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B R I E F

Kyoto Protocol national systems and registries: countdown to 2008

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Introduction

National systems are the backbone of international efforts to mitigate climate change. They provide the mechanisms for the annual estimation of greenhouse gas emissions and removals and the compilation of national greenhouse gas inventories. Accurate and complete greenhouse gas inventories permit evaluation of the success or failure of countries' emissions reduction strategies overall. They can also facilitate more detailed analysis of emissions trends in each economic sector, thereby allowing closer examination of sector-specific emissions reduction policies.

The 1997 Kyoto Protocol to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) requires Annex I parties (developed countries)¹ to establish national systems to verify compliance with their emissions reduction targets. Credible national systems which provide accurate verification of emissions and removals give all states the reassurance that every other state is fulfilling its emissions reduction commitments and not 'free-riding'. Furthermore, only with sound evidence of a party's emissions and removals can the flexible mechanisms (the clean development mechanism (CDM), joint implementation (JI) and emissions trading) of the Kyoto Protocol function: the environmental and economic integrity and workability of these mechanisms is ultimately reliant on the soundness of parties' emissions estimation systems. National registries constitute an essential component of the Kyoto Protocol system by accounting for parties' tradable emissions units.

To ensure that parties are meeting their commitments the Kyoto Protocol has an elaborate compliance system. This VERTIC Brief examines the composition of national systems and registries and the compliance structure that governs their implementation and evaluates progress made to date by parties in establishing them.

1. Annex I parties have binding commitments under the Kyoto Protocol to reduce emissions. Parties with economies in transition (EIT) are included in this group.
2. For this section and the following see documents FCCC/CP/2001/13/Add.2 and FCCC/CP/2001/13/Add.3.
3. EIT parties can choose a different base year.

National systems and greenhouse gas inventories

Several parties already had systems in place for monitoring emissions of certain gases prior to entry into force of the UNFCCC in 1994, which either covered some or all greenhouse gases.² The level of detail and complexity of emissions monitoring systems depends on the capacity of the states they are designed for and how precise the emissions data needs are. As global agreements, the UNFCCC and the Kyoto Protocol depend on greenhouse gas emissions and removals information which is fully comparable among all parties. It should also be simple to produce to enable all parties to participate, yet still be of high quality.

Under the UNFCCC, Annex I parties are required to submit an annual inventory of greenhouse gas emissions and removals to the UNFCCC Secretariat. The submission should include emissions data from 1990³ to the most recent year. The UNFCCC requires parties to use guidelines prepared by the Intergovernmental Panel on Climate Change (IPCC) for national greenhouse gas inventories. These guidelines, frequently revised in order to promote accurate reporting, contain detailed instructions and provide methodologies for estimating greenhouse gas emissions and removals. Annex I parties must submit their inventory in two parts: the Common Reporting Format (CRF), which is a standardized database, submitted electronically, showing emissions data; and the National Inventory Report (NIR), which contains information on how the inventory was compiled.

The inventory is divided into six sectors:

- energy;
- industrial processes;
- solvent and other product use;
- agriculture;
- land-use change and forestry; and
- waste.

Each of these sectors is sub-divided into several categories. For instance the industrial processes sector includes the following categories:

- mineral products;
- chemical industry;
- metal production;
- other production;
- production of halocarbons and sulphur hexafluoride; and
- consumption of halocarbons and sulphur hexafluoride.

The IPCC system is not as detailed as the emissions monitoring systems currently used in some states, since it is intended for use by all parties which vary greatly in terms of their capacities, resources and experience.

In order to compile national greenhouse gas inventories to the standard that the UNFCCC requires, Annex I parties must establish national systems comprising all institutional, legal and procedural arrangements for estimating anthropogenic greenhouse gas emissions and removals and for reporting and archiving inventory information.⁴ National systems should provide emissions inventories that adhere to certain principles, namely: transparency; consistency; comparability; completeness; and accuracy.⁵

The composition of, and arrangements for, each party's national system differ widely, based on factors like the nature of its economy, the structure and size of its bureaucracy and the way in which political and bureaucratic authority is devolved within the state. Other factors include the degree of experience a party has in emissions monitoring and how well resourced the relevant institutions are. The types of entities involved in preparing an inventory are government departments and agencies and, in some cases, research institutes and private companies as well.

Despite the differences in parties' institutional structures all inventories have to

conform to UNFCCC standards and conditions. Parties must ensure, for instance, that there is sufficient capacity within its systems and, in particular, that staff involved with the inventories have appropriate skills. Inventory compilation involves several activities, which are outlined below.

Inventory activities
Collecting activity data.
Selecting methods and emission factors appropriately.
Estimating emissions and removals.
Implementing uncertainty assessment.
Implementing quality assurance/quality control (QA/QC) activities. ⁶
Verifying inventory data.

The national systems should be designed and operated so as to ensure good planning, preparation and management of the inventories, as set out below.

Inventory planning
Designating a single national entity with overall responsibility for the national inventory.
Defining and allocating specific responsibilities in the inventory development process for the inventory activities referred to above.
Elaborating the QA/QC plan, including the establishment of quality objectives.
Establishing a process for official consideration and approval of the inventory prior to submission.
Considering ways to improve the quality of data and emission factors and methods.
Inventory preparation
Identifying key source categories.
Preparing emissions estimates.
Collecting sufficient activity data, process information, and emission factors.

'The composition of, and arrangements for, each party's national system differ widely, based on factors like the nature of its economy, the structure and size of its bureaucracy and the way in which political and bureaucratic authority is devolved within the state'

4. See 20/CP.7, FCCC/CP/2001/13/Add.3.

5. See FCCC/SBSTA/2004/8.

6. QA is a 'system of routine technical activities, to measure and control the quality of the inventory as it is being developed', for example, accuracy checks on data acquisition. QC activities 'include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. *IPCC Good Practice Guidance*, ch. 8.4.

The review process serves a number of purposes: it checks the completeness and veracity of the inventory; and permits the ERT to give advice to the party on how to improve its national systems and inventory'

Carrying out a quantitative estimate of inventory uncertainty for each source category and for the total inventory.

Implementing inventory QC procedures.

Applying specific QC procedures for key source categories.

Providing for a basic review of inventory by personnel that have not been involved in the inventory development.

Providing for extensive review of the inventory where changes in methods or data have been made.

Providing for internal evaluation of the inventory preparation process and re-evaluation of the inventory to meet quality objectives.

Inventory management

Archiving of inventory information for each year in a single location and providing expert review teams (ERTs) with access to this information.

Responding to requests for clarification of inventory information.

Review procedure

As of 2003 all Annex I parties' national inventories have been subject to a stringent three-part review process. First the UNFCCC Secretariat conducts a brief check on the completeness of the inventory and that it is in the correct format. It then compiles a synthesis and assessment document comparing data across parties and highlights areas to be considered in the third part, the individual review process. Individual reviews are carried out by expert review teams (ERTs).⁷ Individual review can be conducted in three ways:

- an in-country review;
- a centralized review (which takes place at the UNFCCC Secretariat); or
- a desk review (where the experts work from their home countries).

The results of the reviews and the synthesis and assessment documents are publicly available on the UNFCCC website. In setting up the ERTs the secretariat aims to ensure that their expertise covers all economic sectors and that there is a balance in the make up between Annex I parties and non-Annex I parties (developing countries).

The review process serves a number of purposes: it checks the completeness and veracity of the inventory; and permits the ERT to give advice to the party on how to improve its national systems and inventory. The ERT will also provide a technical assessment of parties' implementation of the Kyoto Protocol. Review procedures assess annual inventories to see if adjustments are needed and to ensure that all of the other parties, via the Conference of Parties serving as the Meeting of Parties to the Kyoto Protocol (COP/MOP) and the Compliance Committee, have accurate inventory information.

Responsibilities of non-Annex I parties

Under the convention non-Annex I parties must report national greenhouse gas inventories less comprehensively than Annex I parties. However, from 2002, non-Annex I parties are expected to provide more detailed inventories than before. They are not required to submit inventories annually, but rather file them with their national communications, the timing and frequency of which is still under negotiation. Non-Annex I parties are assisted in the preparation of their national communications by the Consultative Group of Experts (CGE).⁸ Their national inventories are subject to review only in the form of a compilation and synthesis document drawn up by the Secretariat. Non-Annex I parties, unlike Annex I parties, cannot trade emissions units using the flexible mechanisms and are not bound by emissions reduction targets. Consequently they are not subject to the eligibility and compliance requirements, described below, which the Annex I parties must meet.

7. ERTs consist of experts who are nominated to a roster and coordinated by the secretariat.

8. The CGE was established by the COP to improve non-Annex I party national communications by providing them with technical advice. See www.unfccc.int.

National registries

National registries are electronic databases which contain data that facilitate accurate accounting of a party's tradable emissions units. They are not trading platforms themselves, nor are they platforms for reporting emissions reductions. The registries track holdings and movements of units both nationally and between parties. The secretariat will also run an 'independent transaction log' to ensure the integrity of transactions by checking them against the trading conditions set out under the Kyoto Protocol.

Pre-commitment period compliance with Kyoto Protocol

Compared with many other international environmental treaties, the Kyoto Protocol has a particularly powerful and robust system for handling cases of non-compliance.⁹ At its core is the Compliance Committee, which will begin operating after the Protocol comes into force. The committee consists of a Facilitative Branch and an Enforcement Branch. Each has 10 members elected by the COP/MOP. The Facilitative Branch provides advice and assistance with the aim of promoting compliance and providing early warning of non-compliance. How strict the Compliance Committee is will depend on who is elected to it. The Enforcement Branch will deal mainly with the legal aspects of enforcement, the technical aspects being handled by the ERTS. A set of procedures has been laid out to address compliance problems. These permit the Enforcement Branch to obtain the information it requires to make its compliance assessment and allows the party whose eligibility and compliance is under scrutiny to present its case. The compliance provisions also set out 'consequences' that the Enforcement Branch may apply in instances of non-compliance: it can make adjustments to

national inventories; suspend and reinstate eligibility to participate in the flexible mechanisms; and correct parties' accounting. For each different instance of non-compliance steps are specified that a party can take to have its eligibility restored and to be deemed in compliance.

It is useful to think of compliance under the Kyoto Protocol in temporal and substantive terms.

Temporal

- Compliance in the run-up to the first commitment period (1 January 2008).
- Compliance during the first commitment period.¹⁰

Substantive

- Compliance with requirements for national systems to monitor emissions and removals and eligibility to use the flexible mechanisms.
- Compliance with assigned amount¹¹ limitations.

This Brief is concerned with compliance in the run-up to the first commitment period, including the requirements for national systems to monitor emissions and removals and eligibility to utilize the flexible mechanisms. The compliance system is designed to encourage early compliance and use of the flexible mechanisms, described below.

- The CDM, under which Annex I parties can implement sustainable development projects that lead to emissions reductions in non-Annex I parties and earn certified emissions reductions (CERS).
- JI, under which Annex I parties can implement emissions reduction projects in other Annex I parties and earn emission reduction units (ERUs).
- Emissions trading, which permits Annex I parties to trade emissions units—assigned amount units (AAUs), removal units (RMUs), CERS and ERUs—with other Annex I parties.¹²

9. In addition to the compliance measures described in this Brief parties may appeal to the COP/MOP against a decision of the Enforcement Branch if the party believes it has been denied due process. See 24/CP.7, FCCC/CP/2001/13/Add.3.

Furthermore, Article 19 of the Kyoto Protocol states that the provisions of dispute settlement provided for in Article 14 of the convention apply to the protocol. Article 14 lays down procedures, including negotiation, the possible involvement of the International Court of Justice (ICJ) and conciliation, for instances of a dispute between two or more parties.

10. For information on compliance procedures and mechanisms during the first commitment period see FCCC/CP/2001/13/Add.2 and FCCC/CP/2001/13/Add.3

11. An 'assigned amount' is the total amount of greenhouse gases that an Annex I party may emit during the first commitment period. Each Annex I party's assigned amount of greenhouse gas emissions will be calculated using its quantified emission limitation and reduction commitments. See Article 3 of the Kyoto Protocol and also 19/CP.7, FCCC/CP/2001/13/Add.2.

12. See 19/CP.7, FCCC/CP/2001/13/Add.2.

There are six main eligibility requirements that need to be met by parties in order to participate in the flexible mechanisms:¹³

- it is a party to the Kyoto Protocol;
- its assigned amount has been calculated and recorded;
- it has in place its national system;
- it has in place its national registry;
- it has submitted annually its most recent required inventory.¹⁴
- it submits certain supplementary information on its assigned amount.¹⁵

The eligibility requirements are applied in a slightly different way for each of the flexible mechanisms. Annex 1 parties (and entities authorized by these parties, such as private companies) may only trade emissions units if they fulfil the above eligibility requirements. However, they can initiate both CDM and JI projects¹⁶ prior to 2008: several such projects are currently under way. Parties may also earn CERS before 2008. They may not use them, though, to contribute to compliance with their emissions reduction commitments until they satisfy the eligibility requirements. Furthermore, parties cannot earn ERUs until 2008. In theory, if parties meet their eligibility requirements before 2008 they can begin trading the units they have. The Facilitative Branch will assist parties in meeting the compliance and eligibility requirements in the approach to the first commitment period.

Pre-commitment period report

Under Article 5 of the Kyoto Protocol, Annex 1 parties must have effective national systems in place at least one year before the start of the first commitment period. Parties must submit a report to the secretariat by 1 January 2007 to demonstrate compliance with the protocol's preconditions. The report should facilitate the calculation of a party's assigned amount and demonstrate

capacity to account for its emissions and assigned amount.¹⁷ The review and compliance procedures have to verify the report and if, after 16 months, they find no evidence of conditions not being met the party becomes eligible. If a party were to leave the submission of its report to 1 January 2007 it would not gain its eligibility until four months into the first commitment period due to the 16-month verification procedure.

The report will be structured in two parts. The first should contain, among other information, a complete inventory of emissions and removals from a party's base year to the most recent year available,¹⁸ and the calculation of its assigned amount. The second should incorporate, inter alia, a description of its national system and national registry. As the process proceeds the secretariat will compile a publicly accessible list of parties that meet the eligibility requirements and those that have been suspended.

Progress and future outlook

Since entry into force of the UNFCCC Annex 1 parties have steadily improved their national inventories and gained experience in running national systems.¹⁹ This trend has accelerated in the past few years.

Some parties are more advanced than others. This is due to factors such as previous experience, greater institutional capacity or because they encounter fewer logistical difficulties in managing the inventory and collecting data. Much depends on whether they have given priority to the establishment of good quality national systems and registries.

There are a number of processes in motion designed to catalyze the development of national systems and registries. For instance the Regional Environmental Center for Central and Eastern Europe (REC) runs a programme to assist EIT parties, for which

13. Joint implementation activities enjoy an exception to the above conditions: a special procedure is possible whereby the host party (usually an EIT party) only has to meet eligibility criteria a), b) and d) to issue and transfer ERUs. However, the activity must then be verified by the 'Supervisory Committee' set up by the COP/MOP. The easing of the eligibility requirements is designed to facilitate greater use of this mechanism.

14. 'For the first commitment period the quality assessment needed for the purpose of determining eligibility to use the mechanisms shall be limited to the parts of the inventory pertaining to emissions of greenhouse gases from source/sector categories from Annex A to the Kyoto Protocol and the submission of the annual inventory on sinks' (19/CP.7, Annex para.2 (e) FCCC/CP/2001/13/Add.2).

15. For details of the supplementary information see FCCC/CP/2001/13/Add.3.

16. There are specific procedures which govern establishing, monitoring and verification of CDM and JI projects. See FCCC/CP/2001/13/Add.2.

17. See 19/CP.7, FCCC/CP/2001/13/Add.2.

18. See 22/CP.7, FCCC/CP/2001/13/Add.3.

19. Information for this section is derived from the EIT in-depth reports on national inventories.

the UNFCCC requirements in this area are particularly challenging, to improve their inventories. In addition there are consultations on registries run by the UNFCCC Secretariat designed to assess progress on registry development and facilitate their development. Currently the targets for the European Union (EU) parties are to have operational registries in place by 2005.²⁰ Registries in non-EU parties are not expected to be operational until 2006–2007. Parties will have to work swiftly in order to meet these targets. Many EU member states will probably meet their target. Although non-EU parties are moving on a slower track, they will be able to learn from the EU members' experience of registry development and even procure registry software from those states or any companies that have already developed it. This will speed up their own implementation.

Several parties are now able to produce inventories that are generally in conformity with the UNFCCC guidelines and a number are well on course to establishing national systems which meet these conditions. Often the parts of the national system already in place are of high quality and there are plans to implement the outstanding elements quickly. Other parties are less advanced with much remaining to be done: for instance problems persist in the areas of completeness and transparency. This is a result of data not being provided for certain sources or years in the inventory or a lack of explanatory information in the NIR. These problems are often due to a lack of resources.

Although there has been significant improvement in several EIT parties' inventories, there is some way to go before they satisfy all of the UNFCCC conditions. Expeditious capacity-building measures will be needed to improve these inventories. On the whole parties are aware of what needs to be done. Problems with base year data, affecting a number of parties, could have negative consequences for the calculation of parties' assigned amounts if not dealt with.

Conclusion

If the first commitment period of the Kyoto Protocol is to begin smoothly Annex 1 parties must ensure that they have effective national systems in place by the 2007 deadline. However, parties should attempt to go beyond this and achieve eligibility before the deadline to stimulate use of the flexible mechanisms.²¹

Due to their complexity, national systems and registries take time and significant resources to develop and perfect. It is hoped that, with the Kyoto Protocol entering into force in 2005, Annex 1 parties will both appreciate the importance of establishing effective national systems and registries as soon as possible and be spurred in their efforts to meet this challenge.

20. EU member states need to have registries (which will be compatible with Kyoto Protocol requirements) in place before the start of the EU Emissions Trading Scheme on 1 January 2005.

21. If a large number of parties leave submission of their pre-commitment period report to the eleventh hour the secretariat will be placed under considerable pressure to carry out the review procedures by the start of the first commitment period.

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About this paper

Larry MacFaul examines the compliance and eligibility requirements facing parties to the 1997 Kyoto Protocol on climate change in the run-up to its first commitment period (2008–2012). These requirements relate to the estimation and reporting of emissions. The development of national systems for emissions estimation and registries for accounting parties' emissions trading units provide the basis for meeting these requirements. To establish their systems and registries states need significant capacity and resources. So far, parties have made considerable progress in developing them. However, to meet the eligibility requirements and be deemed in compliance there is much to do and only a short while to do it before the Kyoto Protocol deadlines take effect.

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