all the above into consideration, we think that Cuba has enormous potential for improving its environmental quality as well as for preparing itself for the rising influx of private investment. Cuba has already begun to develop, implement, and refine a comprehensive set of environmental laws and standards, a vital foundation for environmental

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88. *See* Matias F. Trevieso-Diaz, *Key Environmental Legislation for Cuba's Transition Period*, 21 U. PA. J. INT'L ECON. L. 331, 332-38 (2000).

protection. As it emerges from its condition of dependence on foreign support to a condition of economic independence, the environmental policymakers will need to pay increasing attention to the economic evaluation of environmental policies and economic analysis of its experience with implementation of both regulatory and nonregulatory strategies.

Nonregulatory approaches of the kind that we have suggested earlier in this Article also place a premium on the proper design and reform of institutions, by which we mean legal rules, market or financial systems, business practices, accounting systems, and so forth. Economically oriented environmental management cannot function if appropriate public *and* private institutions do not exist. Moreover, nonregulatory approaches still require public management and oversight, such as collection and publication of pollution data, tracking of source emissions, and economic analysis and environmental monitoring to determine effectiveness and possible recalibration of environmental targets, pollution taxes, or the like. Enough resources have to be assigned for the implementation and control of environmental policies. It is better to try to deal well with a limited number of initiatives than to do badly with a higher number.

In this process, Cuban officials not fully familiar with market systems face the hazard that they may underestimate the role of prices. Prices are by far the biggest driver of environmental impacts or improvements. If relative prices are incorrect, the economic forces will drive the system towards a minimum cost equilibrium that does not take into consideration environmental externalities. Thus, it is of the utmost importance to set the relative prices correctly and introduce taxes or other price-affecting measures to compensate for environmental impacts (as for example in the case of different fuels).[89] This is true for investments, services, and intermediate goods, as well as final products.

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89. During the late 1970s, more than 50% of the Chilean public transportation system was based on gasoline trucks and almost 100% of private vehicles were gasoline. Relative prices changed at the end of the 1970s making diesel vehicles much more price efficient. This resulted in the whole public transportation fleet being transformed to diesel (and, even worse, buying highly pollutant second-hand diesel engines from Europe) in the course of one year. After that, air pollution problems due to particulate matter (PM10) started to increase in Santiago, Chile. Bus owners are politically powerful, so regulating them has been especially difficult. This situation got particularly bad during the late 1990s as the price of diesel got even cheaper relative to gasoline, causing private owners to start buying diesel engines.

After twenty years, the Chilean fleet has become more dieselized and authorities have been trying very hard to correct these price inefficiencies by confronting large social, economic, and political problems, as well as environmental problems.

For urban areas like Havana, the government planners and environmental officials should devise a specific framework of goals for the urban development or redevelopment process. Whether in the developing world or in developed countries like the United States, there are numerous negative examples of cities that developed without taking the environmental costs and consequences of development into consideration in terms of vehicle emissions, congestion, natural landscapes, river or lakefronts, and so forth. These cities not only suffer from an undesirable quality of life, their physical structure makes them unfit for efficient public transportation systems, coexistence of different types of activities, and have poor environmental amenities such as parks, bicycle routes, recreational spaces, and others.

As privatization and private investment intensify, Cuba should not lose the opportunity to debate and define the legal and social limits of private property. Many environmental problems arise from the fact that the boundaries between public and private property are not correctly defined. Cuba has a great opportunity here because the public's interest in private property can be defined in advance without the need for compensation or expropriation. By the same token, though, as markets are starting to develop, Cuba has a great opportunity to try to create better markets and market-based public policy mechanisms than those that evolved without the consideration of environmental externalities. Economic incentives can be used to promote superior environmental performance, especially superior performance that addresses local issues. For example, energy conservation and efficient energy use are of vital importance to Cuba; economic incentives to foreign investors can be used to reward ecologically sound, low-energy buildings using already available technologies and designs.

IV. A CONCLUDING THOUGHT: THE IMPORTANCE OF INSTITUTIONS

This Article has tried to pinpoint some positive and negative experiences gained through the use of different kinds of command-and-control instruments for the improvement of environmental quality in the United States and Chile and recent reforms in each country to expand the use of nonregulatory economic instruments. These observations are, in

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A similar situation happened with firewood as houses changed their kerosene or LPG based heating systems for firewood stoves. Due to the heavy pollution impact of these devices, technological restrictions had to be implemented.

The lesson we learned painfully in Chile was "Get your relative prices right the first time and you will save money and efforts." Personal observation of Ricardo Katz.

our view, pertinent to the continuing process of environmental law reform in Cuba.

A paramount consideration is the design of public and private institutions to carry out the missions. Environmental management is a new situation and therefore most of our countries have created new institutions to deal with it. Key institutional developments include new laws, new legal rules of procedure, new conceptions of public and private interests, and new modes of business organization. Public agencies to guide and oversee these institutional reforms normally have taken the form of either an environmental ministry with executive powers or of a coordinating commission with "coordination powers," or some combination of the two. Cuba, too, has followed this approach so far. In our view, more dramatic steps should be taken to create a truly new, institutional framework able to deal with a completely new phenomenon. Environmental management has some very particular features that have to be taken into consideration when designing the institutional framework that is going to deal with it. Public environmental management in most countries has been torn between the need to create an environmental management system capable of dealing with topics that transcend the different traditional government agencies and the efforts of the bureaucrats in those traditional agencies to maintain their long-time prerogatives. Even though new institutions have been created to deal with environmental problems, most of the legal authority remains in the hands of the traditional government agencies. Health-related issues are still in the hand of the ministries of health, natural resources issues in the hands of the ministries of agriculture, and so on. Worse yet, pollution control of specific industry sectors is normally regulated by the ministries that oversee those sectors from a production point of view and the enterprises themselves are not given appropriate incentives to modify their own behaviors. Emissions from vehicles are determined by the ministry of transportation, emissions from oil refineries by the ministry of energy, and so on, creating a situation where the production goals of a sector are in open contradiction with the environmental goals it is supposed to pursue. A complete revamping of the system is needed. Pollution control policies have to be taken away from agencies or enterprise decision makers that are concerned with production. Natural resource conservation and preservation has to be taken away from institutions concerned with maximizing yields in forestry or fisheries. Constantly our governments have stopped short of reform due to pressures put forward by traditional bureaucracies jealous to keep their status and enterprises reluctant to change their ways of doing business.

An equally important and more difficult task is for the environmental agencies of government to become, in themselves, truly effective. But how is effectiveness measured? It is impossible to provide a full and objective evaluation of the effectiveness of different environmental policies. Part of the problem, of course, is that the costs and benefits of environmental polices are difficult to measure and often difficult to express in monetary terms. But one could say the same about the costs and benefits associated with other social policies such as health and education. A deeper problem in the area of environmental policy is that all the participants—government and industry, as well as environmentally concerned citizens—have not pressed for such quantification, preferring instead to debate environmental policy on the basis of subjective social and ethical values. Consequently, environmental agencies around the world have been reluctant to systematize and quantify the impact of their policies, and the absence of good cost-benefit analysis has resulted in chronic under-budgeting of the environmental sector.

Institutions that are not geared towards dealing under the cost-driven conditions that govern the rest of the public sector are always going to be considered second-class institutions. In modern environmental management policies, the need to know how markets work and what makes companies and people tick will be fundamental. Environmental management policies cannot be conceived in a vacuum that does not consider the fundamental forces that drive the economics of a country. This has probably been the largest cause of failure of environmental policies to date.