

# Monitoring Implementation of the Kyoto Protocol

Key Issues for the 12th Meetings of the Subsidiary Bodies  
to the Convention on Climate Change, Bonn, June 2000

VERTIC Briefing Paper 00/3

Clare Tenner

June 2000

## Executive Summary

- Articles 5, 7 and 8 of the 1997 Kyoto Protocol to the 1992 Framework Convention on Climate Change provide the means for Annex I parties to demonstrate, and share information on, progress made in implementing their greenhouse gas emissions reduction and limitation targets. These Articles provide for: the national systems for estimating greenhouse gas emissions and removals (Article 5.1); the methodologies for applying adjustments to greenhouse gas inventories (Article 5.2); the systems for reporting information on implementation of the Protocol (Article 7); and the systems for review of information submitted under Article 7 (Article 8).
- Elaboration of guidelines and methodologies for the implementation of these articles should be a priority for the twelfth meeting of the Subsidiary Body for Scientific and Technical Advice (SBSTA), with a view to their adoption at the Sixth Conference of the Parties in the Hague in November 2000.
- These systems should be established as soon as possible after the guidelines are agreed, in order to gain experience with their operation before the start of the first commitment period in 2008.
- All parties should be subject to a pre-commitment period review of their compliance with Articles 5 and 7, to demonstrate in advance that they have satisfactory systems in place to provide information for assessing compliance with greenhouse gas emission reduction commitments.
- Parties should not be allowed to transfer or acquire emissions reductions in International Emissions Trading, Joint Implementation or the Clean Development Mechanism until they have been found to be in compliance with Articles 5 and 7.
- Criteria should be agreed to review whether parties have made demonstrable progress, by 2005 in implementing their Protocol commitments, as required under Article 3.2.
- It is important to ensure that the review process has the capacity to deal with the demands placed on it by the Kyoto Protocol. Alternative approaches to the *ad hoc* expert review teams need to be discussed. Parties should consider the establishment of a permanent review institution and the use of private sector auditors.

## INTRODUCTION

Fundamentally, there are two requirements for a treaty to effectively tackle climate change: commitments to reduce emissions of greenhouse gases (GHGs) and systems to monitor, verify and induce compliance with those commitments. Commitments to reduce GHG emissions were agreed in 1997. They are embodied in Article 3.1 of the Kyoto Protocol. However, the systems to induce compliance with those commitments are still being developed. The framework is laid out in Articles 5, 7 and 8 of the Protocol, which deal with verification (monitoring, reporting and review of implementation respectively) of the Protocol, and Article 18, which deals with the compliance system. Elaborating rules and guidelines for the operation of all of these Articles will comprise key agenda items in the workshops and formal sessions being held in Bonn in June 2000.

Parties have gained some experience in this area under the 1992 Climate Change Convention. Parties have been reporting and reviewing GHG inventories and national communications under the Convention since 1994. However many parties still struggle to meet the Convention's reporting demands. In particular, compiling GHG inventories is difficult given that the emissions come from a large number of sources, most of which are not under direct government control. For this reason many parties fail to produce their annual inventory on time (see Table 1).

Compared to the Convention, the Kyoto Protocol has novel features that place greater demands on verification. Development of Articles 5, 7 and 8 must facilitate the establishment of these features without undermining the integrity of the Protocol. The first new feature is binding GHG emissions reduction and limitation commitments for developed countries, listed in Annex I to the Convention. This demands more stringent reporting and review of national GHG inventories than has hitherto been required.

A second new feature is the mechanisms - International Emissions Trading (IET), Joint Implementation (JI) and the Clean Development Mechanism (CDM) - established under Articles 6, 12 and 17. These enable parties to transfer emissions reductions between themselves. If a party's emissions estimates are not accurate, it will no longer just affect its own inventory, but those of all parties to whom such emissions reductions are transferred. Unless there is confidence in the inventories, the mechanisms will be worthless. In recognition of this point, negotiators have indicated that parties will not be able to take part in the mechanisms if they are not in compliance with Articles 5 and 7. This introduces a further requirement into the review system - it must not just be thorough, but speedy, to prevent parties with inadequate

emissions inventories from taking part in the mechanisms.

A third new feature of the Protocol is the use of so-called sinks (biological systems that remove GHGs from the atmosphere) to meet emission reduction commitments. This implies further monitoring and reporting requirements. As the rules for sinks are yet to be discussed, the implications for Articles 5, 7 and 8 will not be discussed in this paper. This paper will focus on the key issues under discussion relating to Articles 5, 7 and 8, although reference will be made to parallel discussions on the compliance system and the mechanisms.

## TIMETABLE FOR ACTION

Parties have agreed that the following items should be adopted by the Sixth Conference of the Parties (COP6) in November 2000:

- Guidelines for national systems for the estimation of GHG emissions under Article 5.1.
- Methodologies for adjustments to inventories under Article 5.2.
- Guidelines for reporting supplementary information under Article 7, with respect to both annual inventories and national communications from Annex I Parties.
- Guidelines for review of implementation by expert teams according to Article 8.

## PROGRESS ON ARTICLES 5, 7 AND 8

The verification systems already established under the Convention will provide the basis for that under the Protocol. These have already been strengthened in anticipation of the Protocol's demands. The Fifth Conference of the Parties (COP5) adopted new guidelines for Annex I Parties for reporting national communications and GHG inventories, and new guidelines for the technical review of GHG inventories.

The reporting guidelines aim to improve the transparency, consistency, comparability, completeness, accuracy and timeliness of inventories. Most parties that have submitted inventories so far this year have used the common reporting format, required under the new guidelines (see Table 1). The new inventory review guidelines have a three-step approach: first, initial checks by the Secretariat; second, a compilation and synthesis of the inventories also by the Secretariat with help from experts; third, in-depth review by experts.

These new guidelines are now under a two-year trial. They will be reviewed again in 2002. In the meantime, parties are discussing the guidelines under the Protocol.

Table 1: Submission of Greenhouse Gas Inventories by Annex I Parties as of 27 April 2000  
(due date 15 April 2000)

Party	Submission/year(s)	Date Submitted	Formats currently provided
Australia*			
Austria	CRF <sup>†</sup> : 1998 IPCC <sup>‡</sup> sectoral tables: 1990-1998	14 April 2000	Electronic
Belarus*			
Belgium	CRF: 1995-1998	20 April 2000	Electronic and Hardcopy
Bulgaria	CRF: 1998	14 April 2000	Electronic
Canada*			
Croatia*			
Czech Republic*			
Denmark	IPCC sectoral tables : 1990-1998	15 April 2000	Electronic and Hardcopy
EU	CRF summary tables 1&2: 1990-1998	18 April 2000	Electronic
Estonia*			
Finland	CRF: 1990 & 1998	14 April 2000	Hardcopy
France	IPCC sectoral tables: 1990-1998	12 April 2000	Electronic and Hardcopy
Germany*			
Greece*			
Hungary*			
Iceland*			
Ireland	CRF: 1998 IPCC sectoral tables 1990-1998	17 April 2000	Electronic and Hardcopy
Italy	IPCC sectoral tables: 1990-1998 CRF: 1998	20 March 2000 3 April 2000	Electronic and Hardcopy
Japan*			
Latvia	CRF: 1998	16 April 2000	Electronic
Liechtenstein*			
Lithuania	CRF: 1998	21 April 2000	Electronic
Luxembourg*			
Monaco*			
Netherlands*			
New Zealand*			
Norway	CRF: 1998 Sectoral tables: 1990-1997	14 April 2000	Electronic
Poland	IPCC summary tables: 1998	20 April 2000	Electronic
Portugal	IPCC sectoral tables: 1990-1998	11 April 2000	Electronic and Hardcopy
Romania*			
Russia*			
Slovakia	CRF: 1998	20 April 2000	Electronic and Hardcopy
Slovenia*			
Spain	CRF: 1990-1998	14 April 2000	Electronic and Hardcopy
Sweden	CRF: 1998 IPCC sectoral tables: 1990-1997	14 April 2000	Electronic and Hardcopy
Switzerland	CRF: 1998	14 April 2000	Electronic and Hardcopy
Turkey*			
Ukraine*			
United Kingdom*			
United States	CRF: 1990-1998	11 April 2000	Electronic and Hardcopy

Source: [www.unfccc.de/resource/ghg/index.html](http://www.unfccc.de/resource/ghg/index.html) and [www.unfccc.de/resouce/cov/index.html](http://www.unfccc.de/resouce/cov/index.html)

\*CRF is the Common Reporting Format agreed at the fifth conference of the parties in 1999. Parties should be using this format for the trial period 2000-2002.

‡Iner-governmental Panel on Climate Change (IPCC) sectoral and summary tables were the format previously used to report greenhouse gas inventories under the Convention.

\*Parties not listed by the Secretariat as having supplied inventories.

A workshop on Articles 5, 7 and 8 was held in Bonn, from 14-16 March 2000. As a result of this workshop the Secretariat has produced:<sup>1</sup>

- Draft guidelines for national systems for the estimation of GHG emissions under Article 5.1.
- Draft guidance on methodologies for adjustment of inventories under Article 5.2.
- Elements of draft guidelines for reporting supplementary information under Article 7.1 and 7.2.
- Elements of draft guidelines for review according to Article 8.

These items will be discussed in Bonn. The following sections highlight key issues and suggest some optimal ways forward.

#### DEVELOPMENT OF A TIMETABLE FOR REPORTING AND REVIEW

A key priority must be to work out a coherent framework for reporting and reviewing information under Articles 7 and 8 of the Protocol. This might seem like an obvious first step, but the March 2000 workshop failed to achieve this as each Article was discussed in a separate group. The result is two separate papers on elements of draft guidelines which are not integrated.

The key distinction between the two papers is their different interpretations of the division of tasks between the annual review of information submitted under Article 7.1 and the periodic review of information submitted under Article 7.2. There is consensus that quantitative information for the assessment of compliance with Article 3.1 should be reported and reviewed annually under Article 7.1. At a minimum this should consist of the annual GHG inventory and data on transfers and acquisitions of emissions reductions using the mechanisms (i.e. ERUs<sup>2</sup>, CERs<sup>3</sup> and AAUs<sup>4</sup>). However, the experts working on guidelines for Article 8 noted, correctly, that it would be difficult to properly review the quantitative data without scrutinising the systems which produce this information, the national systems under Article 5.1 and the national registries of transfers and acquisitions, and vice versa. They agreed that all inventory-related information should be reviewed together. However, experts working on Article 7 elaborated more faithfully the reporting system laid out in the Protocol, which consists of annual reporting of quantitative data, and periodic reporting, in the national

communication, of all other data. The slight differences that arise from these different approaches now need to be reconciled. A solution should not be hard to find. It does make sense to review inventory-related items together. However, a thorough annual review of all these elements is not feasible. Parties therefore need to decide the extent to which this information should be reported and reviewed both annually and periodically.

The annual review should be a relatively quick check of compliance with Articles 5 and 7. This will ensure that parties with suspect inventory data are detected and prevented from trading and that those struggling to provide reliable data for assessing their compliance with Article 3.1 are helped. The annual review will also allow parties to demonstrate progress towards their emission reduction commitments.

The annual review must be supplemented with a detailed, in-country review of parties' implementation of Articles 5 and 7 at least once per commitment period. Again, the main purpose of this review is to ensure that parties are providing accurate data. The in-country review will also have a facilitative function as the party and the review team will engage in a valuable exchange of information, which should help parties improve their national systems, national registries and inventories.

In addition to these reviews of inventory-related information, information on implementation of the Protocol as a whole needs to be reported in the national communication and reviewed. It is important that reporting and review guidelines for national communications should be detailed and provide for a review which includes the use of quantitative data, for example on measures to combat climate change and resulting emissions trends.

Parties need to decide whether all inventory-related information needs to be reported each year or not, and the relationship between the reporting and review of this information and the national communication. Two basic options are available:

- All inventory-related information is submitted each year, under Article 7.1. Parties would develop guidance for the expert review teams (ERTs) on the extent to which this data should be reviewed annually. Once per commitment period this data would be subject to detailed, in-country review.
- Only some inventory-related information is submitted annually under Article 7.1. This would include the GHG inventory and supplementary information relating to transfers and acquisitions of ERUs, CERs and AAUs. In addition, some information on national systems and registries could be supplied annually, for example on changes to the systems since the previous submission. This information would be reviewed annually. More detailed information on national

systems and national registers would be reported under Article 7.2 and reviewed periodically, either as part of the national communication or in a separate document. This information would be subject to in-country review. Separate review guidelines would be required for annual and periodic review.

Parties should consider these alternative approaches and make a clear decision on which to follow.

#### PRE-COMMITMENT PERIOD REVIEW

It is important that the verification systems are agreed and implemented as soon as possible, to allow parties and institutions to gain experience with them before the commitment period starts. Furthermore, all parties should be subject to a mandatory pre-commitment period review of compliance with Articles 5 and 7. At the March 2000 workshop in Bonn, the working group on Article 8 agreed that the base year inventory, the national system, the national registry system and the national communication should all be reviewed prior to the first commitment period. It is essential that the national inventory also be included in the pre-commitment review because otherwise it will be impossible to properly review the national system. For example, whether a party can properly estimate and report on the uncertainties in their inventory can only be evaluated by seeing how a party actually does this in the context of its inventory.<sup>5</sup>

This kind of pre-commitment period review is vital to the integrity of the Protocol. It should consist of in-depth, in-country review of all the elements listed above. It would demonstrate in advance that parties have adequate systems in place to provide accurate information to judge compliance with Article 3.1. This would provide confidence in the regime, both for parties and sub-national participants in the mechanisms. From a practical perspective the review is also necessary to give parties and reviewers time to overcome difficulties with the verification systems before the commitment period begins in 2008. It would have an important facilitative function, as the exchange of views between reviewers and the national experts would offer an opportunity to discuss implementation problems and consider solutions. Provided this time is used to iron out any problems, subsequent reviews will be easier, allowing for an expedited annual review during the commitment period.

In order for the pre-commitment period review to be completed by 2008, it should begin around 2005. There are some potential problems with this arrangement. First, according to Article 7.3, information submitted under Article 7.1 does not have

<sup>5</sup> Susan Subak, *Comments on Guidelines under Articles 5, 7 and 8 of the Kyoto Protocol*, Natural Resources Defence Council, Washington DC, May 2000, p. 3.

to be provided until the commitment period has started. In addition, according to Article 5.1 the national system does not have to be in place until 2007. Therefore, at COP6 parties need to agree a requirement for national systems and resulting national inventories and national registries to be in place, and assigned amount calculations submitted to the Secretariat, no later than 2005, rather than the 2007 deadline given in the Protocol.

It also needs to be decided whether the information for the pre-commitment review is submitted in a national communication or under some other arrangement. The next national communication is due in 2004-2006, so there is an opportunity to utilise this reporting deadline.

One element of the pre-commitment review that has only received very limited attention from the parties is the commitment in Article 3.2. This requires parties in Annex I to have made demonstrable progress in achieving their commitments under the Protocol by 2005. Criteria for the reporting and review of demonstrable progress must be agreed. It would seem sensible to link this to the pre-commitment period review. Implementation of Articles 5 and 7 of the Protocol could be one of the items under review. In addition, quantitative data should be reported and reviewed to assess the progress that parties are making in reducing greenhouse gas emissions. This could include the greenhouse gas inventory, as well as data which demonstrates policies and measures that the party has put in place to reduce emissions, and their impact.

#### ISSUES RELATING TO THE MECHANISMS

The provision of high quality inventory data is important for all parties to the Kyoto Protocol. It is especially essential for those that want to take part in the mechanisms. Hence, parties are unlikely to be allowed to take part in the mechanisms if they are not in compliance with Articles 5 and 7.

The pre-commitment period review outlined above should contribute to an eligibility check for participation in the mechanisms; that is, parties must not be allowed to transfer or acquire ERUs, CERs and AAUs unless they have been found to be in compliance with Articles 5 and 7. An alternative that has been proposed is that parties should be allowed to take part in the mechanisms unless they are found to be in non-compliance with Articles 5 and 7. This approach is completely unacceptable, as it would allow parties with 'bad' inventories to trade for at least a year before any checks were made on compliance with Articles 5 and 7.

Parties may also decide that further eligibility checks are required for parties wanting to take part in the

<sup>1</sup> Report of a workshop related to Articles 5, 7 and 8 of the Kyoto Protocol, FCCC/SBSTA/2000/INF.5, UNFCCC, Bonn, April 2000.

<sup>2</sup> Emission Reduction Units gained in Joint Implementation projects under Article 6.

<sup>3</sup> Certified Emission Reductions gained in Clean Development Mechanism projects under Article 12.

<sup>4</sup> Assigned Amount Units, which are traded under Article 17.

mechanisms. For example, implementation of a national compliance system capable of ensuring the party's implementation plan could be required. In this case parties would need to decide if these checks should be carried out under the Article 8 review process, or some other process.

In addition to the eligibility checks, there are a number of issues to be addressed which are linked to the relationship between the review and compliance processes and the mechanisms. These include the extent to which information relating to projects under the CDM and JI should be reported under Article 7 and reviewed under Article 8, and who deals with non-compliance with the mechanisms' rules.

#### ANNUAL REVIEW PROCESS

The guidelines for technical review of GHG inventories agreed at COP5 provide a foundation for the annual review process. However, at SBSTA 12, parties need to elaborate the way in which inventory problems are identified by ERTs and passed on to the compliance body. A key issue here is which problems should be forwarded to the compliance body and which can be dealt with within the review process.

The approach taken so far has been to try and agree on a classification of inventory problems. It is suggested that problems be classified as first order, second order and *de minus* to describe the severity of the situation. An attempt has been made by the Secretariat to identify and classify potential problems. The result is a complicated, and as yet incomplete, matrix. The EU has suggested an alternative classification scheme that links the types of problems to current guidelines for inventory preparation. Suggested categories for problems therefore include those relating to transparency, consistency, comparability, completeness, accuracy and timeliness.<sup>6</sup>

Whatever scheme is agreed, the roles of the Secretariat, the ERTs and the compliance body should be clearly defined. In the interests of simplicity and speed it seems appropriate for the Secretariat to identify 'problems of implementation' (as mentioned in Articles 8.3 and 6.4) and flag them for the compliance body. The Secretariat might have identified a problem itself, or it might have been informed of a problem by an ERT. This is the model often adopted in the verification of arms control agreements, as it takes political decisions away from the inspectors (or expert reviewers in this case). The ERTs would maintain their position as the providers of technical reviews.

<sup>6</sup> Submission by Portugal on behalf of the European Community and its member states on methodological issues related to Articles 5, 7 and 8 of the Kyoto Protocol, Lisbon, May 2000, p. 11.

As soon as a problem was formally identified by the Secretariat it would be considered a 'question of implementation'. At this point, according to Article 6.4, the party would be suspended from acquiring ERUs for the purpose of meeting its commitments under Article 3. Similar rules should be agreed for acquisitions and transfers of CERs and AAUs. It would be for the compliance institution to decide if the 'question of implementation' was a compliance problem or not.

Another element of the annual review process is the application of adjustments, according to Article 5.2, to inventories that are not compiled according to the guidelines. Parties are undecided on the extent to which adjustments should be used and how they should be applied.

The adjustment issue may not be as innocuous as it first seems if the provision of an adjusted figure actually prevents a 'question of implementation' from being drawn to the attention of the compliance body. For this reason, one school of thought argues that only second order problems should be adjusted, with more severe problems being referred straight to the compliance body.<sup>7</sup> An alternative view is that adjustments should be applied to all problems and then reported to the compliance body. This argument suggests that the scale of the problem is more precisely conveyed to the compliance body in the form of adjustments, rather than as categories of problems.<sup>8</sup> A difficulty with this approach is that the application of adjustments takes time.

Further discussion is also required on the use of adjustments in the pre-commitment period review. It is not clear whether an adjusted inventory, especially a base year inventory, could meet the eligibility requirements for participation in the mechanisms. What is clear is that serious or consistent inventory problems should not escape the scrutiny of the compliance body.

A further debate concerns who should apply adjustments. While most parties agree that experts should make the adjustment, some suggest that the party should take this role. There does not really seem to be any justification for this approach, as the party would already have had the opportunity to correct any problems identified in the review process. Application of adjustments by the ERT rather than the party has the following benefits:

- It ensures consistent application of adjustments.
- It leaves no opportunity for delaying tactics.
- It provides the required incentive for parties to provide their own figures in the first place.

<sup>7</sup> Submission by Portugal.

<sup>8</sup> Subak, p. 5

The adjustment should be provided in the ERT report to the compliance body. Should the party disagree with the ERT recommendation, it has the right to appeal to the compliance body.

The issues highlighted above should be resolved this year. Further elaboration of the inventory review process should occur in 2002, when the trial of the current inventory review guidelines is completed. Parties should be starting to identify and develop advanced methods for detecting inventory problems at the early stages of review. Some methods have already been mentioned, for example outlier detection and time series analysis. Techniques used for detecting fraud in other areas might also be considered, such as Benford's Law<sup>9</sup> and artificial intelligence techniques such as data mining. In addition, the comparison of inventory data with independent data should be encouraged. A process should be instigated for the provision of independent data to the Secretariat for this purpose.

#### PERIODIC REVIEWS

As has been noted, in addition to the annual review of inventory-related information, parties have discussed periodic review of both inventory-related information and wider information on implementation of the Protocol. It is not yet clear whether this will all be reported and reviewed in the context of the national communication, or if inventory-related items will be reported and reviewed separately (and, if so, how).

It is important that there is a periodic, detailed, in-country review of inventory-related items. It will provide confidence in the regime for all parties and those participating in the mechanisms. The in-country review would be additional to the normal annual review because there would still be a requirement for a fast review. Also, the periodic in-country visit would not only refer to the inventory submitted for that year, but would review previous inventories and check what actions have been taken to solve problems identified earlier.

In order that these reviews are carried out as efficiently as possible, parties should consider implementing a rolling timetable. That is to say, in addition to the pre-commitment period review, all parties would be subject to one in-country review per commitment period, spaced at regular intervals. Not all parties would be reviewed in the same year. Given that there five years in the commitment period and 41 Annex I countries, this works out at about 8 reviews each year. The timetable for these reviews would be known well in advance to permit parties to ensure that the relevant paperwork and personnel were available for the ERTs. General guidelines for the operation of in-country visits would be useful to overcome some of the

<sup>9</sup> See NewScientist, 10 July 1999, pp. 27-30.

logistical difficulties outlined by the Secretariat.<sup>10</sup> In the interests of transparency, provision should be made for non-governmental organisations to observe these visits.

Assuming that inventory problems might be uncovered during the in-country review, which were not found in the annual review process, there is a political problem in devising the timetable for a rolling review. If a finding of non-compliance were to result in suspension from participation in the mechanisms, then parties being reviewed early in the commitment period might be concerned that they could be suspended from the mechanisms before other parties had even been reviewed. Alternatively some countries might prefer to be reviewed early, in the expectation that this would give their inventories a 'gold standard'. Solutions might need to be found for this potential difficulty.

Still, it should be recognised that these problems might still occur under a common review timetable, as the ERTs will never be able to review all parties simultaneously. Furthermore, if parties have already been found to be in compliance with Articles 5 and 7 in the pre-commitment period review, they should have nothing to fear from the timing of subsequent in-depth reviews.

#### ARRANGEMENTS FOR REVIEW TEAMS

A key issue for many parties concerns the capacity of the review teams and the compliance body to make thorough, yet rapid assessments of compliance, both with Articles 5 and 7, and with Article 3. For this reason, parties should start to consider the future institutional arrangements for ERTs. The current review arrangements, which use nominated experts on a part-time, *ad hoc* basis, will not fulfil the needs of the Protocol. The Secretariat has already noted problems associated with competing demands on nominated experts' time, including experts being poorly prepared for reviews, having difficulties in contributing to the review report and being unable to provide timely comments on the draft review report.<sup>11</sup> Use of *ad hoc* review teams may not ensure the consistency and time commitment required for timely completion of reviews.

Given the intensity of the planned review process, parties should consider alternative arrangements for review teams. One possible model is the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW), set up under the Chemical Weapons Convention (CWC). A technical secretariat for the Kyoto Protocol could employ experts on a full-time basis in the same way that

<sup>10</sup> National communications from parties included in Annex I to the Convention: experience with the review of second national communications, FCCC/SBI/2000/3, UNFCCC, Bonn, March 2000.

<sup>11</sup> FCCC/SBI/2000/3.

inspectors are employed by the OPCW. The experts would serve in their personal capacities in a division of the Secretariat dedicated to all aspects of Articles 5, 7 and 8. This division could be a source of facilitative advice and technical assistance as well as undertaking reviews.

Whatever institutional arrangements are agreed, experts must be trained before carrying out reviews to ensure a consistent and thorough review process. Selection criteria must take into account professional expertise, experience, competence and integrity. The expertise required of reviewers will vary over time as different types of review are carried out and this should be taken into account. For any given review, a team of reviewers should in the first instance be assembled from the experts according to availability and skills. Due regard must be paid to the importance of selecting personnel on as equitable a geographic basis as possible.

In addition to the arrangements for ERTs, parties must consider the role of outside experts in the review process. In particular, the extent to which private sector auditors should be used to undertake thorough checks of national inventories should be agreed.<sup>12</sup> Auditors could be used during the Article 8 review process to check the detail of submitted inventories, especially the activity data used to estimate emissions. However, the use of private sector auditors should also be an integral part of the pre-submission quality assurance/quality control procedures, developed as part of the national system according to Article 5.1. If pre-submission review of the inventory was mandatory under Article 5.1 this would enable the Article 8 review process to proceed more efficiently. Parties therefore need to consider the relative benefits and drawbacks of using private sector auditors under Articles 5.1 and 8.

## CONCLUSION

Elaboration of Articles 5, 7 and 8 depends to a large extent on development of rules for the mechanisms and compliance system. However, a priority for the Bonn meetings in June 2000 must be to agree the framework for reporting and review in order that details can be easily added later in the year. A key feature of the system should be early implementation, including pre-commitment period review.

**Clare Tenner is VERTIC's Environment Researcher. During the SBSTA workshops and sessions she can be contacted at the Insel Hotel, Bonn. Tel. +49 228 35000, fax +49 228 3500333.**

<sup>12</sup> See Tim Hargrave, Ned Helme, Suzi Kerr and Tim Denne, *Defining Kyoto Protocol Non-compliance Procedures and Mechanisms*, Centre for Clean Air Policy, Washington DC, 1999, p. 13



VERTIC is the Verification Research, Training and Information Centre, an independent, non-profit making, non-governmental organisation. Its mission is to promote effective and efficient verification as a means of ensuring confidence in the implementation of international agreements and intra-national agreements with international involvement. VERTIC aims to achieve its mission by means of research, training, dissemination of information and interaction with the relevant political, diplomatic, technical, scientific and non-governmental communities. A Board of Directors is responsible for general oversight of VERTIC's operations and an International Verification Consultants Network provides expert advice.

### Personnel

Dr Trevor Findlay, *Executive Director*  
Dr Oliver Meier, *Arms Control & Disarmament Researcher*  
Clare Tenner, BSc(Hons), MRes, *Environment Researcher*  
Angela Woodward, BA(Hons), LLB, *Administrator & Legal Researcher*

### Board of Directors

Dr Owen Greene (Chair)  
Gen. Sir Hugh Beach GBE KCB DL  
Lee Chadwick MA  
Prof Bhupendra Jasani  
Sue Willett BS(Hons), MPhil

### International Verification Consultants Network

Richard Butler AO (*arms control & disarmament verification*)  
Dr Roger Clark (*seismic verification*)  
Dr Jozef Goldblat (*arms control & disarmament agreements*)  
Dr Patricia Lewis (*arms control & disarmament agreements*)  
Peter Marshall OBE (*seismic verification*)  
Robert Mathews (*chemical & biological disarmament*)  
Dr Colin McInnes (*Northern Ireland decommissioning*)  
Dr Graham Pearson (*chemical & biological disarmament*)  
Dr Arian Pregenzer (*co-operative monitoring*)  
Dr Rosalind Reeve (*environmental law*)

**Current funders:** Ford Foundation, John Merck Fund, Joseph Rowntree Charitable Trust, Ploughshares Fund, Landmine Monitor, W. Alton Jones Foundation and the John D. and Catherine T. MacArthur Foundation.

Baird House  
15/17 St. Cross Street  
London EC1N 8UW  
United Kingdom

Tel: +44 (0)20 7440 6960  
Fax: +44 (0)20 7242 3266  
Email: [info@vertic.org](mailto:info@vertic.org)  
Web: [www.vertic.org](http://www.vertic.org)

ISBN 1-899548-19-X

© VERTIC 2000.