

Verification under the Kyoto Protocol

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In December 1997, parties to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)¹ adopted the Kyoto Protocol² in order to strengthen international efforts to combat human-induced global warming. Although the convention aims for the ‘stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system’,³ it does not set a specific emission reduction target, instead committing the parties to the ‘aim of returning individually or jointly to their 1990 [emission] levels’⁴ by 2000. It became clear that many parties would not meet this goal.⁵ Yet, at the same time, scientific consensus was pointing, with increasing levels of certainty, to the need for faster and tougher action to reduce anthropogenic greenhouse gas (GHG) emissions.⁶ The Kyoto Protocol emerged out of this background of contradictory indicators, setting, for the first time, legally binding emission reduction targets for a ‘basket’ of GHGs.⁷ Overall, parties to the protocol commit themselves to reduce emissions to 5.2 percent below 1990 levels between 2008 and 2012. This goal has been divided into unequal targets for each of the Annex 1 (developed) nations⁸ on the basis of ‘common, but differentiated, responsibilities’,⁹ as enshrined in the convention.

Although the basic framework for implementing the terms of the protocol were agreed in Kyoto, Japan, it was clear that key countries would not consider ratification until the details were elaborated. This process of adopting a protocol but delaying ratification while the implementation details were worked out appears to be unique to multilateral environment agreements. However, negotiation of the Kyoto Protocol has extended the model furthest because of the high level of technical, scientific and economic complexity involved.¹⁰

The Fourth Conference of the Parties (COP4), held in Buenos Aires, Argentina, in November 1998, established a Plan of Action, setting a timetable and defining the scope of negotiations on the outstanding detail. These were to be completed by COP6 in The Hague, Netherlands, in November 2000. However, the failure of the talks and the subsequent withdrawal of the US from the Kyoto process meant that, for a time, it was unclear whether the protocol could enter into force. The remaining parties decided to proceed with negotiations at a resumed session of COP6, held in July 2000 in Bonn, Germany. There, in an eleventh-hour political deal,¹¹ they reached agreement on the rules for implementing the protocol. However, the late-night brinkmanship left negotiators no time to formalise these rules in legal text. This task was carried forward to COP7, which was held in Marrakech, Morocco, from 29 October–10 November 2001. It was at COP7 that the parties finally agreed, a year late, on the necessary detail to pave the way for the protocol's entry into force. The Marrakech Accords,¹² the conference's final document, are regarded as a comprehensive rule book for implementing the Kyoto Protocol.

The unusual way in which the protocol has evolved means that, in order to implement it, parties need to comply with not one, but three documents: the text of the convention, the protocol text itself and the Marrakech Accords. The accepted view is that the Marrakech Accords 'flesh out' the 'bones' of the protocol text as agreed in Kyoto in 1997. It sets out more precisely what parties must do to meet their obligations, leaving less room for misinterpretation and disputes when the agreement enters into force. The fact that parties negotiated so energetically throughout the process indicates how much room the detail left for them to extract national advantage.

To enter into force, the protocol needs to be ratified by at least 55 parties to the convention, including the Annex I (industrialised) countries responsible for 55 percent of Annex I countries' emissions in 1990. At the time of writing, 96 parties had submitted their instruments of ratification.¹³ This number includes 25 of the 35 Annex I countries, which account for 37.4 percent of industrialised country emissions in 1990. Poland, responsible for 3.0 percent of emissions, will add to this total, having recently completed its national ratification process. Russia, Canada and New Zealand used the World Summit on Sustainable Development, held in Johannesburg, South Africa, between 26 August and 4 September 2002, to

reconfirm their intentions to ratify the treaty. Significantly, Russia's Prime Minister, Mikhail Kasyanov, stated that his country would ratify in 'the very near future'. Since Russia was responsible for 17.4 percent of Annex I emissions in 1990 its ratification alone would trigger entry into force. There is hope that this will occur by the first quarter of 2003.

Chapters in the last two editions of VERTIC's *Verification Yearbook*¹⁴ have followed the negotiation of the Kyoto Framework, and specifically its compliance and verification regime. Since publication of *Yearbook 2001*, most of the detail of the system has been finalised and adopted in the Marrakech Accords. For the first time, it is possible to describe in detail the scope, principles and operational rules for reporting, review and compliance assessment under the Kyoto Protocol. What follows in this chapter is a guide to the newly agreed system.

Meeting the Kyoto emissions targets

Each party's emission reduction target can be expressed as an 'assigned amount'—the volume of carbon dioxide equivalent that a party is allowed to emit over the first commitment period (2008–2012). This is calculated by combining its emissions during the 1990 base year with its negotiated emissions reduction target (expressed as a percentage) and multiplied by five (the number of years of the commitment period).¹⁵ Under the protocol, countries are encouraged to develop domestic policies and measures to reduce their emissions below this level.

However, the protocol also provides parties with additional instruments to help them stay within their assigned amount. Parties can use the so-called flexible mechanisms: emissions trading (ET), joint implementation (JI) and the Clean Development Mechanism (CDM).

Emissions trading will allow parties that are struggling to meet their targets to buy carbon allowances from those countries that have exceeded their commitments by making extra reductions. Alternatively, under the JI mechanism, countries can earn extra allowances by implementing emission reduction projects in another Annex I country. Finally, the CDM enables Annex I parties to claim allowances for projects established in developing (non-Annex I) countries. Advocates of the flexible mechanisms claim that putting a price on a tonne of carbon will exploit the advantages of global markets and achieve the most cost-effective reductions. However,

the use of the flexibility mechanisms is intended to be ‘supplemental’ to domestic action, which is supposed to remain ‘a significant element of the effort made by each party’¹⁶ to meet its target. This rather vague concept will unfortunately make this a difficult requirement to enforce once the flexible mechanisms become operational.

Countries will also have the option of using ‘sinks’ to stay within their assigned amount. Forests, vegetation and soils absorb carbon dioxide from the atmosphere, providing a type of natural storage. However, there are problems associated with the monitoring and verification of such activities, making them unsatisfactory as long-term contributors to climate change mitigation. The inclusion of sinks activities proved to be controversial at COP6, with the Umbrella Group of countries¹⁷ achieving significant concessions as the price of their continued support for the protocol. First, the list of activities that countries can use sinks domestically to meet their target was expanded,¹⁸ subject to an individually negotiated cap¹⁹ on the overall level that can be claimed. Canada, Japan and Russia negotiated generous allowances. Second, parties agreed that afforestation and reforestation projects were eligible under the CDM, subject to a cap of 1 percent per year for the five years of the first commitment period.

At the end of the first commitment period, a party is judged to be in compliance with its emissions reduction obligation provided that:

$$\text{Emissions between 2008 and 2012} < \text{Assigned amount} + \text{CDM allowances} + \text{JI allowances} + \text{allowances acquired via ET} + \text{removals by sinks.}$$

Other Kyoto commitments

While the prime objective of the protocol is to achieve real and measurable cuts in anthropogenic emissions of greenhouse gases, parties will also commit themselves to a range of complementary objectives designed to promote sustainable development, facilitate technology transfer to developing countries and take preventative action against the climatic and economic impacts of global warming.

According to the International Panel on Climate Change (IPCC), there is strong evidence that the poorest and most vulnerable countries are likely to suffer the worst consequences of climate change.²⁰ At COP7, three new funds were established

to address these concerns, successfully promoted by the Alliance of Small Island States (AOSIS)²¹ and the group of least developed countries (LDCs).²² Canada and Ireland have committed approximately US\$10 million to the so-called LDC fund, which will help the poorest countries to identify priority actions in order to cope with the adverse impacts of climate change. The second fund, the Special Climate Change Fund, will help a wider group of developing countries with adaptation and mitigation measures. The European Union has committed US\$410 billion; however, it is not yet clear how this money will be divided between the funds or whether it will be additional to money already channelled through the Global Environment Facility. Finally, the Kyoto Protocol Adaptation Fund will be financed through a levy on the CDM and is designed to support 'concrete adaptation projects and programmes in developing country parties that have become parties to the Protocol'.²³

While these aspects of the protocol are not quantitative like the emissions reduction targets, they are nonetheless an important part of tackling the climate change problem.

The importance of verification

The successful implementation of the Kyoto framework will be heavily dependent on its verification and compliance regime. It is clear from the hard bargaining during negotiations in The Hague, Bonn and Marrakech that the stakes are high. While there are obvious environmental objectives for the process, each country is also influenced by the economic consequences of implementing its share of the deal. In fact, many countries consider the Kyoto Protocol to be as much an economic agreement as an environmental one.

Given these economic implications, each party needs to be reassured that there will be no 'free riders' and that the burdens of implementation are shared fairly.²⁴ For this reason, the verification and compliance mechanisms need to be robust, fair, transparent and effective. This has to be balanced, however, by efficiency and a pragmatic approach that does not overload parties with unnecessarily complicated monitoring and reporting requirements.

First, and foremost, the Kyoto Protocol's verification system is designed to establish clearly and transparently the compliance or non-compliance of each of the parties. It provides parties with an opportunity to clearly demonstrate their compliance,

provides 'early warning' to parties in danger of not meeting their obligations and discourages flagrant non-compliance. Where a country fails to meet its emissions reduction target in the first commitment period, from 2008 to 2012, the Marrakech Accords stipulate that it is bound to make up the shortfall, plus a 'penalty' of an extra 30 percent, in the second period. In addition, parties will be asked to prepare an action plan showing how they will return to compliance. During the period when a party is not in compliance with its emissions target, its eligibility to use the flexible mechanisms will be suspended.

The assessments of compliance for each party will, in turn, be used collectively to judge the overall success of the treaty and whether it has met its environmental, economic and development objectives. It is clearly important to review, periodically, the effectiveness and efficiency of international action. Are emissions falling? Are countries doing enough? Are resources being effectively targeted? This type of analysis is dependent on the open and transparent exchange of information between parties. Access to high quality data will also encourage parties to learn from each other, assisting the development of best practice in policy development, projects and the sharing of expertise.

The Kyoto Protocol's verification regime should also facilitate civil society involvement. The availability of national information on the Internet gives non-governmental organisations and other groups the opportunity to undertake independent monitoring in parallel with the Kyoto process. By operating outside the usual diplomatic niceties, these groups can be openly critical of countries which are not complying with either the spirit or the letter of the agreement. Where necessary, they also have greater capacity to exert domestic pressure on governments to ensure that they meet their international obligations, in the first instance, and thereafter to exceed them.

Verification of the Kyoto Protocol

The workings of the verification system are stated in articles 5, 7 and 8 of the protocol and build on the provisions for monitoring, self-reporting and expert review established under the UNFCCC. However, the new operational elements of the protocol, including sinks activities, the flexible mechanisms and the process for compliance assessment, mean that parties will need to establish new institutional

and legislative structures and supply extra layers of detail during the reporting process. Moreover, clear rules are needed for accounting (summing up) emission reductions and tracking the issuance and trading of credits under the flexible mechanisms. The linkages between articles 5, 7 and 8 and these other aspects of the Kyoto framework had to be carefully respected in order to ensure that the system would be workable and free from loopholes.

National systems

Under Article 5.1 of the Kyoto Protocol, Annex I parties are required to establish by 2007 'a national system for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol'.²⁵ The word 'system' refers to the institutional and legislative arrangements and the methodological developments necessary to prepare an annual GHG inventory.

Since 1996, Annex I parties have been expected to submit an annual inventory under the Framework Convention. To meet this requirement, many countries have already established systems for the preparation of their submissions. However, it is only under the protocol that these systems become mandatory and are required to meet the standards set out in the guidelines adopted at Marrakech.

GHG emissions arise from diverse sources, most of which are not under government control. Furthermore, these sources can be small, diffuse or even mobile, as in the case of transport. This often makes it impossible or impractical to measure emissions directly at source. Instead, inventories are based on activity data and emission factors²⁶ are used to estimate the contribution of individual key sources to the overall emissions of a country. In order to produce high-standard inventories on time, national systems must establish reliable and timely access to this type of data, preferably implemented through national laws or agreements negotiated with individual providers.

The guidelines go further and require that parties delegate the responsibility for planning, preparing and managing the national inventory to a single authority. This body should have sufficient capacity—human and financial—to fulfil its role, which includes:

- the collection and processing of activity data and emission factors, and preparation of the inventory;

- the quantitative assessment of the uncertainties associated with emission estimates;
- the development and operation of quality control (QC) and quality assessment (QA) procedures;
- the archiving of relevant material in a single location; and
- facilitation of the expert review carried out under Article 8 of the protocol (see below).

The guidelines are designed to specify the objectives and responsibilities of the national systems rather than the means they use to meet them. Each country will need to consider the best institutional and legislative model to suit its circumstances. What all have in common, however, is the need for early implementation. Although an operational national system is not a legal requirement until 2007, the complexity of the reporting and review mechanisms makes it imperative that countries allow time for 'learning by doing'. There will inevitably be problems to resolve before the start of the first commitment period.²⁷

National registries

The other 'system' required under the Kyoto Protocol is a national registry to ensure the accurate accounting of the four types of units that will be used by countries to meet their emission reduction targets or traded under the flexible mechanisms.

Assigned Amount Units (AAUs) are derived from the 'assigned amount', or emissions allowance set for each party for the first commitment period. Emission Reduction Units (ERUs) and Certified Emission Reductions (CERS) are awarded in respect of projects operated under JI and the CDM. Removal Units (RMUs) are issued to parties undertaking sinks activities under articles 3.3 and 3.4 of the protocol. These are the only type of unit that cannot be carried over into the second commitment period. Otherwise, the units are fully fungible so that they can be traded freely among Annex 1 parties. All the units are equal to one tonne of carbon dioxide equivalent.

National registries will act like banks, with accounts for holding, retiring and cancelling AAUs, ERUs, RMUs and CERS. Companies that are authorised by a party to participate in the flexible mechanisms can also hold accounts in the national registry. An international transaction log (ITL), operated by the UNFCCC Secretariat, will track the transfer and acquisition of units between national registries, ensuring

that the operation adheres to the rules set out under the protocol. Information from the ITR will be used to check that parties are eligible to use the flexible mechanisms and that transactions do not violate the commitment period reserve (CPR)²⁸ or the sinks caps.

Where there is a discrepancy, the party initiating the transaction is obliged to terminate the operation. Where a transaction is not terminated, the initiating party has 30 days to resolve the discrepancy. However, the units involved remain invalid (that is, cannot be used to meet the emissions reduction target) until the discrepancy has been audited under the annual Article 8 review process. This means that invalid units can be floating in the registry system for up to 12 months before their status is resolved.²⁹ It will be important for the credibility of the flexible mechanisms that these invalid units do not get 'lost', thereby introducing illegitimate carbon reductions into the accounting and trading systems.

The Marrakech Accords stipulate that each national registry should take the form of a 'standardized electronic database'.³⁰ However, the technical standards to ensure the 'accurate, transparent and efficient exchange of data between national registries . . . and the independent transaction log'³¹ will need to be elaborated before parties can implement their systems. These are expected to be finalised by 2003 in order to allow adequate time for the construction of the ITR and for parties to plan and build their registries prior to the first commitment period. It is clear that experience and expertise from the banking and financial sector will be useful in this process.

The Marrakech Accords are more specific about the tracking of units within the registry system. Each unit will have a unique serial number, which will include elements to identify its commitment period, country of origin, unit type and, where relevant, the 'sink' activity it has been generated from. This unique number will make it possible to trace every unit from issuance to retirement or cancellation, thus minimising the potential for fraud.

Reporting and review

Parties to the protocol are required to submit a number of different reports between entry into force and 2013 so that the fulfilment of their obligations over the first commitment period can be assessed. Each of these reports is subject to some kind of evaluation or review. The objectives, scope and timing for each of these processes are summarised in table 1.

Demonstrable progress

Under the protocol each party 'shall, by 2005, have made demonstrable progress in achieving its commitments'.³² This important provision was included as both an 'early warning system' for countries not acting fast or radically enough to meet their commitments by 2012 and a means of sharing experience and information on 'best practice' between parties. In addition, 'demonstrable progress' reports could act as a confidence-building measure, reassuring all parties, even prior to the first commitment period, that the burdens of the protocol are being taken seriously and implemented fairly.

Since the original Kyoto text was adopted, the concept of demonstrable progress has been largely undermined by the Umbrella Group, which wanted it to be clearly decoupled from any form of compliance assessment. For this reason, the text of the Marrakech Accords only 'urges each party to submit a report by 1 January 2006, for the purpose of reviewing demonstrable progress'.³³ The non-mandatory nature of these submissions is likely to make them less meaningful. Furthermore, the parties decided that reports on demonstrable progress should be 'evaluated' by the COP in a similar way to the national communications submitted periodically by parties under the Framework Convention. The absence of any serious, expert analysis will mean that recommendations made by the COP may not carry the weight necessary to encourage failing countries to take serious remedial action.

The Marrakech Accords do state that the reports on demonstrable progress should include:

- descriptions of policies and measures implemented and any legal or institutional steps taken to meet emissions reduction targets;
- trends in and projections of GHG emissions;
- an evaluation of how implemented policies and measures will contribute to meeting emissions reduction commitments; and
- descriptions of activities and programmes to implement technology transfer and capacity building in developing countries.

Beyond this, however, there is little guidance on how the information should be presented, other than that it should be consistent with a party's last national communication. Given that much of the same information is required by both reports,

it would seem sensible to follow the format and guidelines for the preparation of national communications, which were recently revised and adopted at COP8, held in New Delhi, India from 23 October–1 November 2002. However, additional elements, specific to the protocol, will need to be reported on, including:

- the implementation of national systems for estimating GHG emissions and removals under Article 5.1;
- relevant legal and institutional activities;
- the enhancement of sinks activities; and
- activities relating to the financial mechanisms and the implementation of a national registry.

The compiling of the demonstrable progress report will demonstrate in practice the functionality of national systems, provided parties have made efforts to establish them early enough. The value of the reports will be further enhanced if countries begin collecting relevant data now. Without access to historical data when the reports are being prepared in 2005, their quality and usefulness will be seriously reduced, increasing the already speculative and uncertain nature of projections of the effects of policies and measures on emissions trends.

The pre-commitment period report

In preparation for the first commitment period, parties are required to submit a report by 31 December 2006, or one year after the Kyoto Protocol enters into force for them, whichever is later. This report will be used to fix each party's assigned amount and judge the suitability of its national system and registry.

The report will be in two parts. The first should contain complete national inventories for all years since 1990 until the most recent year.³⁴ In the second, each party is asked to calculate its assigned amount and CPR, and to provide full descriptions of its national system and registry. In addition, parties are asked to specify which sinks activities they intend to take advantage of during the first commitment period and how these will be accounted for.

Each party's pre-commitment period report will be reviewed by an expert review team (ERT) in accordance with the Article 8 guidelines adopted in the Marrakech Accords. The team is selected by the UNFCCC Secretariat from a roster of experts on the basis of equitable geographic representation and expertise. The review of

the pre-commitment period report will include either a 'desk'³⁵ or a 'centralised'³⁶ review and an in-country visit, which is thought necessary to enable the comprehensive assessment of institutional arrangements. During the review process, the ERT should interact with the party to resolve any apparent problems. Where this is not possible, the ERT will produce a review report highlighting any 'questions of implementation' for the attention of the Compliance Committee.³⁷ The reviewers are asked to 'refrain from making any political judgement',³⁸ their role being to analyse the technical information presented in the reports and that gathered during the in-country visit.

Once the review process has been concluded, the party's assigned amount is fixed and cannot be changed. The final review report also establishes parties' eligibility to use the flexible mechanisms, which is contingent on the review team having judged its GHG inventories, national system and registry to be satisfactory.

Reporting during the commitment period

The regular reporting process will begin voluntarily a year after parties submit their pre-commitment period report. It becomes mandatory for the first year of the commitment period, in 2008, and beyond. Parties are required to submit two types of report in order to demonstrate the implementation of their commitments under the protocol. The first is an annual report on the action they have taken to meet their emission reduction commitments. The second is supplementary information relating to their other commitments. For practicality, this information will be added to the national communication already submitted periodically under the Framework Convention.

The key component of the annual submission is the national GHG inventory report, the format of which is prescribed by the revised UNFCCC reporting guidelines.³⁹ These require each party to submit inventory tables for every year from the base year to the most recent year (which is two years behind) in a common reporting format (CRF) which is designed to ensure the transparency, consistency, comparability, completeness and accuracy of their inventories. In addition, each party is asked to prepare a supporting national inventory report (NIR), containing information relevant to understanding its inventory. These have been found to greatly facilitate the review of the inventories during a trial period running between 2000 and 2002.⁴⁰

In the preparation of the inventory, parties are also required to comply with two sets of guidance developed by the IPCC. The first of these is the 1996 Revised IPCC Inventory Guidance,⁴¹ which provides a set of default methodologies for calculating inventory estimates. However, countries are encouraged to improve on these methodologies, where possible, to take into account individual country circumstances. The second publication is the *IPCC Good Practice Guidance*.⁴² This provides parties with methods for estimating the uncertainty associated with inventory values. This is important in order to ensure that source categories contributing significant percentages to the overall emissions of a country are prioritised and calculated with sufficient accuracy. Smaller sources are of lower priority.

In addition to its GHG inventory, each party's annual report should contain information relating to the accounting of the assigned amount and any changes to the national system and registry. Although parties have yet to specify what details they will need to report on in relation to their registry, it seems likely that they will include listings of the total numbers of AAUs, ERUs, RMUs and CERs issued, acquired, transferred, retired and cancelled during the year and, if transaction discrepancies have occurred, how they were resolved.

The annual report should be submitted by 15 April each year. After carrying out an 'initial check' of its format, completeness and timeliness, the UNFCCC Secretariat co-ordinates the review of the report by an ERT, which should complete its work and finalise its review report within a year of submission. The annual submissions will be assessed via a desk or centralised review. In addition, parties will be subject to one in-country visit during the first commitment period, carried out in conjunction with the review of their national communications submitted under the Framework Convention.

The quality and accuracy of the inventories will be the key concern of the ERT. As well as being essential for assessing parties' compliance at the end of the commitment period, the inventories are linked to parties' eligibility to use the flexible mechanisms. If the ERT finds that key source categories are missing or have not been calculated correctly or with sufficient accuracy, they may decide to make an adjustment. Parties have developed methodologies under Article 5.2 of the protocol for this purpose. Under these guidelines, adjustments should be 'conservative'⁴³ and only performed when a party is benefiting from an inaccurate or wrong

estimate. In practice, this means that adjustments are only applied where a party has overestimated in the base year and underestimated thereafter.

Apart from the base year inventory, which is fixed during the review of the pre-commitment period report, the significance of a review team applying an adjustment is limited. Parties are able to correct the adjusted value in later submissions of the inventory series, so that it does not have an impact on their final emissions tally at the end of the commitment period. However, adjustments can have immediate implications for a party's mechanisms eligibility. A party will be suspended when:

- the total value of adjusted emissions estimates exceeds the original estimates by 7 percent in any single year's inventory;
- the above value totals 20 percent at any time over the commitment period; and
- an adjustment needs to be applied to any source estimate equal to more than 2 percent of the overall emissions.

Concerned about being suspended for long periods from using the flexible mechanisms, Japan successfully championed the inclusion of an expedited review process for reinstating eligibility. The guidelines for this new process were agreed at COP8. The expedited process can be initiated at any time by the party and will take no longer than 21 weeks. The guidelines specify that a review should be expedited only by restricting it to the issue that caused the suspension, not by adopting a less rigorous approach to assessing the information.

Parties to the protocol will need to supply 'supplementary' information in their periodic national communications submitted under the Framework Convention. This information will focus on parties' non-mandatory obligations, including financial help provided to developing countries, technology transfer and scientific research on climate change. Parties are also asked to demonstrate how their use of the flexible mechanisms is supplemental to domestic action and to provide a full description of their national policies and measures to reduce domestic emissions.

The information relating to the protocol commitments will be reviewed in conjunction with the review of the national communication undertaken under the UNFCCC. This will begin with a desk or centralised review and will be followed by an in-country visit co-ordinated by the UNFCCC Secretariat. The final report will be provided to the Compliance Committee and the COP.

Report on expiration of the additional period for fulfilment of commitments

At the end of the commitment period, in 2012, it will not be possible to assess parties' compliance with their emission reduction commitments. Since the inventory preparation process lags behind real time by two years, the ERT will only have access to parties' inventories for the period 1990–2010. Inventories for 2012 will not be available until 2014. Compliance assessment for each party can therefore only take place in 2015 after its inventory has been reviewed under Article 8.

The COP, serving as the Meeting of the Parties (MOP) to the protocol, will set the completion date for the review process related to the first commitment period. After this date, parties will have an 'additional period' of 100 days to make their final registry transactions, settle their registry accounts and bring them into compliance. At the end of this period, parties will submit a report on the additional period for fulfilment of commitments containing the final registry information relating to the first commitment period, including the total number of AAUs, ERUs, CERs and RMUs in the retirement account. During the review of this information, undertaken in accordance with the Article 8 guidelines, the ERT will compare the total number of units in the retirement account with the party's emissions over the commitment period to assess whether it has met its emissions reduction target.

The expert review process

The mechanism for reviewing parties' annual reports and supplementary information is designed to provide the Compliance Committee with a 'technical assessment of the implementation of the Kyoto Protocol by Parties included in Annex I'.⁴⁴ In addition, the review should help to promote consistency and transparency in national reporting and assist parties in improving the quality of their reports. This dual role of facilitation and assessment is carried out by the ERT in accordance with the Article 8 guidelines adopted in the Marrakech Accords.

The UNFCCC Secretariat will assign each party's submission to a single ERT. The teams are selected and co-ordinated by the secretariat, which maintains a list of experts nominated by the parties or intergovernmental organisations. However, experts will serve in their personal capacity. The ERTs may vary in size and composition, taking into account the national circumstances of the party being reviewed and the expertise necessary to review its submission. When considering the composition of the review teams, the secretariat is required, where possible, to achieve

a mix of Annex I and non-Annex I country experts as well as an equitable geographical balance. However, this should not compromise the team's technical expertise.

Each ERT will be headed by two lead experts—one from an Annex I country, the other from a non-Annex I country. The lead reviewers will manage the work of the review team, assigning work to the other team members, monitoring progress and liaising with the secretariat and the party. They will also manage the writing of the review reports in accordance with the format and guidelines agreed in Marrakech.

Throughout the review of a submission, the ERT may put questions to or request additional or clarifying information from the party. Where the review team identifies a potential problem, the experts should offer advice to the party on how to correct it. The party is able to read the draft versions of the review report with a view to resolving any questions of implementation prior to the final version. This supports the facilitative aspect of the ERT's role, helping states parties to improve the standard of their reporting. In the event of a dispute between the party and the ERT, the party can submit comments along with the final review report to the Compliance Committee.

After completion of the Article 8 review, and following the resolution of any disputes, certain information is recorded in the accounting database maintained by the UNFCCC Secretariat. The database is designed to be a single repository and definitive source of information relating to parties' assigned amounts. Among other things, a party's aggregate emissions for each year will be recorded, as well as a running total for the commitment period. Each year the secretariat will publish a compilation and accounting report containing information from the database. At the end of the additional period for fulfilment of commitments, and following the Article 8 review for the last year of the commitment period, the UNFCCC Secretariat will publish a final compilation and accounting report for each party and submit it to the COP/MOP and the Compliance Committee for the purpose of assessing the party's compliance.

Compliance assessment

Each year during the commitment period, the Compliance Committee will assess each party's compliance with the terms of the protocol on the basis of the ERT's final review report. Whereas the ERT is expected to make a technical assessment of the national reports, highlighting 'questions of implementation', it is the task of

the Compliance Committee to judge whether such questions translate into non-compliance. At the end of the additional period for the fulfilment of commitments, the Compliance Committee will judge whether each party has met its emissions reduction target on the basis of a report from the ERT.

The committee will in fact comprise two separate panels called the Facilitative Branch and the Enforcement Branch. Each will consist of nine members: one member from each of the five UN regional groups,⁴⁵ two from Annex I countries and two from the non-Annex I group of states. In general, the Enforcement Branch is intended to make judgements on emissions target-related issues. This includes meeting the targets set by Article 3.1, issues relating to reporting under articles 5.1, 5.2, 7.1, 7.2 and 7.4, and questions of the flexibility mechanisms under articles 6, 12 and 17. In contrast, the Facilitative Branch will deal with the complementary objectives of the protocol, helping parties implement more effectively their obligations in respect of finance, technology transfer and sustainable development.

Each branch will take decisions by consensus in the first instance. Where that is not possible, a two-thirds majority is needed. Additionally, for the Enforcement Branch, a majority of members in both the Annex I group of countries and the non-Annex I group of countries is required to carry a decision.

In instances where the Enforcement Branch finds a party to be in non-compliance with its emissions reduction commitment, the party can appeal to the COP, serving as the MOP to the protocol. A majority of at least three-quarters of the conference is needed to overturn a decision of the Compliance Committee.

Conclusions

Compared to other multilateral environment agreements, the Kyoto Protocol provides for a rigorous verification regime. To some extent this reflects the parties' commitment to the protocol and to the goal of mitigating and adapting to climate change. The strength of the system is the integration of reporting into all the operational elements of the agreement and the fact that it develops prescriptive guidelines to set out in detail the information and standards necessary to allow a thorough and technical assessment of parties' implementation.

The guidelines represent experts' 'best guess' for facilitating the smooth running of the reporting and review process. However, the protocol is a novel and innovative

instrument and consists of many untested elements. It is therefore inevitable that, as they become operational, problems and gaps will become apparent, requiring parties to revise and adapt the regime.

The requirements may initially present problems. While many parties have established functioning systems for the preparation of national inventories, others only have a rudimentary one and some have none at all. If these systems are to be ready in time for the first commitment period, serious emphasis needs to be put on implementing the institutional, legislative and methodological developments required for national systems and registries. Parties should use the opportunity of the report on demonstrable progress to test these systems with a view to resolving problems before they affect their eligibility to use the flexible mechanisms.

Early implementation of the reporting requirements will also highlight the extent of the resources parties need to commit domestically and internationally, including to the UNFCCC Secretariat, for the verification regime to function successfully. Many countries, particularly those with economies in transition, will need financial and technical help to meet the standards set by the reporting guidelines. However, such assistance needs to be matched by institutional reorganisation and political commitment in these countries so that funding is effectively channelled. In parallel, the secretariat, which collects submissions, co-ordinates the review process and provides technical and administrative assistance to parties, needs to be adequately funded for these tasks. Parties need to demonstrate their continuing commitment to the process not only by meeting their obligations but by supporting others in theirs.

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Table 1 Reporting obligations for Annex I parties to the Kyoto Protocol (submission date, objective and review process)

Demonstrable progress report (Article 7)

1 January 2006

To provide basis for reviewing party's progress by 2005

The UNFCCC Secretariat will prepare a synthesis document, which will be evaluated by the Subsidiary Body for Implementation along with the 6th national communication. Recommendations will be forwarded to the COP

Pre-commitment period report (Article 7.4)

Earliest: one year after entry into force of the protocol for that party

Latest: 1 January 2007

To review party's base year inventory; to fix the party's assigned amount; to demonstrate capacity to account for assigned amount in accordance to Article 7 guidance; to establish the party's eligibility to use the flexible mechanisms

Review by expert review team in accordance with Article 8; desk or centralised review, followed by an in-country review; to be completed within one year of the submission date

Annual Report (Article 7.1)

Yearly on 15 April; voluntary from the year following the submission of the pre-commitment period report; mandatory from 2008

To provide the basis for assessing a party's compliance with their emission reduction commitments

Review by expert review team in accordance with Article 8; desk or centralised review. In addition, each party will be subject to one in-country visit during the first commitment period; to be completed within one year of the submission date

Supplementary Information (Article 7.2)

*Submitted with party's national communication, submitted periodically, as decided by the COP**

To provide the basis for assessing: changes to the national system and registry; a party's compliance with non-emission target-related commitments

Reviewed by expert review team in accordance with Article 8; desk or centralised review of supplementary information in conjunction with review of annual report.

Followed by an in-country visit conducted in conjunction with the review of national communication; to be completed, where possible, within two years of submission date

Report on expiration of the additional period for fulfilment of commitments
(Article 7.4)

2015**

To provide registry information not included in the annual reports, but that is relevant to the review of the last year of the commitment period

Reviewed by expert review team in accordance with Article 8; desk or centralised review; to be completed within 14 weeks of submission date.

Notes

* Under the Framework Convention, parties submit periodic reports called national communications at intervals decided by the COP. Parties are likely to adopt a decision that Annex I parties submit their sixth national communication by 1 January 2006, to coincide with the submission of the report on demonstrable progress, due under the Kyoto Protocol.

** The COP, meeting on behalf of the Meeting of the Parties (MOP) to the protocol, will decide the submission date for the report on expiration of the additional period for fulfilling commitments.

Endnotes

¹ The text of the United Nations Framework Convention on Climate Change (UNFCCC) can be found at <http://unfccc.int/resource/docs/convkp/conveng.pdf>.

² The text of the Kyoto Protocol can be found at <http://unfccc.int/resource/docs/convkp/conveng.pdf>.

³ UNFCCC, Article 2.

⁴ UNFCCC, Article 4, para. 2(b).

⁵ For links to emissions data between 1990 and 2000, see www.climate-network.org.

⁶ International Panel on Climate Change, *Second Assessment Report, 1995*, Cambridge University Press, Cambridge, 1995. Summaries can be found at www.ipcc.ch/pub/reports.htm.

⁷ The Kyoto Protocol regulates the emission of six greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). The 'basket' approach sets one emissions reduction target for all six gases. The last five gases in the list can be converted into carbon dioxide equivalents using global warming potentials (GWPs), which reflect the capacity of each gas to increase the temperature of the atmosphere. Emissions are measured in metric tonnes of carbon dioxide equivalent (M_tCO_{2e}).

⁸ Annex 1 countries are the 35 industrialised countries (plus the European Community) that are signatories to the convention. These are Austria, Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, the Netherlands, New Zealand, Norway, Poland, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland, and the United States. It should be noted that 38 countries have, in fact, taken emission reduction targets, as inscribed in Annex B of the Kyoto Protocol. Annex 1 countries Belarus and Turkey did not take targets, while Croatia, Liechtenstein, Monaco, Slovakia and Slovenia were added to Annex B, leaving them in a slightly ambiguous position.

⁹ UNFCCC, Article 3, para. 1.

¹⁰ Daniel Bodansky, 'The United Nations Framework Convention on Climate Change: a commentary', *Yale Journal of International Law*, vol. 18, 1993, p. 451.

¹¹ COP6 Final Document (Bonn Agreement), FCCC/CP/2001/L.7.

¹² COP7 Final Document (Marrakech Accords), FCCC/CP/2001/13/Add.1-4.

¹³ For the latest ratification information, see <http://unfccc.int/resource/kpthermo.html>.

¹⁴ Clare Tenner, 'Verification and compliance systems in the climate change regime', in Trevor Findlay (ed.), *Verification Yearbook 2000*, The Verification Research, Training and Information Centre (VERTIC), London, December 2000, pp. 151–166; and Molly Anderson, Trevor Findlay and Clare Tenner, 'The Kyoto Protocol: verification falls into place', in Trevor Findlay and Oliver Meier (eds), *Verification Yearbook 2001*, The Verification Research, Training and Information Centre (VERTIC), London, December 2001, pp. 119–133.

¹⁵ If x = an Annex 1 party's emissions during 1990 and R = the reduction percentage it negotiated for the first commitment period (inscribed in Annex B of the protocol), its permitted emissions between 2008 and 2012 would be $5(x - Rx)$.

¹⁶ FCCC/CP/2001/L.7, p. 7, para. 5.

¹⁷ The Umbrella Group is a loose alliance of non-EU members of the Organisation for Economic Co-operation and Development (OECD) which negotiate collectively on some issues. The Umbrella Group states are Australia, Canada, Japan, New Zealand, Norway, Russian Federation, Ukraine and the US.

¹⁸ Under Article 3.4, parties can use forest management, cropland management, grazing land management and revegetation to meet their emissions reduction commitment. This is in addition to the provisions under Article 3.3, which include afforestation, reforestation and deforestation.

¹⁹ Referred to as the Annex Z cap, this sets an overall limit on the emission reduction that can be claimed from the Article 3.4 activities listed above. The limits for Annex I countries can be found in FCCC/CP/2001/L.7.

²⁰ International Panel on Climate Change, *Third Assessment Report: Climate Change 2001*, Cambridge University Press, Cambridge, 2001. Summaries are available at www.ipcc.ch/pub/reports.htm.

²¹ The Alliance of Small Island States (AOSIS) is a coalition of small island and low-lying coastal countries that share similar development challenges and concerns about the environment, especially their vulnerability to the adverse effects of global climate change. For more information see www.sidsnet.org/aosis.

²² Forty-nine countries are currently designated by the United Nations as LDCs. The list is reviewed every three years by the UN Economic and Social Council (ECOSOC). For more information see www.unctad.org/en/subsites/lDCs/lDC11.htmList of LDC countries.

²³ FCCC/CP/2001/L.7, p. 4.

²⁴ See Michael Grubb, 'International emissions trading under the Kyoto Protocol: core issues in implementation', RECIEL (Review of European Community and International Environment Law), July/August 1998. See also Tom Tietenberg *et al.*, 'International rules for greenhouse gas emissions trading: defining principles, modalities, rules and guidelines for verification, reporting and accountability', United Nations Conference on Trade and Development, Geneva, 1998, available at www.cdmcentral.org/docs/emissions-trading/27.pdf.

²⁵ Kyoto Protocol, Article 5.1.

²⁶ Inventory estimates are calculated using a 'top-down' method. Using electricity production from coal as an example, the activity data could refer to levels of coal imports and production, while the emission factor would be the level of CO₂ generated from a tonne of coal when it is burnt in the power station. By combining this type of information, one can estimate emission in each source category. See www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm for a full description of how an inventory should be prepared.

²⁷ This was the subject of a VERTIC workshop held in London on 13 September 2002. Links to the presentation summaries can be found at www.vertic.org/workshops/work1.html.

²⁸ The CPR is the lowest number of units that can be held in a party's national registry at any one time. This provision is designed to prevent countries from flagrantly trading all their allowances without any intention of meeting their emission reduction obligations by the end of the commitment period. For each party, the CPR should not drop below 90 percent of its assigned amount, or 100 percent of five times the total emissions reported in its latest inventory if this is lower.

²⁹ The rules for reporting national registry information, including discrepancies, and the review of this information were agreed at COP8, held in New Delhi, India, 23 October–1 November 2002. This task was postponed to COP8 by COP7 due to lack of time, following the resolution of issues relating to the definition of the assigned amount during the last night of the negotiations.

³⁰ FCCC/CP/2001/13/Add.2, p. 61, para. 19.

³¹ FCCC/CP/2001/13/Add.2, p. 55, para. 1.

³² Kyoto Protocol, Article 3.2.

³³ FCCC/CP/2002/L.6/Add.1.

³⁴ The information in the inventories will be for the current year minus two. Thus, a party's 2002 inventory will list its emissions in 2000.

³⁵ During a desk review the expert reviewer works on a section of a party's inventory in his or her own country, communicating electronically or by telephone with the party, other members of the ERT and the UNFCCC Secretariat.

³⁶ During a centralised review all members of the ERT meet in a central location to review a party's submission.

³⁷ The Compliance Committee makes judgements about whether a party has complied with its obligations under the treaty.

³⁸ FCCC/CP/2001/13/Add.2, p. 42, para. 21.

³⁹ FCCC/SBSTA/2002/L.5/Add.1.

⁴⁰ See 'Report on experience of the technical review process', FCCC/SBSTA/2002/5.

⁴¹ The full title is *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, available at www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm.

⁴² The full title is *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, available at www.ipcc-nggip.iges.or.jp/public/gp/gpgaum.htm.

⁴³ Parties have yet to define the term 'conservative'. COP8 adopted a work plan, proposed by the secretariat, to trial the guidelines for applying inventory adjustments during expert review of parties' annual submissions under the Framework Convention. This process, to be concluded by COP9, will include an investigation into conservativeness. See FCCC/SBSTA/2002/INF.19 for more information about the work plan; and FCCC/2002/SBSTA/INF.5 for the draft guidelines under Article 5.2. Both are available at www.unfccc.int.

⁴⁴ FCCC/CP/2001/13/Add.3, p. 38, para. 2(d).

⁴⁵ The five UN regional groups are Europe and North America, Latin America and the Caribbean, West Asia, Asia and the Pacific, and Africa.

