

CHAPTER 4

HOW CAN ECONOMICS EXPLAIN THE CHOICE OF UNIFORM EMISSION STANDARDS IN MONTEVIDEO?

The main purpose of this chapter is to give reasons that may explain why Uruguayan regulators have chosen uniform emissions standards instead of more cost-effective economic instruments to control industrial pollution in Montevideo.

The chapter is organized as follows. In the next section I classify the instruments for controlling industrial pollution used in Uruguay according to criteria under which environmental policy instruments can be judged. This will provide perspective to the answers given by the economic literature on the puzzle of cost-ineffective instruments choice in Less Developed Countries (LDC). I then review the arguments behind these answers, namely the political economy of instrument choice and the lack of institutional capacity and evaluate their relevance for the case of industrial water pollution in Montevideo.

**4.1 HOW DO THE INSTRUMENTS USED IN MONTEVIDEO PERFORM
ACCORDING TO SEVERAL ECONOMIC AND POLITICAL CRITERIA USED
TO JUDGE ENVIRONMENTAL POLICY INSTRUMENTS?**

When choosing between alternative instruments for controlling industrial pollution, regulators can use several economic, political and ethical criteria. (Böhm and Russell, 1985). In the following paragraphs I briefly present some of these criteria.

Cost-effectiveness: Is the target environmental quality goal achieved at the lowest aggregate cost possible?

Information and computation intensity: How much information and computation is required by the regulator to implement the proposed instrument?

Ease of monitoring and enforcement: How costly is it to detect violations and to collect fines?

Flexibility in the face of economic changes: If variables such as production levels, demand, and technology change, does the instrument automatically adjust to meet the environmental quality targets or does the regulator have to obtain new information and perform new calculations to ensure that the targets are being achieved under the new conditions? Also, do the reporting costs faced by firms due to new information requirements imply delaying or blocking adjustments to changes?

Long-term incentives: Does the instrument create incentives to reduce emission levels in the long run, for example, by updating abatement technology?

Political impact: Who bears the benefits and costs under each instrument? Does the public understand the incentives generated by each instrument on firms, and the

criteria used for selecting them? Answers to these questions determine the political viability of each instrument.

Recalling from Chapter 2 that the instruments used in Montevideo are emission standards defined in terms of concentrations of pollutants per liter discharged, together with the mandatory requirement of installing and correctly operating an effluent treatment plant, how do they perform according to each of these criteria?

Cost-effectiveness: The cost-ineffectiveness of uniform emission standards is a well-known result. This is the largest disadvantage of these instruments compared to other instruments based on economic incentives (emissions taxes or transferable emission permits).

Information and computation intensity: Both the uniform concentration emission standards and the obligatory adoption of abatement technology impose large information gathering and computation requirements for regulators. Under these instruments regulators need to monitor emissions on a relatively continuous basis to assess the degree of compliance with the standards, and at the same time collect information on the effluent treatment and the production processes of the firm in order to ensure that the treatment plant is being correctly operated and the initial conditions are being maintained.

Ease of monitoring and enforcement: Given what was just said, this mix of emissions and technology standards has significant monitoring requirements. Furthermore, an immediate consequence of a regulation based on pollutant concentration levels is the incentive for firms to dilute effluents in fresh water. The Decree 253/79 explicitly prohibits this, but the problem is that such behavior is very difficult to monitor, and therefore difficult to enforce. In order to control dilution, industrial plants are

required to report tap and underground water consumption. However, in the latter case it is practically impossible to detect whether the firm is submitting true data.

Concentration standards may be reasonable from the perspective of monitoring costs for the plants, though. A control system of standards set in terms of concentration levels only requires the extraction of effluent samples at certain points in time.²² Firms do not need to invest in flow measurement technologies that would be necessary if the total volume of a certain pollutant were regulated. Many engineers and consultants agreed that a large number of firms lacked the conditions to be able to measure in a continuous and effective manner the volumes of pollutants discharged.

Flexibility in the face of economic changes: Under the present system, flexibility is nil. Minor changes, such as an increase in production capacity, imposes the requirement of new information and new calculations for the regulator, and the possibility of having to modify the treatment plant. The acquisition of this private information and the calculations themselves consume time, imposing costs on both the regulated firms and the regulators.

Long term incentives: Another disadvantage of uniform emission standards operating in Uruguay is that they do not create incentives to abate emissions beyond the standards. Quite the contrary, concentration standards induce the dilution of effluents in clean water, paradoxically leading to an inefficient use of the resource being protected by the legislation. In the long run, regulators must adjust standards as the only way to improve environmental quality.

²² More formally, the Decree 253/79 establishes that concentration levels of pollutants should be determined from hourly composed samples, during a period of four hours, in volumes proportional to the volumes discharged at that moment.

Policy impact: Taking the technology of each firm as given, a system of emissions standards is less costly to firms than an alternative system of direct incentives, such as effluent charges, under which firms would have to pay for every kilogram of pollutant emitted. When we consider the technology adoption decision, firms' preferences over these two instruments will depend on the cost of the technology, the level of the tax, the level of the standard, and the expected penalties for non-compliance. But if we assume that these are always such that the same basic technology is required under both instruments, then the firm will prefer emission standards to almost any positive charge. This becomes obvious if, as seen in Chapter 2, a firm can get along without investing in abatement technology because violations to emission standards are very rarely punished. In this case of imperfectly enforced emission standards, pollution control costs for firms are too low.

In sum, the instruments chosen by Uruguayan policy makers rank very poorly in terms of cost-effectiveness, have high information requirements for regulators, and provide no incentive to abate emissions beyond the standard neither in the short nor in the long run.

Given that countries like Uruguay, a priori, should be particularly interested in the implementation of cost-effective instruments in order to save scarce resources and avoid further compromising economic development possibilities, then the present choice becomes a puzzle. Given lax enforcement of present uniform emission standards by Uruguayan authorities, the political arena seems to be a good place to look for the answers to this puzzle.

4.2 THE POLITICAL ECONOMY OF THE CHOICE OF POLICY

INSTRUMENTS

As with every regulatory choice, political forces also influence the choice of instruments in environmental policy. The literature on the political economy of regulatory choice is vast, but fortunately a recent paper (Keohane, et al., 1998) has surveyed this literature for the case of environmental policy.

The authors look at the hypotheses provided by this literature on four issues pertaining to the experience of the US environmental policy, from which I take two. These are why have command and control instruments been used more frequently than incentive-based instruments despite the cost-effective advantage of the latter, and why have incentive-based instruments begun to gain acceptance in recent years? In these two respects the US experience is not different from Uruguay's. It is useful then to summarize the answers for these two questions in order to later analyze their relevance for Uruguay.

These authors proposed a model for a “political market” in which the commodity traded is the legislators' effective support for a given instrument. The demand side of the market includes several interest groups: polluting firms, environmental organizations, workers and consumers. The supply side of the market is assumed to be composed of legislators, who seek to assure re-election. They are therefore willing to trade some effective support for a given environmental policy instrument in exchange for votes and/or monetary contributions. The final instrument choice is the result of an equilibrium in such a market, operating through given institutional mechanisms.

Using this model, the question of why command and control instruments are more commonly used can be answered by examining the incentives of each of the aforementioned interest groups. First I examine the demand size of the political market.

Firms: Profit maximizing firms demand those policy instruments that minimize their costs of compliance. In general, firms will prefer standards to emissions charges because under the former they only incur abatement costs (and possibly non-compliance costs) while under a system of emissions charges, for example, firms also pay a certain amount for every unit emitted. On the other hand, preferences over tradable permits are firm specific; they depend on how many permits a firm is allocated, its abatement costs and the permit price. They depend also on the process by which permits are allocated. Some firms may prefer grand fathered permits to emissions standards. Auctioned permits will generally be opposed by most firms when compared to emissions standards.

Environmental organizations: Environmental organizations may also prefer standards to taxes or tradable permits because the latter are seen as licenses to pollute or they may be more difficult to alter in the future than emission standards. The previous sentence doesn't make sense. Environmental organizations may also prefer standards because the solution to "pollution hot spots" is more difficult to address under incentive-based instruments than it is under command-and-control instruments.

Workers: Environmental regulations create costs that firm managers and owners use to pressure governments with the possibility of lost jobs. Unions tend to defend jobs. Consequently they will commonly be on the side of their employers in the case of pollution control, particularly when it does not affect their safety at work and when damages are uncertain and dispersed.

Consumers: Even assuming that citizens and consumers are perfectly informed about the pros and cons of the different instruments for pollution regulation, a very large number of potential beneficiaries may opt to free ride on the lobbying efforts of others. The free-riding problem is a bigger problem for consumers than for other interest groups such as trade associations, because the costs of being informed about the different instruments proposed and their pros and cons for each consumer are large and the benefits are small, basically because pollution control is a public good. Therefore one should not expect consumers or citizens defined in general terms to lobby on the issue of instrument choice. This conclusion becomes clearer if one drops the assumption that the common citizen is informed of the advantages of one instrument over the other.

From the supply side of the “political market” the literature has proposed the following explanations for the prevalence of command and control instruments over incentives. First, legislators and environmental regulators are predominantly not trained in economics. Command and control approaches are not only more easily understood, but also they are the instruments that legislators and regulators are used to. Implementation of incentive – based instruments would require legislators and their staffs to understand them before giving their votes of support. Second, ideology may play a significant role in instrument choice. Politicians, legislators and regulators may be more prone to promote incentive-based instruments if they are free-market oriented, independently of their true understanding of the instruments. Similarly, legislators with more confidence in the role of government may be more inclined to support regulatory measures like command and control instruments. Third, politicians may prefer instruments for which the costs of regulation are less visible. This is not the case for charges and tradable permits. Fourth,

politicians often engage in “symbolic politics” and command and control instruments may be seen as stronger “statements of support for environmental protection” than emission charges or tradable permits. (Keohane, et al, 1998, p. 360). Fifth, politicians may be more interested in the distribution of costs than in their minimization, the main advantage of incentive – based instruments. In other words, politicians may be reluctant to implement instruments that may cause some firms to close, re-locate or lose jobs. As a result they will have a bias toward favoring existing standards. Sixth, legislators may view command and control instruments as assuring a greater degree of control in implementation. And finally, incentive – based instruments shift control decisions from regulatory staff to polluting firms, possibly affecting their prestige and job security.

4.3 LACK OF INSTITUTIONAL CAPACITY IN LESS DEVELOPED COUNTRIES

A second answer that the economic literature has given to the puzzle of cost ineffective instrument choice comes from a fairly recent literature that states that even assuming that environmental policy makers in less developed countries are committed to implement economic instruments, the informational burden that direct economic instruments pose on regulators clashes with the lack of institutional capacity of these countries, making the implementation of these instruments in the short run impossible. (Russell and Powell, 1996 and Russell, 2001).

Examples of what is meant exactly by lack of institutional capacity are: (a) uncoordinated overlapping jurisdictions between different offices in charge of

environmental regulation with the consequence that polluting firms face unclear regulations; (b) unregulated areas of the environment, like air pollution, for example; (c) understaffed or incorrectly staffed environmental agencies with inadequate monitoring technologies; (d) slow legal processes and a small number of judges and attorneys qualified in environmental law; (e) lack of experience with economic instruments for environmental protection, and (f) a general lack of public resources.

The main result of this lack of institutional capacity is the inability to implement parallel monitoring and enforcement strategies in order to attain some “good” level of compliance when applying economic instruments. The cost of administering these policy programs can be a very high price for less developed countries.

The authors conclude that the choice of policy instruments must be compatible with a country's institutional capacity, implying “...an evolution from those instruments more easily defined and enforced, and the least closely connected to ambient quality goals, toward those involving more difficult definition tasks and closer connections to desired ambient results, aiming at tradable permits in the long run.” (Russell and Powel, *op.cit.*, p. 20)

Several authors have agreed with this conclusion (Barbe, 1994; CEPAL, 2000 and 2001; Eskeland and Jimenez, 1992; O’Connor, 1998), and some have also stated that institutional compatibility leads policy makers in developing countries to look for alternative indirect instruments. Examples of these include: technological standards and other indirect command and control instruments, taxes on polluting consumption goods or production inputs (Eskeland and Devarajan, 1995), taxes on complements (or subsidies on substitutes) of polluting goods; combinations of indirect taxation and command and

control instruments (Eskeland, 1994); import quotas on polluting goods or inputs (O'Connor, 1998), private enforcement of environmental regulations (Tietenberg, 1996); voluntary agreements on pollution abatement between the government and polluters (O'Connor, 1998), and public disclosure of the environmental performance of firms (Pargal and Wheeler, 1996; World Bank, 1999).

4.4 RELEVANCE OF THESE TWO EXPLANATIONS FOR THE CASE OF INDUSTRIAL WATER POLLUTION IN MONTEVIDEO

In this section I identify which of the preceding political economy and institutional capacity arguments are more relevant to explain the present choice of cost-ineffective instruments for industrial pollution control in Montevideo.

I first identify more easily observable factors and then analyze the only concrete experience that the country had with direct incentive-based instruments: the repealed municipal emissions charges of December 1995. The reason for doing it in this way is that no other direct incentive-based instruments have been proposed since then and it is therefore very difficult to know the exact present position of some actors with respect to economic instruments. In contrast, the 1995-1996 experience allows me to identify more precisely political economy and institutional capacity factors that may be explaining why incentive-based instruments have not been implemented in Uruguay yet. The time that has passed since this experience could be a critique of this methodology. Nevertheless, during the period in question (1996 – present) the economic conditions of the country worsened significantly. Therefore, it would be very difficult to argue that the majority of

actors on the supply or the demand side of the political market that expressed a contrary view in 1996 could have changed their positions in favor of incentive-based instruments during this period, or that the country's institutional capacity could have improved.

Regarding the institutional capacity arguments, first there is an important problem of uncoordinated overlapping jurisdictions between the Industrial Effluents Unit (UEI) of the Municipal Government (IMM) and the Environmental Control Division (DCA) of the Ministry of the Environment (MVOTMA). The problem has its roots in the evolution of the regulation from the municipal level to the national level, under the presence of a severe lack of resources in the new Ministry of the Environment that makes it impossible to completely swap responsibilities in practice. Consequently, regulatory boundaries remain blurred and offices compete for regulatory power and public budgets, all of which undermines coordination.

There have been some attempts to overcome these difficulties. One example is the 1995 agreement between the IMM and the DCA already mentioned in Chapter 2. In 1995, possibly because of budget constraints, the IMM and the DINAMA verbally agreed that the IMM would be in charge of continuous monitoring in Montevideo so that the DCA could save monitoring resources and increase the frequency of inspections in the rest of the country.²³ This division of tasks was efficient a priori, but it required communication and coordination, which were mostly absent. For example, these two offices rarely shared information. In fact, it was a result of the research for this dissertation that these offices had access to information from the other as complete as the

²³ Gudynas (1996) pointed out that in 1995 the Ministry of the Environment suffered budget cuts and that the monitoring tasks were very affected by these cuts. Since January 1995 the DINAMA had to suspend inspections due to "lack of vehicles and gasoline" (pg. 8).

database constructed for this research (see Chapter 6). Before, information sharing was limited to the records on specific monitoring and enforcement actions performed on a plant regarding a specific episode.

But a definite example of the lack of coordination is the 1997 Industrial Pollution Reduction Plan. This Plan, also presented in Chapter 2, was developed and implemented by the municipal government.²⁴ Under this Plan, metals emissions standards for wool processors and tanneries emitting to the sewage system converged to levels above those originally set in the legislation (Decree 253/79). This is illegal, of course, and complicates enforcement for inspectors of the DINAMA, because firms argue that they are complying with the laxer IMM standards.²⁵ Problems like these could be easily solved with coordination, but this is far from being attained. Interviews revealed that inspectors at both offices blame each other for this lack of coordination. The DCA director has the opinion that the IMM Plan was not as effective as it could have been and started to monitor some plants again in 2002. The present situation seems to be a clear inefficient use of scarce regulatory resources.

Second, it is true that the Justice system in Uruguay has a very small number of antecedents on environmental issues; that is, it is “immature” (M. Cousillas, legal advisor for the DINAMA, personal conversation). This is due basically to a general culture of very low litigation (for reasons that go beyond the objectives of this research) and the fact

²⁴ According to M. J. Cousillas, legal advisor for the DINAMA, there does not exist any formal resolution or technical document stating the position of this institution with respect to the IMM’s Industrial Pollution Reduction Plan (personal communication).

²⁵ The problem goes the other way around also. For example, most of the firms that are expanding or building an effluent treatment plant following deadlines set by DINAMA use these deadlines to negotiate penalty waivers with the IMM inspectors.

that the “environmental issue” is new. Attorneys at the Judicial did not receive formal education in environmental law, because this discipline has only been recently incorporated in law school programs. In fact, there are very few attorneys qualified in environmental law in Uruguay. Command-and-control water pollution regulation has been primarily written by engineers.

The third relevant “institutional-capacity” argument is that both regulatory offices are clearly under-staffed. Seven persons work at the UEI: two engineers (including the Director), one biologist, one secretary, and three engineering students under one-year internships. All of them participate in inspections in one way or another. These same persons are the ones that enter the data of the results of sample inspections and the reported levels of pollution by firms. The rest of the information (production, inputs used, orders, fines) is left on paper. Furthermore, all of these persons work part-time at the IMM to complement their wages. All of these factors severely hinder long run planning and analysis of the information. Similar circumstances prevail in the DCA. A Director and four inspectors staff it. It is important to make clear that these five persons are not only in charge of the monitoring and enforcement of water pollution legislation, but all environmental legislation, including air pollution, toxic and non-toxic waste, and any episode of environmental damage in general, like oil spills on the Uruguayan coast. Under these circumstances it is obviously very difficult to construct an enforcement policy with long-term objectives regarding industrial water pollution.

With respect to the political economy arguments, without analyzing a concrete experience one can only hypothesize about the role that actors on the demand or the supply side of the political market could play. This is the reason why I analyze the 1995

experience with proposed emission charges in the next section. Before analyzing this experience, however, it must be said that regular citizens have played no role in the issue of instrument choice. Uruguayan citizens declare in surveys that the Environment is among their top concerns. (IMM, 2003). More than 50% of the surveyed population indicated that “environmental problems” are “very important” for them, and that the pollution of rivers and streams is the most important environmental problem in the country. Despite these opinions, citizen pressure has been almost nonexistent. A possible explanation is that the overall economic situation of the country could have prevented consumers from being an effective channel of environmental control of firms. Between 1997 and 2002 the Real Wage Index dropped 9.2% and the unemployment rate in Montevideo rose from 11.6% in 1997 to 17.0% in 2002.²⁶ The percentage of persons living in poverty in Montevideo rose from 16.0% in 1997 to 22.9% in 2002 (INE, 2003). Under these circumstances, with almost a quarter of the city population without enough income to cover its basic needs, it is not surprising that consumer pressure for environmental regulation is weak, not to mention pressure for specific instruments for environmental protection.

4.4.1 The 1995-1996 experience with effluent charges

As explained in Chapter 2, in December 1995 the IMM approved the creation of emissions charges for those industries with effluent concentration levels larger than the

²⁶ Both calculated by the National Statistics Institute

emissions standards.²⁷ These were not emissions taxes in the classical sense but rather what are called emissions taxes with thresholds. At no time did the DINAMA express an opinion, nor did it take position in the discussions concerning these charges. (Gudynas, 1996).

In the following paragraphs I analyze this experience in order to identify more concrete political economy and institutional factors that could explain why Uruguay has not yet implemented direct incentive-based instruments for pollution control.

The articles implementing the emissions charges were never ruled on because the Chamber of Representatives (“Cámara de Diputados”) repealed them in July 1996, using a mechanism of the Uruguayan Constitution. Through this mechanism, citizens appealed to repeal the municipal norms before this Chamber by presenting at least 1,000 signatures. The main argument behind this appeal was that the so-called charge (“tasa”) was not a charge but a tax (“impuesto”). The relevance of this discussion is absolutely legal in nature. The Uruguayan Constitution does not allow municipal governments to impose taxes, only charges. The main difference between these two is that the latter needs to be the monetary counterpart for the provision of a service. The service in question was the sanitary system. The arguments behind its unconstitutionality had to do with the relationship between the amount of the charge and the cost of the service, but also with the Special Charge (“Tasa Especial”). This was a charge imposed on industries emitting directly to watercourses, therefore not using the sanitary system.

The first important question to answer is what were the reasons behind this change in regulation, which was not exactly a move away from “command and control”

²⁷ Articles 42 to 45 of the “Decreto de la Junta Departamental N° 26.949”, December 14th, 1995.

type of instruments, but rather the addition of a direct economic instrument into the regulator's toolbox. Answering this question requires the analysis of the incentives of the municipal policy makers on the supply side of the political market. It is known that the creation of a "sanitary charge" was among the conditions accepted by the IMM when signing the loan for the Third Stage of the Urban Sanitary Plan (PSU III) with the Inter American Development Bank (IADB). (Ponce de León, Director of Environmental Development, IMM, in his explanation to the Legislative Commission, as textually cited by Rep. J. García, Partido Colorado, in República Oriental del Uruguay, 1996, pg. 75).²⁸ But it is not clear that it was the IADB that imposed a charge in the form of an emissions tax with thresholds.²⁹ In fact, IMM Directors and inspectors unanimously stated in interviews that these charges were an IMM initiative (Perez Piera, República Oriental del Uruguay, p. 24, 1996). Therefore, it could be concluded that the economic argument calling for the internalization of an externality had somehow gained support among IMM policy makers.³⁰

²⁸ A similar statement appeared in the press at that time: "The Inter American Development Bank stated this week that Uruguay needs "some tax" to maintain the sanitary net and cover the economic compromises assumed as a condition to approve the credit for the Third Stage of the Urban Sanitary Plan ..." (Semanao Búsqueda, July 25th 1996).

²⁹ Eduardo Gudynas, Director of the Latin American Center for Social Ecology (Centro Latinoamericano de Ecología Social (CLAES)) has this opinion (personal conversation). CLAES is an independent environmental NGO, dedicated to research, action and promotion of social ecology. It has a very long tradition, if not the longest, in the analysis of environmental issues in Uruguay.

³⁰ The charge did not have unanimous support inside the IMM. One of the directors interviewed declared that he did not agree "philosophically with the idea that a firm can get along with a violation by paying an amount of money". Based on this statement it could be said that the lack of support may be explained by a lack of understanding of the basic principles underlying the proposition of economic instruments.

A second question regarding the experience of the repealed emission charges is what were the reasons behind their repeal. In order to answer this question, I analyze the role played by the actors on the demand side of the political market.

The fact that citizens presented signatures to derogate an emissions charge could imply that their role was central in the explanation of why Uruguay still bases its water pollution legislation on command and control instruments. But this interpretation may be misleading because these citizens acted as an expression of political and economic interests.³¹ The reason for this support appeared to be to bring about a political defeat to the governing party, the “Frente Amplio”. This could be sensed while reading the discussion during the session of the Chamber of Representatives that ended in the repeal. Significant parts of this session were devoted to exchanging political accusations about issues that had nothing or very little to do with the charges (see República Oriental del Uruguay, 1996c).

The representation of industry interests by the citizens, on the other hand, is the only possible explanation for some of the reasons included in their petition to derogate the emissions charges. For example, consider the following: “Finally, though not less important, it is the contradiction with the rule of Law that implies the creation of the so-called Additional Charge and Special Charge destined to tax pollutants” (República Oriental del Uruguay, 1996, p. 37). It is hard to think of a reason why common citizens would oppose to a pollution tax except that they were the firms’ owners and workers

³¹ Some politicians explicitly recognized political support for the citizens presenting the signatures: “... Neighbors’ signatures were presented.... You could say that political sectors supported them. Yes, surely, ...” (Rep. A. Atchugarry, who belongs to the Partido Colorado, the political party mostly interested in the derogation of the effluents charged, during the discussion session that derogated the effluent charge, República Oriental del Uruguay, 1996, pg. 76).

The role played by the industrial sector was as expected. The opposition to these charges from the Industry Chamber (Cámara de Industrias del Uruguay) was only based on the argument of increasing costs (see República Oriental del Uruguay, 1996). According to several persons interviewed, lobbying by the Industry Chamber was determinant in the repeal of the charges.

Environmental organizations in Uruguay do not support the implementation of economic instruments in general. Nevertheless, representatives of some environmental organizations met several times with the Director of the Department of Environmental Development of the IMM at that time to convince him to include the “externality” argument among the arguments in favor of the emissions charge. According to Gudynas (Latin American Center for Social Ecology, CLAES) the Director lacked sufficient understanding of the way economic instruments work (personal communication).

It is interesting to point out something that the previously discussed literature does not take into account. That is the role of academia. According to Gudynas, the way economic instruments work is neither discussed nor very well understood in the academia. This view of academia is extended to the professional world. As an example, a draft document with suggestions to amend the values set for emission and ambient standards in the Dec. 253/79 proposes new values for emission standards and ambient standards that are stricter than the current values (Technical Advisory Committee for Environmental Protection, COTAMA, 2002).³² The document is inspired by the view that control efforts should be centered on ambient standards rather than emission standards because conservation of water quality is the ultimate policy objective

³² The suggestions produced by the Monitoring Program implemented by the IMM and the IADB go in the opposite direction: they propose laxer, “more real”, standards.

(discussion meeting, Association of Engineers of Uruguay, November 21, 2001). The suggestion is contrary to the evolution of legislation in other countries, such as the US and has obvious enforcement costs. (Field, 1995). The proposal was not backed by an implementation plan in this sense.

The national workers' union (PIT-CNT) did not formally state its position with respect to the charges. Perhaps the explanation for this is a very uncomfortable political position between a leftist municipal government proposing an emissions tax that would increase costs to industrial firms (already affected by the newly installed MERCOSUR) and the industry sector opposing it and raising concerns about its job destruction consequences.

This takes us to what I think is one of the most important reasons behind the implementation failure of these charges and the absence of economic instruments for pollution control in Uruguay; that is the impact that these instruments may have on firms and in a very depressed economy. Evidence to support this conclusion is obviously not easily found. For example, the issue had some space in the discussion at the Chamber of Representatives, although not comparable with the constitutional issue. Nevertheless, some legislators explicitly supported this argument.³³ As another piece of evidence, the response given by IMM representatives before the Constitution and Codes Commission of the Chamber of Representative to the argument of the potential effect of the charge on industry costs was that the additional charge was “conceptually” the most important goal

³³ “... what some firms could end up paying ... could result dramatic. This is a very complicated issue because ... it affects employment. I agree with eco-taxes, but I disagree with these having an over dimensioned level ..., because we all know that ... in the end, it is the worker who ends up paying the ... consequences. ...” Rep. W. Abdala, Partido Colorado, during the discussion session of the Chamber of Representatives (República Oriental del Uruguay, 1996, pg 58).

attained by this decree and that the objective of the municipal government was to collect no money from it in the short run. (Perez Piera, República Oriental del Uruguay, pg. 24, 1996). The objective of this declaration was to convince the industrial sector that they would not suffer any cost increase in the short run and to let time do their job, hoping that after a period of time they would be able to implement a positive charge.

Further evidence of the unwillingness of regulators to impose costs on the industry sector was supplied by an important IMM official who clearly stated in an interview that although he was working at an environmental protection office, he was not willing to sacrifice Uruguayan industrial production by imposing environment-related costs on industrial plants, because of uneven competition that the Uruguayan industrial sector faces from the developed world, and their importance as demanders of labor in a very depressed national labor market.

Some of the inspectors interviewed also mentioned the unwillingness of regulators to impose costs on the industrial sector when asked for their opinion regarding the question of why economic instruments have not yet been implemented in Uruguay.

Indirect evidence regarding regulators' unwillingness to impose costs on the industry sector is given by the small number of fines applied by regulators during the studied period, despite frequent reported violations. Figures 3.11 and 3.12 in Chapter 3 suggest the existence of noncompliant plants (possibly with obsolete abatement technology), toward which regulators could easily concentrate their enforcement efforts. However, there is no apparent political will to do so.

If politicians and policy makers were unwilling to impose environment-related costs during years of economic expansion, as they were in 1996, what could be expected during the contraction years that followed? The question has an obvious answer.

It is important to note that in spite of not fining industries, regulators keep inspecting them regularly. Such a position is totally consistent with some theoretical results. (Garvie and Keeler, 1994). But it may also be explained by the fact that there were compromises generated with the Inter American Development Bank with respect to the control of water pollution. Active inspection activity, disregarding actual enforcement pressure, could serve as a signal not only to Uruguayan citizens but also to the Inter American Development Bank, whose funds are determinant in the successful completion of the extension of the sewage system to the city.³⁴

Finally, regarding the experience of the repealed emission charges, it is interesting to note how the lack of institutional capacity argument plays a secondary role in terms of the explanatory power of its main corollary; the lack of capacity to implement a monitoring and enforcement policy. It was seen that the present system of command and control policy instruments imposes enormous monitoring requirements on regulators. Therefore, the choice of these instruments could not have been the result of a discussion on the grounds of the relative cost-effectiveness of alternative instruments when taking into account monitoring costs, as suggested by the institutional capacity literature.

Nevertheless, institutions play a much more important explanatory role in other respects. First, under the present normative framework any emissions tax proposed by

³⁴ The position of not fining violators is not transmitted to inspectors, who continue to do their jobs. Nevertheless, in the end inspectors get the signal: at both offices the number of fines suggested by inspectors is larger than the number of fines finally applied. As a result, inspectors end up proposing fewer fines.

municipal governments would be unconstitutional. Second, the fact that there does not exist a single environmental economist among the staff of both the Municipal Government of Montevideo (IMM) and the Ministry of the Environment (MVOTMA) is undoubtedly an important institutional-capacity reason behind the puzzle of why economic instruments have not yet been part of the instruments menu in Montevideo. Almost none of the inspectors, regulators, and professionals interviewed were aware of the advantages of economic instruments over the existing ones. Given this, it is no surprise that the discussion that preceded the derogation of these charges was centered on the issue of its unconstitutionality. The IMM only marginally mentioned the externality argument to defend the charges. So did some legislators during the session of the Chamber of Representatives (Cámara de Diputados) that ended with the repeal of these charges, but their interventions were completely ignored (see República Oriental del Uruguay, 1996). These interventions also reveal a lack of understanding of the basic economic principles behind these instruments in the Uruguayan Congress.³⁵

³⁵ I think this is clearly illustrated by the only three short interventions of legislators that marginally touched the issue of incentives. At one point in the discussion Rep. R. Legnani, alluding to a previous comment by another legislator on the ceilings that these type of charges must have, said: "... In term of ecological economics this means that the externalities, that is, the destruction of the ecosystems by the big polluters, are being paid by those who use the ecosystem". Rep. Legnani would refer again to the experience of the European Union with "ecological charges" at the end of the discussion. Later, the Rep. D. García Pintos (Partido Colorado), arguing on the illegitimacy of the charge, said: "... (the charge) converts environmental degradation, pollution and the risk of public health in a source of revenues: "The more you pollute, the more you pay", instead of preventing more pollution" (op. cit., p. 97). Finally, Rep. E. Rubio (Frente Amplio) said: "We have been talking here of an eco-tax and that this affects employment. But gentlemen, the ecological component is central in a modern conception of international competitiveness! ... who is in touch with what happens in the world knows that those perverse industry men that do not invest ecologically won't succeed." (op. cit., p. 110). On the other hand, Rep. P. Balbi (Frente Amplio) stated near the end of the discussion: "Listening with attention to who discusses about Law from my formation in natural

This lack of understanding leads to the conclusion that environmental economists at the regulatory offices or advisory groups of the policy makers and legislators is a necessary condition, although not sufficient, to have economic instruments proposed, properly defended, and successfully implemented in Uruguay.

4.5 CONCLUSIONS

Industrial water pollution control policy in Montevideo, Uruguay, is based on concentration emission standards together with mandatory, government – approved, treatment technologies. This mix of instruments is clearly cost-ineffective and very demanding in terms of information and computation for regulators. It also provides no incentive to abate emission beyond the standard in the short run or to increasingly invest in abatement technology in the long run. Even more, it has no flexibility in face of economic changes. In particular, it has no monitoring and enforcement cost advantage over more cost-effective instruments such as effluents charges.

The answers given by the economic literature to explain the choice of inefficient and cost ineffective command and control type of instruments in less developed countries are based on political economy arguments and the lack of institutional capacity. But these answers have been largely theoretical. Better explanations require case-specific field

sciences, I believe that if some colleagues would be forced to vote on the laws of nature, surely, and if this would favour their political objectives, would vote against, for example, the law of universal attraction and would go satisfied to their homes.” (op. cit., pg. 126).

studies like the one presented in this Chapter to identify which factors are most relevant in each case.

This research has identified the following two factors as the most important answers to the question posed above. In the first place, in spite of the economic argument calling for the internalization of an externality, which had gained support among IMM policy makers, there exists an important lack of knowledge regarding this type of instrument on the part of legislators and policy makers. This could be explained by the lack of environmental economists in regulatory offices or advisory groups of policy makers and legislators. Second, given the economic situation of the country, policy makers and legislators are very sensitive to imposing costs on production activities. They are willing to sacrifice environmental amenities in favor of investments that could have a positive effect on the very depressed economy of some communities. Consequently, they are unwilling to implement economic instruments.

Apart from these two most important factors, other factors were also identified. The most important are that the regulatory offices are under-staffed, the legal system is “immature”, and there is a lack of coordination between the IMM and the DINAMA. But the lack of institutional capacity plays a secondary role in terms of the explanatory power of its main corollary: the lack of capacity to implement a monitoring and enforcement policy. In Uruguay, the choice of a mix of command and control instruments was not the result of a discussion on the grounds of the relative cost-effectiveness of these instruments when taking into consideration monitoring costs, as suggested by the institutional capacity literature. Otherwise, regulators would not have chosen this mix of command and control instruments that do not have any monitoring advantage over direct

incentive based instruments. Effectively, the demand of information on the regulator in the current system is very large. The regulator must not only monitor emissions on a continuous basis, as would be the case with a direct economic instrument, but also the operation of the effluent treatment plant, the consumption of some key inputs, and the level of production.

Nevertheless, institutions play a much more important explanatory role in other respects. Under the present normative framework, any emissions tax proposed by municipal governments would be unconstitutional. This casts doubts on whether municipal governments will ever be able to implement such instruments. Municipal governments may need to look for another type of incentive-based instruments or emissions taxes would need to wait to be implemented by the national government. In this sense it is the Uruguayan legal framework (more specifically the Uruguayan Constitution) that has prevented the implementation of incentive-based instruments.

In spite of this, I think that the amount of information presently managed by the Uruguayan regulators would allow them to implement an emissions charge if the political will existed. The tax could be defined in terms of average levels of pollution load or concentration, calculated from concentrations and flow levels reported by plants. The tax would allow the regulators to increase cost-effectiveness and possibly at the same time decrease monitoring costs, because it would not be necessary to monitor the operation of the treatment plants, or the production process.³⁶

³⁶ On the other hand, if plants are going to pay a tax per unit of reported pollution they will have a larger incentive to under-report than they have under the present system. We saw in Chapter 3 that plants are not being fined for the violations they report. Under these circumstances the incentives to under-report are smaller (Harford, 1987).

But even when it would be possible to apply emissions charges, taking into consideration all the factors mentioned, I believe that the possibility of implementing direct incentive based policy instruments for industrial water pollution control in Montevideo is limited in the short run because of the political and institutional factors just mentioned.