Information Technology Platform for Consistent, Transparent, and Efficient Monitoring, Reporting, and Verification

Summary of a Workshop on 24 February 2006
PricewaterhouseCoopers Offices, Brussels, Belgium
Sponsored by the International Network for Environmental Compliance and Enforcement (INECE) and the International Emissions Trading Association (IETA)

1 INTRODUCTION

The International Network for Environmental Compliance and Enforcement (INECE) and the International Emissions Trading Association (IETA) organized a workshop on defining an Information Technology Platform for Consistent, Transparent, and Efficient Monitoring, Reporting, and Verification.[1] The purpose of the workshop was to explore the strategic and operational aspects related to the expanded use of information technology (IT) in the implementation and compliance aspects of the European Union Emission Trading Scheme (EU ETS).

Twenty-five participants, representing a broad range of stakeholders, including government and regulatory agencies, verification bodies and industry (*See* Annex 1) engaged in discussions built on a Feasibility Study[2] prepared by PricewaterhouseCoopers (PwC) on commission by The Netherlands' Ministry of Housing, Spatial Planning, and the Environment (VROM). The workshop was further sponsored by Environment Agency (England and Wales) as part of its activities to promote the work of the European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL). In the Feasibility Study, PwC analyzed options for the expanded use of IT within the EU ETS, focusing initially on verification, but covering also the options for expanded use of IT in permitting, monitoring, reporting, inspection and enforcement.

During the workshop, a general consensus emerged that IT could enhance the reliability, consistency, accuracy, faithfulness, transparency, and cost-effectiveness of the EU ETS. Although good examples of the use of IT already exist in the US, and also some European countries have made efforts to extend the use of IT, most Member States do not yet generally use IT for delivering and processing of the information (workflow) between the operators, the verifiers, and the competent authorities. However, it is thought that IT could provide an important tool to create efficiencies and ensure the proper functioning of the EU ETS in the Member States. The workshop was designed to initiate the strategic planning process for IT in the EU-ETS through a discussion on the PwC report and to outline the various technical options, practicalities and implications involved.

This report summarizes the main discussions from the workshop and concludes with recommendations on next steps, including potential discussion topics for the next workshop, which is scheduled to be held on 29 May 2006. The most important points of discussion involved: current practice of IT in EU ETS, motives for setting up a verification based system, the need for harmonization, the scope of an IT based system,

[1] Additional background information on this workshop and previous emissions trading workshops hosted by INECE is available at http://inece.org/emissions/.
[2] PricewaterhouseCoopers, *Information Technology Enhances Consistency, Transparency, and Efficiency in EU-ETS* (February 2006).

practical and legal implications, involvement of other stakeholders, communication to the stakeholders, and the strategic plan to be followed for the upcoming period.

2 CURRENT PRACTICE

Several Member States currently use IT to some degree. The PwC report provides a summary of the IT systems used in Finland, Austria, Ireland, Germany, UK, and the USA. Although each European country's use of IT is unique, there are a number of common elements to all the systems. The PwC report points to Finland and Austria focusing on, for example, the automation of the workflow, whereas, in the US, the Environment Protection Agency has automated activities comparable to the EU ETS verification within the workflow.

In both the US and the EU, installations use monitoring and reporting systems, and trade their allowances through registries. Although there are similarities between the automated workflow systems already in operation in Europe, the realistic possibilities for the enhanced use of IT in the various information and workflow activities as part of the monitoring, reporting and verification requirements and procedures within EU-ETS call for a more common and shared approach between the Member States. This approach would more fully take advantage of the opportunities that IT can provide in the compliance and enforcement of emissions trading.

If each Member State set up its own IT system without a common blueprint, the result would be a collection of different systems that are not able to communicate with each other. Therefore, the EU-ETS would not realize the major potential cost reductions and efficiencies otherwise possible, nor would it provide the confidence that an European wide emissions trading demands.

The same is true for software used for verification and enforcement activities. It is therefore important to assess to current position of the Member States, European industry, and other stakeholders, and to ascertain whether they are prepared to cooperate and share ideas on (re-) organizing the IT functions for permitting, monitoring, reporting and verification. Also its is important to determine the extent that the parties in this discussion could agree on the objectives, conditions and requirements for such an IT based approach and the extent that are prepared to define and agree on the role for software in the permitting, monitoring, reporting, verification, inspection and enforcement within EU ETS.

3 MOTIVES FOR EXTENDING THE USE OF IT TO MONITORING, REPORTING, AND VERIFICATION

The workshop participants shared the opinion that IT could strongly improve the efficiency, consistency, and accuracy of the permitting, monitoring, reporting, and verification functions in EU ETS. Discussed benefits included:

- Capability to better structure processes and streamline the workflow between the parties involved in the transfer of information, e.g., the operator, the verifier, and the competent authority.
- Removal of the more inefficient and more costly elements of the EU ETS.
- Enhancement of the elements of EU ETS that are already properly functioning.
- Opportunity to harmonize and uniform the different practices of permitting, monitoring and reporting throughout Europe.

The participants believed that use of IT by verifiers would result in substantial added value for the planning and preparation of verification; however, they also suggested that the added value of IT for assessing a control system (quality assurance/ quality control) would be less.

However, verifiers' use of the same software would support a level playing field among installations and among Member States. The system would be even more advanced if competent authorities also used this particular software. To achieve this important result, barriers have to be overcome since operators will have to make available more data to the competent authorities. However a middle course would have the advantage of simplicity and the speed by which systems can be developed and applied. XML could play an essential part of the solution because parties involved can restrict the extent of their investments (please see section 6 for an additional discussion of XML). The first steps should be to streamline the reporting requirements of the verifiers and installations. This would already enable simple discrepancy checks on data.

4 NEED FOR HARMONIZATION

Member States do not interpret and implement the European Directive and the Commission's Decision on the Monitoring and Reporting Guidelines in the same way. This disparity has led to major differences in the more practical aspects of monitoring, reporting, and verification, and has resulted in a system that is in the end not sustainable, not cost-effective, and, that ultimately has the potential to damage stakeholders' confidence in the system.

It is generally agreed that a properly designed and developed IT system (including common definitions, units, scope, and functions) would be a tremendous step forward in harmonizing the systems and approaches used. Such a system would serve the Lisbon agenda,[3] which has the goals of making Europe and the European Industry more competitive; reduce the administrative burden of emissions trading to industry and to the competent authorities; and contribute to the objectives of Better Legislation.

A potential first step in the development of a harmonized system would be the development of guidance notes by IMPEL and experimentation with integrated IT-based permitting, monitoring, reporting, verification, inspection, and enforcement. Once the first experiments show acceptable results, the preparatory work by IMPEL could then be taken over by the Commission to ensure a more common understanding and interpretation of the EU ETS legislation.

As some Member States are already fully engaged in the process of setting up their own IT systems, it would be most appropriate to communicate the findings of the workshop to all other Member States and also to other stakeholders. Furthermore, it would be most advisable to organize a follow-up workshop to explore further the options outlined in the PwC report. This would inform Member States of the developments under way and perhaps avoid them from undertaking investments in the development of a national IT solution.

[2] In March 2000, the EU Heads of States and Governments agreed to make the EU "the most competitive and dynamic knowledge-driven economy by 2010". (a.k.a., The Lisbon Strategy or Lisbon Process.)

5 SCOPE OF AN IT-BASED SYSTEM

There is a clear need for properly defining and delineating the scope of an IT-based system. One of the more important considerations is whether to develop a system similar to US EPA's system, whereby the US EPA has automated the activities within the workflow by performing automatic checks and balances, or whether it would be more appropriate to start with automating the workflow and focusing on the options available whereby Member States use the same software.

Another important issue is agreeing that stakeholders do not restrict the use of IT in EU ETS only to verification. On the contrary, proper IT-based verification can only function if all the elements prior to verification are well-defined, well-structured and organized. Once that has been established, IT could be highly beneficial for permitting, monitoring, reporting, inspection and enforcement. A prerequisite would be to formalize and clearly delineate the roles and responsibilities of the competent authority, verifier, and operator to avoid entanglement of the various interests.

Furthermore, it is evident that not all processes can be (or should be) automated. Site visits will always be necessary. It would be overly optimistic, and even presumptuous, to assume that the verifier could simply sit behind their desk and perform all the necessary verification checks. The main use of software in the verification process is likely in the planning phase: determining where to sample data and where to target the substantive testing of the internal control system. However, from current experience, it is obvious that IT systems that integrate all compliance and enforcement functions will greatly reduce the workload of the verifier, competent authority, and operator, and also that the quality, accuracy, and consistency of the data flow between the three parties would improve significantly.

Research is also required on the extent to which IT systems can and should be connected to systems like the register. Links to the register would have implications to the regulation and the register itself. The European Commission will certainly look into the opportunities provided by revising the Regulation of Registry and also into the options to establish a common reporting format.

Furthermore, workshop participants felt that during the next few months INECE, IETA and IMPEL should explore the options for the most promising scope of an IT-based system by assessing the benefits and disadvantages of each of the alternatives. In any decision for action, the cost of non-action also should be considered. Therefore, the assessment would also explore the costs and benefits of a situation in which no action is taken towards a properly designed IT-based system.

6 PRACTICAL IMPLICATIONS AND TECHNICAL POSSIBILITIES

In the PwC report, the advantages of using XML technology are clearly explained. XML enables attaching labels to the data being transferred between various users of these data and incorporating these in their own in-house IT network and databases. XML makes it far easier to store data, to link different databases, and to crosscheck data from different sources. Competent authorities, operators, and verifiers would be able to manage their autonomous IT systems, but the universal language and adaptability of XML would allow for the harmonization of processes and workflow among the parties that transfer the information. Using XML systems would enhance the compatibility, consistency, and efficiency of the automated data flow (*See e.g., Finland's system).*

Furthermore, common reporting formats, monitoring plans, and permitting formats and linkages to the register would be first steps in harmonizing the current diversity of monitoring, reporting and verification activities in the various Member States. It might be that an ideal solution would be to create one centralized European IT-based verification system, but most participants felt that this would be an ambitious undertaking and doubted the feasibility of a central system unless other major improvement steps had been completed.

A more likely solution would be to use XML to connect autonomous systems of member states that are functioning well. However, because XML would greatly expand the range of possible options, it would be very important to define the basic "commonalities" and bring in the right restrictions to fulfill other conditions and requirements, such as transparency to other stakeholders. Furthermore, and in line with a more cautious approach, participants felt it was important to take things one step at a time.

7 LEGAL IMPLICATIONS

A solid legal basis in European and in the national legislations is required for setting up a complex IT-based system. Stakeholders should check carefully the implications to the EC Directive, the Monitoring and Reporting Guidelines and national legislations providing the legislative framework for permitting, monitoring, reporting and verification, as well as inspections and enforcement actions by the Competent Authority.

However, even before a legal basis is established, a more pragmatic view could be taken by focusing first on enhancing the permitting, monitoring, reporting and verification functions by the use of IT. Participants agreed that the legal aspects that would determine the scope of an IT-based system should not constrain the development of such systems. Furthermore, participants generally believed that the first steps towards automating certain aspects of permitting, monitoring, reporting, and verification are within the boundaries of the EC Directive and would not need an immediate change of legislation. For example, the registry regulation already prescribes the use of XML in the communication between the Community independent transaction log (CITL) and the national registries of the Member States.

It was recommended that, as the project moves forward, it would be very useful to explore in detail the implications to the EC Directive, the Monitoring and Reporting Guidelines, and the Regulation for Registries. Such an analysis also should apply to other legal areas, e.g., the extent to which the public has a right to access of information.

8 WHO SHOULD BE INVOLVED, WHEN AND HOW?

Other Member States who have not been involved in the discussions and in the workshop have expressed interest in the development of an IT-based system. Other interested parties and industry should be included as well. However, during the exploratory phase of the project, the size of the project group should not become too large.

The best approach may be to develop the project and to study the options step-by-step, taking into account the various aspects, implications, benefits, disadvantages, and lessons learned from other studies and experiences. As soon as a clearer picture of the best option emerges, other stakeholders should be taken on

board. This would include software suppliers, verifiers, and installations so that all benefits can be identified and assessed properly.

It is important, though, to focus clearly on the benefits and functionalities of an IT-based system and to not lose sight of the right track by letting legal hurdles and other problems stand in the way. This does not mean that potential bottlenecks should not be identified. The European Commission, for example, will look into the implementation of the monitoring and reporting guidelines and the way Member States have carried out the permitting and validation of monitoring plans. It will also assess the role of small installations.

Not only Member States should be involved. Other countries like the US, Japan, Canada, Australia and others should also participate in the project or be fully informed on objectives and execution of the project. A number of lessons can be learned from the US, which has already automated monitoring, reporting, and enforcement by using a tracking system. Countries like Japan or Canada may learn from Europe's experiences of setting up IT-based compliance and enforcement systems within ETS. Exchanging information is the best way of understanding how IT can enhance the efficiency and cost-effectiveness of the EU ETS and ascertaining on how to get forward.

INECE could serve as a facilitator on international level, leading discussions, creating a network of experts and other key stakeholders, and looking beyond EU ETS by raising awareness for the benefits of IT.

9 COMMUNICATION TO STAKEHOLDERS

Communication of the benefits of and the need for an IT-based system is important to get people to understand the technical options that could solve some of the problems that are connected with today's diversity of permitting, monitoring, reporting, and verification practices in the Member States. Communication is the key to avoiding misrepresentations between stakeholders about the scope of developing an IT-based system.

How this communication is framed may be critical to the success of the project. It may be beneficial to distinguish different stages of project development and to assign tasks to different stakeholders. For each task, the basic question of "who is doing what, when and how" must be answered. Furthermore, communication with the stakeholders should be formulated to answer possible concerns: the cost-effectiveness of the system, the enforceability, and the transparency.

Development of IT-based approaches should have objectives that include: (1) delivering better regulation at lower cost; (2) creating measurable efficiencies in the permitting, monitoring, reporting and verification processes; (3) improving transparency, and thus reducing risk in the markets. It should catch the eye and provoke the right level of expectations by relating it to the Lisbon Agenda, to broader objectives such as better regulation, competitiveness of and lower administrative burdens to European industries, as well as lead to cleaner, sustainable ways of industrial production.

10 STRATEGIC PLAN FOR THE UPCOMING PERIOD

Although during the workshop a broad consensus emerged regarding the need for and the possibilities of IT-based compliance and enforcement systems, the participants felt, at the end of a long day of discussions, that more time was needed to set a clear agenda for the next steps.

Participants believed that more time was needed to crystallize their thinking at least one step further before deciding on the concrete and immediate actions as follow-up.

Participants agreed that another workshop to more clearly define the next steps was necessary. It was agreed that the best timing of this follow-up workshop would be end of May as, by that time, the results from the first trading period would be known and the review of the Monitoring and Reporting Guidelines would be in its final stages of decision. It was therefore decided to have this workshop on 29 May 2006, with the objective to decide on the type and sophistication of IT-based system, when to have it ready and operational, who should do it, and at what cost (business case).

A showcase can be organized to assess how integrated IT systems can be used in the whole chain of activities, from permitting, monitoring, reporting, verification up to inspection and enforcement. This time lag would allow for clearer development of the various thoughts and ideas on the role IT could play in EU ETS.

ANNEX 1: ATTENDING THE WORKSHOP

Tom Spencer (European Centre for Public Affairs, UK), presiding workshop discussions
Jeroen Kruijd (PricewaterhouseCoopers, Netherlands), presenting the IT feasibility study
Ken Markowitz (INECE Secretariat, Washington)
Edwin Aalders (IETA secretariat, Geneva)
Reid Harvey (US EPA, Washington)
Kunihiko Shimada (Ministry of Environment, Japan)
Hans Scholdeman (PricewaterhouseCoopers, Netherlands)
Clemens Duivesteyn (ExxonMobil-Netherlands)
Eva Muro Redondo (Endesa, Spain)
Deameon Meadows (DG Environment, European Commission),
Marco Loprieno (DG Environment, European Commission),
Johan Pype (Tractabel, Belgium),
Lesley Ormerod (Environment Agency (England & Wales))
Chris Dekkers (Ministry of Environment (VROM), Netherlands)
Andrew Vincent Alder (European Centre for Public Affairs, UK)
Mike McMahon (BP UK)
Hubert Fallman (Ministry of Environment Austria)
Rob Gemmill (Environment Agency (England & Wales))
Helen Shore (DEFRA UK)
Ken Macken (EPA Ireland)
Anne-Marie Warris (Lloyd's Register)
Sven Starcks (DNV verification)
Ton Grosjean (Netherlands Emission Authority)
Alexander Brandt (Netherlands Emission Authority)
Machtelt Oudenes (consultant to Ministry of Environment (VROM), Netherlands).