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**MONITORING, REPORTING AND REVIEW OF NATIONAL PERFORMANCE  
UNDER THE KYOTO PROTOCOL**

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## FOREWORD

The Annex I Expert Group oversees development of analytical papers for the purpose of providing useful and timely input to the climate change negotiations. These papers may also be useful to national policy makers and other decision makers. In a collaborative effort, authors work with the Annex I Expert Group to develop these papers. As such, the papers do not necessarily represent the views of the OECD, nor are they intended to prejudge the views of countries participating in the Annex I Expert Group.

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## EXECUTIVE SUMMARY

The design of effective monitoring, reporting and review functions for the Climate Convention and the Kyoto Protocol is a priority task for the international community. Entry into force of the Kyoto Protocol will add binding, quantified emission limitation or reduction commitments for industrialised countries (i.e. “Annex I” Parties under the Climate Change Convention). These commitments will necessitate a shift in emphasis in the Convention’s current compliance system. They will also require some new functions. At a minimum, the Protocol requires a co-ordinated effort to account for national performance with respect to Kyoto targets<sup>1</sup> in an accurate and transparent way.

The objective of this paper is to consider ways of tailoring the existing UNFCCC compliance system to the substantive commitments created under the Protocol. The paper focuses on monitoring, reporting, review and related functions in the context of a wider compliance system (see Figure 1). Possible responses to non-compliance are addressed in companion OECD papers (Werksman 1998 and Mullins 1998).

Monitoring, reporting and review functions figure prominently in the Protocol. Although the Protocol may not enter into force until 2001 or later, a number of actions may be possible in the near term to begin to strengthen the existing compliance system under the Convention. Early action can prepare the ground for rapid implementation of the Protocol once it enters into force, avoiding the need for a radical transition later. Effective national systems for monitoring, reporting and review will also be important. This paper explores the connections between international compliance functions and national systems.

The paper builds on previous OECD work on monitoring and compliance under the Climate Convention (OECD 1998a, 1998b). It considers the new issues presented by the provisions of the Protocol that refer to monitoring, reporting and review and explores their relationship to existing functions under the Convention. The paper’s conclusions are necessarily preliminary. This paper is intended to help governments consider ways in which the compliance-related functions under the Convention might evolve between now and when the Protocol enters into force.

### Relevant Provisions of the Protocol

The Kyoto Protocol allows Annex I Parties to meet their emission targets through a mix of domestic and international actions. Participation in joint implementation, emissions trading and the clean development mechanism may alter the level of actual emissions allowed for individual Annex I Parties under the Protocol. Accounting for changes in national “assigned amounts”<sup>2</sup> due to the transactions occurring under

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<sup>1</sup> The paper uses the term “assigned amounts” to refer to Kyoto targets. This term refers to the amount of emission allowed for individual Parties in the target period given the targets for individual countries listed in Annex B of the Protocol. The assigned amount for the period 2008-2012 is therefore the target multiplied by the agreed base year emission in year 1990 (taking into account any adjustments to the base year as allowed for in Article 3 of the Protocol), multiplied by 5.

<sup>2</sup> This term refers to the amount of emission allowed for individual Parties in the target period given the targets for individual countries listed in Annex B of the Protocol. The assigned amount for the period 2008-2012 is therefore the target multiplied by the agreed base year emission in year 1990 (taking into account any adjustments to the base year as allowed for in Article 3 of the Protocol), multiplied by 5.

these mechanisms, and verifying that individual national targets are achieved, will be a key monitoring function under the Protocol.

Parties will have the primary responsibility for monitoring both their national emissions and transactions that effect their allowable emissions level. It is likely that reporting systems to be established under Article 7, will require countries to report information on all international transactions that affect assigned amounts (trading, joint implementation or the clean development mechanism). As the central repository of this information, the UN Climate Change Secretariat may be in a good position to verify national information on transactions and the overall international accounting of assigned amounts. To allow for accounting of assigned amounts, national and international monitoring systems will need to be modified. Work should begin as soon as possible to allow development of these systems so that they will be effective once the Protocol comes into force.

The Protocol outlines other new monitoring and reporting requirements for Annex I Parties, which explicitly link national reporting and review to compliance assessment (Article 5 and 7). These include the requirement for governments to have national systems for inventory preparation and to expand annual reports on inventories to include relevant supplemental information to ensure compliance. COP/MOP decisions on how to define national systems could make a critical difference to improving inventory data. Such decisions could be based on recommendations expected from the current IPCC assessment of “good practice” approaches to manage inventory uncertainty. The Protocol also requires Annex I Parties to continue to submit national communications on a periodic basis (less than annual). The information presented in these reports will cover the full set of Parties’ commitments in the Protocol and the Convention and, in addition, will include “supplementary information necessary to demonstrate compliance.”

Finally, the Protocol (Article 8) also requests the UN Climate Change Secretariat to co-ordinate and expand the expert review process. This will include expert review of annual reports (inventories and supplemental information) “as part of the annual compilation and accounting of emission inventories and assigned amounts.” The Protocol makes it clear that review of national communications is one of the activities that is necessary for assessing implementation and compliance. The mandate for the review process is to perform “a comprehensive technical assessment of all aspects of implementation” by individual Parties and report to the COP/MOP on any potential problems influencing the fulfilment of commitments. Specific implementation questions are to be brought to the attention of the COP/MOP for further consideration.

Article 8 is important as the first step towards a full compliance system that identifies and addresses compliance problems. The Article calls for separate reviews of the national annual inventory reports and the national communications. It extends the use of expert teams to the review of implementation of the Kyoto Protocol. It also calls on the COP/MOP to consider implementation questions stemming from the performance of individual Parties, and to take decisions to address these questions. Both the Secretariat and Parties are asked to bring questions concerning implementation by individual Parties to its attention. This is an important departure from the present procedures under the Convention which emphasise facilitative and non-confrontational “shared learning.”

### **A Prompt Start Under the Convention**

While the Protocol is not likely to enter into force until 2001 or later, a number of actions may be possible in the near term to begin to strengthen the existing system under the Convention. Early action can prepare the ground for rapid implementation of the Protocol once it enters into force, avoiding the need for a radical transition later. This might include:

- modifying reporting requirements for annual inventories and national communications;

- extending the review of these reports to include problem identification and collaboration to explore possible solutions for their resolution;
- compliance assessment for some of Convention commitments such as reporting obligations.

Annual inventory reporting before the Protocol enters into force might also be improved by requiring more detailed reporting of inventories by source and sector which would facilitate a more meaningful and informative review of this information. A first step in this direction could be taken by the COP to revise guidelines for the annual inventory reports so that the reports are better adapted to the evolving needs of the Convention.

A variety of other changes in reporting would be possible under the Convention and would begin to lay the foundation for implementation of the Protocol. Firstly, IPCC recommendations on “good practice” in inventory preparation are expected to be available in 2000 and, eventually, these could be used to strengthen the reporting guidance under the Convention. These recommendations might be tested under the Convention. Secondly, guidance on adjusting base year inventory estimates before the first commitment period is also essential. This could begin to emerge through decisions under the Convention bodies that could be confirmed later by a COP/MOP. Thirdly, Parties might be encouraged to report supplemental information on transactions in order to begin to gain some experience with what is likely to be important to the longer run monitoring needs. Finally, Parties may also work towards shortening the time delay for preparation of inventories. All of these possible changes in the reporting system are likely to be useful. Parties will need to learn how to adapt their current national reporting systems to the needs of the Protocol. An early start will limit delay and help to have a functioning system in place when the time comes for implementation of the Protocol.

As for inventory reporting, national communications could be made more focused, limiting the type of information being required from Parties. This information should correspond with the major obligations under the Convention which would in turn make for a more targeted and effective in-depth review of national communications.

A number of improvements in the existing review and verification Convention functions are also possible. These include:

- technical verification of annual inventory data;
- identification and assessment of implementation problems related to commitments under the Convention;
- stronger links to independent research and review activities;
- exploring the use of an independent audit function; and
- use of the internet to share information and open the review process.

Compliance assessment under the Convention is currently weak, reflecting the non-binding nature of the Convention’s aim to stabilise emissions in Annex I Parties. To gain experience with compliance assessment, and to underscore the importance of reporting under the Convention, the COP could begin to assess national compliance with reporting obligations. Although these are only procedural obligations, this would serve two purposes: advancing the implementation of Convention monitoring and reporting requirements; and beginning to establish a function for the legal and political assessment of compliance which will become even more important under the Kyoto Protocol.



## 1. INTRODUCTION

The UN Framework Convention on Climate Change emerged in 1992 as a landmark multilateral environmental agreement (MEA) aiming to protect the global commons of the earth's atmosphere. Obligations established under the Convention were strengthened in the Kyoto Protocol which was agreed to in 1997. The Protocol sets out, for the first time, legally binding greenhouse gas emission targets for industrialised countries (see box). Both the Convention and the Protocol aim to help prevent and limit the dangerous build up of greenhouse gases in the atmosphere.

The design of effective monitoring, reporting, and review functions should be a priority task for the international community as they move towards full implementation of the Climate Convention and the Kyoto Protocol. A review of the literature reveals that thorough national (self) reporting and international review of national performance under MEAs has a number of benefits. It helps to build Parties' confidence that the agreement will be effective and fair. Information sharing and review of individual country's performance encourages shared learning, which can help improve implementation of the agreement. Review of performance also enables identification of compliance and implementation problems which, ideally, can trigger a range of possible responses intended to ensure compliance over the long run. The international community has begun to build monitoring, reporting and review functions under the Convention to achieve these benefits. The Kyoto Protocol calls for further development and strengthening of these functions.

### Kyoto Protocol: Key Features

Parties agreed the first protocol under the United Nations Framework Convention on Climate Change (UNFCCC) in Kyoto, Japan, in December 1997. The Protocol:

- strengthens the commitments of industrialised countries to reduce greenhouse gas (GHG) emissions by establishing legally binding targets in the time frame 2008-2012 for a "basket" of six categories of direct greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs; and SF<sub>6</sub>)
- aims to achieve at least a 5% reduction in industrialised country (Annex I) emissions for the period 2008-2012 compared to 1990;
- establishes differentiated quantitative emission targets for Annex I countries;
- allows the use of a number of market mechanisms to enable countries to cost effectively achieve these targets. These new mechanisms are: international emission trading and joint implementation among Annex I countries and a clean development mechanism (CDM), which aims to enhance co-operation among industrialised and developing countries to achieve sustainable development and reduce emissions. The CDM is intended to be a vehicle to harness funding for clean development projects in developing countries in exchange for certifiable emission reduction credits;
- requires regular national reporting and national systems for the preparation of inventories;
- places added emphasis on review as a means to follow and identify implementation problems;
- identifies a role for accounting and verification of Annex I country performance with respect to targets and in the context of the new mechanisms.

Despite the significant progress made in agreeing on the Kyoto Protocol, many details must be resolved, first to clarify its provisions and second to move Parties towards its implementation.

The objective of this paper is to consider actions that might be taken to tailor the existing UNFCCC system to the substantive obligations created under the Protocol. The paper focuses on monitoring, reporting and review and related functions. Companion OECD papers consider possible responses to non-compliance (Werksman 1998 and Mullins 1998).

The conclusions of this paper are necessarily preliminary. However they are intended to assist governments to consider ways in which they might want the Convention to evolve in the interim period between now and when the Protocol enters into force. Monitoring, reporting and review functions figure prominently in the Protocol. While the Protocol is not likely to enter into force until 2001 or later, a number of actions may be possible in the near term to begin to strengthen the existing system under the Convention. Early action can prepare the ground for rapid implementation of the Protocol once it enters into force, avoiding the need for a radical transition later.

National systems will also be important and have many parallels with international compliance systems. Thus the paper begins to explore the connections between international compliance functions and national systems.

This paper builds on previous OECD work in this area (OECD 1998a, 1998b) and goes further to consider new issues presented by the Protocol:

- the remainder of Chapter 1 provides a brief outline of the context: the compliance system that is evolving under the Convention and key concerns with respect to compliance assessment;
- Chapter 2 provides an assessment of the Protocol provisions and their implications for monitoring, reporting and review within the climate change regime;
- Chapter 3 considers possible next steps under the Convention in the areas of monitoring and reporting, and
- Chapter 4 does the same for verification, technical review and outlines a few possible steps to extend review to compliance assessment under the Convention.
- Chapter 5 presents conclusions and discusses possible next steps.

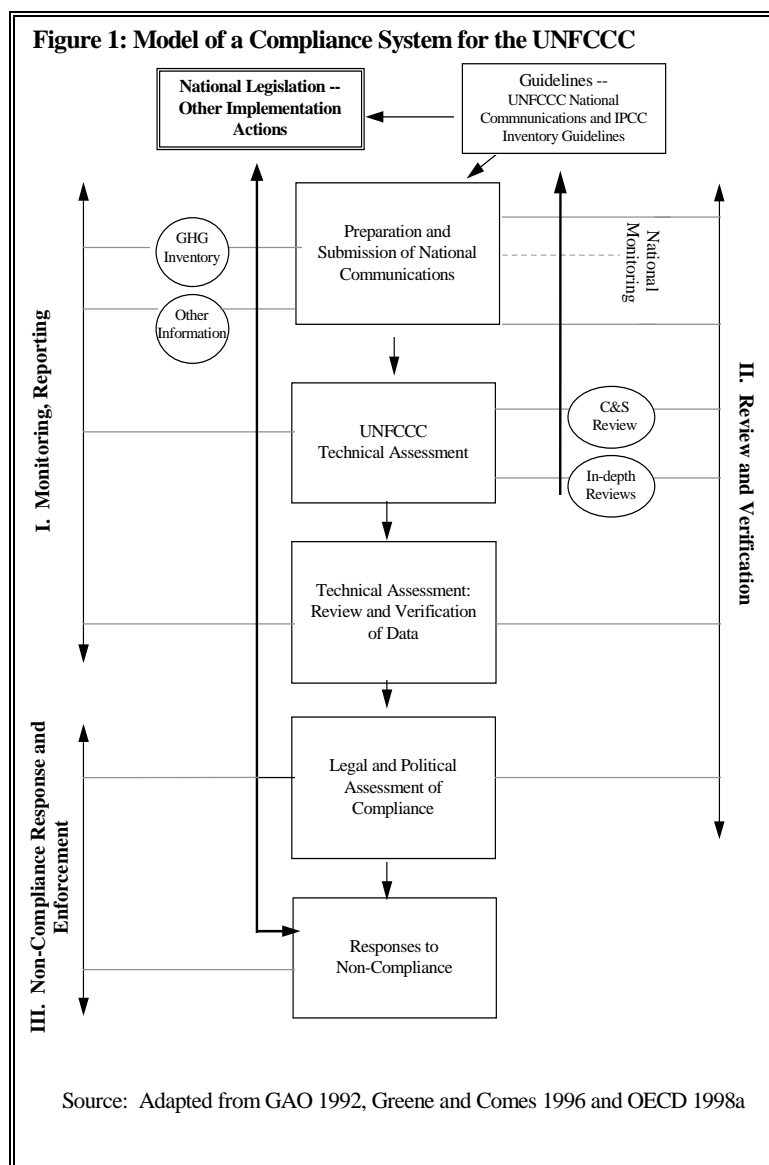
The paper draws on the relevant technical literature emerging under the UNFCCC, and about the UNFCCC, and on results from the existing national communications. It also draws on recent IPCC work on methods to estimate and manage inventory data quality and uncertainty.

### **1.1 Context: A compliance system under the UNFCCC**

The literature identify a number of features of international agreements necessary to enhance compliance and effectiveness.<sup>3</sup> Firstly, obligations under the agreement need to be unambiguous and verifiable. Secondly, open and transparent information on performance should be made available on a regular basis. Thirdly, active participation in the implementation of the agreement should be encouraged by including not only government participants, but also non-governmental organisations and other stakeholders, in development of the agreement and in follow-on decision making. Fourthly, if compliance problems are identified, the system should provide graduated responses that depend upon the nature and severity of the problem. Fifthly, provision of assistance, both technical and financial, may be essential to enable Parties and other affected actors to comply with an agreement. Finally, effectiveness of the agreement will

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<sup>3</sup> See for example Victor et. al. 1998; Cameron et. al. 1996; Chayes and Chayes 1995; Jacobsen and Brown Weiss 1997; and OECD 1998a.



inevitably hinge on broad participation by responsible nations, hence the provisions of the agreement should encourage new entrants.

Three essential elements of the international compliance system under the UNFCCC are outlined in Figure 1:

1. monitoring and reporting of information on implementation of the agreement by individual nations and other Parties to the agreement;
2. verification and review of this information by the Climate secretariat or other independent actors; and
3. establishment and use of procedures to respond to non-compliance by the Conference of the Parties.

A key issue in the design of the compliance system will be to identify the obligations of the agreement that will be the subject of compliance assessment by COP/MOP. These are the obligations that should be at the centre of the monitoring, reporting and review functions.

Jacobsen and Weiss Brown suggest that there are several inter-related concepts when considering compliance with MEAs (1997). They distinguish between implementation, compliance and effectiveness (see Table 1). Implementation refers to the steps that governments take to implement the agreement; in many cases this will

require changes in domestic laws. Compliance implies that the domestic actions taken to implement the agreement actually result in meeting national obligations. For example a country might implement the Kyoto Protocol through a series of changes in domestic laws and regulations aiming to achieve the targeted reductions in greenhouse gases. For a variety of reasons – e.g. more rapid than expected economic growth, over-optimistic estimates of the mitigation performance of different measures -- the country may not achieve its Kyoto target. Thus the country will have “implemented” the agreement yet it will not be in “compliance” with its target. Effectiveness is an even broader concept which refers to whether the agreement has made a difference to the environment and to the achievement of its objectives. It is difficult to assess effectiveness under any MEA, especially when the experience with the agreement is relatively limited. Compliance assessment is important because it is on the critical path to understanding whether an agreement is effective and therefore whether it makes a difference to the environment.

**Table 1: Inter-related Concepts in Context of Compliance Assessment and MEAs**

<b>Implementation</b>	refers to measures taken by states to make international accords (MEAs) effective in domestic law.
<b>Compliance</b>	goes beyond implementation, referring to whether countries adhere to the provisions of the accord; assessing compliance involves assessing the extent to which governments follow through on steps taken to implement the accord
Specific Obligations, both procedural and substantive	procedural obligations would include reporting; substantive obligations include obligations to cease or to control activity
Spirit of the Accord	broad normative framework of the accord, usually outlined in the preamble to the agreement
<b>Effectiveness</b>	related but not identical to compliance;
Stated Objectives of Accord	it is possible to be in compliance without having achieved the objectives of the agreement
Problems (e.g. gap between formal objectives and environmental outcomes)	effectiveness in achieving the stated objectives of the agreement does not necessarily mean that the agreement is effectively addressing the targeted problem

Source: based on Jacobsen and Brown Weiss, 1997

The discussion in this paper focuses on compliance and on approaches to facilitate the assessment of compliance under the Convention and the Protocol. Jacobsen and Brown Weiss note that there are two types of obligations relevant to any discussion of compliance: specific obligations and the spirit of the accord (1997). Because of its subjective nature, it is difficult to assess compliance with the spirit of the accord. Thus the discussion here is limited to specific obligations of the Convention and the Kyoto Protocol.

There are a number of specific obligations under the Convention and the Protocol that are relevant to the compliance system. Table 2 lists those that are found under the Protocol. Other than the Kyoto emission targets (Article 3), these commitments are largely a reiteration of the specific obligations existing under the Convention.

A few additional obligations exist under the Convention that are not explicitly in the Protocol. These include: the obligation for all Parties to co-operate preparing for the adaptation to the impacts of climate change (Article 4.1); to co-operate on scientific and technical research, systematic observation and development of data archives, and the full, open, prompt exchange of relevant

**Table 2: Provisions under the Kyoto Protocol**

KP Article	Provision	Parties
3, Annex B	QERLC demonstrate progress by 2005	Annex I
2	policies and measures	Annex I
10	national programmes	all Parties
11	finance	Annex II
10(c)	technology	all Parties
5,7	national systems for inventories, reporting information	Annex I
4	joint fulfilment	participating Annex I
6	joint implementation	participating Annex I
12	CDM	all participating Parties
17	emissions trading	participating Annex I

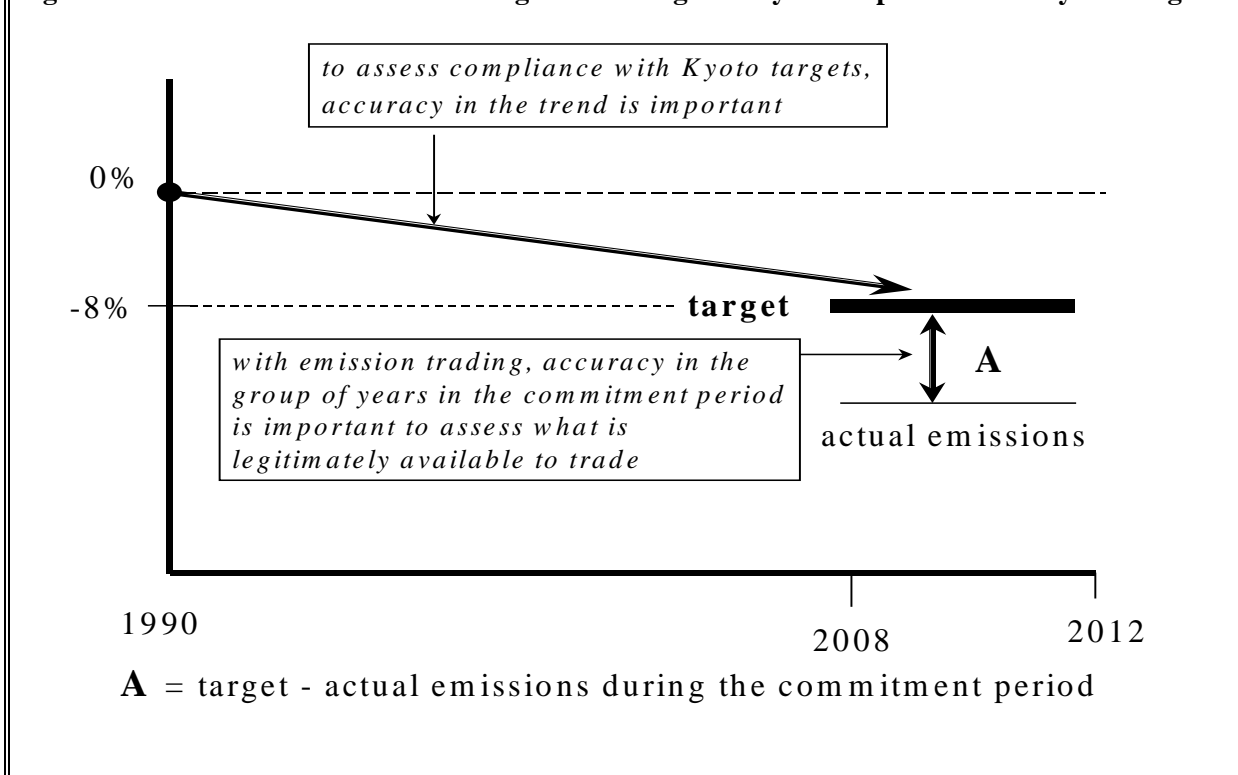
Source: adapted from Werksman 1998

information (Articles 4.1 and 5); and to co-operate improving on education, training and public awareness about climate change (Articles 4.1 and 6).

The full listing of specific obligations for Parties under the Kyoto Protocol and the Convention is broad. It includes procedural obligations, such as adopting national systems for the preparation of inventories and reporting information. It also includes significant substantive obligations which vary by group of country. The most important substantive obligations relate to mitigation and adaptation, financial and technology assistance and co-operation.

Monitoring, reporting and review functions must therefore span the range of specific obligations found in the Convention and the Protocol. A principal concern is to establish functions that can cope with the technically complex exercise of compliance assessment for the Kyoto targets, an exercise which is intertwined with the implementation and use of the new mechanisms (joint fulfilment, emissions trading, joint implementation and the clean development mechanism). National inventories will be the backbone of this part of compliance assessment. Therefore this paper assesses possible approaches to improve national inventories, through better monitoring and compilation approaches, strengthened national reporting and more thorough technical review. A Party's accuracy in determining both the trend and absolute estimates of its emissions for the commitment period will be important under the Protocol (see Figure 2) (OECD 1998a). But ultimately the effectiveness of the climate change regime will rest on Parties' implementation and compliance with the full set of substantive obligations contained in the Protocol and the Convention. Thus this paper also considers the need to strengthen the wider compliance assessment exercise through preparation, reporting and review of national communications.

**Figure 2: The effect of emissions trading on assessing a Party's Compliance with Kyoto Targets**



## 2. MONITORING, REPORTING AND REVIEW UNDER THE KYOTO PROTOCOL

Entry into force of the Kyoto Protocol will add binding, quantified emission limitation or reduction commitments for Annex I Parties. This will require a shift in emphasis in the current “compliance” system under the Convention and the addition of a number of new tasks. The Protocol also establishes mechanisms to allow emission reductions to be traded among Parties. Although the details of these mechanisms have yet to be determined, the Protocol establishes that adjustments to assigned amounts will result from the use of the new mechanisms. In addition to addressing compliance with targets, the Protocol’s compliance system will need to oversee and enforce the rules and guidelines for the new mechanisms.<sup>4</sup> At a minimum, the Protocol requires a co-ordinated effort to account for “assigned amounts” in an accurate and transparent way. The system will also need to oversee aggregate emission performance by Annex I Parties.

The Convention’s formal national reporting and review functions for Annex I Parties will need to be expanded in a number of important ways under the Protocol. The Protocol adds to rather than replaces obligations laid out in the Convention. Thus, there is a need to continue to refine reporting on and review of national implementation of the full set of the Convention’s obligations while also expanding the process to take into account new obligations under the Protocol.

This chapter outlines the main elements of the Kyoto Protocol that call for specific monitoring, reporting or review functions.

### 2.1 Article 3: accounting of assigned amounts

Article 7 of the Protocol states that the COP/MOP1 is to decide on modalities for the accounting of assigned amounts. Such modalities might include a number of different actions taken by Parties and the Secretariat, in order to facilitate the assessment of compliance with Article 3 obligations of the Protocol.

The timing of action and responsibilities of various players will need to be clear in the COP/MOP decision on modalities. Table 3 lays out a possible sequence of actions that would enable the Secretariat, or other authorised agent(s), to assess and report to the MOP on the performance of individual Parties and on the group of Annex I Parties as a whole. As outlined in the Protocol, reporting and assessment would occur on an annual and interim basis as well as at the end of the commitment period. Cumulative inventories covering the full commitment period will only be available 1-2 years after the end of the period. Adjustments to assigned amounts to take into account transfers and acquisitions should be available well before this. But final adjustments, to take into account verifiable changes in sinks, may not be known until the final cumulative inventory is available. In addition to the normal lag due to data availability, it could take some months for Parties to prepare their inventory reports and submit them for compliance assessment. Compliance assessment by the MOP is not likely to be possible until after final inventories are available. This is likely to be around 2014, unless the time delay in inventory availability can be shortened to less than one year. The lag time between gathering inventory information for the last year of the commitment period and submitting final inventory reports for compliance assessment could be used by Parties as a “grace period” to ensure that their emissions are within their final adjusted assigned amounts.

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<sup>4</sup>This is not to prejudge how the compliance system will eventually be elaborated under the Protocol. The compliance system, and in particular responses to non-compliance, might be elaborated under various provisions of the Protocol, e.g. as part of the rules for the new mechanisms (Art. 4, 6, 12, and 17) as well as under Articles 16 and 18.

### *2.1.1 International and national systems*

Reporting on and assessing compliance with emission targets will require synchronised action by domestic and international institutions. Parties will have the main responsibility for monitoring emission levels and transactions at the national level. Annex I Parties already report emission inventories annually under the Convention. However, if implementing the Protocol requires changes to the national systems for inventories, these will require time to implement. For example, although IPCC inventory guidelines were initially published in 1995 and later revised in 1996, Annex I Parties required about two years to switch over to use of the Revised IPCC 1996 Guidelines in their annual inventory reports. The delay is because the national systems are complex and even with sufficient financial support, time is required to train staff and to alter data collection, processing and reporting. At the international level, time is also required to move to new reporting systems, for example, new reporting formats may need to be developed to allow efficient aggregation of data. Establishing new national and international systems for monitoring and tracking transactions under the new mechanisms is therefore likely to take at least several years to develop.

In an ideal situation, the COP/MOP would agree on methods to determine the quantitative limits represented by the Annex B targets for each country (i.e. on assigned amounts) well before the beginning of the first commitment period. This would allow countries to know exactly what they have to achieve, with enough lead time to put the necessary policies in place. Early agreement on accounting modalities, as referred to in Article 7, would also facilitate implementation of the agreement. However, accounting of assigned amounts is intertwined with decisions on the rules for new mechanisms and on how to handle removals by sinks, all of which are complex and likely to take time to agree.

### *2.1.2 Fixing base year national inventories*

Fixing the quantitative assigned amount for each Annex I Party will require each country to estimate its base year inventory envelope according to IPCC agreed methodologies. This requires the following information:

- base year figures for all gases covered
- if a Party is in transition to a market economy, determination of the base year or period it has chosen if other than 1990
- a decision by the Party on the year of PFC, HFC SF<sub>6</sub> data to include in the base year calculation (1990 or 1995)
- estimation of emissions and removals from the land use change and forestry sector for the base year (or period) to determine how this category of emissions/removals should be handled in the base year.<sup>5</sup>

Parties may need to adjust historical data from time to time to correct for inaccuracies. Required in the normal course of inventory development, this will affect a Party's assigned amount. As time passes and more effort is invested in improving data collection, analysts may discover errors or ways to improve historical assumptions. Adjustments will be necessary to ensure that historical data sets are consistent and that the trends they represent are accurate.

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<sup>5</sup> Article 3 also requires Annex I Parties to provide data on carbon stocks in 1990 to enable estimation of changes in carbon stocks in subsequent years.

**Table 3 Possible Timing and Tasks in the Accounting of Assigned Amounts**

<b>2007 and before</b>	
	<p>agreement on the quantitative limits represented by assigned amounts for each Annex I Party in the first commitment period (2008-2012); this requires that the base year inventory, or period in the case of EITs, to be fixed.</p> <p>2007 – Annex I Parties are to have national systems for the estimation of GHG (inventories) in place following the guidelines for the systems agreed at COP/MOP1 (5.1)</p> <p>COP/MOP1 also to have agreed on other guidance to implement Articles 7, and 8 (Art. 7.4, 8.4)</p>
<b>During the commitment period (2008-2012)</b>	
	annual reporting, for verification purposes, inventory data from individual countries, by gas and detailed source/sink category; also aggregated by GWP (Article 7.3)
	annual reporting by countries of aggregate changes in assigned amounts resulting from transactions under the new implementation mechanisms (joint implementation, trading or the clean development mechanism)(implied in Article 7.1, 7.3)
	centrally co-ordinated, technical (expert) review of national inventories and supplemental information submitted in annual reports, as part of the annual compilation and accounting of assigned amounts (Article 8.1)
	centrally co-ordinated double entry book-keeping to allow cross-checking of national data, accounting for adjustments to national assigned amounts and early identification of possible implementation problems and questions
<b>At the end of the commitment period (2013 to 2014)</b>	
	Parties report on adjusted assigned amounts and on cumulative inventories (2008-2012). The lag period between the time when Parties have gathered their data on final inventories for the commitment period and submission of their inventory reports for compliance assessment could be considered as a grace period. This could be a short period of time after the end of the commitment period during which short-term reparative action (e.g. buying parts of first commitment period assigned amounts from other Parties) may be carried out to ensure compliance with targets. These final transactions should also be reported and verified.
	central registry, expert review teams, tally and cross-check national accounts against its central registry
<b>Final national reporting and compliance assessment (2014)</b>	
	UNFCCC secretariat, or other designated agent, checks and summarises these and reports on final results to the COP/MOP, listing implementation problems of individual Parties

A different issue is that raised by adjustments desired by individual Parties to correct for abnormal conditions in the base year, such as adjustments for temperature or electricity exports. The COP has acknowledged that some countries are choosing to adjust data for abnormal conditions but has clearly stated that unadjusted data are also to be reported (Decision 9/CP.2). This is for reasons of consistency and comparability among countries; unadjusted data are being used in the compilation and synthesis reports being prepared by the UNFCCC Secretariat (see section 3.2.1) and would presumably be chosen by the COP/MOP as the basis for compliance assessment.

Clear rules will be required for which adjustments are to be allowed, and how and when they should be made and reported. Such rules will guide the review process and guarantee that Parties do not adjust inventory data to give the appearance of better performance with respect to “compliance” with targets. Indeed, rules are necessary to make sure national data are comparable, consistent and transparent for the purposes of compliance assessment under the agreement.



### ***2.1.3 Timing of accounting functions***

Annual reporting of inventory data is already required under the Convention (Decision 9/CP2). This information provides a regular indication of performance with respect to the emission objective of the Convention, a function which becomes even more important under the Protocol. But because of the time needed for data collection and inventory compilation, inventories for any given year are likely to be available with a one or two year time lag. Therefore data for the first year in the commitment period (2008) may not be available until 2010 and so on for each year after. This time lag for inventories necessarily pushes out the timing for accounting of assigned amounts. Table 3 (and Figure 3) also lay out the timing for possible functions.

### ***2.1.4 Reporting on assigned amounts***

Article 7 also implies that countries should report information on all international transactions that affect assigned amounts (emissions trading, and joint implementation or clean development mechanism projects). Review of this information could be facilitated if it were reported annually along with national inventory information. The information would be reported by all participating countries, those transferring and those acquiring units or portions of assigned amounts.<sup>6</sup> Even though compliance assessment only necessitates aggregate data on transactions reported at the end of the commitment period, annual reporting will have benefits including early detection of errors or inconsistent reporting among countries. Early and frequent reporting will also allow lead time to investigate problems before the end of the commitment period.

At the end of the first commitment period, when inventories for the full five years of the commitment period are available, Parties should report to the Secretariat their final adjustments to national assigned amounts (based on national records). If Parties' emissions exceed their assigned amounts at this point, additional transactions could be allowed to ensure that their emissions are within their final assigned amounts are allowed. Parties should report any such final transactions and request adjustments to assigned amounts. Any remaining units (equal to assigned amounts minus actual 5 year inventory estimates) may be banked by individual Parties for use in the second commitment period. If any anomalies remain, the Party should flag this.

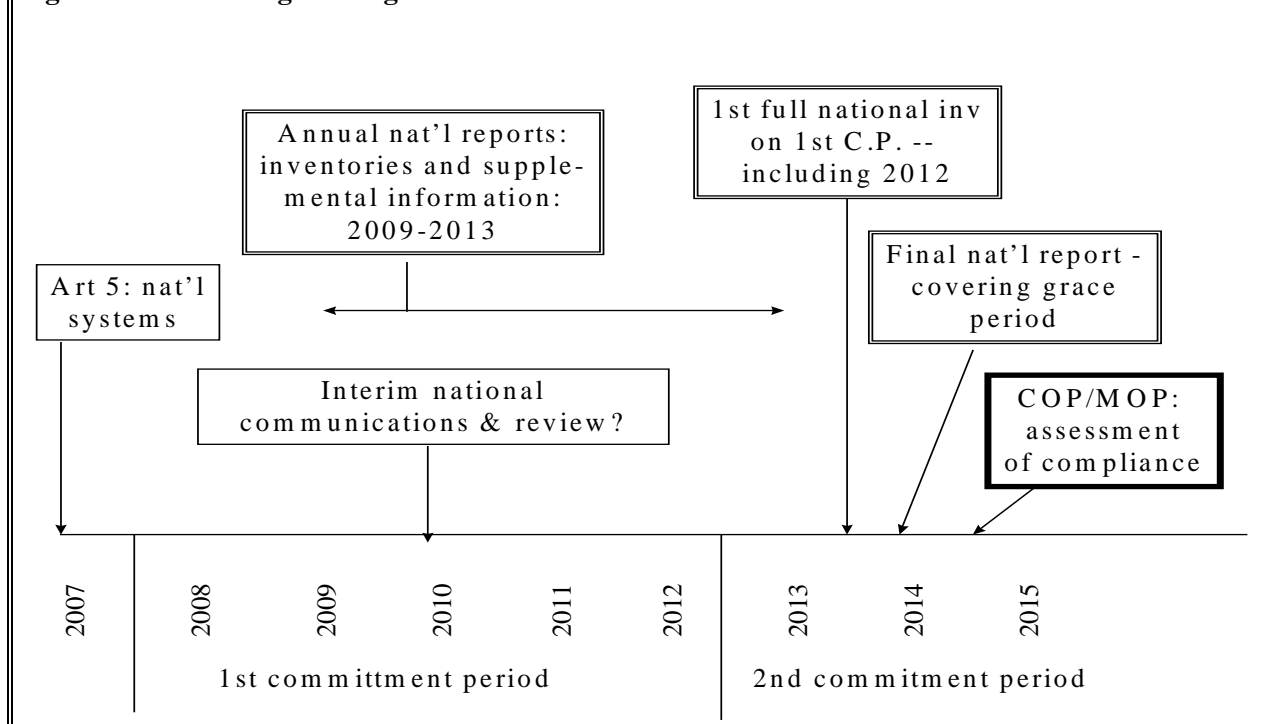
### ***2.1.5 Review of assigned amounts***

These national reports on inventories and changes to assigned amounts, should be summarised and cross-checked, by the Secretariat or a designated agent of the MOP, through an agreed review process based on information submitted by each Party (Article 8). The Secretariat should report to the MOP on the results of the technical review. This report should cover individual and aggregate performance of Annex I Parties with respect to the Kyoto targets, and, as outlined in the Protocol, identify implementation problems. To prepare this report, the Secretariat or the other designated review agent of the MOP, will need time to interact with Parties and investigate possible discrepancies. At best such a report could be available roughly two years after the end of the first commitment period, which is well into the second commitment period. This report and the transactions occurring during any grace period will be critically important to the compliance process, and could trigger the non-compliance responses foreseen in Article 18 or in the rules of the mechanisms themselves (e.g. Articles 4, 6, 12 or 17).

At any point in the process, reviews may discover discrepancies among the data reported by countries. There might be different reasons for such discrepancies, for example:

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<sup>6</sup>In the case of the clean development mechanism, such a requirement would extend to reporting by developing country partners of transactions with Annex I Parties or their agents.

**Figure 3: Accounting of Assigned Amounts – Possible Timeline**

- inadvertent errors or mis-reporting of information
- disagreement about the amounts transferred or the terms of a transfer transaction.

Review agents will need to interact with national authorities to discover whether the discrepancy can be easily resolved and agreement reached by all Parties on the amounts transferred and hence final adjusted assigned amounts. Where a fundamental disagreement is discovered or known to exist, the matter need to be referred by the Parties involved to the dispute resolution mechanism. It might also be referred to the multilateral consultative process.

To ensure that the new mechanisms deliver emission reductions consistent with the Kyoto targets, systems to respond to non-compliance will be needed at both international and domestic levels.<sup>7</sup>

## 2.2 Article 5: methodologies

Article 5 provisions relate to inventory guidelines, methodologies and preparation. The Article introduces a new obligation related to reporting of national inventory information: it requires Annex I Parties to have in place a “national system” for the estimation of greenhouse gas emissions and removals (national inventories).” This system is to be in place no later than one year before the start of the first commitment period, i.e. 2007. While the Protocol does not define a “national system” it notes that Guidelines for national systems are to be agreed by the COP/MOP1. It also states that the Guidelines for national systems, “shall incorporate IPCC methodologies.” However beyond this statement, the Protocol is silent on what the Guidelines for national inventory systems should contain.

A wide range of interpretations of the term “national system” is possible. At one extreme is the minimalist interpretation which limits new guidance. This view simply takes the opportunity to require countries to

<sup>7</sup>The subject of responses to non-compliance at both the international level and the national level is critically important but is not dealt with in this paper. An exploration of the international issues is found in OECD 1998a and Werksman 1998 (forthcoming). OECD). National issues will be the subject of future work. Relevant discussions by other authors on compliance with other international environmental agreements, and the linkages to national laws and practices, may be found in Werksman (1996) Victor, et. al. (1998) and Jacobsen and Brown Weiss (1997)

describe whatever national system for inventory preparation they might already have in place. It has the advantage of being quick and easy to implement. However it will not necessarily lead to an improved quality of inventory information. Yet the latter is important to ensure the environmental effectiveness of the Protocol, especially given the new mechanisms and their close relationship to compliance performance.

### *2.2.1 Good practice standards for national inventories*

Another interpretation is to use the national system guidelines as an opportunity to set clear “standards” for national performance in inventory preparation and data quality management. These standards would outline desirable features of national inventory systems intended to improve inventory data quality. Such standards could be made mandatory for all Annex I Parties or those wishing to participate in the trade or crediting of emission reductions as outlined under Articles 6, 17, or 12. They could provide the basis for independent auditors from the private sector to provide an important service in a market for such trades. Once the COP has outlined the standards by which it expects inventories to be prepared, private sector auditors could certify a Party’s performance on a regular basis. Such guidance has the advantage of contributing to a stronger information base for policy makers.

A disadvantage of the standards approach is that it may take several years to develop, and would need to be tested and refined over time. However, since the Protocol is not expected to enter into force for some time, and the start of the commitment period is ten years away. Development of internationally accepted guidance is feasible in this timeframe. Such standards could lead to greater confidence in the data underlying compliance assessment and thus help to instil confidence in the agreement as a whole. The use of good practice standards might bring broad benefits and it makes sense to begin to lay the groundwork for them now.

Another disadvantage of the standards approach is the potential to de-emphasise the value of implementing inventory “good practice” for all other Parties. Some have suggested that “good practice” standards should be set for all Parties reporting under the Convention rather than used only as a means to gain eligibility to participate in trading and crediting activities. However reaching international agreement on the use of meaningful standards for all Parties would be more difficult and could lower the stringency of the standards. Since Annex I Parties have binding emission targets under the Protocol, setting appropriate standards for this group of Parties must be a first priority. In any case, experts from all countries of the world could be involved in developing such standards. Wider application of the standards could be established as a longer term goal for all Parties.

#### **SBSTA Request (June 1998)**

*Encourage the Inventories Programme to give high priority to completing its work on uncertainty, as well as prepare a report on good practices in inventory management and to submit a report on these issues, if possible for consideration of SBSTA by COP5.*

The IPCC should play an essential role in the development of good practice guidance for national inventory preparation and management. This can be done through the IPCC programme on national greenhouse gas inventories which has a tradition of using expert groups on different sector

issues to develop and improve the inventory guidelines (IPCC, 1997). Good practice guidance is likely to vary by sector and by the nature of the activity emitting (or removing) GHG to the atmosphere. Thus the sector expert groups previously used by the IPCC are being revived and asked to focus on the question of “what constitutes good practice” for individual sector-source/sink categories of activity. The IPCC recently began to work on this, in response to a request from the SBSTA in June 1998 that asks the IPCC to complete work in related areas by COP5 (see box; see also section 3.2.1.2.). Expectations are now that the first IPCC contribution on “good practice” will be available in the first half of the year 2000.

### 2.2.2 *What elements might a desirable “national system” include?*<sup>8</sup>

The objective of establishing criteria or standards for national systems should be to improve the quality of inventory data. Desirable features of a national inventory system might be categorised along several different axes (based on IPCC 1998a and b):

1. institutional arrangements for inventory preparation (e.g. who does it and how do they relate to central policy-makers and other stakeholders; what level of effort; how stable are the staffing and budget for the activity; etc.)
2. choice of method for estimation of individual emission sources or removal by sinks
3. data collection procedures (e.g. for activity data, survey techniques and frequency; for emission factors, own measurement studies or taken from the literature; etc.)
4. review and evaluation procedures (e.g. reporting on differences in comparison to reference or default IPCC methods, quality assessment and control, verification or audit procedures conducted or sponsored by the national inventory programme to review and assess assumptions and/or results, estimation of and communication of uncertainty, development of means to address and limit uncertainty).

Institutional support for national inventory systems will determine the capacity that a government has to improve its inventory over time and may influence the quality of the information at any one point in time. Governments may approach the inventory task in different ways. Some see it as central to their policy efforts, assigning analysts close to the policy process the responsibility for overseeing its development. Others see it as a technical task and contract it out to consultants that are somewhat removed from the central government process intended to move towards implementation of the agreement. Some governments use a combination of these approaches. A key issue is the level of resources and the consistency of the assignments. If staff preparing the inventory change every year or there are wide fluctuations in the funding levels, there may be an gaps in institutional knowledge and learning. Another important issue is domestic oversight of national inventory development by staff knowledgeable about the UNFCCC and changing requirements in that context.

Choice of emission estimation methodology may be an important determinant of inventory data quality (OECD 1998a). Earlier work on this issue concluded that more research is required to determine the influence of method on data quality. There may be an argument that Annex I countries should move to higher “tier” IPCC methods which require more detailed input information, but which also produce results that are disaggregated into finer source/sink categories. This detail could be critical to verification of key trends in socio-economic drivers, such as animal populations by type of animal or vehicle fleet or gasoline sales statistics for mobile source fossil fuel emissions.

Data collection procedures also vary widely among countries and are closely related to the resources available for the inventory task. Ideally a country relies largely on information available from own field work and national surveys, in this way controlling for the quality of input information. As resources are usually limited however, national teams usually must prioritise spending for field research and data collection. Outside data sources will be used especially for parts of the inventory that are not deemed worthy of national research funding. Normally the teams are also dependent upon the national statistical systems that are established for other reasons. Where data are not collected for other reasons, such as in the case of industrial emissions of SF<sub>6</sub>, HFCs and PFCs, the emitters may be the only sources of information. Though the emitters themselves, may not be expected to be unbiased sources of information. Clearly the quality of the data will depend on its origin and the robustness of the methods used to collect it.

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<sup>8</sup> Advancing IPCC contributions on the development of good practice recommendations for inventory preparation is also discussed in the context of the Convention in section 3.2.2.

From the point of view of the international process, transparency is key and must be achieved through careful documentation of sources and methods.

Review and evaluation procedures should be part of every national inventory system especially for the largest and rapidly growing emission/sink activities. Where there is a wide range of possible values for an input assumption, expert judgement will be used. However, informed review of such judgements may assist analysts to have confidence that the values selected are appropriate. Further, quantitative estimation of uncertainty associated with individual emission and removal estimates may be a helpful step to better understand the relative uncertainty associated with different parts of the inventory and to prioritise specific areas for further work. Nevertheless the confidence in different quantitative estimates will vary widely, depending on the quality of original input data. Thus the use of this information to assist with compliance assessment may be limited. The IPCC is developing recommendations on methods to quantitatively assess and to manage uncertainty as part of its work on “good practice” (IPCC 1998b).

### 2.2.3 What is the meaning of “methodologies accepted by IPCC”?

Article 5.2 notes that methodologies accepted by the IPCC and agreed by COP3 should be used to compile national inventories through the first commitment period, 2008-2012. The Article further states that where such methodologies are not used, appropriate adjustments shall be applied based on methodologies (for adjustments) agreed by the COP/MOP1. This Article refers to a COP3 decision which requested Annex I Parties to use the latest *1996 Revised IPCC Guidelines* for the preparation of national inventories to be reported under the Convention. As inventory data will be the backbone of the compliance system, the interpretation of this Article should, at a minimum, aim to improve the comparability and transparency of the national data. Accuracy and data quality are also of concern.

The IPCC initially accepted methodologies for inventory preparation in 1995 when it produced the *Guidelines for National GHG Inventories* of all known GHG not controlled under the Montreal Protocol (IPCC 1995). The Guidelines are regularly updated by the IPCC, with the latest edition issued in 1997 (but referred to as the *1996 Revised IPCC Guidelines*). This edition of the Guidelines improved and added new methodologies in a number of key areas compared to the 1995 edition. The 1996 Guidelines also changed reporting formats slightly due to revisions in the structure of inventories. Parties reporting under the Convention are taking a few years to migrate completely to the use of the new Guidelines.

Because of the need to fix methods for relatively long periods of time to monitor under the Convention and the Protocol, the IPCC is limiting the frequency of its updating of inventory methodologies. While the scientific work on methodology assessment is a continuous part of the IPCC programme, the Plenary in 1997 decided that updating of the Guidelines would only occur at roughly five year intervals: work will begin again on updating the Guidelines in 2000. IPCC may reconsider its schedule for work on the Guidelines now that the Convention and the Protocol have fixed the periods in which they intend to use *1996 Revised IPCC Guidelines*. Presumably the window of opportunity for updated estimation methods is for the second commitment period, likely to be 2013-2018. Guidelines should be in place several years before this time period to allow time for their uptake by national governments.

The only mandatory part of the Guidelines are the reporting instructions. These instructions outline guidance for reporting inventories, providing standard structure for reporting, tabular formats and a list of documentation that is to accompany an inventory report.<sup>9</sup> The *Revised IPCC Guidelines* also require Parties to submit their detailed estimation worksheets to provide complete transparency for their inventory. Other parts of the Guidelines include a workbook to assist countries with the preparation of inventories

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<sup>9</sup> The Reporting Instructions also suggest procedures to be used by national authorities to check and verify estimates prior to completing the inventory report, however these are not mandatory.

with simple worksheets for each source-sector category and gas and the basic estimation formulas and guidance on how to construct the inventory.

Within each of the source sector categories the IPCC may recommend two or three different methods, ranging from more simplistic to more complex. These are referred to as “Tiers.” The more complex methods are thought to provide greater accuracy but usually require more detailed input data, and hence imply a greater level of effort and resources for inventory preparation. The IPCC Guidelines do not require countries to use a particular method. Where alternatives are provided, they provide advice to users about how to select among the alternatives. The Guidelines also note that where countries have their own estimation methods these can be used but differences with IPCC estimation methods should be carefully described in the documentation of the inventory report.

The Guidelines also provide “default” data by region or country to assist countries that are attempting to compile inventories for the first time or on limited resources. However the Guidelines clearly encourage national analysts to seek and use their own national or local data to compile the inventory. This is because the data available locally are likely to be more reliable, current and appropriate to the local circumstances than those cited in the Guidelines from estimates available in peer-reviewed literature.

Thus the IPCC Guidelines and methodologies are open-ended, providing a great deal of flexibility to analysts to select the most appropriate methods and to use the most appropriate input data to reflect national circumstances. This is intended to enhance the accuracy of national inventory estimates. This flexibility has created a trade-off with transparency, as countries do not always clearly identify which IPCC tier method they are using, or whether emission estimates have been calculated using other “comparable” national methods, and if so, how such methods differ from IPCC methods. However a lack of transparency is unintended as the IPCC national inventory “Reporting Instructions” request countries to report on exactly this point.

The flexibility in choice of method could also hinder comparability, if the methods selected by countries differ widely, especially across time. More research is required to determine whether inventory data are incomparable and if so why. Answers to this question may be assisted by national assessments to use comparisons with default methods as a means for “self-verification” of inventory results. The latter is suggested by the IPCC in the Reporting Instructions of the *Revised Guidelines* and is being explored by the SBSTA as an approach to review national inventories (UNFCCC 1998c and d).

A key issue is to continue to provide incentives to countries to improve inventory methods and data quality, including accuracy of the estimates. However in striving to achieve accuracy the monitoring requirements of the Convention and the Protocol cannot afford to weaken comparability and transparency. Perhaps a mid-way solution to the flexibility problem is to require Annex I Parties to move towards the more sophisticated, higher tier, IPCC methods or comparable national methods for their more important emission sources. As part of the same solution, “methodologies accepted by IPCC” might be extended to include good practice recommendations discussed above.

Once there is clarity as to the meaning of “methodologies accepted by IPCC,” additional guidance by COP/MOP1 will be needed on the nature of “adjustments” to be applied when Parties’ methods vary from those specified. The purpose of such adjustments should be consistent with principles that have been developed to underlie the inventory process – transparency, comparability, completeness – in addition to accuracy. A number of outstanding questions will need to be discussed, first at the technical level, and eventually decided by the COP/MOP1:

- what is the relation of these adjustments to the “assigned amount” or base year inventory figures?
- who is to decide on whether adjustments are called for and upon what basis?

- what are the adjustments to be made?

### 2.3 Article 7: reporting

Article 7 presents an opportunity to tailor the information being reported under the Convention to the needs of the Protocol. It identifies two specific opportunities: through the annual inventory reports; and through the less frequent, but more complete, national communications.

#### 2.3.1 *Necessary supplementary annual information to ensure compliance with Article 3*

Article 7.1 specifies that “Each Party ... shall incorporate in its annual inventory... the necessary supplementary information for the purposes of ensuring compliance with Article 3.” This raises the question of what is “*necessary supplementary information*”? Article 3 obligations include emissions targets for each individual Annex I Party, and for the group of Annex I Parties.

Compliance with the Kyoto emission targets can only be assessed on the basis of historical inventory information that documents actual national emissions and transactions affecting the assigned amounts. As mentioned above, the targets will be calculated on the basis of estimates of the base year and, because of the multi-year commitment period, compliance assessment cannot take place until after the close of the period.

However, annual inventory reporting provides useful records of the evolution of the inventory and of national emission performance. These reports currently include historical data beginning in 1990 through the most current year available at the time of reporting and this should continue under the Protocol. Annual reporting encourages countries to check their inventories for consistency and to keep them updated. It is common for individual estimates within an inventory to be regularly updated to incorporate better information on relevant activities or emission factors. This is especially true for greenhouse gas emissions and removals that are inherently difficult to monitor and estimate. It also holds true where the estimation methods are still evolving e.g. nitrous oxide from agricultural soils; land use change and forestry; fugitive methane emissions from gas pipelines and coal mines; methane from livestock, industrial process emissions. Changes to a current year inventory often leads to updating historical estimates for consistency. When adjustments extend to the base year or period, these changes are relevant to the accounting of assigned amounts and they should be the subject of careful expert review under the Protocol (see discussion of base year adjustments in accounting of assigned amounts, Section 2.1).

Annual inventory reporting is also useful, prior to the commitment period, to gain experience with this basic element of the compliance system. Early inventory reports will also permit the MOP:

- to assess national compliance with Article 3.2 of the Protocol, which requires each Annex I Party “to have made demonstrable progress in achieving its commitments under this Protocol” by 2005; and
- to assess evaluate and test criteria on national systems for inventory preparation, which are required one year from the start of the commitment period (i.e. from 2007 on).

Annual reporting on aggregate international transactions under the new mechanisms will allow careful tracking and verification of transfers and acquisitions affecting national assigned amounts during the commitment period. While technically only cumulative information may be necessary, Article 8 (see below) indicates that the accounting of assigned amounts is to occur incrementally, on an annual basis. Thus, at a minimum, information summarising the net or aggregate of international transactions affecting the national target should be added to the list of supplementary information to be submitted annually along with national GHG inventory reports.

As mentioned above, an important international co-ordination and oversight function would appear to be reconciling (across all Parties and Party by Party) reports on international transactions. That is, if Party A, at the end of 2008, reports net transfers of 100 Mt of CO<sub>2</sub>-equivalent to Party B, Party B should have reported net acquisition of the same amount from Party A. If the two accounts do not balance the UNFCCC Secretariat, or other authorised agent(s), could work with the two Parties to verify accounts, make corrections, or if necessary, identify the amount in dispute.

Similarly, information on offsets to assigned amounts from verifiable changes in stocks of carbon from land use change and forestry activities will assist the Secretariat or other interested actors to carefully monitor this activity. Since information on stocks of carbon is not necessarily reported under the 1996 *Revised IPCC Guidelines*, this information might fall under the category of supplementary information. Because of the nature of the land use change and forestry activity, it is unlikely that it would need to be reported annually, however it might be usefully provided along with inventories. Ultimately the type and need for information on removals by sinks and changes in stocks of carbon will be determined by future decisions of the COP further clarifying the meaning of Article 3.4.

Article 7.3 of the Protocol notes that supplemental information is to be submitted annually, beginning with the 1<sup>st</sup> year of the commitment period after entry into force of the Protocol. Parties might usefully begin reporting on some of these items earlier, especially for the data that are relatively new under the Convention and the Protocol e.g. carbon stocks, PFC, HFC, SF<sub>6</sub> and on transactions under the new mechanisms (see Section 3).

### ***2.3.2 Supplemental information in national communications to demonstrate compliance with Protocol commitments***

Article 7.2 requires Parties to provide supplemental information to demonstrate compliance with their commitments under the Protocol in their national communications. The Protocol does not define “supplemental information” with respect to Article 3 commitments but this might include:

- a description of the national system for the estimation of GHG emissions and removals and how it compares to guidance adopted by the COP/MOP under Article 5;
- an overview of the national inventory from 1990 to the most recent available year and a discussion of the trends with respect to national policies and measures to mitigate GHG (i.e. an indication of historical performance and how that might relate to trends in the coming years);
- an overview of the aggregate transfers and acquisitions under the new mechanisms, and of changes to national target amounts; a demonstration that emission reduction units (ERU) transferred or acquired and changes in stock from allowed land use change and forestry activity are verified or verifiable (Art. 3 and 6);
- discussion of whether the requirement for “demonstrable progress by 2005” has been met (Art. 3);
- a summary of actions taken to implement technology transfer and co-operation provisions of the Convention and Protocol (Art. 10c);
- an overview of the financial assistance provided to developing countries (Art. 11).



The key words are *demonstrate compliance*. To interpret Article 7 it is necessary to read the Protocol thoroughly and identify formal obligations for which compliance can be demonstrated by Parties and assessed through the review mechanism and the COP/MOP. A preliminary summary of the full range of Kyoto Protocol commitments, which might be reported upon in national communications is summarised in Table 2 (Section 1).

### ***2.3.3 Guidelines for the preparation of information required under Article 7***

Article 7.4 specifies that COP/MOP1 shall “adopt..., and review periodically... guidelines for the preparation of the information required under this Article...” The COP/MOP is instructed to take into account previous guidelines adopted by the COP for the preparation of national communications.

Given the clear separation in Article 7 of national inventory reporting and national communications, it may be useful to split these reporting functions more formally. This would allow careful and focused technical consideration of annual inventory reports and supplementary information referred to in Article 7, especially with respect to accounting for assigned amounts. In contrast, national communications could be the instrument to report on compliance with the broader set of commitments under the Convention and the Protocol (Articles 2, 10, 11) and to provide aggregate information on performance with respect to Article 3.

A key question in the design of national inventory reports and national communications is how the information to be supplied will be used in the review process. The present review process under the Convention, and possible modifications, are discussed in Section 4; relevant provisions of the Protocol are outlined below.

Changes in requirements should be mindful that the reporting of information under MEAs is an increasing burden on both developed and developing countries. The ability for countries to implement international agreements is closely related to available technical and financial resources. Therefore the information required under the Convention and the Protocol should be streamlined to serve clear purposes, such as: enhancing understanding of performance, identification of implementation problems, assessment of compliance. Usefully, the reporting functions under the Convention and the Protocol will be combined to consolidate the reporting requirements of both.

### ***2.3.4 Modalities for the accounting of assigned amounts***

Article 7.4 also notes that the COP/MOP is to decide on modalities for the accounting of assigned amounts “prior to the first commitment period”. Accounting of assigned amounts is a critical new function that will need to be carried out in a co-ordinated manner, with initial accounting and reporting the responsibility of individual Parties to the Protocol (see 2.1). Oversight, review and aggregation of inventory data and transactions affecting assigned amounts will need to be conducted at the international level. The UNFCCC Secretariat is well placed to co-ordinate this function. To a large extent the international review function could be integrated into reviews of annual inventory reports and national communications. The UNFCCC Secretariat should be charged to regularly report to the COP/MOP, perhaps annually, on the changes in assigned amounts of individual Parties. Section 2.1 (and Table 3 above) explore the possible tasks and timing of accounting for assigned amounts. Parties will need guidance from the COP/MOP on what information is to be gathered and reported under the Protocol. As with inventory preparation, the guiding principles should be consistency, transparency, comparability and accuracy.

## **2.4 Article 8: review**

Article 8 lays out a number of functions and requirements for the review of (Article 7) information under the Protocol. These requirements build on the review process that is already in place but they also extend it in several important ways. The main features of the review function are:

- to “provide a thorough and comprehensive technical assessment of all aspects of the implementation by a Party of this Protocol.”; [Art. 8.3]
- establishing a two part review function – 1) annual review of inventories and supplemental information on the accounting of assigned amounts; 2) less frequent review of national communications to more broadly assess implementation; [Art. 8.1]
- the continued use of expert teams, comprised of experts nominated by Parties and IGOs, to perform the reviews. [Art. 8.1 and 8.2]
- requiring the COP/MOP to consider implementation questions and take decisions to implement the Protocol [Articles 8.3, 8.4, and 8.5].

### ***2.4.1 Separate inventory and national communications review functions***

Article 8.1 outlines with some precision the timing and coverage of the review process to be developed for the different elements of information to be reported by countries:

- Art 7.1 information (on inventories and transfers/acquisitions among Parties under the mechanisms) is to be *reviewed as part of the annual compilation and accounting of emissions inventories and assigned amounts;*
- Art 7.2 information (all other information on performance relevant to Protocol obligations) *shall be reviewed as part of the review of communications.*

**Table 4: Provisions of the Kyoto Protocol on Monitoring, Reporting and Review of Annex I Party Information**

<b>Article 3: accounting for assigned amounts</b>	<p>Net changes in GHG emissions from sources and removals by sinks resulting from direct human-induced land use change and forestry activities, limited to afforestation, reforestation, and deforestation since 1990, measured as verifiable changes in stocks in each commitment period, shall be used to meet the commitments under this Article... These shall be reported in a transparent and verifiable manner and reviewed in accordance with Articles 7 and 8. ...each Party shall provide data to establish its level of carbon stocks in 1990 and to enable an estimate to be made of its changes in subsequent years [ Art. 3.3 and 3.4]</p> <p>Parties undergoing the process of transition to a market economy are to notify the COP if they intend to use an historical base year or period other than 1990, unless they have already done so [3.5]</p> <p>Any emission reduction units (Art 6), any part of an assigned amount (Art 17), or any certified emission reductions (Art 12) which a Party acquires or from another Party shall be added to the assigned amount for the acquiring Party; any emission reduction units (Art 6), or any part of an assigned amount (Art 17), which a Party transfers to another Party shall be subtracted from the assigned amount for the transferring Party [3.10, 3.11, 3.12]</p> <p>Any Party may use 1995 as its base year for HFC, PFC and SF<sub>6</sub> [3.8]</p> <p>On request, any Party allowed to bank the difference between actual emissions and assigned amounts at the end of a commitment period for use in subsequent periods [3.13]</p>
<b>Article 5: methodologies</b>	<p>Parties shall have in place, no later than one year from the start of the first commitment period, a national system for the estimation of ghg emissions and removals (national inventories) [5.1];</p> <p>Methodologies for estimating GHG emissions/sinks shall be those accepted by the IPCC and agreed by COP3. Where agreed (IPCC) methodologies are not used, appropriate adjustments shall be applied based on methodologies (for adjustments) agreed by the COP/MOP1 [5.2];</p> <p>Guidelines for national systems, which shall incorporate IPCC methodologies, and guidelines for adjustments where IPCC methodologies are not used, are to be agreed by the COP/MOP1 [5.2, 5.3].</p>
<b>Article 7: reporting</b>	<p>Parties shall incorporate in their annual inventories necessary supplementary information for the purposes of ensuring compliance with Art 3; this information is to be submitted annually, beginning with the 1<sup>st</sup> year of the commitment period after entry into force of the Protocol [7.1];</p> <p>Parties shall incorporate in their national communications the supplemental information necessary to demonstrate compliance with their commitments under the Protocol; this information is to be submitted with the first national communication under the Convention once the Protocol has entered into force; the frequency of submission of this information is to be determined by COP/MOP [7.2];</p> <p>COP/1<sup>st</sup>-MOP to adopt, and periodically review, guidelines for the preparation of this supplementary information COP/1<sup>st</sup>-MOP to decide on modalities for the accounting for assigned amounts [7.4]</p>
<b>Article 8: review</b>	<p>Information reported by Parties under Article 7 shall be reviewed by expert review teams; the expert review teams are to be composed of experts nominated by Parties (all) and by IGOs; [8.2]</p> <p>Art 7.1 information shall be reviewed as part of the annual compilation and accounting of emission inventories and assigned amounts; Art 7.2 information, reviewed as part of the review of national communications. [8.1]</p> <p>Review process to provide thorough and comprehensive technical assessment of all aspects of the implementation by Parties; the expert review teams shall prepare a report to the COP/MOP assessing the implementation of the commitments of the Party and identifying any potential problems, or factors influencing, the fulfilment of commitments. Reports to be circulated to all Parties. Secretariat shall list implementation questions for further consideration by COP/MOP.[8.3]</p> <p>COP/1st-MOP to adopt guidelines for review of implementation by expert teams. [8.4]</p> <p>COP/MOP shall, with assistance of SBI and as appropriate SBSTA, consider information reported under Art 7 and reports on the expert reviews and questions of implementation listed by the secretariat, as well as any questions raised by Parties. COP/MOP shall take decisions on any matter required for the implementation of the Protocol. [8.5 and 8.6]</p>

This defines a distinct two part reporting and review system for the Protocol. An annual review process will be limited to annual inventory reports and supplemental information as defined by the COP/MOP. A

second, more broadly based review will occur on a less frequent basis to consider Parties' national communications. The latter would focus on implementation of both the Convention and the Protocol, summarising progress in implementing the full range of commitments in each of these agreements. This would allow the annual review process for Annex I Parties to focus on implementation of Article 3 commitments and more technical questions relating to the quality of the inventory.

Article 8 indicates that the annual review should be part of an *annual compilation and accounting of emissions inventories and assigned amounts*. Thus requiring expert teams to review and synthesise information on emission levels and changes to assigned amounts from the national reports – a function intended to track performance relative to the targets – as laid out in the Protocol.

The Protocol language signals emphasis on inventory information and on accounting of assigned amounts as a principal function of the review of annual reports. It also implies that review of national communications, might occur less frequently and shift in focus to carefully consider implementation problems and compliance. Thus the UNFCCC's compilation and synthesis exercise, which to date has covered all information contained in national communications, might be narrowed to focus on inventories and supplemental information.

#### ***2.4.2 Expert teams to conduct the reviews***

Article 8 of the Protocol calls for the information reported by Parties under Article 7 to be reviewed by expert review teams. The expert review teams are to be composed of experts nominated by Parties (all) and, as appropriate, by inter-governmental organisations (IGOs). This is similar to what is already occurring under the Convention with a few exceptions.

The Protocol language implies that expert review teams are going to be used to more widely than they are at present. Teams are a prominent feature of the in-depth reviews of individual national communications, and play an important role in the UNFCCC in-depth reviews, where a multilateral, peer review function has clear advantages. But the process for compilation and synthesis exercise is structured less formally. Perhaps this is because the review mandate did not require an expert review team for this part of the process (UNFCCC 1995b). Though, in practice, the Secretariat is already drawing on nominated national and IGO experts to contribute to the compilation and synthesis.

Article 8.4 of the Protocol indicates that COP/MOP1 is to adopt guidelines for the review of implementation by expert teams. These guidelines should probably handle review of annual inventory reports and of national communications as separate exercises and aim to provide clear guidance to the secretariat on the nature of each of these review exercises.

#### ***2.4.3 COP/MOP to consider implementation questions, take decisions***

The Protocol breaks new ground by instructing the COP/MOP, the SBI and the SBSTA to consider information and questions on implementation of the Protocol by individual Parties. This provides a clear focus for the reviews, an end-point which should allow a more limited set of information to be the subject of review.

The Secretariat is also instructed to provide a listing of implementation questions for individual Parties, as raised by the expert review teams, for consideration by the UNFCCC subsidiary bodies and the COP/MOP. This will help to raise the profile of compliance and implementation issues as a whole and increase the likelihood of discussion of these questions by the appropriate bodies. More importantly, it will help Parties to avoid information overload, focus attention on key questions and move towards decisions on how to address implementation problems. This is a critical link in the compliance system for the climate regime as a whole.

### 3. MONITORING AND REPORTING: REVISITING THE CONVENTION

#### 3.1 Current Requirements and Experience under the Convention

Building a compliance system under the Kyoto Protocol could begin by strengthening existing approaches under the Convention. Under current guidelines, Annex I Parties presently report national inventories annually and a fuller set of information on a multi-year basis in the form of “national communications.”<sup>10</sup> The range of information reported by Annex I Parties includes:

- **annual submission of national greenhouse gas inventories**, including the six gases covered in the Kyoto Protocol and all relevant sources and sinks (except carbon stocks in land use change and forestry sector); information on the approach used to construct inventories; to some extent, documentation of the supporting data underlying inventories; and information on inventory uncertainty (qualitative or quantitative); and in some cases, countries are reporting on the results of internal verification and checking against reference or IPCC default methods;
- **submission in 1995 and in 1998 of full national communications** including projections data (for the years 2000-2010) for all greenhouse gases; information on policies and measures implemented to respond to climate change; a quantitative estimation of the aggregate and individual estimated effects of mitigation policies and measures; a description of pertinent national circumstances; a discussion of analytical approaches used to develop quantitative information; key assumptions in the development of projections and quantitative estimates of effects of measures; other information on the financing of technology transfer and other assistance to developing countries to respond to climate change, on public awareness and education actions, and on research and development relevant to climate change.

To date, two full rounds of national communications’ reporting have taken place and the majority of Annex I Parties are successfully reporting under the system. However, a number of important gaps, omissions and problems are apparent, including:<sup>11</sup>

- a large number of Parties were late in submitting second national communications; in addition, a few major Parties were more than one year late in the submission of first national communications indicating, from the outset, implementation problems;
- even when timely reporting is occurring, inventory and projection data may be missing, especially for land use change and forestry and the industrial process emissions for the new gases (PFCs, SF<sub>6</sub>, and HFCs);

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<sup>10</sup>These guidelines were originally adopted by COP1 (UNFCCC 1995b and a) and were later updated by COP2 (UNFCCC 1996a).

<sup>11</sup>Based on OECD 1998a except where otherwise noted; this document reviewed the UNFCCC compilation and synthesis reports of national communications (see UNFCCC 1997b and c; UNFCCC 1996b).

- a lack of transparency in how the inventory was prepared (e.g. lack of information on data sources, quality of data, and estimation methods used) and a failure to provide information on important differences in methods and results that would be obtained using IPCC defaults;
- for many Parties, recent inventory reports reveal significant changes in the base year (1990) estimates; these changes are likely to arise as Parties apply the recent IPCC 1996 Revised Guidelines, and/or as a result of improvements in national data and estimation approaches;
- methods used by Parties for national business-as-usual projections and quantitative estimates of effects of measures tend to lack transparency and consistency; in addition, Parties often have different motivations and philosophies in the preparation of with measures projections; these differences make it difficult to compare, review and compile the quantitative *forward looking* national data in a meaningful way (OECD 1998b).

Thus the Convention has strong national reporting obligations which are consistent with the Convention as a framework agreement. Reporting and review of “performance” information under an international agreement can be an effective tool to encourage action consistent with the objectives of the agreement. Such action may range from compliance with international obligations to following through on related domestic policy objectives. The requirement for governments to provide information on domestic responses, in this case on climate change, can also stimulate actions by non-governmental environmental organisations, business and industry and citizens. Through an open assessment of progress, the Convention’s reporting requirements are helping to raise public awareness of climate change as a policy concern. Ultimately, the reports stimulate national as well as international debate on national performance, and encourage action by governments to achieve their international climate change obligations.

### **3.2 A prompt start through monitoring and reporting**

A number of interim steps are possible in the near term under the Convention to begin to prepare for implementation of inventory reporting. Actions should aim to improve the quality of inventory data (i.e. to limit the uncertainty of annual and trend estimates, to improve the transparency, comparability and consistency of inventories), including enhancing understanding of the quality of the methods and input data being used to construct the inventories. Better understanding the strengths and limitations of the inventory information should enable a continuous improvement in inventory information over time and ultimately build confidence in the agreement as a whole (IPCC 1998 forthcoming).

#### **3.2.1 Annual inventory reporting**

##### *Update reporting guidance*

The structure and format of national inventory reports are based on the *Reporting Instructions of the Revised 1996 IPCC Guidelines*. While the Protocol fixes IPCC methods, it is possible to modify the guidance for the reporting of inventories through the UNFCCC guidelines for Annex I Party reporting. Several different dimensions of the inventory reporting system might be revisited in the near term to prepare for the implementation of the Protocol. In particular, the COP might want to develop its own clear guidance on inventory reporting, adapting the IPCC Reporting Instructions to better meet the needs of the Protocol. Examples of possible changes are:

- revised sectoral, summary and overview tables to ensure the availability of more detailed information for each gas by source and sink category compared to that presently available in the summary tables;

- developing formats to allow electronic transmission of national data;
- emphasise and provide structured reporting formats to cover existing IPCC requirements for transparency (e.g. to document the origin of input data; to report on differences in methods and assumptions compared to IPCC default information);
- reports on how inventories are prepared (this could be important if the review process intends to assess inventory uncertainty as one of its functions);
- outlines of more stringent inventory reporting requirements for Annex I Parties, given their emission targets and the information needed to assess compliance.

IPCC expert groups might be well placed to help develop relevant recommendations. However it is timely to consider a moving away from the IPCC defining the reporting formats for inventories under the Convention and the Protocol. This function is too closely related to the core objectives of the agreement to task off to another inter-governmental body.

#### *Towards “good practice” and management of uncertainty*

Following on from previous work in this area and at the request of the SBSTA, the IPCC inventory programme is addressing data quality and uncertainty management issues. They began new work in this area in October 1998 which should result by 1999/2000 in IPCC recommendations on what constitutes “good practice” in inventory development. National expert groups will consider what “good practice” might constitute on a sector by sector basis in the preparation of inventories. The work aims to improve inventory data quality and uncertainty assessment. Recommendations from the IPCC by early 2000, or by COP5 as requested by SBSTA, should provide sufficient time for the COP to consider how it might use these to strengthen reporting under the Protocol. IPCC recommendations could become the basis for a COP/MOP decision to establish guidelines for national systems (as required under Article 5).

Based on the IPCC recommendations, the COP could adopt good practice guidance prior to implementation of the Kyoto Protocol, and begin to test the use of the guidance with countries. “Good practice” standards would predominantly affect future inventory data. However, there are instances where moving towards good practice will uncover errors or inconsistencies in historical data. This will warrant adjustments to historical data including the base year or period. Applying this guidance will also need to be linked to decisions on how to handle national data from systems that fail to meet the good practice standards. These are examples of the types of issues that need to be tested before such guidance can be used reliably to improve implementation of the Protocol. The guidance could also help to structure the issues that will be taken up in the UNFCCC review of inventory information.

#### *Adjustments to base year data*

Base year data under the Kyoto Protocol are essential to determine the precise quantitative emission target for each Party during the commitment period. Procedures for reporting inventory data should allow for adjustments to base year and other historical data under certain, limited conditions. These procedures could be developed and tested in coming years under the Convention’s reporting procedures.

Adjustments to base year data might be limited to correcting for errors or inaccuracies in the information due to:

- changes in estimation method to improve the accuracy of estimates;
- erroneous input assumptions such as emission factors or activity levels;



- discovery of errors in the coverage of the inventory (e.g. double-counting or addition of a previously unknown source or sink activity).

Adjustments in historical data will be necessary to ensure a fully consistent inventory data set. The SBSTA noted the need for adjustments to historical data, in its conclusions from its fourth meeting. They requested Annex I Parties using the *IPCC Revised 1996 Guidelines* for the first time to recalculate historical estimates for inclusion in their 1997 and 1998 annual reports on inventories for consistency (SBSTA, 1996).

Adjustments falling outside of the boundaries noted above, such as those for abnormal temperature or economic conditions in the base year, would be disallowed for the purposes of compliance assessment. In practice, this is what the Climate Change Secretariat is already doing in its compilation and synthesis reports to the COP. While Parties are allowed to report data adjusted for abnormal conditions, they are also required to report unadjusted data (9/CP.2). Only unadjusted inventory estimates are presented in the Secretariat's reports to the COP.

The Article 3 commitments of the Kyoto Protocol will require reconstruction of the base year data to account for the new industrial gases (PFCs, HFCs, SF<sub>6</sub>), sinks and choice of base year or period (for transition countries). In addition, some countries may still be missing elements in the base year inventory estimates (e.g. missing estimates certain source/sink categories for some of the gases). The reporting and review procedures for the base year may be a focus in the coming years to prepare for entry into force. In this way, problems with data might be worked out by the time it becomes important to fix base year amounts (e.g. at the latest by 2007).

#### *Supplemental information*

Annual inventory reporting will facilitate early identification of data and reporting problems and their ultimate resolution. However, monitoring performance over a five year commitment period and implementation of the new mechanisms could also make use of forward-looking assessment. In anticipation of this function, Annex I Parties might want to begin providing additional information along with annual inventory reports. This could include short term projections for a five year period and estimated inventories for current years. While experience to date suggests that caution should be exercised in the use of national projection information to review performance, it could be interesting to experiment with the use of shorter term projections, which might be more reliable and useful for comparison with historical trends.<sup>12</sup> This information could be particularly relevant to the review of performance with respect to the Article 3 obligation that each Annex I Party *shall, by 2005, have made demonstrable progress in achieving their commitments* under the Protocol.

Early reporting of activities and transactions under the new mechanisms might also be undertaken to test the design of joint implementation, emission trading and clean development mechanisms. Such an exercise could begin to develop the necessary institutional framework to monitor and track transactions at both the international and the national level. A structure for such reporting would provide an early signal to different participants about their respective responsibilities (e.g. host versus investor national governments, project developers, other legal and private entities).

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<sup>12</sup> Experience to date indicates that national projections may be an indication of a Party's aspirations or political commitment, rather than a true assessment of expected emission trends (personal communication with the UNFCCC secretariat; see also OECD 1998a and b; WEC 1997, Climate Network Europe 1997 and US CAN 1995).

### *Timing of reporting*

Annex I Parties report national information annually under the Convention but non-Annex I Parties are not yet required to do so (UNFCCC 1996a, Decision 10/CP.2). Requiring annual inventory reporting by all Parties might assist developing country Parties to request and receive necessary support from the GEF to develop and maintain their own national systems which will eventually be important to the overall implementation of the Convention. Allowing national inventory reporting to occur less frequently may actually disrupt the smooth development of such systems by interrupting the flow of the work and the consistency of estimates from one compilation effort to another.

In the near term, Annex I Parties may want to work on achieving shorter lag times for the development of recent year inventory estimates. Ideally, with greater resources available to develop information systems, Annex I Parties should be able to provide inventory data with a one year lag from the last inventoried year. For example, in 2009, the Party would submit inventory data for 2008 and so on. Reducing this time lag could have assist with smooth and timely implementation of the Protocol.

### **3.2.2 National Communications**

There is an opportunity to update the guidelines for national communications for Annex I Parties at the next COP. But as noted above, there may be value in shifting emphasis in the reporting process away from consideration of a wide variety of general information on national circumstances and climate change programmes towards a more focused reporting on key aspects of implementation of specific obligations and performance with respect to compliance.

The immediate reporting priorities for Annex I Parties might therefore be best directed towards providing less information. Narrowing the information reported under the UNFCCC would help to shift the UNFCCC review functions to begin to identify and address implementation problems. A limited national communication might include reporting on:

- inventories (more timely and thorough reporting), including an assessment of historical trends;
- short term “forecasts” of emission levels (3-5 years forward);
- highlights or new developments in national programmes, policies and measures to respond to climate change (mitigation and adaptation efforts)
- “demonstrable progress”, i.e. the effectiveness of policies and measures to mitigate GHG emissions and enhance sinks;
- efforts to implement technology transfer and co-operation;
- actions taken to fulfil of financial obligations.

The first two items (inventories and short term forecasts) would be reported on an annual basis as well as included in the more occasional national communications. The timing of national communications could be every 3-4 years. Other information commonly found in national communications (e.g. a comprehensive description of national action programmes, policies and measures, research and observation, adaptation measures, and national circumstances) could still be required from Parties. However this information might not best be reported in formal UNFCCC submissions. Instead it could be published separately and made accessible through national websites.

Longer term projections are absent from priority information list outlined above for national communications. This is because long term emission projections have proven to be unreliable and

impossible to compare among countries (OECD 1998b). Even if countries do not include projections in national communications, there may be a market for this information linked to the development of the new mechanisms under the Protocol. This information could be provided by private analysts. As independent providers of this information, private sources might be more reliable. In any case, in a review process focused on compliance assessment, national emission projections for the long term are unlikely to prove useful. As suggested above, a possible alternative is to begin test the usefulness of short term national projections as an indicator of the compliance path through the commitment period.

#### 4. STRENGTHENING VERIFICATION, REVIEW AND ASSESSMENT OF COMPLIANCE

The Climate Change Secretariat's present review of national reports provides a strong starting point for the technical review of Parties' compliance with targets and other obligations under the Kyoto Protocol. To be effective as part of a compliance system under the Protocol, the review process needs to expand to include technical verification of inventory and related information on changes in national assigned amounts as well as a focused assessment of compliance with all obligations of the Protocol. This would enable a clear declaration at the end of the process about a Party's status with respect to compliance.

Relative to the secretariats for other international environmental agreements, the UNFCCC secretariat has a knowledgeable staff, adequate financial support, and a demonstrated ability to critically assess and synthesise national information for the COP. But the Secretariat has a limited mandate in the area of verification of information and compliance assessment. While they have been asked to co-ordinate the in-depth review of individual Party national communications, and to compile and synthesise national communications and annual inventory reports, a full technical review of compliance is not formally part of their mandate.

The Climate Change Secretariat has the lead responsibility to conduct and co-ordinate the review of the national reports required under the Convention. The purpose of the reviews is to share information and to consider the accuracy of the information reported under the Convention rather than to identify implementation problems or to assess compliance of individual Parties. This reflects the nature of the Secretariat's mandate for the reviews but it stems from the nature of the Convention itself and the way Parties see their obligations under the agreement. Other than reporting, there are few binding obligations placed upon Annex I countries under the Convention.

##### 4.1 Current Requirements and Experience under the Convention

The Secretariat oversees a two-step review process for Annex I Party communications aiming to:

*review in a facilitative, non-confrontational, open and transparent manner, the information contained in the communications from Annex I Parties to ensure that the Conference of the Parties has accurate, consistent and relevant information at its disposal to assist it in carrying out its' responsibilities (UNFCCC/CP/1995/7/Add.1).*

The same decision cites a number of responsibilities of the COP for which the information from the reviews will be used:

- to assess implementation of the Convention by Parties, the overall effects and cumulative impacts of the measures taken and the extent to which progress towards the objective of the Convention is being achieved;
- to guide the development of methodologies and guidelines and to facilitate the exchange of information on measures adopted by Parties.

To achieve these broad objectives, the reviews focus on establishing the accuracy of information<sup>13</sup> contained in national reports, enhancing a common understanding and sharing experience among Parties with respect to the climate change policy process occurring in individual countries, and assessing the overall progress of Annex I Parties to achieve their Article 4 commitments under the Convention.<sup>14</sup> While the in-depth review (IDR) reports on individual Parties identify problems related to implementation, the attention of the SBI in their consideration of this information, has been on the performance of Annex I Parties as a whole.

The review process draws on multi-lateral teams with participants selected from experts nominated by Parties to the Convention and representatives of international governmental organisations. The geographic representation in the teams is carefully balanced to draw on experts from all main groups of Parties under the Convention.

The reviews encompass two distinct steps:

- 1) **regular synthesis and compilation of national reports**, with complete synthesis reports available for each annual meetings of the Conference of the Parties (since 1995); interim reports are made available in between COP to update the major data elements;
- 2) **in-depth review (IDR) of individual national communications** are conducted on a multi-year cycle linked to the cycle of reporting; reviews follow within one year of the submission of the national communications.<sup>15</sup>

Recent guidance from COP-3 instructed the Climate Change Secretariat to “*collect, process and publish, on a regular basis, national greenhouse gas inventories submitted annually by Annex I Parties...*” (6/CP.3). The decision also notes that publication of these data may be accompanied by “relevant documentation” prepared by the Secretariat “on evaluating compliance with the IPCC guidelines” and “it may include or refer to data from authoritative sources.” The Secretariat is just beginning to explore and implement this. The guidance is notable in that it widens, for the first time, the mandate of the Secretariat for synthesis and compilation reports to include compliance assessment.

The IDRs provide the best opportunity to carefully study implementation of the Convention for each Annex I Party, and make it possible to explore specific questions in some detail. All Annex I countries accept country visits in this part of the review process.<sup>16</sup> During the visit, the review team poses questions related to the communication and underlying data with experts and policy makers from the country. The visit results in an exchange of views and information, enhancing the understanding of specific challenges faced by each country in the implementation of its obligations. The visit often results in greater clarity and transparency of national information and fills information gaps identified in the communication.

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<sup>13</sup> The National Communications are reviewed for accurate policy information. Inventory data are reviewed for transparency, and potentially for method. However, underlying activity data and emission factors are not verified or validated, nor is the accuracy of the inventory or the quality of the overall or individual estimates.

<sup>14</sup> Article 4 of the Convention states that Annex I Parties should aim to achieve a stabilisation of greenhouse gas emissions by the year 2000 compared to 1990. This commitment is considered to be voluntary, rather than binding. The main binding obligations of Article 4 of the Convention is that Annex I Parties are to adopt national programmes to respond to climate change, and policies and measures to mitigate emissions and to enhance removals by sinks. Another binding set of obligations has to do with Article 12 requirements to provide national communications.

<sup>15</sup> Communications became due in 1994/95 period (within six months after entry into force of the Convention or after ratification of the agreement) and again in April 1997.

<sup>16</sup> It is possible to opt for a desk only exercise. This has been done for a few of the smallest Annex I Parties e.g. Monaco.

The fact that that Annex I Party reports are reviewed by developing country and industrialised country experts is somewhat unusual in the context of international agreements and their review processes. Although a featured in a few international agreements, in depth reviews of this type are not typical in other environmental agreements. The General Agreement on Tariffs and Trade and international labour agreements overseen by the International Labour Organisation (Chayes and Chayes, 1995; Romano, 1997), both have elaborate mechanisms for the review of national implementation and performance. The ILO procedures are of interest because they include the involvement of non-government representatives (e.g. from organised labour groups) in a country to review and comment on the information provided by the national government. Extensive and “intrusive” review is also commonly a part of nuclear non-proliferation and other arms agreements (Fischer 1991 and Greene 1991). But it is not a common feature of MEAs. A recent development to use environmental non-governmental organisations to help with verifying a forestry joint implementation project in Costa Rica, could set an interesting precedent for further verification of this sort to occur under the Protocol (Subak 1998 and Rada 1998).

The foregoing discussion outlines the main dimensions of a healthy review function under the Convention. Now that several years of experience are available, it may be time for the Conference of the Parties to reconsider the operation and orientation of the reviews’ functions. This would be consistent with the “learning by doing” principle. How can we advise policy makers to improve the effectiveness of the review process? Without departing radically from present procedures, there are a number of simple steps that could be taken to strengthen the technical review and verification of national information under the Convention.

## **4.2 A prompt start through technical assessment, verification, and assessment of compliance**

### ***4.2.1 Technical assessment and verification: inventory reports***

Prior to entry into force of the Protocol, annual inventory data could be compiled and reviewed by expert teams on an annual basis. The present UNFCCC review process has not yet attempted to address inventory compilation or data quality questions in any depth. In general, present reviews include a check on transparency, completeness and consistency. Recently, at the request of the SBSTA, the UNFCCC Secretariat has begun to investigate approaches to more fully review inventory data quality (UNFCCC 1998a, b and c). The SBSTA considered these papers for the first time in November 1998 but no decisions were made. These Secretariat papers highlighted methodological issues and options for reporting and review. Many of these options were further considered through expert workshops hosted by the UNFCCC, as well as in 1999 submissions from countries. Suggestions for the future review process of inventories and national communications are advancing to SBSTA at its 10<sup>th</sup> session in June 1999 (UNFCCC 1999a and 1999b) and the issue is targeted for decision at COP5 (late 1999). The main suggestion is for a more focused, technical review of inventories to take place. This would include both initial checking for completeness and consistency (e.g. with previous year’s submissions) and individual technical reviews of inventories by expert review teams. A number of additional improvements are outlined here.<sup>17</sup>

A simple step to separate the review of inventories from that of national communications will allow the careful treatment and consideration of inventory data and other relevant information. The COP/MOP could begin to establish procedures for monitoring and verification of inventory data quality. Verification approaches could include:

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<sup>17</sup> Some of these ideas presented here are found in FCCC 1999a and b, some of them are not. This section has largely been left as originally written in 1998.

- verification of trends in emissions, and in those of underlying socio-economic activities, with independent sources of information;
- the use of standards or codes of good practice for inventory preparation against which to assess performance (e.g. source of input data; frequency of own field data collection; choice of method; whether inventory uncertainty assessment has been performed) (see discussion in Sections 2.2.1 and 3.21);<sup>18</sup>
- the use of expert review teams to explore technical questions.

These approaches would aim to improve the review of inventories for all relevant sources and sinks of greenhouse gases and ultimately, to assess the quality of the data available for compliance assessment. Strengthening verification would not only provide information upon which to assess compliance, but could also provide a means to share relevant experience and results among experts and government analysts. In this way the verification process might also be instrumental to build national capacity to improve data quality in the long run.

#### *Data corroboration and verification of inventory approaches*

Building on the information available from the Convention's reporting process, verification procedures could be used to check the reliability and accuracy of inventory data. Technical verification of the final estimates would be possible as well of verification of the methods and input data. Such an exercise could include:

- checking national estimates with those available from global data bases or from independently published literature (IPCC 1997a); to enable meaningful comparisons, this would require that inventories be reported in a more detailed manner than at present;
- verify main assumptions, largely activity data, through corroboration with independent sources of information;
- verify the methods used by Parties to construct the inventories.

Some possible difficulties with a data corroboration exercise include: differences in definitions or categories of activities; and a lack of truly independent information since governments are usually the source of much of the international data available in the literature. In addition, data corroboration will require additional resources. Nevertheless, corroborating data provided in national reports with information found elsewhere in the open literature, can help to identify inadvertent errors and inconsistencies in data reported. Where significant differences are identified and cannot be explained by the Party being reviewed, the review process could publicly release data comparisons as part of the report from the expert review team.

#### *Expert review teams*

An important question for implementation of Article 3 is to guarantee that expert review of annual reports is objective and consistent. It might also be interesting to explore a link to independent audits that might be authorised by individual Parties prior to or in parallel to the UNFCCC submission and review. Such an audit function could also be important to help establish confidence in markets for emission reductions under the new mechanisms. Inventory audits for emission trading, or project-level audits for joint implementation could provide the basis for quality rating, or differentiation, of individual Parties' units in

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<sup>18</sup>The IPCC is preparing 'good practice' recommendations for inventories. They may form the basis for a COP decision on how they should be used in the UNFCCC process.

an international market. This information might be useful as input or background information in the Secretariat co-ordinated expert review to be conducted under the Protocol.

*Use of expert review teams*

Article 8 calls for the use of expert review teams to be used to conduct the annual compilation and accounting of emission inventories and assigned amounts. Beginning to move in this direction of a more thorough review of inventories under the Convention is an important step forward. However, to be effective, inventory specialists will need to be involved in such a review. The Secretariat will need to carefully oversee the review to ensure its neutrality and consistency. Inventory review is a more technical task than review of a national communication, and might be more difficult to conduct in a multilateral team composed of different individuals for different national reports. Therefore it might be wise to have at least a common set of individuals considering the full set of annual reports.

**4.2.2 National communication review: identification and assessment of implementation problems**

There is scope to extend the UNFCCC In-depth Review (IDR) of national communications to include a careful discussion and review of specific problems related to implementation and compliance. The IDRs could:

- identify problem areas in advance of the review visit, thereby giving the Party time to consider its position and possible responses;
- aim to explore specific problems preventing or limiting the Party's ability to comply with its international obligations during the review team visits;
- where the problems relate to a lack of capacity or targeted resources, refer the problem to the multi-lateral consultation process (MCP) or another review body to be established by the SBI with the aim to offer assistance and agree on a plan for how the Party intends to address the implementation or non-compliance problem.

Thus, the In-depth Reviews could become an increasingly important mechanism for dialogue with individual Parties under the Kyoto Protocol, allowing early problem identification and resolution. This approach could require significantly more advance preparation than the present review process and a reorientation of the present resources. Rather than presenting a comprehensive and descriptive review, the IDR report will need to present a targeted exploration of key aspects of national performance related to the implementation of specific obligations. The end result would be to make the IDR a critical step in the overall compliance system of the Protocol.

A further step would be to link the results of the IDR to the compilation and synthesis review process. At present the compilation and synthesis exercise limits its source information to that provided by Parties in their national communications and annual inventory reports (Annex I Parties). Yet much relevant information on Annex I Parties is also gathered through the IDR process. More importantly, the IDR visits often provide insights into the reasons implementation problems exist in a country. The compilation and synthesis process could be a critical step in the assessment of implementation and compliance, but to do so it would need to better link to the results of the IDR reports.



### 4.2.3 *Linkages to independent research and review activities*

There may also be a role for the other organisations and agents outside of the formal UNFCCC review process to contribute to technical verification and assessment of compliance. Possible links are (OECD 1998a):

- the IPCC/OECD/IEA National Greenhouse Gas Inventory Programme might be asked to assist the UNFCCC Secretariat by lending expertise or in-kind products, timed to assist with their work on verification of inventories, and in the development of verification methods;
- the UNFCCC review of Annex I Parties' compliance might be supplemented by a targeted use of the information provided in e.g. OECD or IEA policy performance reviews; similarly the UNFCCC might flag implementation problems to these organisations so that they might be added to the list of issues to be addressed at a relevant point in time in their ongoing policy review process;
- where individual Parties have chosen to use non-government, independent auditors or experts to certify or to rate the quality of information which is being reported or the nature of national systems, such information might be used as background in the UNFCCC review. If it is not already in the public domain, Parties would have to have submitted relevant documentation for use in the review, which would give the expert teams the opportunity to draw on this information;
- non-governmental environmental organisations are another independent source of information; some already review national performance with respect to the UNFCCC (e.g. USCAN 1995 and Climate Network Europe 1997). The value of such reviews is well recognised by OECD governments, with some providing financial support for non-governmental organisations to serve this function.

The linkages do not need to be formal connections under the Convention to provide effective contributions to the wider verification and compliance process. Non-governmental organisations in particular serve an extremely useful "watchdog" role, exerting pressure on Parties to comply with international obligations as well as raising public awareness (Cameron *et al.*, 1996; Chayes and Chayes, 1995). Combined, a variety of external sources of reliable information, such as those mentioned above, are likely to help to strengthen the review of national performance.

A major problem with reliance on any one of these avenues is that they are likely to be partial in geo-political coverage at best. For example, because of a lack of financial resources and poor institutional infrastructure, non-governmental processes are unlikely to emerge, or to be as effective, in transition or developing countries. Further, OECD and IEA policy discussion fora and performance reviews, which currently run in parallel with the formal UNFCCC review process, do not exist for the majority of transition economy Parties. There may also be a legitimate concern about duplication and asking national governments to respond to too many institutions on a same issue.

### 4.2.4 *New mechanisms and the independent audit function*

The COP (for article 17 emissions trading) and the COP/MOP (for article 6 and 12 project based trading) have a mandate to decide and elaborate parameters for the new mechanisms. These parameters could include functions and systems that could help ensure compliance, such as:

- eligibility criteria for Parties, entities and projects;
- liability rules; and

- other compliance requirements.

Independent auditing may be invaluable to assist in the verification of the quality of the information systems that will underlie the implementation of the Protocol at different levels of action: national performance, project activities, and legal entities authorised by Parties to participate.

Some consensus appears to be emerging on the importance of data systems and quality as an eligibility requirement for participation in international emission trading under the Protocol. One of the eligibility requirements for an emission trading system, which is endorsed by the majority of Annex I Parties, is the establishment of national systems to monitor national emissions and track trading transactions (UNFCCC 1998a and 1998b). Many Annex I Parties have suggested that this would include requiring a Party to comply with the monitoring and reporting requirements laid out in Articles 5 & 7 of the Protocol as a prerequisite for participation in the international trading system (Mullins 1998).

Linking eligibility to compliance with reporting requirements would send a signal on the need for reliable data on national performance (national emission inventory data). The consensus among many Annex I Parties on this point would imply that they see similar requirements as necessary to implement project based crediting under Articles 6 and 12. Article 5 already requires Parties to have “national systems” for inventory estimation. A parallel development would be to adopt rules requiring national governments to adopt sound national monitoring systems for joint implementation project activities and for legal and private entities that are allowed to participate in international emission trading under Article 17. Such systems might cover:

- national monitoring systems for the emissions of eligible legal entities;
- project-based monitoring systems on actual emission performance of joint implementation projects;<sup>19</sup>
- the tracking and registration of transactions under the new mechanisms.

If the COP/MOP were to agree on clear performance standards for these different actors and activities, it is likely that independent auditing, performed by private would develop naturally. Reports from these agents could be used to supplement information from the UNFCCC review functions and in this way, assist in providing a technical information base for compliance assessment and determination of eligibility.

#### *4.2.5 Use of the internet to share information, widen review process*

The rise of the internet as an information medium, widely accessible around the world, opens a number of possibilities to strengthen the review of national reports under the UNFCCC. The UNFCCC Secretariat already uses its internet site to distribute all of its documentation, including the results of the IDRs and compilation and synthesis reports on national communications. Further steps to use the internet to open the review process, improve access to information as well as to standardise data reporting and processing, could include:

- to have all Parties establish a national internet site providing a range of relevant information, such as: recent national reports to the UNFCCC (national communications and national GHG inventories); national contact points for more information; the status of new policy

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<sup>19</sup>Note the projects under the clean development mechanism would also be relevant were their certification not already overseen by an executive board.

initiatives. While UNFCCC Secretariat encourages Parties to develop such sites, only a few Annex I Parties have taken this step.<sup>20</sup>

- the UNFCCC internet site could also provide links to other relevant “review” information available on the internet. These internet links could extend to relevant sites for non-governmental or inter-governmental organisations that provide the results of their independent reviews of national performance.
- use of the internet to provide electronic formats for reporting inventory data and other supplementary national information such as on transactions under the implementation mechanisms; this might be done through password protected sites to protect the integrity of the reporting system. However an electronic data reporting system could facilitate quick data processing and summary, and early identification of implementation problems with respect to reporting and emission obligations (Art 7 and 3); an electronic processing system would also facilitate the development of “automatic” responses to compliance problems.

Development of the use of the internet could begin now, building experience and improving effectiveness by the time of entry into force of the Protocol.

#### *4.2.6 Compliance assessment of procedural obligations under the Convention<sup>21</sup>*

The model outlined in Figure 1 identifies a two stage review and verification process to identify compliance problems under the Convention (OECD 1998a). A first stage is the technical review of relevant national information. As described briefly above, to some extent this stage is already in place and functioning reasonably well under the UNFCCC.

The second stage is a process where the Conference of the Parties or a designated subsidiary body considers the results of the technical review, formally recognises a compliance or implementation problem. This stage has not yet developed under the UNFCCC. Since 1995, the Secretariat regularly reports to the COP, and to its two subsidiary bodies, on the individual and aggregate emission performance of Annex I Parties (UNFCCC 1996b, 1997b, 1997c). Problems in meeting national emission targets and the Convention’s aim, as outlined in Article 4.2 (UNFCCC), as well as non-compliance with reporting requirements are clearly outlined in the Secretariat’s reports. However to date, none of the UNFCCC institutions have taken concrete action to address the implementation problems identified in these technical reviews.

A number of explanations may be offered for the slow progress in moving towards compliance assessment and a system to respond to non-compliance under the UNFCCC. One reason may be that national reporting obligations are the only obligations of the Convention that could be considered legally binding. Because reporting obligations do not have any potential to lead to economic, competitiveness, or trade distortions, Parties may not be overly concerned with the effects of non-compliance. This may be an important oversight since ultimately compliance with reporting obligations is essential to the whole compliance system. Only complete and consistent reporting will enable the assessment of compliance with more substantive obligations.

<sup>20</sup> Personal communication Andrea Pinna, UNFCCC Secretariat. With a seed grant from Germany, the Secretariat developed a tool kit (CC:INFO/Web model) aiming to help countries develop consistent sites to share information. To date, 12 developing countries have websites (including Brazil, Egypt, Jordan, Malaysia, Seychelles, Senegal, Tanzania, Thailand Uganda, Venezuela, Zambia, and Zimbabwe). To the Secretariat’s knowledge, no Annex I country has established a site. However, national communications are available on some Annex I countries’ Environment Ministry websites.

<sup>21</sup> This section highlights possible initial steps to move towards compliance assessment and responses to non-compliance, focusing on the procedural reporting obligations under the Convention. More complete discussions of compliance and compliance responses can be found in Werksman 1998 and in OECD 1998a. In the context of emission trading, Mullins 1998 also contains relevant material.

Another reason may be that no formal non-compliance procedures exist under the Convention. While Article 13 of the UNFCCC requested the first Conference of the Parties to consider adoption of a multilateral consultative process, negotiations have continued into 1998 on the exact purpose and operating strategy for such a mechanism. It is presumed that this mechanism will play a prominent role in addressing implementation and compliance problems, however, its scope and modalities have yet to be determined. Finally, the question of responses to non-compliance or a compliance procedure, only emerged clearly under the Kyoto Protocol in Article 18.

Despite the lack of formal compliance assessment, a strong public stakeholder process has emerged to encourage improved national performance, especially with respect to mitigation of greenhouse gases. Environmental and industry non-governmental organisations are active in national policy processes and in the international negotiations (WEC, 1997; USCAN, 1995 and Climate Network Europe, 1997). The wide availability of national progress reports, and of concrete data on emission levels, stimulates open and public debate on national performance and may improve the quality and accuracy of national reports. Such debate also raises public awareness of the policy dimensions of climate change and undoubtedly stimulates policy decisions. Thus informal review and responses to the UNFCCC reports are also an important factor to encourage better performance from Parties.

In the near term, the SBI could assist the COP to begin to develop a process for the assessment of individual Parties' performance by:

- initiating an assessment of compliance with reporting obligations of the UNFCCC. UNFCCC reporting obligations are similar to those that will be needed under the Protocol and could be developed further in this direction prior to entry into force of the Protocol.
- execute elements of the compliance assessment function through automatic non-compliance responses.<sup>22</sup> This might include issuing warnings or cautions, for certain forms of non-compliance problem (see CIEL 1998).

Warnings might be particularly appropriate as a response to non-compliance with reporting obligations. Automatic responses could be facilitated by electronic data processing, which could trigger the response as soon as the problem is identified, thus avoiding a discussion and ad hoc decision making on individual cases by the SBI. Automatic responses might be as simple as providing a listing of Parties that have not met standard reporting requirements, such as failure to provide complete inventory data sets; or late reporting.

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<sup>22</sup>Werksman points out that Article 6.4 of the Protocol appears to establish an automatic response to non-compliance (1998).

## 5. CONCLUSIONS

Monitoring, reporting and review are important elements in the emerging compliance system under the Framework Convention on Climate Change. Expansion of this system will be necessary to enable full implementation of the Kyoto Protocol. The Convention already has strong reporting and review mechanisms to address commitments for Annex I Parties. These lay the groundwork for implementing the Kyoto Protocol mitigation commitments – in particular, those outlined in Article 3 defining emission limitation or reduction targets for Annex I Parties in the period 2008-2012. Reporting and review of national information will also be instrumental to implementation of the new mechanisms and will figure centrally to the overall compliance system to be developed for the Protocol.

The Kyoto Protocol will not come into force until the year 2001 or later. This allows time to further develop elements of a compliance system. The provisions of the Protocol shift the role and mandate of Convention institutions towards identifying and addressing implementation and compliance problems. This is a change in emphasis which stems from the more substantive mitigation obligations contained in the Protocol, and Parties' perception that compliance could be costly (Werskman 1998).

The Protocol also requires the development of new international and national systems to account for national compliance with the Kyoto Protocol. This is referred to as 'accounting for assigned amounts.' The COP/MOP will need to set out modalities that clearly distinguish who is to do what, at both the international and the national levels. It will be particularly important to provide a clear mandate to the Secretariat on their role and responsibility with respect to verification and overall accounting of assigned amounts. National responsibilities will also need to be clearly delineated early in the implementation stages to allow governments time to build their capacity to monitor emissions and register trading transactions.

National inventories will be the backbone of the accounting system and a key question is how to ensure the quality of these data. This paper discusses the development of "good practice" standards as a means to address inventory data quality and uncertainty, including: institutional arrangements for inventory preparation; choice of method; data collection procedures; and internal review procedures including uncertainty assessment. The IPCC could develop recommendations on "good practice". In turn, the COP/MOP could decide minimum requirements for Annex I Party "national systems" (Article 7). Recommendations on "good practice" would also be relevant to all Parties by assisting them to fulfil basic reporting requirements outlined in the Convention.

Once in place, "good practice" guidance could serve several purposes. National inventory teams could use them to help improve their own inventory systems and resulting estimates. The UNFCCC secretariat could use the standards as a common ruler against which to assess national performance in the reviews of national information. Private sector auditors might also use the standards to assess performance, a function that could be important in the creation of a market for emission reduction trading or crediting. In the longer run, meeting good practice standards for inventory preparation could be an eligibility requirement for participation in the new mechanisms.

A variety of options exist to improve reporting and review functions of the Convention in moving towards implementation of the Protocol. In the near term, Parties may want to focus on inventory reporting and de-emphasise the breadth and frequency of the present national communications exercise. National communications might usefully be focused on key issues related to compliance. This would allow the prioritisation of resources for the further development of inventories, which will be critical to long term compliance assessment.

More attention is also needed for the preparation and review of inventory information. Parties might want to expand annual inventory reports by in at least two ways. Firstly, they might report national inventories in more detail to allow corroboration of emission estimates, activity data and of underlying trends. Secondly, reporting on inventory methods could be more explicit on how they differ from IPCC default methods. The latter would provide the basis for a more thorough review of inventory data quality and uncertainty and might provide guidance to Parties on how to manage data quality.

Parties might also want to provide supplemental information along with annual inventory reports in advance of implementation of the Kyoto Protocol. This could include information related to the development of the base year estimates and the full set of GHG data relevant to Article 3 commitments. It might also include short term forecasts of emission levels and estimated inventories for current years. This information would enable forward looking assessments of performance, which might be particularly useful to the development of markets for parts of assigned amounts or emission reduction units. Experience to date suggests the need for caution in the use of national projections to assess performance (looking 5-15 years into the future). However, short term projections (for up to 5 years into the future) might be reasonable indicators of short term emission trends, and would support a review of the effectiveness of national programmes, policies and measures. Prior to entry into force of the Protocol, the review process might test the usefulness of this information. The review could provide early warnings of potential problems.

Implementation of the new mechanisms (joint implementation, emission trading, and clean development mechanism) under the Protocol will add significantly to the reporting requirements of participating Parties. In preparation for these changes in information systems, Parties participating in relevant activities might want to begin to voluntarily report information on transfers and acquisitions. This might be useful in the development of a prototype international system on the accounting of assigned amounts.

In anticipation of the Protocol's requirements, review and verification under the Convention should be extended to include a more extensive review of implementation issues and assessment of problems. This might include a more structured approach to Annex I annual inventory review. To allow time to develop better review procedures, the COP might decide to limit the frequency of Annex I Party national communications to every 3-5 years. In the interim, the Secretariat co-ordinated expert review process would focus on the inventories and other information submitted in the annual reports by Annex I Parties. Compilation and synthesis of national information should be extended to treat annual inventory information separately, and to draw on results of the IDRs. Once new national communications are available, the compilation and synthesis exercise should work in tandem with the IDR process to focus on the full set of information relevant to implementation and compliance.

Parties could also make better use of the internet to share information and provide access to the UNFCCC national inventory reports and national communications, facilitating wider review and contributions by other stakeholders.

Under the Convention, Parties could begin to develop the capability to assess compliance by instructing the review process to consider compliance by individual Parties with reporting obligations. At the request of SBI, the Secretariat might explore expanding links with independent research and review activities. Independent audit activities are relevant and the results of their work could provide interesting background for the UNFCCC review process. Existing UNFCCC institutions could focus initially on a narrow set of

obligations, beginning with reporting obligations. Issuing automatic warnings for non-compliance with reporting obligations, combined with a transition towards the use of electronic reporting systems and data processing, would help to further develop the compliance system under the Convention. While reporting obligations are procedural rather than substantive, they will underpin assessment of compliance with Kyoto targets, and could be an important place to start.

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