

# Verification of the Kyoto Protocol: A Fundamental Requirement

Key Issues for the Sixth Conference of the Parties to the  
Convention on Climate Change  
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## Executive Summary

- Decisions taken at the Sixth Conference of the Parties (COP6) to the 1992 Convention on Climate Change must ensure that the 1997 Kyoto Protocol is as verifiable as possible.
- It is imperative that Annex I parties put in place strong institutions and procedures to monitor and report on their own implementation of the Protocol before the first commitment period begins in 2008. An adequate international system to review parties' reports according to Article 8 must also be in place by 2008. To achieve this, Annex I parties must be required to submit, by 2005, the relevant information for a thorough pre-commitment period review of compliance with Articles 5 and 7.
- Consideration should be given to the means of providing facilitative assistance for those parties that struggle to comply with Articles 5 and 7.
- Greenhouse gas (GHG) emissions and removals from the land-use change and forestry (LUCF) sector will be extremely hard to verify. For this reason, Article 3.4 activities must not be allowed to be used to meet emissions reductions commitments, at least in the first commitment period. Emissions estimates and removals under Article 3.3 with an uncertainty of greater than 10% should also be excluded. GHG emissions and removals data from the LUCF sector must be subject to the same stringent requirements for annual reporting and review as other inventory data.
- Periodic reporting and review of national communications provide an opportunity for stakeholders to assess how parties implement their commitments under the Protocol. Given that emissions can be difficult to estimate, parties in their national communications should be required to report alternative data with which to assess their progress.
- Article 3.2, which requires all Annex I parties to show 'demonstrable progress' in meeting their commitments under the Protocol by 2005, provides an excellent opportunity to build confidence in the regime at an early stage. Decisions at COP6 must ensure Annex I parties are required to report on the effectiveness of their policies and measures to reduce GHG emissions, and that this information is transparently reviewed in 2005.
- COP6 must agree rules to ensure that only properly verified emissions reductions produced under the Kyoto Mechanisms are used by parties to meet their emissions reduction commitments under the Protocol.

## INTRODUCTION

The Sixth Conference of the Parties (COP6) to the 1992 Framework Convention on Climate Change must take decisions that will decide the future of the 1997 Kyoto Protocol. All stakeholders in the climate regime will have their own hopes for the meeting, to be held in The Hague from 13 to 24 November 2000, but everyone should welcome agreement on an effective and efficient verification system for the Protocol.

Verification is the process of gathering, processing and using information to make a judgement about compliance or non-compliance by parties to an agreement. The aim of verification is to establish or increase confidence that a treaty is being implemented fairly and effectively by all parties. In the case of the Kyoto Protocol, the verification system should provide assurance to governments that all parties are taking action to reduce greenhouse gas (GHG) emissions. It should assure industry that the Protocol is operating efficiently – fostering rather than impeding business opportunities. Finally it should assure environmental groups that the parties are taking action to meet the Protocol's stated aim – to mitigate climate change. COP6 must make take decisions on a number of key issues related to verification of the Kyoto Protocol:

- A key requirement is to establish a system designed to detect whether Annex I parties<sup>1</sup> meet their GHG emissions reduction commitments under Article 3.1 of the Protocol. This will be based on these parties estimating their own GHG emissions (Article 5.1) and annually reporting their GHG inventories and other relevant data (Article 7.1). This information will be reviewed by expert review teams (ERTs) according to Article 8. Guidelines for the operation of these articles will provide the framework for the verification system.
- A contentious part of this system is the land-use change and forestry (LUCF) sector, provided for under Articles 3.3 and 3.4. Parties at COP6 must decide the extent to which these activities can be used to meet emissions reduction commitments, at least in the first commitment period, and how they will be verified.
- In addition to verifying *whether* Annex I parties have complied with their Article 3.1 commitments, the verification system must allow for assessment of *how* emissions reductions have occurred. It should also verify how parties have implemented other commitments under the Protocol. Guidelines for the periodic reporting (Article 7.2) and review (Article 8) of national communications under the Protocol will therefore be very important and should not be sidelined at COP6.

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<sup>1</sup> Developed country parties listed in Annex I to the Climate Convention.

- Those negotiating the Kyoto Mechanisms<sup>2</sup> will need to set up further verification systems at the national and project level to ensure that the mechanisms operate transparently and that only 'real' emissions reductions are transferred between parties.

- Finally, decisions on the Protocol's compliance mechanism must provide systems to verify any emissions reductions used to bring a party in non-compliance with Article 3.1 back into compliance.

This paper will discuss these key issues, and make recommendations on the decisions to be taken if parties are to take home from The Hague agreement on a treaty regime that is verifiable.

## VERIFYING COMPLIANCE WITH ARTICLES 5 AND 7

Assessing compliance with Article 3.1 will rely on Annex I parties providing reliable information under Articles 5.1 and 7.1. This is also fundamental to the proper operation of the Kyoto Mechanisms. A priority, therefore, must be to ensure that all Annex I parties are reporting properly, and that any problems with the review process are resolved, before the first commitment period begins in 2008. Parties have agreed that there should be a pre-commitment period review of compliance with Articles 5 and 7, but they differ over the timing of this review. VERTIC believes that it is vital to the integrity of the Protocol that Annex I parties be required to submit relevant information in time for a thorough review and compliance finding - we suggest 2005 at the latest.<sup>3</sup>

It is vital that a comprehensive facilitative procedure is in place to assist those Annex I parties that fail to comply with Articles 5 and 7, both before and after 2008. This could be organised via the facilitative branch of the compliance committee, the ERTs or the Multilateral Consultative Process (Article 16). To date far too little attention has been paid to this matter.

The focus of annual reviews during the commitment period will be national GHG inventories. These must be as reliable as possible to maintain confidence in the regime. For this reason, Article 5.2 of the Protocol allows for the 'adjustment' of emissions estimates that are not produced according to relevant guidelines.<sup>4</sup>

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<sup>2</sup> International Emissions Trading and the project-based mechanisms: Joint Implementation and the Clean Development Mechanism

<sup>3</sup> See VERTIC Briefing Papers 00/3 and 00/4 for further details.

<sup>4</sup> IPCC 1996 Revised Guidelines for National Greenhouse Gas Inventories, and 2000 Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.

Adjustments could also be used where data are missing altogether and where figures have unacceptably high uncertainty. Adjusted inventories can then be used to assess compliance with Article 3.1.

Parties are also working on defining 'first order problems'. These are inventory-related problems deemed to lead to loss of confidence in the inventory, such as large amounts of missing, adjusted or inconsistent data. These cases will be passed from ERTs to the compliance committee, possibly via an expedited procedure, and could result in a party being barred from taking part in the mechanisms.

Although this system appears robust, parties will need to consider how to cope with several shortcomings. A key problem could be gaps in base year national GHG inventories, as parties were not required to collect the relevant statistics at that time. The base year inventories might be 'adjusted', but without activity data it is unclear how this could be achieved. This would create challenges for agreeing Annex I parties' assigned amounts, at least for the first commitment period.

Even contemporary inventories will not be problem-free. Emissions estimates for many sources will have large uncertainties and parties need to consider how to deal with these, particularly with regard to emissions trading. Furthermore, guidelines give parties some choice in the methodologies used for estimating GHG emissions. This is necessary to account for different national circumstances, but could result in Annex I parties deliberately interpreting guidelines in a way which helps them reach their Article 3.1 commitments. In any case, ERTs and the compliance body might find it difficult to state whether or not a party is in compliance with Articles 5 and 7.

These problems make it especially important that COP6 agrees a review system that is as transparent as possible. All ERT review reports should be forwarded to the compliance committee, not just those which identify first order problems. This procedure would not only de-politicise the role of the ERTs, but would ensure the compliance committee received the full picture on a party's implementation of the Protocol. Attention must also be paid to enforcing requirements for thorough explanation in the national inventory report of the methodologies used to calculate emissions estimates, and pre-submission peer and public review of Article 7 submissions.

Finally, it is imperative that adequate institutional arrangements are agreed for the annual and periodic reviews provided for in Article 8. VERTIC is pleased to see progress towards agreement that there should be a standing body of review experts from which the

ERTs will be drawn. If the review process is to be effective and efficient, it is vital that adequate human, technical and financial resources are provided for the standing body.

## VERIFYING ARTICLES 3.3 AND 3.4

A major decision to be taken at COP6 is the extent to which Annex I parties may use LUCF activities to meet their Kyoto targets, as provided for in Articles 3.3 and 3.4. These activities are anticipated to act as carbon dioxide 'sinks', although they can also act as GHG sources. According to the Protocol the net changes in GHG emissions from these activities can be added to, or subtracted from, parties' assigned amounts.

### Article 3.3

Article 3.3 allows Annex I parties to meet their emission reduction commitments using GHG emissions and removals from 'direct human-induced afforestation, reforestation and deforestation since 1990', so long as these are 'verifiable changes to carbon stocks...reported in a transparent and verifiable manner'. However, verification of these activities will be challenging.

For a start, it is difficult to accurately estimate sequestration without extensive monitoring. Furthermore, many parties simply do not have accurate land-use and forestry data for 1990 and this clearly cannot be gathered retrospectively. Even where forestry data is available, emissions and removal estimates have extremely large uncertainties attached to them, reflecting poor understanding of biosphere-atmosphere fluxes, and monitoring difficulties. In short 'changes to carbon stocks' will rarely be 'verifiable.'

Second, forests can act as both sources and sinks of greenhouse gases. A sink can rapidly become a source due to damage by fire or pests, and the sequestration rate and capacity of forests is likely to change over time depending on many factors, including climate change itself.<sup>5</sup> Therefore, once an area of land has been counted as a sink, the sequestered carbon must be accurately monitored into the indefinite future.

Finally, according the Intergovernmental Panel on Climate Change (IPCC), 'it may be very difficult, if not impossible, to distinguish with present scientific tools that portion of the observed stock change that is

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<sup>5</sup> It is predicted that due to climate warming the biosphere will become a source rather than a sink of carbon, due to increased heterotrophic respiration. Furthermore changing climate may lead to a degradation of biotic ecosystems due to increased fire, pests or ecosystem shifts. Kevin Guernsey and Jason Neff, 'Carbon Sequestration Potential in Canada, Russia and the United States Under Article 3.4 of the Kyoto Protocol', *World Wide Fund for Nature*, Washington D.C., July 2000, p. 13.

directly human-induced from that portion which is caused by indirect and natural factors.<sup>7</sup>

One further point raised by the IPCC is that methane and nitrous oxide emissions and removals cannot be measured as carbon stock changes. Emissions of these gases from forestry activities, which are not included in Annex A of the Protocol, will therefore not be covered in national GHG inventories.

Given these difficulties, VERTIC supports the idea that Article 3.3 activities that have an uncertainty of greater than 10% should not be used to meet Article 3.1 commitments. We also suggest that action is taken to ensure that methane and nitrous oxide emissions and removals from forestry activities are accounted for.

#### Article 3.4

Article 3.4 allows further LUCF activities to be included in the accounting of emissions and assigned amounts from the second commitment period.

The IPCC has noted that:

Few if any, countries perform all of these measurements routinely, particularly soil inventories. Some Annex I parties may use existing capacity with minimal modification to implement the various articles of the Protocol; however, some other Annex I Parties may need to significantly improve their existing measurement systems in order to develop operational systems.

Many activities under consideration under Article 3.4 are based on moving carbon from the atmosphere to the soil, for example, agricultural practices that conserve the soil. These activities pose particular monitoring challenges since, unlike above-ground biomass, carbon sequestered in soils cannot, at present, be monitored remotely. Comprehensive, *in situ* monitoring would be required. Only the UK and Japan have ever submitted national estimates of GHG emissions flux from agricultural soils – and these were not comprehensive. No other countries have any experience in estimating and reporting carbon flux from agricultural soils at the national level. Emissions estimates related to these activities would be extremely uncertain. Moreover, the uncertainties themselves will not be known precisely.<sup>6</sup>

It could become even more difficult to separate the human and natural effects across the range of activities. For example, carbon accumulation in soils in a given year may be due to an unusually cool fallow period, rather than deliberate carbon sequestration activities.

<sup>6</sup> Susan Subak, *Agricultural Soil Carbon Accumulation in North America: Considerations for Climate Policy*, Natural Resources Defense Council, Washington DC, Feb. 2000.

Given the enormous verification challenges posed by Article 3.4 it is vital that COP6 respects the Protocol's exclusion of these activities from at least the first commitment period.

#### Reporting and review of Articles 3.3 and 3.4

Emissions data from Article 3.3 and 3.4 activities will be added to, and subtracted from, Annex I parties' assigned amounts. The data will be used to assess compliance with Article 3.1, and the assigned amount may be traded between Annex I parties. Therefore it must be reported and reviewed annually alongside all the other inventory data. Inventory reporting guidelines must be extended to cover the LUCF sector<sup>7</sup> and first order problems for this part of the inventories defined. As with other parts of the inventory, first order problems should be reported to the compliance committee and could result in loss of eligibility to participate in the mechanisms. This is necessary to maintain confidence in both the assessment of compliance with 3.1 and the trading regime.

#### VERIFYING PARTIES' POLICIES AND MEASURES

While the annual review process should ensure that Annex I parties have adequate monitoring and reporting systems to assess compliance with Article 3.1 and take part in emissions trading, it will not assess the actions taken by parties to comply with the Protocol. Furthermore, the annual review process will not assess Annex I parties' progress until the final inventories for the first commitment period have been reviewed, around 2015 – this would be 18 years after the Protocol was signed in Kyoto. The periodic submission and review of national communications under the Protocol should fill these gaps. The national communications review should permit all stakeholders to assess how well parties have done to date, and how they are planning to implement their commitments in future. It addition, it will reveal what the Protocol as a whole is achieving. It is also an opportunity for parties to demonstrate how policies and measures implemented under the Kyoto Protocol conform with commitments under other environmental agreements, such as the 1992 Biodiversity Convention, the 1992 Convention to Combat Desertification and the 1992 Forest Principles.<sup>8</sup> As such it is important that reporting is highly transparent. The involvement of civil society must be a key element in the review process. In contrast to national communication review under the Convention, the review should also be high profile.

<sup>7</sup> See footnote 4.

<sup>8</sup> See Sophia Ryder, 'Monitoring Governments' Deforestation Commitments', *Trust and Verify*, September 2000, No. 93, p. 1. Trust and Verify is published by VERTIC.

In the run-up to COP6, national communications reporting and review has received far less attention than the annual review process. This imbalance must not be reflected in the outcomes of The Hague.

### **Demonstrable Progress**

Article 3.2 of the Protocol makes further provision for review of implementation prior to 2015. It states that:

Each party included in Annex I shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol.

Properly carried out, this early review will provide confidence in the regime as stakeholders will be able to observe Annex I parties' efforts. Article 3.2 should be used to assess Annex I parties' progress in changing their trend of emissions downward, and the effectiveness of domestic policies and measures established to meet their Article 3.1 commitments. Reporting on the institutions and legal steps that parties have established to meet their obligations under the Protocol will be useful too, but insufficient on its own.

A high-level debate on the definition of demonstrable progress will be necessary after COP6 in order to agree reporting guidelines for Article 3.2. In the meantime, provision must be made for transparent reporting on demonstrable progress, plus a high profile review in 2005, separate from the potentially lengthy fourth national communication review.

### **VERIFYING THE KYOTO MECHANISMS**

The involvement of sub-national entities in the operation of the Kyoto Mechanisms creates unique and uncharted verification challenges for an international agreement of this kind. A further layer of verification will be required to ensure that the emissions reduction credits generated by the Mechanisms are sound.

For both Joint Implementation (JI) and the Clean Development Mechanism (CDM) agreement must be reached at COP6 for transparent and credible procedures for accredited private entities to verify that 'additional' emissions reductions are generated by projects. A key element of this procedure will be the calculation of a 'baseline' – the emissions that would have occurred over the lifetime of the project if it were not established. International guidelines are required to ensure that baselines are calculated in a consistent way across projects. In the case of JI, host countries should also be in compliance with Articles 5 and 7.<sup>9</sup> This is because project baselines should be derived from national emissions inventories and projections. The emissions factors and activity data used to calculate

<sup>9</sup> This is not possible for CDM because host countries will be non-annexe I parties.

project emissions should be reported and cross-checked with national inventory data.

For international emissions trading it will be fundamental that Annex I parties are in compliance with Articles 5 and 7 to be eligible to sell assigned amount units. This will ensure that a party's assigned amount is agreed, the emissions it has made (and hence excess assigned amount) is clear, and that it has an adequate registry to account for its assigned amount. Parties wishing to trade should also be required to establish strong domestic enforcement systems.

It will also be necessary to verify that CDM projects meet the requirement to 'promote sustainable development in the host country' set out in Article 12. In fact, civil society should be able to assess the environmental integrity of activities under all three Mechanisms. COP6 should ensure that each party is required to make publicly available, for example on a website, up-to-date information on its JI and CDM projects and entities authorised to take part in emissions trading. Summary information should also be annually reported under Article 7.1.

### **VERIFYING CONSEQUENCES OF NON-COMPLIANCE**

COP6 must agree on the consequences for non-compliance with Article 3.1. A key purpose of a 'consequence' must be to fully (and quickly) offset the excess emissions resulting from non-compliance. This could be achieved by buying banked assigned amount units on the open market, paying moneys into an internationally or domestically administered 'compliance fund' or establishing supplementary domestic policies and measures under a compliance action plan. Whichever consequences are agreed, it is imperative that stringent verification procedures are established to ensure only highly credible emissions reductions are used to offset the excess emissions.

### **SUMMARY**

The Kyoto Protocol is a complex and intricate treaty that sets new challenges for verification. Setting up an effective and efficient verification regime for the Protocol will require the attention of participants across negotiating groups in The Hague. Parties agree on the need for verification of the Protocol. In fact the term 'verification' is used throughout the Protocol. However, as COP6 approaches, parties seem to be losing sight of this fundamental requirement in pursuit of more immediate gains.

Calls by several parties for inclusion of Article 3.4 activities in the first commitment period is one example. This may help these parties meet their Kyoto

targets, but many observers have noted the challenges that this will place on verification of the Protocol. Notably, researchers at the International Institute for Advanced Systems Analysis recently publicly stated that full inclusion of LUCF activities in the Protocol would make it 'completely unverifiable'.<sup>10</sup> The Protocol would lose all environmental integrity, and confidence in the emissions trading system would be lost.

A second example is the reluctance of many Annex I parties to put in place effective reporting and assessment of 'demonstrable progress' in 2005. Rather than an assessment of their emissions trends and policies and measures to implement the Protocol, these parties would prefer an assessment of the procedures and institutions that they have in place. Clearly, this could help them avoid an embarrassing finding of poor progress in 2005. But in the longer term a fuller review has many benefits. It would allow parties to formally share experiences on effective policies and measures and, if it did expose weaknesses would give the party a chance (and could be given help) to fix them before the commitment period begins. This is surely better than facing the consequences of non-compliance in 2015.

At COP6 parties need to look beyond such short-term fixes for potential difficulties in meeting their Kyoto commitments towards setting up a sustainable regime that provides assurances to all parties that they are working together to mitigate climate change.

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<sup>10</sup> Fred Pearce, 'Smokescreen exposed', *New Scientist*, 26 August 2000, p. 18; Sten Nilsson, Anatoly Shvidenko, Vladimir Stolbovoi, Michael Gluck, Mattias Jonas and Michael Oberstainer, 'Full Carbon Account for Russia, Interim Report IR-OO-021, International Institute for Advances Systems Analysis, Laxenburg, Austria, 22 August 2000.



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