Don't Judge a Book by Its Cover: Use of an Analytic Framework and Empirical Data in Analyzing Environmental Policy Tools

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Summary

What is the most effective mix of policy tools for achieving environmental improvements? Are governments leaving behind the "hard" law of legislation and regulation in favor of "soft" instruments like environmental management systems and voluntary disclosure agreements? A case study of pollutant release and transfer registries, an environmental policy designed as a soft law tool, reveals that hard uses may go hand in hand with soft uses of a policy. Results of the analysis demonstrate that policy tools may be used in various fashions simultaneously. These findings support the contention that governments are going "hybrid," rather than soft, finding both hard and soft uses for a broad range of policy tools.

What are the implications of developments and changes in environmental law and policy? Environmental law and policy are considered to have evolved in three different but mutually linked stages.[1] The first stage, known as *formal* law, perceived environmental concerns to be problems of private law, mainly dominated by tort law, in which the option was left to citizens to choose whether or not to defend their environmental rights.[2] In the second stage, the welfare state assumed the mission to defend the environment and regulated criminal and civil environmental offenses through *substantive* law. This process is known as using command-and-control regulations.[3] However, as reality becomes more complex

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1. *See* Richard. B. Stewart, *A New Generation of Environmental Regulation?*, 29 Cap. U. L. Rev. 21 (2001); Daniel J. Fiorino, *Rethinking Environmental Regulation: Perspectives on Law and Governance*, 23 Harv. Envtl. L. Rev. 441 (1999); Daniel J. Fiorino, The New Environmental Regulation (MIT Press 2006).
2. *See* Stewart, *supra* note 1, at 130; Fiorino, *supra* note 1, at 159, 441.
3. *See* Stewart, *supra* note 1, at 130; Fiorino, *supra* note 1, at 159, 446 ("Substantive law is more than just a way of structuring private relationships. It has a specific social purpose, which is why it is also called positive law. Instead of delimiting spheres for autonomous private action, the law directly regulates social behavior by defining substantive prescriptions."). *See also* Daniel J. Fiorino, *Regulating for the Future: A New Approach for Environmental Governance*, *in* Toward Sustainable Communities: Transition and Transformations in Environmental Policy 71 (Daniel A. Mazmanian & Michael E. Kraft eds., 2009). Daniel Fiorino described the era of substantive regulation as the "old regulation" as opposed to "new regulation." "One conceptual underpinning of the old regulation is that deterrence should be the primary approach to influencing behavior in industry. Rules backed by sanctions are seen as the best, and perhaps the only, way to influence behavior."

and criticism of the substantive law grows stronger, additional policy instruments start to develop as a legal process referred to as *reflexive* law.[4] Under a reflexive law framework "government focuses on how to integrate society's goals."[5] Here, the state assumes the role of a coordinator who seeks to ensure that proper mechanisms are set and information flow is established, as opposed to only requiring particular outcomes.[6]

Given the present status of passage from the second to third stage, we can ask, what are the operational influences that result from this observable shift? How does this shift manifest in the existence and use of policy tools? How does it affect interconnections between different types of policy tools? This Article proposes an analytic approach intended to answer these questions. A case study of a particular soft/reflexive law tool—namely Pollutant Release and Transfer Registers (PRTRs)—is presented to demonstrate this analytical approach.

The evolution of the legal system takes place in parallel with development of "new governance" and devolution of different state authorities to additional actors within civil society, such as nongovernmental organizations (NGOs), industry, and the funding sector.[7] This transition is characterized in the *new governance* literature as a shift from state-centered, hierarchical government to networked governance, based on mutual dependency[8]; from a reactive to a more proactive civil society based on greater participation and involvement.[9] Such discussions have also depicted a corresponding process as a shift from *hard* policy instruments toward *soft* ones.[10] However, additional studies criticized this proposal, contending that soft instruments did not replace the hard instruments but rather complemented them, creating a hybrid system of mixed policy tools.[11]

The ongoing soft versus hybrid debate is closely related to approaches to policy tool categorization. Various theoretical accounts suggest ways of looking at the construction of different policy instruments as well as their interrelationships.[12] One prevailing categorization of policy tools follows the soft versus hard debate with location of a particular tool on the soft-hard continuum determined according to the level of "intrusiveness and coercion involved in the use of a specific instrument."[13] The characteristics of hard versus soft policy instruments are conceptualized in parallel with substantive versus reflexive policy instruments. For the sake of unity and in order to avoid confusion, the remainder of this Article will use the most representative traits of these tools for categorizing them within the hard versus soft framework.

Terminology aside, one substantive concern that remains open asks the following question: Is policy instrument use reflective of their categorization? Since policy instruments vary in their use by regulatory authorities,[14] in particular when used in combination with other policy instruments, the anticipated nature of a particular policy

4. Fiorino, *supra* note 1, at 159.
   > (The aim of reflexive law is creating incentives and procedures that induce people and organizations to assess their actions (hence the reflexivity) and adjust them to achieve socially desirable goals, rather than telling them directly what to do in all cases. Rather than relying just on negative incentives, such as penalties for noncompliance, a reflexive legal strategy encourages behavioral change through a combination of negative and positive incentives. Positive incentives could include favorable publicity, more collaborative relationships with regulators, more regulatory flexibility, and other measures.)

   See Stewart, *supra* note 1, at 130.
   > Reflexive law was developed as an alternative or additional theory of law alongside formal law and substantive law . . . As applied to environmental law, this approach contemplates that government will take an intermediating role between the various and sometimes conflicting goals of business and society . . . it seeks to coordinate the goals and activities of the various elements of society.
5. Stewart, *supra* note 1, at 130.
6. *Id*.
7. Fiorino, *supra* note 1.
8. *See* Gerry Stoker, The New Management of British Local Governance (1999); Rod Rhodes, *The New Governance: Governing Without Government*, 44 Pol. Stud. 652 (1996); Gerry Stoker, *Governance as Theory: Five Propositions*, 50 Int'l Soc. Sci. J. 17 (1998); Jon Pierre & B. Guy Peters, Governance, Politics and the State (St. Martin's Press 2000).
9. Russell J. Dalton, Citizen Politics: Public Opinion and Political Parties in Advanced Industrial Democracies (CQ Press 2006); Randall D. Germain & Michael Kenny, The Idea of Global Civil Society: Politics and Ethics in a Globalizing Era (Psychology Press 2005); Henry Milner, Civic Literacy: How Informed Citizens Make Democracy Work (Tufts Univ. 2002); Andrew Arato & Jean Cohen, Civil Society and Political Theory 10 (MIT Press 1992).
10. Amos Zehavi, *New Governance and Policy Instruments: Are Governments Going "Soft"?*, *in* Oxford Handbook of Governance (David Levi-Faur ed. 2011).
11. The debate is presented in the following section.
12. *See* Christopher C. Hood & Helen Z. Margetts, The Tools of Government in the Digital Age (Palgrave Macmillan) (2007). The review of different theoretical strands involving analyzing and categorizing policy tools found that studies have tried to analyze the outcomes of using specific regulatory instruments under different contexts and sometimes comparatively.
13. Zehavi, *supra* note 10. A plethora of different policy instruments evolved during the previous two decades leading to an empirical and theoretical scholarly literature investigating the effectiveness and efficiency of these instruments, as well as creating a variety of typologies and categorizations of these instruments. *See* Hood & Margetts, *supra* note 12 (reviewing the different approaches used for analyzing policy tools); Hans Th. A. Bressers & Laurence J. O'Toole Jr., *The Selection of Policy Instruments: A Network-Based Perspective*, 18 J. Pub. Pol. 213 (1998), (reviewing literature regarding policy instruments); Michael Howlett et al., *Assessing Instrument Mixes Through Program- and Agency-Level Data: Methodological Issues in Contemporary Implementation Research*, 23 Rev. Pol'y Res. 129 (2006) (describing the development in policy instruments study); *see* Asa Persson, *Characterizing the Policy Instrument Mixes for Municipal Waste in Sweden and England*, 16 Eur. Envt. 213 (2006) (reviewing different categorizations of policy tools). *See* Peter J. May, *Regulation and Compliance Motivations: Examining Different Approaches*, 65 Pub. Admin. Rev. 31 (2005) (introduced a prevailing categorization that discerns between various policy instruments according to the government role in their implementation and the level of voluntary and cooperative role of regulated entity).
14. *See* Hood & Margetts, *supra* note 12 (suggesting that use of policy tools depended on different characteristics of the governments and the societies in which they operate).

instrument may not capture its use in practice. Thus, this Article claims that practical uses of tools should also be taken into account when analyzing policy tools' relationship patterns, in particular in reference to their effects. Therefore, understanding the connection between theory and practice in the field of environmental policy is very significant. To advance such discussion, this Article proposes an analytic approach for categorizing actual uses of policy tools. This approach aims to enable us to characterize different agencies according to the patterns of the use of policy tools. This analytic framework is also useful for studying the connection between the use of hard versus soft policy tools, i.e., in reference to the *going soft versus going hybrid* debate.

The PRTR, an insightful policy instrument, is employed in order to develop and demonstrate our analytic approach. PRTRs are online, publicly accessible, emissions databases that exist in various environmental media. PRTRs have been implemented widely in different jurisdictions.[15] Furthermore, PRTRs are a unique example of a policy instrument designed as a reflexive law (soft) instrument. The aim in doing so was to establish an infrastructure that enabled additional actors to influence the behavior of the industrial sector.[16] Therefore, as conceived, PRTRs should have been directed to establishing cooperation, networking, etc. However, PRTRs have also been used to enhance the command-and-control system.[17]

This Article uses empirical data from a PRTR comparative study undertaken by the author in Australia, Canada, and the United Kingdom to support the contention that policy instruments may be used in various ways, and not always according to their initial design. We shall also see that these different uses of policy tools are interconnected. Indeed, the results demonstrate that the more a PRTR is used for deterrent (hard) purposes, the more it is also used for cooperative (soft) purposes. Support for this broader hypothesis will be provided through a brief discussion of the general use of environmental policy tools in these countries. These data support the hypothesis that governments are going hybrid rather than going soft.

Hence, the Article responds to the call for additional rigorous empirical research that seeks to unravel the different consequences and the interactive influences of environmental policy instruments.[18] This call emerged in the extant literature regarding policy tools where it is acknowledged that policy instruments should be studied in their context and as mixes, as the relationship between different kinds of policy tools may impact their effectiveness.[19] The current study contributes to this call as the interactions between policy tools are a necessary baseline for further developing the study of policy tools and their effectiveness.

The Article is structured as follows: discussion begins by analyzing the question of whether soft instruments replaced the hard instruments or rather complemented them, creating a hybrid system of mixed policy tools. The presentation of typologies of policy instruments includes an explanation of why consideration of the uses of policy tools is important for categorization. An analytic approach for studying policy tools as well as their interaction is then presented, along with discussion of the Article's claim that policy tools may be simultaneously used in soft and hard manners. In recognizing that the actual (de facto) uses of policy tools are essential for their categorization, the proposed *double continuum* approach for studying policy contexts and for categorizing policy tools is explained in relation to separate axes of soft and hard tool uses. Possible interactions between different kinds of policy tools and a state's policy contexts (soft, hard, low-capacity, or hybrid) are demonstrated by the four quadrates created by the combination of the two axes of soft and hard uses. These proposals are demonstrated by applying the analytic approach to a case study of PRTRs. The uniqueness and importance of the PRTR as a policy instrument is explained, along with how its uses may inform us regarding the relationship between policy instruments and the context in which they are implemented. Results of an empirical study of PRTR used by environmental regulatory agencies are then presented. The Article concludes with policy recommendations regarding the interconnections between various types of policy instruments and particularly PRTRs.

I. Are Governments Going Soft or Hybrid?

A sharp increase in the discussion of the use of soft instruments exists in the literature dealing with governance, law, and regulation. Legal literature dealing with environmental law, policy, and regulation describes the proliferation of "third-generation" policy instruments, such as voluntary agreements, environmental management systems, and information and disclosure instruments.[20] Empirical evidence also confirms the rise in the number of soft law

15. *See* Dorit Kerret & George Gray, *What Do We Learn From Emissions Reporting? Analytical Considerations and Comparison of Pollutant Release and Transfer Registers in the U.S., Canada, England, and Australia*, 27 Risk Analysis 204 (2007). See a full list of countries at 204, *supra* note 10.

16. *See* Fiorino, *supra* note 1, at 448 (discussing information regulation as a flagship of reflexive law instruments and in particular, use of the example of the Toxic Release Inventory (TRI)); Sanford E. Gaines, *Reflexive Law as a Legal Paradigm for Sustainable Development*, 10 Buff. Envtl. L.J. 1(2002) (presenting the TRI, the U.S. PRTR, as one of the existing reflexive law schemes in sustainable development policy); *see also* Stewart, *supra* note 1; Bradley C. Karkkainen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 Geo. L.J. 257 (2001).

17. See examples in Section III.

18. *See* Neil Gunningham, *Environmental Law, Regulation, and Governance: Shifting Architectures*, 21 J. Envtl. L. (2009); Howlett et al., *supra* note 13, at 132; Zehavi, *supra* note 10.

19. Neil Gunningham et al., Smart Regulation—Designing Environmental Policy (Oxford Univ. Press. 1998). Smart Regulation theory stresses the need for studying policy tools according to their mixes and under different contexts. The authors demonstrate that some policy instruments are considered to be inherently complementary, while others are considered as inherently counterproductive. *See also* Robert Baldwin & Julia Black, *Really Responsive Regulation*, 71 Mod. L. Rev. (2008) 59; Hood & Margetts, *supra* note 12, (suggesting that societal and governmental contexts influence use of policy instruments and discussing potential consequences).

20. Stewart, *supra* note 1; Fiorino, *supra* note 1; Gunningham, *supra* note 18.

instruments.[21] In turn, this visible trend triggered a scholarly discussion on whether the rise in soft instruments implies that governments are going soft, or whether their role has changed and there is just "more of everything."[22] Amos Zehavi, for example, claimed that "several influential commentators have discerned a clear trend towards greater use of soft instruments."[23] Rod Rhodes, Gerry Stoker, Lester M. Salamon, and Adriaan Schout claimed that the command-and-control mode of regulation has been replaced by instruments that rely on negotiation, persuasion, and networks.[24] Translated into legal language, these commentators claim that substantive law is replaced by reflexive law. Furthermore, on the normative level, legal scholars supported this shift as a cure of malfunctions of substantive law (or command-and-control regulation).[25] Other scholars focused on the conditions for choosing between soft tools and hard tools and suggested that governments have to carefully weigh the advantages and disadvantages of each option and choose between them.[26]

The theory of governments going soft has been challenged at the positive empirical level as well as the normative level. For example, recent empirical studies found that the proliferation of soft tools was accompanied by an increase and strengthening of the use of hard policy instruments.[27] Indeed, some scholars claimed that the hard law background reinforces and enables soft tools to be far more effective. In other words, soft policy instruments operate best under the shadow of hierarchy (or the effective regulatory threat).[28] On the normative level, discussions in the regulation literature suggest that in order to produce the best results, policymakers should implement different policy instruments following the specific context.[29]

The current Article contributes to this discussion in two ways. First, the analytic approach for studying the interactions between uses of soft tools versus hard tools provides a fine tuning of a discussion regarding the de facto implementation of policy tools. In addition, case study empirical evidence supports the contention that governments are going hybrid, not soft. Indeed, the uses of PRTR, a soft tool, demonstrate that even a tool designed as soft may be used in hard fashions. However, prior to proceeding with these discussions, we should discuss the meaning of going soft: What does it mean to use soft versus hard tools? How are these tools categorized and defined? The following brief review of categorizations of policy tools sets the theoretical baseline for later discussions in this Article.

II. Categorization of Policy Instruments

The scholarly literature includes discussions critical of such dichotomies as categorizing policy instruments as either soft or hard and governments having to choose between hard and soft tools.[30] Darren Sinclair discussed the typology of policy instruments or modes of regulation and claimed that theory has created a black and white typology of these instruments. In contrast to them being either soft or hard, he claimed "it may be more accurate and productive, therefore, to envisage the range of environmental policy instruments as being on a regulatory continuum, with idealized forms of 'pure' self-regulation and 'strict' Command and Control regulation at opposing ends."[31] According to Sinclair, such a continuum of modes of regulation combines location on the continuum of different variables.

Neil Gunningham focused on a differentiation among policy instruments based on the level of intervention exercised.[32] He suggested looking at the level of intervention as a continuum from least to most interventionist.[33] In doing

21. *See, e.g.*, Klaus Jacob et al., *Instruments for Environmental Policy Integration in 30 OECD Countries*, *in* Innovation in Environmental Policy?: Integrating the Environment for Sustainability (Andrew J. Jordan & Andrea Lenschow eds., 2008) (providing empirical evidence of the growth of various policy instruments for environmental policy integration in a comparative perspective); *see* Adriaan Schout et al., *From "Old" to "New" Governance in the EU: Explaining a Diagnostic Deficit*, 33 W. Eur. Pol. 154 (2010) (claiming that "decisionmakers in the EU traded the 'old' governance regulation for the 'new' governance of networks without sufficiently diagnosing the administrative demands associated with either"); *see* Zehavi, *supra* note 10.
22. Zehavi, *supra* note 10 (framing this debate and reviewing the literature supporting each side).
23. *Id.*
24. *Id.*
25. *See* Darren Sinclair, *Self-Regulation Versus Command and Control? Beyond False Dichotomies*, 19 L. & Pol'y (1997) (reviewing these works).
26. Sinclair, *supra* note 25. For further discussion regarding the interrelationship of different policy tools, see discussions of the "crowding out" effect. Timothy F. Malloy, *Regulation, Compliance and the Firm*, 76 Temp. L. Rev. 19-20 (2003). Andrew Green, *You Can't Pay Them Enough: Subsidies, Environmental Law, and Social Norms*, 30 Harv. Envtl. L. Rev. 407 (2006); Sverre Grepperud, *Environmental Voluntary Behaviour and Crowding-Out Effects: Regulation or Laissez-Faire?*, 23 Eur. J. L. & Econ. 135 (2007). Miriam Hechler-Baer, *Governing Corporate Compliance*, 50 B.C. L. Rev. 949 (2009).
27. Stephen Bell & Andrew Hindmoor, Rethinking Governance: Bringing the State Back ch. 4 (2009) (presenting empirical evidence for the increase in command-and-control instruments).
28. *See* Neil Gunningham, *The New Collaborative Environmental Governance: The Localization of Regulation*, 36 J. L. & Soc'y (2009); Adrienne Héritier & Lehmkuhl Dirk, *The Shadow of Hierarchy and New Modes of Governance*, 28 J. Pub. Pol'y 1 (2007); Adrienne Héritier & Sandra Eckert, *New Modes of Governance in the Shadow of Hierarchy: Self-Regulation by Industry in Europe*, 28 J. Pub. Pol'y 113 (2007); Tanja A. Börzel & Thomas Risse, *Governance Without a State: Can It Work?*, 4 Reg. & Governance (2010).; Tanja A. Börzel, Coping With Accession to the European Union: New Modes of Environmental Governance (2009); Bell & Hindmoor, *supra* note 27. *See also* Marc De-Clercq, Negotiating Environmental Agreements in Europe (2002); Allen Blackman, *Can Voluntary Environmental Regulation Work in Developing Countries? Lessons From Case Studies*, 36 Pol'y Stud. J. 119 (2008); Dorit Kerret & Alon Tal, *Green Wash or Green Gain? Predicting the Success and Evaluating the Effectiveness of Environmental Voluntary Agreements*, 14 Penn St. Envtl. L. Rev. 31 (2005) (presenting specific empirical evidence regarding higher effectiveness of voluntary agreements under effective regulatory threat).
29. Smart Regulation theory suggests picking the best policy mixes according to the regulatory context and the context of the problem. *See* Gunningham et al., *supra* note 19. Responsive Regulation suggested responding to the regulated entity with a basket of policy tools. *See* Ian Ayres & John Braithwaite, Responsive Regulation (1992). For further developments of these theories, see for instance Baldwin & Black, *supra* note 19; Vibeke Lehmann Nielsen & Christine Parker, *Testing Responsive Regulation in Regulatory Enforcement*, 3 Reg. & Governance 376 (2009).
30. Sinclair, *supra* note 25.
31. *Id.*
32. Gunningham et al., *supra* note 19, at 394.
33. For example, highly prescriptive, coercively enforced American command and control is at one end of the spectrum; pure voluntarism and some form of information-based approaches are located at the other end of the spectrum. *Id.* at 394.

so, Gunningham contributed two additional perspectives to the debate. First, focusing on differences in the level of intervention within a specific category of tools requires examining individual instruments rather than categories.[34] Second, he argued that different uses of the same tool may influence its location on the intervention continuum.[35]

Sinclair and Gunningham's observations lead us to ask the following: Do uses of soft policy tools stay soft, or are they hybrid? In response, we claim that, first, uses of policy tools should determine their location on the continuum, and second, the same tool could be placed on different locations according to its multiple uses. As will be demonstrated later in this Article, the empirical data from the PRTR comparative research supports these claims.

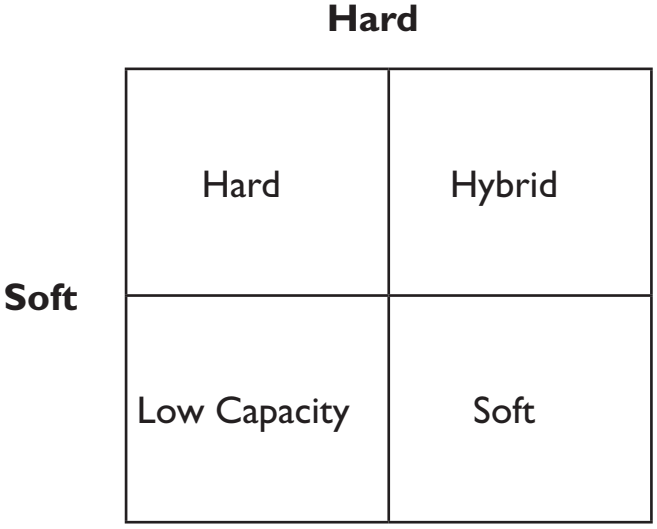
Accurate categorization of policy tools has a myriad of practical and theoretical implications. For instance, different theories present a variety of principles for creating the most effective regulatory mixes. "Responsive regulation"[36] and in particular "smart regulation"[37] theories argue that regulatory mixes should be established for effective policy designs. These theories present meta and macro principles. *Smart regulation* discusses different combinations of policy instruments according to their classification. Understanding how different instruments are applied is a primary and important stage necessary for the application of these principles.[38]

III. The Quadrates Approach for Categorizing Policy Tools

The discussions cited above leave us with a number of important, unanswered questions, such as: If self-reported information is used for litigation against an industrial facility, is it still considered to be self-regulation? Is it still soft? And how about the opposite: Is it coercive to use information gathered by the regulatory agency for the sake of enforcing a particular statue for constructing a compliance plan based on negotiation and information sharing with the regulated entity? And, can such usage be included in the substantive law framework? Is it still hard command and control?

As a contribution to the discussion of policy instruments, the following section advances the continuum approach. This proposal is necessary since the continuum approach has not conceptualized interactions between the variety of uses of policy tools. Hence, the more sensitive typology of policy tools proposed here—the Quadrates Approach—looks at the hard-soft continuum as a double continuum creating four quadrates (see Figure 1). Location in each of the axes is determined according to the frequency of using a policy tool either in hard manners or in soft manners.

Figure 1: The Quadrates Approach for using soft and hard tools



The quadrate approach could be useful in at least two main contexts. First, at the specific tool level, it enables a more accurate picture of the uses of a particular policy instrument. Acknowledging that each tool could be simultaneously used for hard purposes and for soft purposes, the same tool could be located in any of the four quadrates. Such an approach enables us to determine the qualities of a specific tool in a specific context.[39]

On the more generalized level (such as the regulatory agency or the state), the quadrate approach could present a clearer picture of a country's regulatory context. It may

34. *Id.* at. 394, 395 ("In practice, it is often necessary to examine individual instruments rather than merely instrument categories because the level of intervention may vary quite dramatically within each category."; "On the contrary, the US TRI is quite coercive in requiring companies to estimate emissions and disclose this information. That is, there is a higher level of coerciveness associated with a specific measure located within a wider category that is generally perceived to involve low interventionism.").
35. *Id.* at. 395. ("The level of intervention may also vary greatly in terms of how a given instrument is used. For example, enforcement of environmental regulation in the United Kingdom is much less coercive than in the United States.")
36. Ayres & Braithwaite, *supra* note 29.
37. Gunningham et al., *supra* note 19.
38. For instance, Gaines, *supra* note 16, suggested the desirable sustainable development legal structure. The author claimed that reflexive law has an important role in complementing command-and-control regulation to achieve a better environmental law structure for sustainable development. He described how reflexive law theoretical thinking may improve the capacity of the legal framework for sustainable development. As a primary example for currently operational reflexive law instruments, he described the TRI. However, for Gaines' agenda to be realized, reflexive instruments need to serve as such. If the instruments are not used according to their intentional goal or if their command-and-control uses disrupt their reflexive uses, they would not serve de facto as an instrument for reflecting reflexive law values. Howlett et al., *supra* note 13 (studying interrelationship between different policy tools as certain mixes may be counterproductive while others are constructive).
39. Each policy instrument has an initial goal as a command-and-control, or reflexive, instrument. However, de facto operation of this instrument may change its classification. For instance, an emission standard that includes limits on desirable emissions as well as sanctions when it is violated should be characterized as a command-and-control instrument. However, the regulatory agency may operate this instrument very strictly: inspecting, monitoring, and punishing for noncompliance. Alternatively, it may also use it in a more cooperative manner—create a compliance plan and provide incentives for beyond compliance activity. A more obvious example would be the other way around. An instrument that initially was designed as cooperative and reflexive may be used as a command-and-control instrument by regulatory agencies.

determine the level of hard uses of policy tools alongside soft uses. More importantly, it could serve as a tool for answering the question whether countries are going soft or hybrid. In other words, it may enable us to answer the question whether soft tools co-exist with hard tools or replace them? It may also enable a more accurate analysis of policy tools under different regulatory capacities, e.g., separate analysis of developing countries or countries in transition.

An additional application of the quadrate approach could be within the "Shadow of Hierarchy" theory. Here, the two axes may be useful for determining, on the one hand, the effectiveness and strength of the regulatory threat, and on the other hand, the effectiveness of self-regulation or voluntary tools.

A. *PRTR as a Mirror of Soft and Hard Policy Instruments*

The following sections will apply the suggested analytical framework to analyze the PRTR as a policy tool. PRTR is a policy instrument aimed at reducing industrial emissions.[40] PRTRs are online, publicly accessible, emissions databases that exist in various environmental media.[41] Such systems currently operate in many industrialized western countries, as well as in developing countries in a variety of formats.[42] Various international and regional frameworks recommend the adoption of such systems and attempt to codify them.[43] Despite variability in the content, coverage, and implementation of PRTRs in various countries,[44] they follow the same mechanisms to induce reduction in industrial emissions.

PRTRs were designed initially to influence industrial emissions through reflexive mechanisms.[45] In contrast to traditional command-and-control instruments that set emission targets as well as sanctions in case of noncompliance with the standards, PRTRs do not set specific targets accompanied by sanctions.[46] Instead, their mechanism is designed to influence the internal behavior of reporting facilities through external pressures from various stakeholders (market forces),[47] as well as internal processes

40. See Kerret & Gray, *supra* note 15, at 205 nn.13, 14, for discussion regarding the primary goal of PRTR as reducing industrial emissions.

41. *See id.* at.1.

> A PRTR is defined by the OECD as ". . . a database or register of chemicals released to air, water and land, and wastes transferred off-site. Based on a list of priority chemicals, facilities that released one or more of the listed chemicals report periodically—usually annually—on the amount of released and/or transferred and to which environmental media. Reported data are then made available to the public." Their basic characteristics include:
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> > Listing potentially hazardous chemicals; Multi-Media reporting (or integrated reporting) of releases to (air water and land) and transfers; Reporting data by source/facility; Reporting on a periodic basis (usually annually); and Making data and information available to the public, normally on a site-by-site basis.
>
> OECD, Why Pollutanat Release and Transfer Registers (PRTRs) Differ: A Review of National Programs. No. ENV/JM/MONO(2001)16(2001).

42. Kerret & Gray, *supra* note 15, at 1 (reporting that: "The following countries were found to have at least the inception of a comprehensive web-accessed PRTR: Austria, Australia, Chile, Canada, Czech Republic, Denmark, England, France, Germany, Hungary, Italy, Japan, Norway, Netherlands, Japan, Scotland, Spain, Sweden"; the following countries are in the process of adopting such systems: "Bosnia & Herzegovina; Dominican Republic; Macedonia (FYR); Serbia and Montenegro; South Africa; Switzerland; Trinidad and Tobago; Turkey." In addition, Israel has recently started the process of implementing a PRTR following its joining the OECD countries, and Legislation Proposals have been submitted to the Israeli Knesset (Parliament).

43. *See id.* at 1.

> Among these efforts are the Kiev Protocol on Pollutant Release and Transfer Register, adopted in 2003 The PRTR protocol to the Aarhus convention on access to information, public participation in Decision making and access to justice in environmental matters was adopted in Kiev on 21 May, 2003, and was opened to signature till 31 December 2003. As of 31 December 2003 the following 36 states had signed the protocol: Armenia, Austria, Belgium, Bosnia, Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, the Netherlands, Norway, Poland, Portugal, the Republic of Moldova, Romania, Serbia and Montenegro, Slovenia, Spain, Switzerland, Tajikistan, the former Yugoslavia, Republic of Macedonia, Ukraine, the United Kingdom and the European Community. http://www.unece.org/env/pp/prtr.htm; the European Pollutant Emission Register, established by a commission decision of July 17, 2000 2000/479/EC: Commission Decision of 17 July 2000 on the implementation of a European pollutant emission register (EPER) according to Article 15 of the Council Directive 96/61/EC Concerning Integrated Pollution Prevention and Control (IPPC); reinforced by the Regulation (EC) No. 166/2006 of the EU Parliament and the council concerning the establishment of a European PRTR Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC, OJ L 33/1 4,2,2006; the Recommendation of the Council on Implementing PRTR C(96)41/Final, of 20 February1996 as amended by C(2003)87 28 May 2003; and the PRTR program of the Commission for Environmental Cooperation of North America (CEC) Under the CEC's PRTR program the governments of Canada Mexico and the US have worked together to enhance the comparability of their PRTR systems.

44. *Id.* at 1.

45. *See* Fiorino, *supra* note 1, at 448 (Discussed information regulation as a flagship of reflexive law instruments; and, in particular, the example of TRI); Gaines, *supra* note 16 (presenting TRI as one of the existing reflexive law schemes in sustainable development policy); Stewart, *supra* note 1; Karkkainen, *supra* note 16; Michael E. Kraft et al., Coming Clean: Information Disclosure and Environmental Performance (2011) (discussed the theory underlying information and behavioral changes. They focused on the role of government as a facilitator, providing information that reduces collective action dilemma as well as transaction costs).

46. *See* Fiorino, *supra* note 1, at 448.

> The TRI does not require firms to install technology or otherwise take steps to reduce emissions; it is purely an information requirement. Nonetheless, experience and empirical studies document that firms respond to the negative publicity that accompanies the release of TRI information. Companies do not want to be known as leading polluters in their communities.

Id. Gunningham et al., *supra* note 19, at 198; Karkkainen, *supra* note 16.

47. A series of studies investigated empirically the effects of TRI data on emissions reductions through news and the stock market. *See* James T. Hamilton, *Pollution as News: Media and Stock Market Reactions to the Toxic Release Inventory Data*, 28 J. Envtl. Econ. & Mgmt. 98 (1995), (focusing on TRI as an instrument for emission reduction through news and the stock market. The article presented results of empirical tests of how TRI data were news to journalists and investors. The study demonstrated, empirically, how the stock value of TRI firms dropped following the release of pollution figures); *see* Shameek Konar, *Information as Regulation: The Effect of Community Right to Know Laws on Toxic Emissions*, 32 J. Envtl. Econ. & Mgmt. 109 (1997) (demonstrating how firms respond to disclosures of TRI emissions. The study found that firms with the largest stock price declined on the day TRI data became public, and subsequently reduced emissions more than their industry peers); *see* Paul R. Kleindorfer & Eric W. Orts, *Informational Regulation of Environmental Risks*, 18 Risk Analysis 165 (1998) (presenting an economic model for effective information regulation. According to their analysis, information regulation focuses on achieving compliance through actors who are different than the regulator. "IR in its pure form opens up

based on knowledge and awareness ("you manage what you measure").[48]

Analysis of the introduction of PRTR can shed light on the question whether governments are going soft, as well as on such questions as: Does the involvement of additional societal actors make the state hollow and result in delegation of its regulatory powers to additional actors? Is PRTR used only in soft ways? The remainder of the Article addresses these questions using the *policy instruments uses* approach, as well as the quadrates analytic conception.

This Article extends the current anecdotal evidence regarding the different uses of PRTRs in a number of ways. First, we analyze the literature reporting on uses of PRTRs and introduce our categorization of these uses as hard or soft. This prior categorization is essential for the introduction and use of the quadrates approach, suggested in this Article, as it requires evaluating the frequency of use of a particular policy tool in both hard and soft fashions. In addition, despite the anecdotal evidence of different uses of PRTR for a variety of purposes, there has been no previous reported attempt to portray the frequency of uses for the different purposes, as well as the interaction between the different uses. Nor has there been any attempt, prior to this Article, to find a connection between uses of other environmental policy instruments and the uses of PRTRs. The current Article addresses these gaps by providing empirical evidence from a survey of regulatory authorities in Australia, Canada, and the United Kingdom.

B. Uses of PRTRs

As is characteristic of reflexive instruments, the primary mechanism of PRTR builds on uses by various societal actors and reporting facilities. Indeed, regulatory agencies face a number of creative challenges when they decide to employ it. The following sections categorize uses of PRTR data reported in various reports. Categorizations of reported uses employed their soft versus hard traits (see Table 1), as it proved to be useful for understanding the various uses of the same tool that deviates, sometimes, from their initial design.

As a soft instrument, the most obvious uses of PRTRs by regulatory authorities are derived from their role as facilitators. Using *Smart Regulation* language, regulatory agencies may use PRTRs as a policy instrument to harness other actors to comply with the regulatory process, using all the levels in the pyramid.[49] As soft uses are basically made by parties external to the regulatory agencies, the role of the regulatory agencies in this regard focuses on encouraging uses of the PRTR for both voluntary reduction of industrial emissions and public participation.[50]

Various soft uses of PRTR have been reported in the literature. Aggregating and interpreting raw PRTR data is one prominent use of the PRTR, as it advances public reaction to the data and encourages self-regulatory or voluntary action by the industry. For example, providing grading and simple codification of the pollution level of the facilities enables better benchmarking and focuses both public attention as well as the attention of the polluting facilities.[51]

Various examples of uses of the PRTR data for the initiation and implementation of voluntary programs are documented in the scholarly literature, surveys, and public reports.[52] Here, PRTR data serve to target relevant polluters

another possibility that focuses on the effect that disclosure of information has on the social institutions of markets and public opinions . . . IR does not directly impose standards. It focuses instead on structuring information and communications among interest groups in society."); Karkkainen, *supra* note 16, at 316-23 and 323-31 (analyzing the mechanisms through which TRI facilitates emission reductions; and, in particular, roles of community and markets); Gunningham et al., *supra* note 19, at 198; Archon Fung & Dara O'Rourke, *Reinventing Environmental Regulation From the Grassroots Up: Explaining and Expanding the Success of the Toxic Release Inventory*, 25 Envtl. Mgmt. 119, 120 (2000) (presenting the "populist maxi-min" mechanism through which the U.S. TRI operates. Public pressure exerted at the highest polluting facilities. "TRI generated lists specify the targets of enforcement, but leave the degree and method of sanction open to citizens themselves. Mobilized citizens have responded by attacking egregious polluters both through direct action and negotiations.").

48. *See* Gunningham et al., *supra* note 19, at 198; *see also* Karkkainen, *supra* note 16, at 295-305 (referring to the self-reflection effect of PRTR upon industry self-regulation and beyond compliance improvements); Fung & O'Rourke, *supra* note 47, at 119 (presenting the "voluntarist" view but criticized it by contending that it may only explain a part of the results attributed to the U.S. TRI); Kraft et al., *supra* note 45.

49. Gunningham et al., *supra* note 19, at 402: (". . . government might require business to disclose various information about its level of emissions under a Toxic Release Inventory, leaving it to financial markets, insurers (commercial third parties), and environmental groups (non-commercial third parties) to use that information in a variety of ways to bring pressure on poor environmental performers").

50. *See* Karkkainen, *supra* note 16 at 309-12.

51. Fung & O'Rourke, *supra* note 45 (contending that the main mechanism through which the TRI operates is "blacklisting" or "populist maxi-min"); Karkkainen, *supra* note 16, at 314 (providing examples of the effects of using TRI data for benchmarking and comparing environmental conditions within areas and among facilities. These comparisons facilitate self-improvement and raise the performance bar.). Significant examples to the codification and data aggregation of PRTR are the UK Environment Agency's Spotlight 2002:

> Based on environmental data, including PRTR data, that the Agency collects in the course of its activities to control pollution, the report presents a sector-by-sector analysis of business and industry in England and Wales. It highlights good and bad performers and details the main prosecutions brought by the Agency over the year.

Id. *See* OECD, Uses of Pollutant Release and Transfer Register Data and Tools for Their Presentation—A Reference Manual. No. ENV/JM/MONO(2005)3(2005), at 30; The U.S. Sector Facility Indexing Project (SFIP) aggregated data from various available sources (such as compliance history, reported chemical spills, production data, and estimates for surrounding facility environment) and thus could theoretically facilitate both self reflexive action of industrial facilities as well as public responses. However, it was highly criticized for deficiencies in its current structure. *See* Karkkainen, *supra* note 16, at 357. A more comprehensive program for grading and aggregating data, including the provision of grading of facilities was implemented by the U.K. Environmental Agency. *See* Andrew Farmer, Handbook of Environmental Protection and Enforcement: Principles and Practice (2007); Andy Gouldson et al., *Better Environmental Regulation—Contributions From Risk-Based Decision-Making*, 407 Sci. Total Env't 5283 (2009). In Indonesia, PRTR-like data was used to create a grading program of facilities considered highly effective in inducing pollution reduction and environmental improvements. *See* Allen Blackman et al., *How Do Public Disclosure Pollution Control Programs Work? Evidence From Indonesia*, 11 Res. Human Ecology 235 (2004); Shakeb Afsah et al., *Regulation in the Information Age—Indonesian Public Information Program for Environmental Management*, World Bank Working Papers Series (1997).

52. *E.g.*, The Organization for Economic Co-operation and Development (OECD), Environmental Policy Tools and Firm-Level Management Practices in Norway, Japan, Hungary & Germany 30 (2004) (providing examples of use of PRTR data to "solicit voluntary pollution reduction goals and then measure progress toward the goals of the PRTR data");

for voluntary programs and to assess their performance and voluntary improvements. Furthermore, PRTR data is used for rewarding best performers,[53] as well as for identifying the need for technical assistance and focusing assistance efforts.[54] In addition, PRTR data may be used to enhance public participation through various mechanisms.[55]

However, despite their primary role as soft law instruments, PRTRs are only one of many policy instruments employed within complicated legal systems. Therefore, they may also be used by regulatory agencies to strengthen hierarchical components of the environmental policy system.[56] Indeed, Gunningham contended that information policy instruments serve as potentially complementary instruments to all other policy instruments.[57] Hard uses of PRTRs may be directed to improve an enforcement system and, as a database, PRTRs can be employed to enforce other rules[58] to influence enforcement efforts of the regulatory authorities at the facility, sector, or area levels.[59] Hard uses may also take an indirect form by improving regulatory efforts, e.g., enhancing and improving existing regulation is an important and well-documented result of the uses of PRTR data.[60]

Table 1: Categorization of potential PRTR uses by regulatory authorities

Soft Uses	Hard Uses
Grading facilities for inducing public pressure and self-regulation.	Targeting non-compliant facilities.
Initiation and implementation of voluntary emission reduction programs.	Identifying the need for stringent regulation.
Providing assistance to industrial facilities.	Using data for litigation.
Providing priority treatment and regulatory relief to best performers.	
Educating citizens.	

Table 1 summarizes reported uses of PRTRs and categorizes them into soft and hard uses. What remains unclear is if and how soft and hard uses of the PRTRs are connected. How frequently do environmental authorities use PRTRs as a policy tool in general and how frequently do they use it in soft ways? How frequently do they use it in hard ways? Are there various uses of PRTRs (thus combining both hard and soft uses) and if so, are they compatible with uses of other existing environmental policy tools? The empirical study presented in the next section addresses these questions.

Environment-Link, Final Report—Review of the National Pollutant Inventory for the Department of the Environment and Heritage 45 (2005) (indicating that PRTR data in Australia is used as "support for emission reduction programs"); Karkkainen, *supra* note 16, at 350 (describing the U.S. 33/50 program "inviting TRI polluters to pledge voluntary reductions in emissions and transfers of seventeen EPA-identified priority TRI chemicals with the explicit aim of achieving thirty-three percent reductions by 1992 and fifty percent by 1995 (as measured against 1988 baseline)." In this regard, as Bradley Karkkainen indicated, the program is "an extension of the TRI concept." In fact, PRTR data was used for reflexive purposes: establishing and operating a voluntary reduction program.). *See also* U.S. Environmental Protection Agency (EPA), How Are the Toxics Release Inventory Data Used? Government, Business, Academic and Citizen Uses 11 (2003); Karkkainen, *supra* note 16, at 352 (described how Canada initiated a similar, even more ambitious and successful program—the Accelerated Reduction/Elimination of Toxics (ARET). Based on PRTR data, pre-identified facilities were challenged to "virtually eliminate, that is, reduce by ninety percent or more—emissions of thirty high-priority persistent, bio-accumulative, and/or highly toxic substances, and to achieve fifty percent reductions in eighty seven others by the year 2000." The program was considered a significant success, both in participatory levels as well as in meeting its targets. *See also id*. at 354.

53. Fung & O'Rourke, *supra* note 45, at 126 (mentioning the Common Sense Initiative and Project XL that rewards best performers by increasing their flexibility in compliance as a reward for their beyond compliance performance. The performance data is based on the TRI data.); Karkkainen, *supra* note 16, at 14 (describing how TRI data may serve local governments to provide various regulatory reliefs for best performers in tax matters, licensing and permitting).
54. Karkkainen, *supra* note 16, at 314.
55. Survey of state and federal environmental regulatory agencies through the United States indicated that 42.9% of the respondents claimed they used TRI data for "educating citizens about local pollution problem" and 2.6% reported using the TRI data for "exerting public pressure on area businesses." See question 13 of Mark Stephan et al., Results of National Survey of Public Officials on CorporateEnvironmental Behavior and the Toxics Release Inventory (2005) (7.1% reported using TRI data to assist in citizen / industry negotiations. In another survey of U.S. environmental regulatory agencies, 27% of the respondents reported using TRI data to exert public pressure on facilities; 16% reported using the data to "educate affected residents" and 11% indicated using TRI data for direct citizen/industry negotiations). Frances Lynn & Jack Kartez, *Environmental Democracy in Action: The Toxics Release Inventory*, 18 Envtl. Mgmt. 517 (1994). *See also* Organisation for Economic Co-operation and Development (OECD), *supra* note 52, at 33. Kraft et al., *supra* note 45 (63% of surveyed federal officials in the United States and 38% of U.S. states officials used the data to educate citizens about local pollution problems).
56. Karkkainen, *supra* note 16, at 310.
57. Gunningham et al., *supra* note 19, at 430.
58. *See* Karkkainen, *supra* note 16, at 309-12. *See also* Lynn & Kartez, *supra* note 55, at 515 (reporting results of a survey of TRI uses by regulatory authorities in the United States. The most frequently reported use of TRI data (64% of respondents) compared TRI data to permits. Furthermore, 35.7% of states and federal environmental regulatory agencies indicated using TRI data to "Check facility emissions against permit records." Another reported use at Lynn's survey was preparing court litigation (which was reported by 7%). It is also indicated that 9.5% of states and federal environmental regulatory agencies indicated using TRI data to "Prepare for court litigation."); Kleindorfer & Orts, *supra* note 47, at 157 ("IR (Information Regulation) enhances traditional form of performance-based or specification-based regulation…IR adds a mechanism of enforcement: both mandating disclosure of information about whether the underlying regulatory standards are being met and providing an investigative instrument for enforcement authorities . . . IR eases the task of direct regulation by providing for self-reporting about compliance."). *See also* Kraft et al., *supra* note 45, at 133 (indicating that "although TRI is not formally understood to be regulatory information it has been widely used as a part of the regulatory process as 63% of federal officials in their US survey indicated they used TRI data to check facility emissions against permit records").
59. *See* Karkkainen, *supra* note 16, at 312 (42.9% of state and federal respondents indicated using TRI data for assisting with regulation and enforcement).
60. *Id.* at 310 (providing an example of the 1990 amendments to the CAA as a result of data discovered from analyzing TRI trends). Gunningham et al., *supra* note 19, at 430 (claiming that information is essential for the effectiveness of command and control. "Information instruments designed primarily for other purposes may also be of value to regulators, enabling them to target toxic 'hot spots' or worst performers."); Fung & O'Rourke, *supra* note 45, at 122 (stating that the United States used the TRI to support passage of stricter environmental legislation). Stephan et al., *supra* note 55 (7.1% reported using TRI data to assess the adequacy of current law; 11.9% reported using TRI data to prepare recommendations for legislation or regulation).

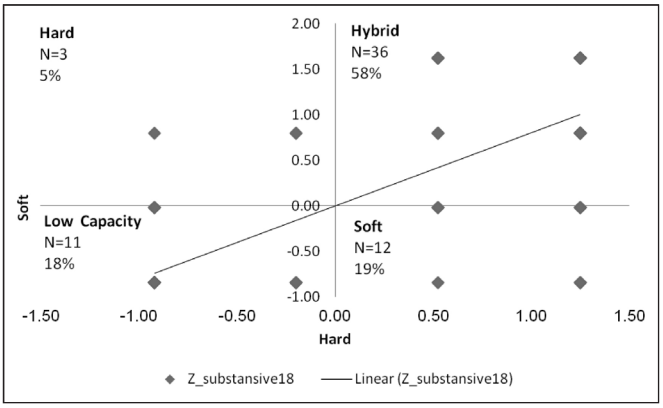
IV. Connection Between Soft and Hard Tool Uses: The Empirical Case Study

An Internet survey was distributed to public officials in various environmental authorities in Australia, Canada, and the United Kingdom.[61] In soliciting opinions of a variety of public officials at different positions, the goal was to capture as many potential users of PRTRs as possible. Therefore, the sample included representatives who engaged in roles that involve policymaking, enforcement, authorization, monitoring, and liaising between civil society and the private sector, as well as regulators of industrial emissions, e.g., air and water quality departments, and members of specific PRTR data departments. A total of 105 public officials responded to the survey.[62]

Respondents were asked to describe the frequency of PRTR use in regard to the following purposes: "setting policy"; "enforcement purposes"; "litigation purposes"; "to assist industry in reducing emissions"; "to engage facilities in voluntary pollution reduction programs"; "as a basis for working with NGOs"; and "to publicize PRTR data in the media." Respondents graded PRTR use for each purpose, as follows: 1 = often; 2 = sometimes; 3 = rarely; and 4 = never.

As Table 2 demonstrates, the de facto use of PRTRs includes both hard and soft uses. The high frequencies of hard use of what was designed to be a soft law tool are indicative of how policy tools are adapted beyond their initial intentions. The data also demonstrate that PRTR uses are intertwined with use of additional policy instruments. Furthermore, as Figure 2 shows, soft and hard PRTR uses are strongly correlated.[63] These data support our hypothesis that governments are not going soft, but rather hybrid—using more tools of different kinds. Furthermore, the data show that active agencies generally employ their full set of tools regardless of categorizations. Indeed, given that PRTRs were designed to be cooperative tools, their intertwined implementation in support of both deterrent tools as well as tools for promoting cooperation is logical and provides strong support for the hypothesis that governments are going hybrid; that is, what seem to be soft tools are not necessarily operated as such. In addition, the operation of soft tools is not indicative of a decline of using hard tools, on the contrary.

Figure 2[64]: The connection between soft and hard uses of PRTR (Using the four quadrates approach). $R^2 = 0.64$



In order to verify whether PRTRs present a unique case of the relationship between soft and hard tools, we also asked the respondents to report on the general frequency of using environmental policy tools in highly representative soft or hard fashions. Respondents were asked: "How often does your agency use each of the following measures to deal with violations by industry of environmental standards, regulations, permits etc.?" In doing so, respondents graded the frequency of the following three measures: 1 = negotiate with violators; 2 = provide technical assistance (categorized as soft measures); and, 3 = press charges (categorized as hard measures). Table 3 summarizes the distribution of respondents' responses.

In order to provide a complete picture of all measures used, respondents indicated the frequency with which they used different policy tools for reducing industry emissions. Among the choices, "setting mandatory standards or emission reduction targets" and "economic instruments" were categorized as hard tools, while "voluntary emission reduction programs" was considered to be a soft tool. Table 4 summarizes the distribution of respondents' selections.

In order to evaluate the connection between uses of various policy tools, a scale was created for soft and hard uses, and all the high-frequency uses in each category were calculated for each respondent.[65] As Figure 3 shows, a very high connection was found to exist between the soft and hard uses of environmental policy tools.

61. Australia, Canada, and the United Kingdom were chosen because they represent developed countries with long established PRTRs. *See* Kerret & Gray, *supra* note 15. These three countries are known for the reflexive elements that are integrated within their environmental policy. They also represent countries with different geographical features as they are located on different continents. The United States was left out of the sample as their policies are considered more hierarchical and the large states influence on environmental policy needs to be taken into account. For a review of the Background to Canadian Environmental policy, see Stepan Wood et al., *What Ever Happened to Canadian Environmental Law?*, 37 Ecology L.Q. 981 (2010). For a review of the background to Australian Environmental Policy, see Gunningham et al., *supra* note 19; For a review of the Background to British Environmental policy, see Persson, *supra* note 13, and Farmer, *supra* note 51. Respondents represented various levels of environmental authorities, at the federal, state, and district levels.

62. There were19 respondents from the United Kingdom, 44 from Canada, and 42 from Australia.

63. The Cronbach's Alpha of all uses of PRTR is 0.862, which signifies an exceptionally high correlation between all uses of PRTR. This value is higher than the interconnectedness of the separate uses of PRTR for either reflexive or substantive purposes. The Cronbach's Alpha of the uses for reflexive purposes is 0.806, and the Cronbach's Alpha for substantive uses is 0.789.

64. The results in Figure 2 are normalized using Z score normalization. Z score is a standard score.

The line presents a simple regression using a single variable. We used Pearson R correlation for calculating the correlation between "Soft Uses" and "Hard Uses." The dots on the graph present the single answers of respondents. As we used an ordinal scale, some cases are located on the same spot.

65. High frequency was considered as answers 1-2 (often or sometimes) on the scale of 4 the respondents had (which also included: 3 (rarely) and 4 (never)). Results are presented in a normalized Z scale.

Table 2: Uses of PRTRs (descriptive statistics)

		Often	Sometimes	Rarely	Never	N	Mean	Std.
Hard	**Setting Policy**	19.8%	27.4%	7.5%	2.8%	61	1.89	0.82
	Enforcement	13.2%	22.6%	13.2%	8.5%	61	2.30	0.99
	Litigation	3.8%	16.0%	18.9%	18.9%	61	2.92	0.94
Soft	**Industry Assistance**	11.3%	34.9%	5.7%	5.7%	61	2.10	0.83
	Voluntary Program	10.4%	31.1%	11.3%	4.7%	61	2.18	0.83
	NGOs	6.6%	33.0%	8.5%	9.4%	61	2.36	0.90
	Media	11.3%	23.6%	14.2%	8.5%	61	2.34	0.97

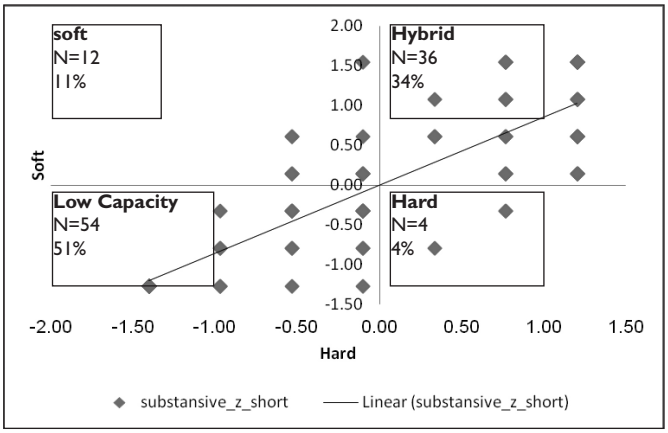
Table 3: Uses of soft and hard measures for dealing with violations by industry (descriptive statistics)

		Often	Sometimes	Rarely	Never	N	Mean	Std.
Hard	**Litigation (Press charges)**	15.5%	48.8%	26.2%	9.5%	84	2.30	0.85
Soft	**Negotiate with violators**	47.6%	36.9%	9.5%	6.0%	84	1.74	0.87
	Provide technical assistance	38.1%	47.6%	10.7%	3.6%	84	1.80	0.77

Table 4: Uses of soft and hard policy tools for reducing industrial emissions (descriptive statistics)

		Often	Sometimes	Rarely	Never	N	Mean	Std.
Hard	**Setting mandatory standards**	54.8%	29.8%	9.5%	6.0%	84	1.67	0.88
	Economic instruments	16.7%	45.2%	21.4%	16.7%	84	2.38	0.96
Soft	**Voluntary programs**	28.6%	47.6%	14.3%	9.5%	84	2.05	0.90
	Self-regulation	11.9%	21.4%	52.4%	14.3%	84	2.69	0.86

Figure 3: The connection between soft and hard uses of PRTR and general environmental policy tools (Using the four quadrates approach). $R^2 = 0.85$



Overall, the results support the importance of examining de facto uses of policy tools in attempts to categorize them. A policy tool designed as a soft tool was ultimately used in multiple fashions, rendering it a hybrid kind. The results are also compatible with previous studies that were summarized in Part IV and reported mixed uses of PRTRs.

Reliable categorization of policy tools has multiple theoretical and practical implications on the individual tools level, as well as the operation of the entire regulatory system. On the individual tool level, the understanding of its true nature is crucial for understanding its operational mechanisms, which also affects its effective design. For instance, in the case of PRTRs, a conceptualization of the tool as entirely soft might lead to hypothesizing that its influence over emissions reductions might mostly rely on the impact of external actors, such as the stock market or the local community. This narrow conceptualization would fail to take into account the impact of PRTRs through additional regulatory tools, and thus the importance of such potential combinations. For instance, if the effectiveness of the tool is mostly affected by its integration with other regulatory requirements, such as permit requirements, comparison possibilities should be taken into account while setting the PRTR system. The comparison between PRTR data and permit requirement might be challenging when different methods are utilized for calculating the permitted emissions.[66]

Policy analysis, as well as the debate regarding the desirable composition of policy tools, relies on policy tool categorizations. Thus, failure to grasp the true nature of policy tools might lead to inaccurate insights regarding the development of regulatory structures. For instance, if hybrid policy tools are categorized as soft policy tools, a possible

66. For instance, as opposed to the American system of using annual mass units as emission standards, the European system uses concentrations or mass units that are calculated per time unit and not total mass. The differences between the measurement systems make the comparison between the PRTR emissions and the permit records more complicated.

examination of regulatory structures might lead to the conclusions that more soft policy tools are implemented, when in fact hybrid structures are in place. Such a conclusion might lead to potential recommendation that soft tools should replace hard tools, when in fact their effectiveness draws from the hybrid nature of the system.[67]

The findings also demonstrate the importance of the quadrate approach, in both evaluating the characteristics of a particular policy tool, as well as in evaluation of the policy context of a regulatory authority or state. First, this approach helps to grasp the difficulties with a single dimension categorization. As each tool might encompass a variety of hard and soft components, a single dimension categorization might miss the complex reality. The quadrates approach may also reflect the connections between different tools in their applications. This understanding may help improve the existing tools, as well as their interrelationship and desirable operation.

Furthermore, most of the authorities investigated in our study proved to be hybrid authorities who employed both soft and hard policy tools frequently (although some were located at the low end of infrequent use of policy tools). The empirical evidence is even more persuasive as hard uses are undertaken with a tool initially created to be soft. In addition, the data regarding the general use of environmental policy tools provide additional support to the validity of the particular case study. These results also support the hypothesis that governments are not going soft, but rather hybrid.

V. Concluding Thoughts and Policy Recommendations

This Article offered an analytic approach to address two prevailing questions in current policy tools literature debate: Are governments going soft or hybrid? What should be the key considerations in categorizing policy tools? The analytic approach proposed was implemented in an analysis of a representative policy tool: the PRTR. Empirical data from a survey conducted in three countries followed the explanation of the theoretical conceptualization.

The research presented in this Article addresses three main issues: First, we learn about the importance of the connection between theory and practice in the field of policy tools. As de facto uses of policy tools affect their categorization, it is important to take practice into account while evaluating and theorizing policy tools. The analysis presented also stresses the need for a rigorous analysis of policy tools prior to determining their nature. The proposed quadrates approach may be useful for sharpening the categorization of policy tools.

The Article also provides additional support to the going-hybrid theory. The results presented show that hard uses of policy tools may go hand-in-hand with soft uses. The empirical evidence is even more persuasive as hard uses are undertaken with a tool initially created to be soft. Furthermore, the study demonstrates that PRTR mirrors all levels of the pyramid suggested by Gunningham, as it seems to engage all manner of actors at all levels of response, including low to high intervention. Furthermore, it may harness self-regulation, second parties, and use of a combination of other regulatory instruments in preparing a highly deterrent response. However, despite the variability in the countries subject to the case study, as well as its compatibility with research results in the United States, the research was undertaken in three developed countries, with a highly mature regulatory system who are also leaders in environmental awareness and protection. PRTR systems exist in a variety of jurisdictions, including those with less-developed environmental protection. Further research is required to study if the results are duplicated in different jurisdictions. Particularly, further research is required to observe whether additional jurisdictions also fall within the hybrid tools quadrate.

Third, the study presented demonstrates the connection between soft and hard uses of policy tools, and thus highlights the importance of taking into account different combinations of policy contexts. Further research is required to evaluate the connection between different uses of the PRTR instrument and its effectiveness. Theory suggests that both the uses of PRTR data as well as its impact upon other actors depend on the general context in which they operate. In particular, we refer to perceived potential uses of PRTR data, as well as to the uses of other existing policy instruments. For instance, potential hard uses of PRTR have an additional soft trait, as they also construct an "implicit threat that regulatory action may follow."[68] This is a form of the shadow of hierarchy that may induce additional soft responses as a form of "anticipatory self-regulation"[69] or voluntary emission reductions. The soft effect created due to the potential uses of PRTR to strengthen the enforcement system depends on the perceived strength of the regulatory authority. Therefore, such an effect will be more apparent where the regulatory context is considered as strong and deterrent. Although this was the research question that triggered the described research, we only found very primary results. Thus, this matter should be investigated further. In particular, the impact of using different sequencing of policy tools should further be studied.

This Article is but an initial effort. While it succeeded in opening a narrow window, there is a need for further inquiries into research of environmental policy tools. It should be kept in mind that while studying environmental policy tools, their true nature may require additional investigation, as it is affected by practice. Therefore, policy tools should not be judged by their cover.

67. *See* Kraft et al., *supra* note 45.

68. Karkkainen, *supra* note 16, at 311, 353.

69. *Id.* at 311. Karkkainen went on to claim that further developments of current voluntary programs could result in imposing minimum mandatory standards on facilities. "If the implicit threat of regulatory action, together with other elements in TRI's varied bundle of sticks and carrots prove insufficiently robust to round up the laggards, the big stick of mandatory default rules or coercive sanctions might do the trick." *Id.* at 353.