

Working Paper

An Empirical Study of Review
Mechanisms in Environmental
Regimes:
report on work in progress

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Preface

Hundreds or even thousands of international legal instruments on "the environment" are in existence. What happens to international environmental agreements once they are signed, and how does the process of implementing such agreements influence their effectiveness? These are the questions that motivate the IIASA project "Implementation and Effectiveness of International Environmental Commitments (IEC)". Research teams are examining these questions from many angles and with different methods.

In this paper, David Victor, John Lanchbery, and Owen Greene describe an effort underway to compile information on the implementation review mechanisms (IRMs) operating in a large sample of international environmental agreements. Such mechanisms allow the parties and others to verify the extent to which another party is complying with an agreement and offer a venue to handle problems, for example, of poor performance or noncompliance. They can make agreements more effective by keeping the international bargain connected to the reality of what states can implement. Consequently, building more effective IRMs could be a major way that policy-makers could improve the effectiveness of international environmental agreements.

The authors describe a data protocol that they are using, with others in the IEC project, to build a database of the major variables related to the operation of IRMs. Using the protocol, they have now coded several dozen cases; some initial observations and research questions that stem from "working with the data" are presented here.

The IEC research project is now sponsoring several historical and comparative case studies on the functioning of IRMs. This paper, along with another paper that surveys the same issues but from a theoretical rather than empirical perspective, lays a foundation for our research program on IRMs. Because it organizes the relevant data in a systematic fashion, the database described here has also been used to help select cases for IEC's in-depth case-study research on IRMs.

The context of this paper in the IEC project

This paper is one of several IEC working papers that survey the existing literature, place the project in a framework of prior research, and identify the major questions that deserve further study. At the outset, members of the project decided to prepare these papers to ensure that we were adequately aware of other research in the field and, especially, to ensure that we would be studying the most important questions in the proper context. The papers that play these roles are listed below, divided into each of the three areas of IEC's research program. Fuller descriptions of different parts of IEC's research program are available in the IEC project description (copies available from IEC) and in the prefaces and working papers listed below.

1. Historical case-study and comparative research

Most of IEC's research is directed at studying how international environmental agreements have been implemented historically through examination of case-studies and focussed comparisons among selected cases. Teams are studying domestic implementation as well as international and transnational processes. Eight papers review the relevant literature and establish the context and research questions:

Research on implementation at the domestic level in Western Europe and in the Eastern economies undergoing transformation:

- o Steinar Andresen, Jon Birger Skjærseth, and Jørgen Wettestad, 1994, "Regime, the State and Society--Analysing the Implementation of International Environmental Commitments".
- o Vladimir Kotov, 1994, "Implementation and Effectiveness of International Environmental Regimes During the Process of Economic Transformation in Russia".
- o Elena Nikitina, 1994, "Domestic Implementation of International Environmental Commitments: a Review of Soviet Literature".
- o Alexei Roginko, 1994, "Domestic Compliance with International Environmental Agreements: a Review of Current Literature".

Research on international and transnational processes of implementation:

- o David G. Victor with Owen J. Greene, John Lanchbery, Juan Carlos di Primio and Anna Korula, 1994, "Roles of Review Mechanisms in the Effective Implementation of International Environmental Agreements".
- o David G. Victor, John Lanchbery and Owen Greene, 1994, "An Empirical Study of Review Mechanisms: Report on Work in Progress".

- o David G. Victor with Anna Korula, 1994, "What Is an International Environmental Agreement?"
- o Owen J. Greene, 1994, "On Verifiability, and How It Could Matter for International Environmental Agreements".

2. Development of a database

IEC is developing a database that will consist of key variables related to the development and effective implementation of international agreements. It will allow systematic use of historical evidence from a large number of cases. The goal is to make possible the testing of hypotheses and the drawing of general conclusions about which variables are causally linked to "effectiveness". One paper reviews the major hypotheses related to the formation and effectiveness of international regimes:

- o Marc A. Levy, Oran R. Young and Michael Zürn, 1994, "The Study of International Regimes".

3. Other research and policy activities

IEC researchers are applying their research findings to current and future policy issues as opportunities arise. The project is also sponsoring a major simulation-gaming exercise to explore issues of institutional design, implementation and compliance in international environmental agreements. Simulations can help promote creative thinking about political options for international management of climate change, identify potential pitfalls, integrate policy-relevant knowledge from a variety of domains, and identify important policy-relevant knowledge needs. One paper surveys the benefits of using simulation-gaming as a policy and research tool:

- o Edward A. Parson, 1995, "Why Study Hard Policy Problems With Simulation-Gaming?"

The above list includes only the papers that the project has used in establishing the framework for its research activities. A complete list of publications and copies of papers are available from the IEC offices at IIASA.

Abstract

This report is part of a large scale comparison of how implementation review mechanisms (IRMs) are used in international environmental agreements. Broadly, IRMs are the means by which data is exchanged and gathered, reviewed and assessed in the context of an international agreement, and by which problems of compliance and inadequate performance are managed. Here we describe the data protocol that is being used in assembling a database of review mechanisms and explain the rationale behind all the major questions in the protocol. The protocol consists of questions about the general features of agreements as well as more focussed questions concerning: how information relating to national performance and compliance is gathered and disseminated; how that information is assessed; and the means by which the parties and the agreement respond to potential problems of noncompliance and inadequate performance.

The database is useful in part because it organizes information about different international environmental agreements into a comparable format and thus aids in the selection of appropriate cases and comparisons for further research. It is also useful because it can aid in the testing of hypotheses about which aspects of international agreements and review mechanisms lead agreements to be more effective. We are now using it for both purposes, in addition to extending the number of cases in the database.

To date, over fifty cases have been coded using the protocol. Here we also report some observations and hypotheses derived from working with the data from those cases. These include: 1) a hypothesis that review mechanisms tend to grow as needed to fulfill demand for specific functions; 2) a hypothesis that review mechanisms might help the parties to an agreement address various forms of complexity that arise in negotiating and managing international agreements; 3) a questions as to whether and how often institutions that are formally outside a particular agreement but with competence or power in the issue-area de facto provide the review mechanisms for the agreement; 4) a question as to whether review mechanisms make their largest contribution to effectiveness when the obligations of an agreement are precise or vague; 5) a question as to whether in practice some of the functions of review mechanisms are performed by dispute resolution mechanisms, which tend to be formally created in most international agreements (but appear to be rarely used in environmental agreements).

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An Empirical Study of Review Mechanisms in Environmental Regimes

Report on work in Progress

David Victor, John Lanchbery and Owen Greene¹

I. Introduction

International agreements often establish procedures for reviewing parties' performance. Scholars have given many names to these--for example, surveillance, enforcement, or performance review mechanisms. Here we title them broadly as "Implementation Review Mechanisms" (IRMs), intending to encompass in that phrase all of those procedures for review that have been established within international agreements.

IRMs may be of great importance in promoting the effective domestic implementation of international environmental agreements; the many pathways by which they can contribute to the effectiveness of international environmental agreements has been discussed elsewhere (Victor et al., 1994). Their utility has been well demonstrated in subjects such as arms control, trade, economic performance, and human rights.

A systematic understanding of the role of IRMs is a major component of the IIASA project, "Implementation and Effectiveness of International Environmental Commitments (IEC)". One important part of that systematic study--a useful prelude to any other research--is to capture in an extensive database the experience to date of existing review mechanisms that have been formally established within international agreements. This essay reports on the structure, rationale, and initial results of a major effort undertaken by the project to build such a database.

We have limited ourselves, for this initial purpose, to formally-established IRMs, that is, those that have been spelled out in formal texts, either in an original agreement, or at a subsequent time. We recognize, of course, that there are also many informally established review mechanisms, but the delimitation is necessary at the start to compile efficiently a substantial database. So far, we have coded over 50 international

¹With substantial input to the discussions from Juan Carlos di Primio and Anna Korula.

environmental agreements--a representative sample selected from a universe of possible cases that currently number about 175; the work is continuing.

This database effort is intended to serve two primary purposes: 1) to highlight important research questions that emerge when examining a large number of agreements in detail rather than just the handful that are most studied by scholars. The penultimate section of this paper highlights five major questions that have come from "working with the data". In this capacity, this paper complements the research agenda suggested in Victor et al. (1994), the theoretical paper written in parallel with this empirical study. For a view of the theoretical and empirical context of IEC's research into IRMs, the two papers should be read together. Readers should also note that the theoretical paper has an annex on the design characteristics of IRMs, intended to apply some of the theoretical questions raised in the paper to the practical policy-oriented issue of design choices faced by policymakers when they construct IRMs. The present essay looks at that question from the opposition angle: at the choices that have been made and the ways that they may influence the effectiveness of the IRM. 2) This structured study of the key variables related to the operation and effectiveness of IRMs is intended to identify variance in those variables. That variance is then used in later, more detailed studies, to choose cases that are useful in answering focussed questions. Indeed, a broad database such as this one can not provide definitive answers to most questions about the operation of IRMs, but it can help avoid the problem in much social science research that cases are not selected scientifically.

The second purpose is the more important of the two, and the database now forms a growing resource by which the IIASA project on Implementation and Effectiveness of Environmental Commitments (and others) can review the existence and procedures for IRMs in a structured way, across a large number of agreements.

II. Database Structure

We have developed a protocol which we use to structure the data collection process. The logic of a common data protocol is simply that it forces the analyst to organize data in a manner that promotes comparability. Annex I of this essay reproduces the data protocol in the form of a template. Each field of data is shown in bold typeface; the type of data requested, explanations and options are shown in light typeface. The actual database, which IEC maintains at IIASA, consists of one file (Wordperfect 5.1/5.2 format) per case; each file is a copy of the template, with the light typeface explanations removed and each field filled in with the appropriate information.

Currently the database is available only in this multiple file format. We are still building the full data set, and the main purpose has been to identify cases for further detailed study. However, we plan an integration of the data into a common single (or

linked) file structure, perhaps as part of the database activities in the larger project under way at IIASA (for a description of that project see IEC, 1994; for a description of the database effort see Levy et al., 1994). A version accessible via the Internet, probably with a Mosaic reader, is foreseen.²

III. Data Protocol

The data protocol reprinted in Annex I requests four types of information: 1) general information about each case; 2) information about Implementation Review Mechanisms that may be operative in each case; 3) sources used in coding the case and for further reading; and, 4) comments. The bulk of the information is in categories 1 and 2, and we will focus on those here. However, category 3 will point the reader to additional sources of information and, especially, to the formal reports and documents that were used for coding the case (see section below "Sources of Information for Coding"). Category 4 reports any comments--we include this because a major benefit of working through so many cases, especially less well-known agreements, is that many observations about possible research questions and interesting design features have arisen. This category is where those can be noted.

The data protocol described here is version 3 and has been developed through two major revisions, each resulting from discussions amongst the authors about the key variables and, crucially, from testing earlier versions on actual cases. Development of the protocol took place over a three month period beginning November, 1993; the bulk of the coding reported here was done (and revised) between December, 1993, and July, 1994.

Field-by-field description of the variables is included in Annex II; here we provide only a very brief overview.

General Information

We have coded for a large amount of general information about each case, primarily because some key factors are essential background when interpreting and comparing cases--it is crucial to control for variables that may influence the outcomes and effectiveness of the different agreements so that, as much as possible, we can

²For current information contact the authors at IIASA.

observe the independent influence of the IRM. Controlling for variables is a perennial problem in the social sciences, especially when dealing with cases that are complex and where cause and effect are linked in complex and poorly understood ways. Thus, here we report on the major control variables.

In addition, the general information field includes other background information, such as the city of adoption and the dates of significant changes, which is of general help in understanding the evolution of the agreement. We include contact information for the secretariat because in many cases we have obtained documents from the secretariat, and for cases that will be subjected to further investigation, the secretariat is a logical starting point for information gathering.

Information on Implementation Review Mechanisms

The bulk of our attention is given to coding information on the IRMs themselves, and what we have found is that few agreements actually adopt a fully developed set of review functions. Rather, most have procedures that could evolve into an IRM (or parts of an IRM), and we suspect that IRM functions are, in some cases, performed by competent organizations not formally attached to the agreement (e.g., the OECD or the EU in agreements where the commitments overlap with areas where those organizations have competence). These claims suggest hypotheses to be investigated, and we explore some later in this essay (see "Initial Observations").

We are interested in two aspects of IRMs: first, how information enters the IRM process; and, second, how that information is reviewed, evaluated and utilized (and who can participate in or influence the review). Our data protocol follows this division. In both aspects of the study we have developed a matrix that organizes the information; in the data protocol, each box of the matrix is represented by one data field. The two matrices are shown in Annex II as figures 1 and 2.

IV. Sources of Information for Coding in the Database

Primarily this is a survey of international environmental agreements drawn from the standard source, the UNEP Register of treaties (Rummel-Bulska and Osafo, 1991 and Kiss, 1983). However, clearly there are many questions about what actually is a case: i.e., "What is an International Environmental Agreement?". We have addressed that issue at length elsewhere (see Victor with Korula, 1994) and will not cover those issues here, except to note that there is no single definition that applies in all circumstances. Our longer discussion reviews the implications of alternative definitions, and in this early effort reported in this essay we have focussed primarily on "hard law"--i.e., legally binding treaties that comprise the core of international environmental law. By

UNEP's estimates that is about 132 agreements. We have adjusted that slightly and are now working with a universe of cases that currently number 175 (Victor with Korula, 1994, table 1).

Annex III lists the cases we have coded to date. It is a representative sample covering all the major issue areas, single- as well as multiple-issues; young as well as older treaties; regional and global arrangements; soft as well as hard law; active and moribund treaties.

The most important aspect of our data sources is that in order to keep this database effort manageable we have limited the data sources to formal documents. In all cases we begin the coding with the legal instrument (i.e., treaty or soft law declarations, guidelines, etc.) and then in most cases have expanded with formal reports of meetings, background papers from secretariats and other "official" documents. In many cases we also cite secondary sources--such as the Green Globe Yearbook (1991 - 94)--which we have used only to extract formal information.

Limiting our database to formal sources of information has two important consequences, both of which restrict the extent to which we can draw robust conclusions from the effort without further more detailed research. (And in both cases we are engaged in such further research to avoid these limitations.) First, even under hard law regimes, the review mechanism might operate informally or in ways not evident from examination of the formal documents. Sometimes organizations perform review functions for an agreement even when not formally empowered to do so within the agreement. This is probably especially true in data gathering and exchange, where many organizations at the national, regional and global levels have competence, but might not be explicitly empowered to perform the functions under the agreement; in practice, nonetheless, they could be the main reasons for an effective review procedure.

The second limitation relates directly to soft law. We have tested the framework described above with a few "soft law" cases such as the FAO International Undertaking on Plant Genetic Resources and find generally that this framework remains quite useful. However, the key issue in analyzing soft law regimes is the relationship between the (softer) obligations and what parties actually implement over time, and that relationship must be studied in detail on a case-by-case basis. Indeed, later work will be examining the operation of IRMs explicitly in soft law regimes and exploring whether they are more effective in loose soft law arrangements when compared with hard law. Note that it is possible that softer and more flexible arrangements will result both in: 1) more effective and timely adjustment of the agreement over time, thus in all likelihood, better connecting the agreement to underlying science, interests and what is feasible to implement; and, 2) greater willingness by governments to make bold claims and targets in soft law systems and, in doing so, allowing for an effective IRM to help nudge the party in the correct direction. This second point suggests that one mode of effective

soft law operation could be to keep the standards in an agreement constantly higher than actual performance. If so, these regimes could be very effective, but could also be characterized by very low formal "compliance". Most analysts instinctively assume that high compliance is favorable, but this would suggest that under some conditions-- i.e., flexible soft law and the operation of an effective IRM--the opposite is more effective. These are possible propositions, but few if any will emerge from the database because the crucial operation of a soft law regime is likely not to be evident in the formal documents, even if it proves possible to actually code soft law agreements into the database (as we have attempted to do).

Although the restriction to formal sources greatly reduces any systematic conclusions that can be reached from this database alone, it is fully consistent with the main purpose of this exercise. Namely, as mentioned before, we are using this, in conjunction with the theoretical constructs elaborated in a parallel study (see Victor et al., 1994) to serve two purposes: 1) to highlight important research questions that emerge when looking in detail at a large number of agreements rather than just the handful that are most studied by scholars (see next section for some initial observations on such research questions); and 2) to identify variance in the key variables that are related to the effectiveness of IRMs so as to improve the process of case selection. The more important purpose, is that the database now forms a growing resource by which the IEC project, and others, can review the existence and procedures for IRMs in a structured way, across a large number of agreements.

V. Initial Observations

For research questions that come from a review of the theory, the reader is directed to Victor et al., (1994). However, the following paragraphs outline some initial observations and frameworks for further investigation that have emerged from the data collection effort described in this essay. In particular, we underscore five broad hypotheses and questions that could provide the focus for further work on IRMs. At present, the IIASA research program is giving most attention to the first, which we have elaborated into several narrower sub-questions. Several detailed case study comparisons are under way on these sub-questions (for more information contact the authors at IIASA). Our goal is to test hypotheses and build theory simultaneously; the questions outlined here have served in part as an initial focal point for further in-depth research into IRMs.

A. "Organic growth" hypothesis: IRMs form and are used as needed, and adjustments over time are driven by changes in perception and need.

Virtually every regime we examine has an IRM. This suggests that IRMs might evolve autonomously, *in response to the demand for their functions*, further implying that perhaps the demands for IRMs will be met as they arise. The main driving force of further development of IRMs might be the (natural) desire to know if other parties comply. However, since other factors are at play (e.g., interests, power), IRM development can be stopped or diverted. These could be interesting insights but not ones that can easily be studied, but it does imply some more focussed questions that highlight the factors that might affect the origins and evolution of IRMs, as well as the demand for different IRM functions:

1. Do the legal formulations of the IRM really matter? In particular, two detailed questions emerge:
 - a. What role is played by the formal provision for IRMs in the initial agreement? If the initial agreement makes formal provision for IRMs, perhaps it will be easier to satisfy the subsequent demand to develop such IRMs because, in principle, the need for an IRM has already been formally acknowledged.

However, where the initial agreement specifies the possible form of any IRMs precisely, obstacles to subsequent development of IRMs outside this narrow framework may well be at least as great if no initial provision had been made at all. On the other hand, general provisions for IRMs that were initially envisaged simply to facilitate reviews of new "knowledge" and of national commitments, could subsequently also facilitate the development of mechanisms to review national implementation and performance.

Other characteristics of the initial agreement are potentially important in this context, such as: voting rules; the character, role, and authority of the Secretariat.

The policy relevant outcome of research into this question is to identify what formal procedures and language should be put into the treaty at the outset versus which of the necessary functions will evolve automatically? If we find that the initial structures and procedures do not much matter for the later evolution, then much of the talk about the need to put these procedures into place as an early, formal part of an agreement is probably irrelevant.

- b. What role is played by existing relevant precedents or principles? Even where there is no formal provision for the subsequent development of IRMs in the original agreement, the existence of relevant norms, principles and precedents (that are acknowledged by the members of the agreement) could facilitate the development of IRMs. Thus, where the members of an agreement are also parties to other environmental regimes with IRMs, they may tend to be more

positive towards proposals to establish similar IRMs in another agreement. Further, established principles and precedents are important: proposals to establish IRMs in an agreement will tend to be facilitated if they are modelled on mechanisms in existing agreements which the parties see as legitimate and which the parties are familiar, or feel reasonably comfortable with.

2. How are IRMs shaped by, and does the IRM help to manage complexity? Central to our assumption that IRMs lead to effective agreements is that IRMs offer a venue for the parties to work through implementation problems, reducing the chances that the regime will become mired, or stagnate, with no efficient means of dealing with these problems. The need to work through problems may increase with complexity, because exact outcomes are difficult to forecast when the initial agreements are framed.

In particular, we are interested in three types of complexity; in each case we ask what is the relationship between the form of complexity and the demand for IRMs and the role of the IRM in increasing the effectiveness of the agreement:

- a. Complexity of issue-area: One important dimension here is the intrinsic complexity of the issue area or problem addressed by the agreement. In this context, we are mainly referring to the (scientific or social) complexity of the processes that the agreement is aiming to limit, manage, or prevent. In principle, provided that parties are committed to implementing the agreement, the greater the complexity, the greater is the demand to develop complex IRMs; the need for customized data- collection and reporting requirements as well as for defined and well-developed monitoring and implementation review mechanisms follow from this assumption. Where the issues and relevant activities are relatively simple, informal or ad hoc IRMs are more likely to suffice.
- b. Complexity of participation: Similarly, the larger or more diverse the participation in the agreement, the greater may be the demand to develop formal IRMs rather than rely on informal mechanisms. One reason for this may be because clear and systematic procedures, guidelines, structures for communication, and dedicated or expert resources are required to manage the complexity of reviewing implementation by all members. A second, more political, reason may be that parties could be more tempted to free-ride or neglect implementation if they are only one of many participants: systematic IRMs may therefore be established to make it clear to participants that their activities will be reviewed routinely.

Linked with the above issue is the diversity of interests and power, leading the members of the agreement to participate in it. Clearly, the more distinct

interests a single party has in joining and developing an international agreement, the greater its commitment to the agreement is likely to be. To the extent that members share these diverse interests, the regime will be reinforced and any functional demand for IRMs may be strengthened. However, if the parties have different reasons for, and interests in, participating in the agreement, the development of IRMs may be constrained or shaped by this fact. On the one hand, knowledge that other parties have different interests in the agreement may increase the demand for effective implementation review, and may increase the range of activities covered in the IRMs. On the other hand, differing concerns and priorities may impede the process of negotiating IRMs, and narrow the range of issues on which agreement on the need for IRMs can be achieved. A 'super power' might have undue influence in the establishment and effectiveness of IRMs.

- c. Complexity of the agreement: The number of distinct issues and problems that the agreement is seeking to address, and the interrelationships and trade-offs between them, may be an important factor in the development of IRMs. Demand for the development of IRMs within one aspect of the agreement may stimulate and legitimate the development of IRMs for other aspects of the treaty. Moreover, the sheer complexity of the agreement may generate demand for formal reporting and review systems.

3. How does the density of alternative institutions and processes influence the effectiveness of the IRM? In principle, if other institutions exist, then the required capacity need not be duplicated. Similarly, where there is already a high degree of relevant transparency and information exchange between countries participating in an agreement, there may be less demand to establish specific IRMs within an agreement. And, countries that have already established a number of fora where issues relevant to an agreement can be aired and reviewed may feel less need to establish new ones. In contrast, where existing institutionalized information exchange and review processes involving members of an agreement are much less dense, the functional need for new IRMs to be formally established for an agreement will tend to be greater.

Alternatively, where parties are already engaged in dense and active information exchange and review processes, they will tend to be familiar and comfortable with them. In this context, they may be less resistant to establishing a new system of IRMs. Moreover, the transition costs associated with developing new IRMs for an agreement will be relatively low, and therefore more acceptable.

The policy-relevant outcome of investigating this question is that many agreements concern countries and regions that already have well developed information and review infrastructures, in some cases due to prior agreements. To what degree

should IRMs established for these types of agreements differ to reflect the existing density of interaction and information?

4. How do changes in knowledge about an issue affect the evolution of the IRM and demand for IRMs? Is the IRM responsive or not, and does it matter? In particular, we are interested in changes in knowledge along four dimensions:
- a. Changes in knowledge about causes and effects of the processes addressed by agreement: in issue-areas where there are likely to be continuous advances (or at least changes) in scientific understanding of the causes and effects of a process addressed by the agreement, there is likely to be demand for IRMs to review new information and to review the adequacy of existing commitments under the agreement. Moreover, continuous developments in "knowledge" about such processes may generate broader debate and political salience of the agreement. Increased political salience of an agreement (and the commitments associated with it) may in itself tend to increase the demand for IRMs. Increased concern in this context may well also generate demand for IRMs to review implementation of existing commitments.
 - b. Advances in knowledge about responses to the environmental problem: similarly, advances in knowledge about potential and existing policy responses to the issue addressed by an agreement will tend to generate demand for IRMs to review existing policies and commitments, and also to review national and international implementation of existing policies and commitments.
 - c. Sources of new knowledge: New knowledge relevant to an agreement may come from a wide variety of states, as well as from non-state sources. For issue areas and agreements where non-parties are acknowledged to be potentially important sources of relevant new information or knowledge, there may be increased demand for formalizing IRMs, to facilitate the collection and review of such information or to allow participation of such non-parties in the IRMs themselves at some level.
 - d. Identifying technical indicators or methodologies to facilitate review of implementation and compliance: Changes in scientific and technical understanding may affect the prospect that parties to an agreement can agree upon monitoring systems, indicators of performance or implementation, or data-collection and reporting systems, and thus on developing IRMs to review the data generated. Parties' perceptions of the scientific and technical expertise required to identify such monitoring systems, indicators, or methodologies will affect their willingness to delegate the task to expert bodies, which may be more likely to achieve agreement than an explicitly intergovernmental negotiating body.

Changes in knowledge may typically be external to the treaty and the IRM, although in some cases the treaty and its operation may induce actors to generate new knowledge (e.g., scientists may find new causal mechanisms through funded research programs). Whether external or internally induced, we are interested in knowledge changes because the IRM's ability to handle them should significantly affect the durability of the IRM over time, and in turn help us prescribe better designs for IRMs. The relationship between knowledge creation/change and institutions and effectiveness is also of great theoretical interest since, broadly, knowledge changes play a major role in the evolution of regimes.

B. Is an IRM more effective when commitments are precise or vague, and how do IRMs deal with conflicts between commitments and objectives?

We seek general knowledge and conclusions about IRMs, but probably the ability of an IRM to function properly will depend upon the types of commitments that it reviews. Findings here will help us predict (and advise) when IRMs can be helpful, and they may also, e.g., give additional credence to the argument that specific international commitments are crucial (or the reverse). The relevant nature of the commitments will vary on at least three dimensions:

- a. Extent to which the types of commitments in the agreement lead to incentives to defect. For example, where there are incentives to "free ride" the demand for effective mechanisms to monitor and review national performance and implementation will tend to be relatively high, for well known reasons.
- b. Specificity of commitments. Whereas IRMs to review knowledge about the causes and effects of a problem, or potential responses to it, could be meaningfully developed in the absence of specific commitments, this is not so true of IRMs to review and assess national implementation and performance. This point relates to questions of "verifiability", which are being addressed in a separate study currently under way in IEC.
- c. The extent to which the commitments of the parties differ. The extent to which parties to the agreement enter into different commitments may affect the development of IRMs. In part, IRMs may be needed to manage the complexity of a myriad of different commitments (see previous discussion of complexity). In part, when the obligations are diverse, it may not be transparent which parties are abiding by their commitments, nor easily detectable whether the burdens and benefits under the treaty are fairly distributed. The IRM can help to assure the parties of adequate compliance and fair treatment.

In cases where some key principles underlying the agreement appear to clash, the development of IRMs is likely to be contested. Under these circumstances, do effective IRMs avoid the controversy, take sides, or simply report all viewpoints and hope not to become embroiled?

C. Do matters of standing and access to the IRM affect the performance of the IRM? And, under what conditions and at what stages in the IRM process do non-state actors play constructive or destructive roles?

It strikes us that standing and access obviously matter, but to date we have not seen a systematic treatment of this issue. Such treatment could couple work on comparative law, as well as law and economics, to our research program. Further, the question of standing is directly relevant to the ongoing debates about the roles of non-state actors within treaty systems. Some argue that access by non-state actors will increase the diversity of viewpoints which can only lead to better outcomes; others claim that too much diversity will lead to chaos and blockage. The practical policy reason for asking this question about standing is to assess whether some rules of standing are more effective than others, including whether to grant or deny greater access to non-state actors.

D. To what degree are IRM functions adequately fulfilled by dispute resolution procedures?

We ask this question because often much attention (especially by lawyers) is given to dispute resolution. Currently we are gathering information on dispute resolution mechanisms as part of the data base described above, but so far we find little evidence that IRM functions are largely performed through dispute resolution mechanisms nor much evidence of the use of dispute resolution mechanisms in environmental agreements. Nonetheless, perhaps some comparative case studies will allow for useful conclusions about the roles of dispute resolution mechanisms. The practical policy reason for asking this question is simply whether it is wise to create some (or all) of the needed IRM functions through a dispute resolution mechanism. This question could also be explored as part of "A" above.

E. To what degree do diplomats and individuals within secretariats influence the effective operation of IRMs?

Many projects in this area find that the outcomes are heavily dominated by the personalities. This 'negotiating community' might dominate the operation of an IRM and whether it works. Bureaucratic and institutional politics are a large part of how

international mechanisms operate and interact among national and international agencies. Institutional mandates, resources, and turf battles will all affect which organizations and personalities become involved in an issue, affecting the promotion and blocking of implementation. If we find this to be true, we might conclude either that it is constructive to give room for personalities in the process and/or that the personnel choices to run these procedures are crucial.

VI. Conclusions

To close, we note that this is a study in progress. Here we have described the rationale of the study and its connection to a larger research project on the effectiveness of review mechanisms. The study reported in this paper is an empirical one--a structured database of the key variables that are related to the operation and effectiveness of review mechanisms. We are engaged in this empirical study for two reasons: first, working with these cases and focussing on their review mechanisms generates many hypotheses that would not be evident initially. This hypothesis-generation benefit of working with the data has taken place in parallel with the writing of a theoretical paper elaborating the conceptual framework for IEC's research program on IRMs, which has generated theory-driven hypotheses (Victor et al., 1994). The study introduced in this essay is driven by evidence. Second, a structured survey of many cases helps to identify variance in the key variables and thus aids the process of selecting cases for more detailed research. That research is now under way and is described further in the IEC research program (IEC, 1994).

The data structure is presented in annex I, and a detailed description of why we are coding for each variable is given in annex II. The sample of cases coded to date is listed in annex III.

We have limited the data collection effort to formal sources of information--treaties; reports from Conference of Parties meetings, subsidiary bodies or official working groups, etc.--in an effort to keep the study manageable. The main purpose is to allow rapid review of a large number of cases in a structured manner. However, this limitation on data sources has at least two serious consequences for the ability to draw conclusions from the study. First, even in hard law regimes, many (or all) of the review functions could be performed outside the regime on an informal basis. How these functions are performed will not be evident from formal documents. Second, in soft law regimes--which may be more effective than hard law for many problems of international cooperation--the actual operation of review mechanisms might be especially difficult to discern from formal sources because soft law is, by definition, looser and perhaps less precise than hard law. Yet the flexibility of soft law is exactly what might allow for review mechanisms to play a more effective role in adjusting an agreement over time and working with the parties to adjust behavior and

implementation. Both of these limitations can be overcome with detailed case studies, and other research is now under way to perform the needed case studies and controlled comparisons. That research has benefitted from this database effort, especially in the selection of cases.

In the process of constructing the template and working through the data for this study we have identified a series of research questions. At present we are investigating two of these in greater depth: 1) the role of the legal formulations in shaping the development of IRMs, which is part of a larger study of IRMs in biodiversity agreements led by John Lanchbery; 2) the role of IRMs in helping treaties to manage complexity, which is a comparison of the roles of IRMs in the Montreal Protocol on Substances that Deplete the Ozone Layer and in the agreements that control pollution of the Baltic sea, led by Owen Greene. A third detailed study--a comparison of the operation of IRMs under overlapping soft law and hard law agreements, led by David Victor--touches on two of the hypotheses described here: the hypothesis that where alternative institutions exist that IRM functions need not be performed by new institutions created specifically to serve an agreement; and, that IRMs can help the parties to an agreement manage vague and conflicting commitments.

Some of these questions overlap heavily with the research questions suggested in the theoretical study of IRMs (Victor et al., 1994), notably those related to the management of complexity and vague and conflicting commitments. More detailed information on these focussed empirical studies now under way is available from the authors.

VII. References

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Annex I: Template

(researcher: location&filename)

IRMS TEMPLATE 3
revision 21 January 1994

Popular name of the agreement:

(please define any acronyms)

I. GENERAL INFORMATION

Name of agreement: Text.

Updates to this record: Dates (most recent first)

Issue area of agreement: (four keyword fields)

Intrinsic physical characteristics: keyword(s), options:

Biosphere, marine, freshwater, rivers, atmosphere, outer space, natural biodiversity/species, land, cultural heritage, domesticated animals, nuclear, chemical, biological (i.e., bacteria, virus, toxins)

Impacts to be averted or promoted: keyword(s), options:

human health, ecosystems, agriculture, economy, animal suffering, cultural degradation, military advantage

Type of objective: keyword(s), options:

preservation (of a resource), resource management, protection (against harm/disaster), prevention (of a harm/disaster), international military security

Mechanism(s): keyword(s), options:

trade control, control of discharges (e.g., emissions), information exchange, limits on activity, ban on activity, standard-setting, norm creation/promotion, research and observation, technology transfer, confidence-building measures

Objective: Text.

Geographical Scope: Text.

Scope of membership: Text

Date and city of adoption and significant changes: Date (most recent listed last)

Date of entry into force: Date

Number of Parties (currently): Numeric

Sub-agreement(s): Text.

Parent agreement(s): Text

Substantive links to other agreements (regarding objectives, impacts to be averted or promoted, and mechanisms): Text

Organizational links with other agreements: Text

Decision making framework for the agreement (organizations and structures):

1. Supreme decision making body (and occasion and obligation to meet and make decisions): Text

2. Other bodies (and occasion and obligation to meet and make decisions):
Text

Secretariat:

Secretariat name (and contact information where available): Text

Personnel (number, approx.): Numeric and text

Finance: Text

Types of Commitments: Within each field there are two parts. The commitments themselves and the extent to which participation is required (by "participation" we intend to gather information on whether reservations, opt-outs, or other devices (including voting) that allow parties to choose which commitments to follow exist, as well as information on whether and how these are used). *Not all of these headings may apply to a particular case. Omit those which do not.*

1. Restrictions on behavior:

Restrictions: Text

Participation: Text

2. Projects (national and multilateral, such as: engineering programs, other direct actions, development of action plans, scientific research and data collection programs):

Projects: Text

Participation: Text

3. Compensation for damage (including liability):

Compensation: Text

Participation: Text

4. Assistance (financial, information, technological, etc.):

Assistance: Text

Participation: Text

Finance (where available, add information to specific functions, e.g., secretariat, but if more general information is available and should be included with the record, put it here): Text

II. IMPLEMENTATION REVIEW MECHANISMS

II.1. Sources of Information, e.g., information exchange and self reporting.

1. Data relevant to broad assessment of the agreement (subject, reporters and frequency, monitoring mechanisms, etc.):

Data from parties: Text

Data from treaty-created functions (e.g., secretariat activities, monitoring programs): Text

Data from non-parties (e.g., IGOs, NGOs): Text

2. Data relevant to assessment of parties' performance and compliance (for which commitments, reporters and frequency, monitoring mechanisms, etc.):

Data from parties: Text

Data from treaty-created functions (e.g., secretariat activities, monitoring programs): Text

Data from non-parties (e.g., IGOs, NGOs): Text

II.2. Review mechanisms.

1. Broad assessment review:

By the supreme decision-making body: Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and relationship to parent): Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

2. Review national performance and compliance:

By the supreme decision-making body: Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

To what degree are these functions provided by a dispute resolution mechanism? Text

By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and relationship to parent): Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

To what degree are these functions provided by a dispute resolution mechanism? Text

3. Recommend or implement responses to inadequate performance (e.g., sanctions, further study by others, further study by organizations created under the regime, further study and response by the deviant, issuance of official report, request for change in behavior of the deviant).

By the supreme decision-making body: Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

To what degree are these functions provided by a dispute resolution mechanism? Text

By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and relationship to parent): Text

To what degree do non-parties (e.g., IGOs and NGOs) observe and participate? Text

Who can set the agenda? Text

To what degree are these functions provided by a dispute resolution mechanism? Text

III. SOURCES AND FURTHER READING

IV. COMMENTS

Annex II: Data Protocol

The template reprinted in Annex I requests four types of information: 1) general information about each case; 2) information about Implementation Review Mechanisms operable in each case; 3) sources used in coding the case and for further reading; and, 4) comments. The bulk of the information is in categories 1 and 2, and we will focus on those here. However, category 3 will point the reader to additional sources of information and, especially, to the formal reports and documents that were used for coding the case (see below section "sources of information"). Category 4 reports any comments--we include this because a major benefit of working through so many cases, especially less well-known agreements, is that many observations about possible research questions and interesting design features have arisen. This category is where those can be noted.

The data protocol described here is version 3 and has been developed through two major revisions, each resulting from discussions amongst the authors about the key variables and, crucially, from testing earlier versions on actual cases. Development of the protocol took place over a three month period beginning November, 1993; the bulk of the coding reported here was done (and revised) between December, 1993, and July, 1994.

General Information

We have coded for a large amount of general information about each case primarily because some key factors are essential background when interpreting and comparing cases--it is crucial to control for variables that may be influence outcomes and effectiveness of the different agreements so that, as much as possible, we can observe the independent influence of the IRM. Controlling for variables is a perennial problem in the social sciences, especially when dealing with cases that are complex and where cause and effect are linked in complex and poorly understood ways. Thus here we report on the major control variables.

Also, the field of general information includes other background information, such as the city of adoption and the dates of significant changes, that is of general help in understanding the evolution of the agreement. We include contact information for the secretariat because in many cases we have obtained documents from the secretariat, and for cases that will be subjected to further investigation the secretariat is a logical starting point for information.

Below we list all of the fields and, briefly, the rationale for including each:

- o **Name of agreement.** Self-explanatory. Note that this is the formal name, which may differ from the popular name. Many legal sources and textbooks are searchable or indexed only on the formal name and thus including the formal name is valuable for gaining further information.
- o **Updates to this record.** This is a history of changes to our coding of the record and is used primarily to ensure that we are using only the most recent version.
- o **Issue area of agreement.** We have collected four fields of information related to the issue-area of the agreement. Many scholars believe that agreements covering different "issues" have different characteristics, and thus we want to ensure that we can keep this in mind both as a variable for control and perhaps as a hypothesis to be investigated in a later study. "Issue" matters for many reasons: different issues will involve different parts of the bureaucracy during negotiation and implementation; different issues may tend to involve different economic, political or social interests or different sets of actors; and, similarly, different issues may tend to have different structures of interests and thus result in different incentives to cheat and thus different needs for mechanisms such as IRMs that might help detect and deter cheating.

These are reasonable claims, but upon investigating what "issue-area" means in practice, we have found that it varies along four dimensions, and thus we have developed a set of keywords for each dimension and code for all four of the dimensions:

1. **Intrinsic physical characteristics.** Many people think that "issue" is defined physically. Insofar as we are interested in the issue-area because it helps us understand the underlying politics, we are skeptical of this claim that different physical characteristics matter. However, we code for this because of its common use and because different physical characteristics may be related to different levels of scientific uncertainty and ability to monitor performance--that, in turn, could affect whether an IRM can be useful in the operation of the agreement.
2. **Impacts to be averted or promoted.** "Issue" might be further refined to focus on the impacts of unconstrained activities--i.e., the physical and economic outcomes that the parties are trying to avoid or promote. This definition of "issue" is better connected to the underlying concerns that give rise to an international agreement.
3. **Type of objective.** We have found that in many cases an agreement is characterized by conflict over the objective, and we have hypothesized

that these conflicts could affect (probably impede) the operation of an IRM. Thus we have coded directly for different objectives, such as "preservation of a resource", "resource management", "prevention of harm/disaster". For example, we expect that regimes with conflicts between "preservation" and "management" will find it difficult to let an IRM operate effectively because when virtually any issue related to implementation is addressed within an IRM these conflicts will surface. Also, we expect that issues of management will require the services of an IRM more than strict conservation or preservation.

4. **Mechanism.** Finally, "issue" is sometimes defined by the mechanism used in the agreement, and we expect that some mechanisms (e.g., standard-setting, information exchanges and confidence-building measures) will make greater use of IRM functions than others (e.g., bans on activities).

Each of the above is a keyword field, and each field might have more than one keyword that applies. We have coded for all that apply. A complete list of keywords for each field is in annex I.

- o **Objective.** As listed in the agreement, we reprint or paraphrase the objective. The information this provides will overlap with the above keywords, but the formal description of the objective may nonetheless provide additional information. We expect that this information is not useful for controlling the study or predicting the use and efficacy of IRMs, but it may be a useful reference.
- o **Geographical scope.** We are particularly interested in comparing the roles and efficacy of IRMs in global vs. regional agreements, and thus information on the geographical scope helps us identify cases for potential future comparisons on this topic.
- o **Scope of membership.** Similarly, we are interested in restrictions on membership and participation, which may be expressed in geographical terms (as above) or in other ways (e.g., by membership in an economic or trade organization). We do not know if useful comparisons will be possible but include this information to highlight possible differences in cases and to see whether sufficient differences exist to allow more focussed comparisons.
- o **Date and city of adoption and significant changes.** This is for reference primarily but also to highlight agreements that have been through many adjustments. One hypothesis we raise in the IRM thinkpiece is the possibility that IRMs can help the agreement adjust over time; this suggests that a

comparison between rapidly and slowly changing agreements could be valuable in elaborating whether those different types of agreements have benefitted from the operation of an IRM.

- o **Date of entry into force.** We want to distinguish between old and new agreements, mainly because old agreements by nature have been in operation longer and thus allow for richer historical analysis, but also because there may be trends in the tendency of negotiators to include review mechanisms in agreements.
- o **Number of parties.** As with information on geographical scope and membership, we are interested in the roles that IRMs might play in highly multilateral agreements--where the number of competing interests might be very high and it could be difficult to handle implementation issues in plenary--and smaller agreements that could operate more smoothly. This is a hypothesis that might be investigated, and at least the number of parties is a variable for which there should be some control when investigating other factors.
- o **Sub-agreements.** Many "agreements" result in sub-agreements on more focussed aspects of the general problem at hand. For example, by design "Framework Conventions" result in later protocols. We enter each of the sub-agreements as separate records because each controls different issues, involve different interests, and may include some different IRM components. This field and the next are accounting measures to show the relationships between the records in our database. Notably, where sub-agreements make use of all or some of the IRM provisions in a parent agreement then this information is helpful in identifying the sources.

Further, this field is a way of handling the problem of coding agreements that have developed or changed substantially over time. When these changes result in new sub-agreements or we judge that the agreement is significantly different (although perhaps with the same name) then we code it again and indicate so here.

- o **Parent agreements.** As described above.
- o **Substantive links to other agreements (regarding objectives, impacts to be averted or promoted, and mechanisms).** As above, we are interested in links between agreements, and here we code for links that may be made through the actual commitments rather than a formal parent/sub-agreement relationship.

- o **Organizational links with other agreements.** As above, this is another aspect of linkage. Notably, organizational linkages might include organizations that operate IRMs or provide some parts of IRM services (e.g., an industry group that provides data to the agreement, which in turn uses the data to assess performance or the general state of the resource).
- o **Decision making framework for the agreement.** Here we code for two aspects of formal decision-making:
 1. **Supreme decision making body (and occasion and obligation to meet and make decisions).**
 2. **Other bodies (and occasion and obligation to meet and make decisions).**

Because we are interested in how IRMs might contribute to adjustments in agreements over time we have included information on how decisions are made. In the later section where we code directly for information on IRMs we also note where and how the IRM can provide information to the formal decision making process. We expect that the formal arrangements for making decisions will strongly influence how information from the IRM actually results in decisions to change the agreement and thus these formal organizational and legal relationships are explicitly included in our framework.

- o **Secretariat.** We are interested in secretariats because they may provide some functions needed in an IRM, such as assembling and distributing reports, providing legal and technical support, and in some instances perhaps even reviewing reports and performance. We are collecting three types of secretariat information:
 1. **Secretariat name (and contact info where available).** This is reference for future efforts to contact the secretariat, especially where we are contemplating more detailed research and the secretariat has information that would be useful.
 2. **Personnel (number, approx.).** We are interested in whether the secretariat is large or small because that is an indicator of the extent of services that can be provided by the secretariat. The number reported here is professional staff.
 3. **Finance.** As with personnel, finance is an indicator of size and resources.
- o **Types of Commitments.** In addition to the above, we are collecting many types of information related to the commitments in each agreement because fundamentally the study on IRMs is about how the parties to an agreement relate their commitments to their performance over time. However, gathering this information in a structured manner has proved very challenging. Our

approach is to divide commitments into four types (not all of which apply in any particular case) based on the types of commitments undertaken in international environmental agreements, tested against the types of commitments that would logically follow from different issue-areas discussed above. We have then tested these ideas using a very large number of cases that might be coded to ensure that the structure could accommodate the many differences.

1. **Restrictions on behavior.** Most agreements require some change in behavior from what would otherwise have occurred, and most environmental agreements express this as a restriction against emissions, resource depletion, etc. We code this in two ways:
 - a. **Restrictions.** The restrictions themselves and how they are expressed.
 - b. **Participation.** To whom (usually which parties) the restrictions apply; including information on the possibility of reservations and opt-outs.

2. **Projects.** Some agreements also call for national or multilateral projects to be conducted. These include: engineering programs, development of action plans, scientific research and data collection programs. Some projects such as data collection and exchange will directly contribute to operation of an IRM. Other projects contribute to solving the problem at hand but might be initiated, adjusted or terminated over time based on the information and advice from an IRM. We gather two kinds of information on projects:
 - a. **Projects.** Information on the projects themselves.
 - b. **Participation.** Who is responsible for carrying out projects (usually expressed as which parties and/or collaborating international organizations); including information on the possibility of reservations and opt-outs.

3. **Compensation for damage (including liability).** Compensation schemes are a potentially efficient way to deal with many environmental problems, but to date they have been used rarely. An IRM can help a compensation system operate because fair compensation requires information on who caused the problem and who has been harmed (and, in theory, who has benefitted--but, to date, systems such as taxing beneficiaries have not been used in international environmental agreements). IRMs might be designed to provide that information or could provide it because they are already gathering and assessing much related information. We include this category because we are keen to see if at least a few cases exist to allow comparisons of compensation

schemes and the potential roles of IRMs in them. We gather two kinds of information on compensation:

- a. **Compensation.** The compensation scheme itself.
 - b. **Participation.** To whom it applies; including information on the possibility of reservations and opt-outs.
4. **Assistance (financial, informational, technological, etc.).** Finally, we include information on assistance programs. This information could be part of "projects", but most agreements include loose requirements for assistance and only a few actually call for better defined projects--we want to ensure that our data protocol reflects this pattern and makes it easy to distinguish these loose commitments from project-oriented commitments. Nonetheless, the overlaps between the two may result in some coding of the same commitments in both categories. Also, this category is reserved for assistance--i.e., cooperation or transfers--whereas projects may or may not involve assistance. We do not claim that assistance, even if loosely worded, is irrelevant but only that these types of commitments may be seen differently by the parties from more focussed commitments to conduct projects.
- a. **Assistance.** The assistance required.
 - b. **Participation.** To whom it applies (donors and recipients); including information on the possibility of reservations and opt-outs.
- o **Finance.** Finally, we have found that it is helpful to include a category for general information about financial arrangements, beyond those required for the secretariat, so that the resources for projects and other activities, as well as their sources and donors are clear. Who pays for the activities and commitments has an effect on whose performance should be reviewed to leverage the required behavior.

Information on Implementation Review Mechanisms

The bulk of our attention is given to coding information on the IRMs themselves, and what we have found is that few agreements actually adopt a fully developed set of review functions. Rather, most have procedures that could evolve into an IRM (or parts of an IRM), and we suspect that IRM functions are, in some cases, performed by competent organizations not formally attached to the agreement (e.g., the OECD or the EU in agreements where the commitments overlap with areas where those organizations have competence). These claims suggest hypotheses to be investigated, and we explore some later in this essay (see "Initial Observations").

We are interested in two aspects of IRMs: first, how information arrives into the IRM process; and, second, how the process reviews and judges that information (and who can participate in or influence the review). Our data protocol follows this division. In both aspects of the study we have developed a matrix that organizes the information; in the data protocol each box of the matrix is represented by one data field. The two matrices are shown at the end of this annex as figure 1 and figure 2.

First, we code for the sources of information, for example information exchange systems and self reporting. We are interested in how information gets into the IRM. A matrix, shown in figure 1, describes the types of information and the sources of that information. Filling in the rows and then columns, each box is represented by one data field:

- o **Data relevant to broad assessment of the agreement (subject, reporters and frequency, monitoring mechanisms, etc.).** We first want to know how the IRM gets information about the general state of the problem at hand--e.g., whether it is getting better or worse and whether the agreement is helping to address the problem--because pressure to change the agreement might arise from a broad sense that the agreement is not adequately dealing with the problem. Similarly, pressure to focus on performance and implementation of the parties individually might arise from a sense that the agreement overall is not adequate. Of course, pressures to modify an agreement may arise for many other reasons--e.g., domestic pressure from the public or lobbying from environmental groups--but pressure from an IRM charged with managing the treaty is likely to arise from more "rational" or "objective" sources such as the interpretation of data on ambient conditions. The data might come from three sources:
 - a. **Data from Parties**
 - b. **Data from treaty-created functions (e.g., secretariat activities, monitoring programs)**
 - c. **Data from non-parties (e.g., IGOs, NGOs)**

We distinguish these different sources of data for several reasons: first, data from parties will tend to be self reported, which is the common mode of formally submitting data to an agreement; we want to be sure this mode is distinguished from others. Crucially, we want to be able to explore the extent to which self reporting introduces biases into an IRM that diminish effectiveness, and by dividing the data sources into these separate categories we can more easily identify agreements that rely exclusively on self-reporting (i.e., all information comes from the Parties and in the form of self reports) and those that also have other sources (e.g., from the Parties but perhaps in a mode where parties can report on other parties' activities or, more likely, from

other sources, either through treaty-created functions or through independent non-parties).

- o **Data relevant to assessment of parties' performance and compliance (for which commitments, reporters and frequency, monitoring mechanisms, etc.).** These data are directly related to whether a party individually is complying with the agreement and/or taking measures to implement the agreement. The previous data were broadly about the performance of the agreement but these data are party-specific. As before, the data might come from three sources:
 - a. **Data from Parties**
 - b. **Data from treaty-created functions (e.g., secretariat activities, monitoring programs)**
 - c. **Data from non-parties (e.g., IGOs, NGOs)**

The same reasons for this tripartite division apply, but for data related to performance the reasons are even more acute. The incentives to mis-report or omit incriminating data will be much stronger when the data are directly relevant to assessing a party's performance rather than just broadly relevant to the agreement.

Second, we code for how data and performance are reviewed. Again, we are filling in a matrix, which is shown in figure 2. Filling in the rows and then columns, each box is represented by one data field:

- o **Broad assessment review.** We begin by coding for the process by which broad assessments are made of the performance of the agreement, thus extending our earlier suggestions that the IRM might contribute to the effectiveness of agreements by assessing and highlighting when the agreement is not performing adequately as a whole. Who performs those reviews? Filling in the boxes left to right we distinguish between two types of bodies that might perform such assessments:
 - a. **By the supreme decision-making body.** In addition to asking whether the supreme decision-making body performs such reviews we ask two further questions:
 - i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?** These other bodies might be sources of independent assessments and thus could contribute to the effectiveness of review if they are allowed to participate. Thus we are collecting data on the potential scope for these to play a role (and whether certain IGOs/NGOs have a recognized role) and distinguishing it from the formal roles (e.g., by the parties and secretariat) in the supreme decision-making body.
 - ii. **Who can set the agenda?** Control over the agenda might affect whether revision of the commitments is a seriously debated issue. It

may be that diffuse agenda control will put these issues in front of the supreme decision-making body more often, and open access could at least ensure that when changes are suggested by the IRM that they are dealt with in a prompt manner.

- b. **By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and relationship to parent).** It probably makes a big difference whether reviews can be made by (probably more efficient) smaller bodies (e.g., committees) or whether the consent and debate of all parties are needed. This is probably especially true when detailed and complex issues are at stake, and those are exactly the conditions under which we think IRMs are likely to be most useful--i.e., when it is difficult to make broad agreements that cover all circumstances and thus detailed interpretation and oversight is needed to handle each particular case. In addition to asking whether the supreme decision-making body performs such reviews we ask two further questions:

- i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?**
- ii. **Who can set the agenda?**

The logic for asking these two questions is described earlier.

- o **Review national performance and compliance.** Next we are interested in how reviews of performance of the parties individually is conducted. In most instances this function, if it is performed at all, might be fulfilled by the same body that makes general assessments, but the functions that are performed are actually quite different and thus it could be useful to separate these variables from those related to broad reviews of the agreement (discussed above). Indeed, we may want to investigate whether it is usually true (and whether it usually leads to effectiveness) that these functions are combined or separated. Thus separating them in the data protocol helps to highlight cases that might be used to study this issue in more detail. As above, filling in the boxes left to right we distinguish between two types of bodies that might perform such assessments:

- a. **By the supreme decision-making body.** In addition to asking whether the supreme decision-making body performs such reviews we ask three further questions:
 - i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?**
 - ii. **Who can set the agenda?**
 - iii. **To what degree are these functions provided by a dispute resolution mechanism?**

The logic for asking the first two questions is described earlier. The third question is asked because in other areas, such as trade law, many

questions of performance are handled when they appear as disputes. Dispute resolution procedures are well developed in some agreements, including environmental agreements, and in general dispute resolution is a separate field of law with well-developed precedents. (Whether such procedures are actually used is another matter). Thus the data protocol distinguishes the possibility of dispute resolution procedures playing IRM functions. (We did not ask this question earlier because dispute resolution procedures are not directly relevant for broad assessment of the agreement.)

- b. **By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and relationship to parent).** In addition to asking whether delegated bodies perform such reviews we ask three further questions:
 - i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?**
 - ii. **Who can set the agenda?**
 - iii. **To what degree are these functions provided by a dispute resolution mechanism?**

The logic of asking these questions is as above.

- o **Recommend or implement responses to inadequate performance.** The IRM could initiate a variety of possible responses to poor performance. Many analysts have focussed on sanctions or other penalties. More commonly used options are recommendation for further study, a formal report, a (loose) request for change in behavior, etc. We are interested in the types of responses available because they indicate both the ability of the IRM to generate pressure for corrections and, crucially, its value as a deterrent. Detailed study beyond the overview possible in this database is especially important in this area because the formal authority to take corrective or punitive measures usually differs substantially from what is actually done in practice. As with the above, filling in the boxes left to right we distinguish between two types of bodies that respond to an assessment of poor performance:
 - a. **By the supreme decision-making body.** In addition to asking whether the supreme decision-making body performs such functions we ask three further questions:
 - i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?**
 - ii. **Who can set the agenda?**
 - iii. **To what degree are these functions provided by a dispute resolution mechanism?**
 - b. **By bodies delegated by the parties to make decisions or recommendations (for what types of decisions/recommendations, and**

relationship to parent). In addition to asking whether delegated bodies perform such functions we ask three further questions:

- i. **To what degree do non-parties (e.g., IGOs and NGOs) observe and participate?**
- ii. **Who can set the agenda?**
- iii. **To what degree are these functions provided by a dispute resolution mechanism?**

The logic of all these questions is as discussed above.

Figure 1

How information formally enters the agreement and review mechanism

What kind of information?

data relevant for broad assessment of the agreement	data on parties' performance and compliance with treaty commitments
--	--

Who
provides the
information?
parties

treaty-created
functions (e.g.,
secretariat activities,
monitoring programs)

non-parties
(e.g., IGOs, NGOs)

Figure 2

How does the agreement review and assess information on the operation of the agreement, national performance, and responses to noncompliance?

What kind of review and assessment are conducted?

broad assessment of the agreement	review performance of the parties	recommend or implement responses to noncompliance
--	--	--

Who participates
in review and
assessment?

supreme
decision-
making body
of the treaty
--do non-
parties
participate?
--who can
set agenda?

(*)

(*)

delegated
bodies
--do non-
parties
participate?
--who can
set agenda?

(*)

(*)

(*) To what degree are these functions provided by a dispute resolution mechanism?

Annex III: Agreements Coded

Table 1. Module 3 IRMs Database³
November 1994

ConventionPlace

(date of adoption)Geographical Scope (No. of parties)1. Convention Relative to the Preservation of Fauna and Flora in their Natural StateLondon (1933)Regional (9) 2. Convention on Nature Protection and Wildlife Preservation in the Western HemisphereWashington (1940)Regional (17)3. African Convention on the Conservation of Nature and Natural ResourcesAlgiers (1968)Regional (27)4. Convention on International Trade in Endangered Species of Wild Flora and FaunaWashington (1973)Global (120)5. Convention on Conservation of Nature in the South PacificApia (1976)Regional (4)6. Convention on the Conservation of European Wildlife and Natural HabitatBern (1979)Regional (31)7. Protocol Concerning Protected Areas and Wild Flora and Fauna in the Eastern African Region. (Protocol to the Convention for the protection, management and development of the marine and coastal environment of the Eastern African Region.)Nairobi (1985)Regional (5)8. ASEAN Agreement on the Conservation of Nature and Natural ResourcesKuala Lumpur (1985)Regional (not in force) 9. Convention on Biological DiversityRio de Janeiro (1992)Global (30+) In force 199410. Convention for the Protection of Birds Useful to AgricultureParis (1902)Moribund11. International Convention for the Regulation of WhalingWashington (1946)Global (40)

12. Convention for the Establishment of an Inter-American Tropical Tuna CommissionWashington (1949)Regional (7)13. International Convention for the High Seas Fisheries of the North Pacific OceanTokyo (1952)Limited (3)14. International Convention for the Protection of BirdsParis (1950)Global (10) - now moribund15. Benelux Convention on the Hunting and Protection of BirdsBrussels (1970)Regional (3)16. Convention on Wetlands of International Importance especially as Wildfowl Habitat (+ Regional Amendments and Paris Protocol)Ramsar (1971)Global (80)17. Convention for the Conservation of Antarctic SealsLondon (1972)Regional (16)18. Agreement on the Conservation of Polar BearsOslo (1973)Regional (6)19. Convention on the Conservation of North Pacific Fur SealsWashington (1976)Regional (4)20. Convention for the Conservation of Migratory Species of Wild AnimalsBonn (1979)Global (42)21. Convention for the Conservation and Management of the VicunaLima (1979)Regional (5)22. Protocol to Amend the Convention on Wetlands of International Importance especially as Wildfowl Habitat (see Ramsar - 16 above)Paris (1982)Global23. Convention on the Conservation of Antarctic Marine Living Resources (part of Antarctic Treaty System)Canberra (1980)Regional24. Agreement on the Conservation of Bats in Europe (set up under CMS Bonn - 20 above) London (1991)Regional25. Agreement on Seals in the Wadden Sea (set up under CMS Bonn - 20 above)(1991)Regional26. Agreement on Small Cetaceans in the Baltic and North Seas (set up under CMS Bonn - 20 above)(1992)Regional27. International Convention Regarding Measures to be taken against Phylloxera VastatrixBerne (1889)Regional (moribund)28. International Convention for the Protection of Plants (superseded by Rome Treaty - see 30 below)Rome (1929)Global29. Convention for the Establishment of a European and Mediterranean Plant Protection Organisation (set up under Rome treaty - see 30 below)Paris (1951)Regional (23)30. International Plant Protection ConventionRome (1951)Global (81)31. Phytosanitary Convention for Africa South of the Sahara (and 1961 Protocol set up under the Rome treaty - see 30 above)London (1954)Regional32. Plant Protection Agreement for the South East Asia and Pacific Region (set up under the Rome treaty - see 30 above)Rome (1956)Regional33. Agreement Concerning Co-operation in the Quarantine of Plants and their Protection against Pests and DiseasesSofia (1959)Regional (10)34. International Tropical Timber AgreementGeneva (1983)Global (50)35. International Undertaking on Plant Genetic ResourcesRome (1983)Global (111)36. Convention for the International Council for the Exploration of the SeaCopenhagen (1964)Limited (17)37. Convention on the Protection of the Marine Environment of the Baltic Sea AreaHelsinki (1974)Regional (10) Not yet in force 38. Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and AircraftBarcelona (1976)Regional (19)39. Convention for the Prevention of Marine Pollution by Dumping from Ships and AircraftOslo

³ From: (a) Selected Multilateral Treaties in the Field of the Environment, Vols 1 and 2, UNEP (1983) and Grotius (1991), (b) Green Globe Yearbook 1994, Oxford University Press (1994), (c) P. Sand, The Effectiveness of International Environmental Agreements, Grotius (1992).

(1972)Regional (13)40. Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other MatterLondon

(1972)Global (68)41. Convention for the Prevention of Marine Pollution from Land-based SourcesParis

(1978)Regional (13)42. International Convention on Civil Liability for Oil Pollution DamageBrussels

(1969)Global (75)43. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage Brussels

(1971)Global (50)44. Convention on the Protection of the Marine Environment of the Baltic Sea AreaHelsinki

(1992)Regional (not yet in force)45. Convention on the Control for the Conservation of Transboundary Movements of Hazardous Wastes and their DisposalBasel

(1989)Global (33)46. Convention on Early Notification of a Nuclear AccidentVienna

(1986)Global (64)47. Convention on Assistance in the Case of a Nuclear Accident or Radiological EmergencyVienna

(1986)Global (46)48. Convention on Long-range Transboundary Air PollutionGeneva

(1979)Regional (35)49. Convention on Long-range Transboundary Air Pollution on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per centHelsinki

(1985)Regional (20)50. Protocol to the 1979 Convention on Long-range Transboundary Air Pollution on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in EuropeGeneva

(1984)Regional (33)51. Protocol to the 1979 Convention on Long-range Transboundary Air Pollution concerning the Control of Emissions of Nitrogen Oxides or their Transboundary FluxesSofia

(1988)Regional (21)52. Vienna Convention for the Protection of the Ozone LayerVienna

(1985)Global (134)53. Montreal Protocol on Substances that Deplete the Ozone Layer (as well as London (1990) and Copenhagen (1992) Amendments)Montreal

(1989)Global (131)54. Convention for the Protection of the Rhine Against Chemical PollutionBonn

(1976)Regional (6)55. Convention on the Protection of the Rhine Against Pollution by ChloridesBonn

(1976)Regional (5)