

**NEU-CO<sub>2</sub> – III**

**Continuation of the “International Network Non-energy use and CO<sub>2</sub> emissions  
(NEU-CO<sub>2</sub>)”, Phase III**

**Methods for Verification of Emissions Trading  
(WP 3)**

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## 1 Introduction

The European Union (EU) agreed to the Kyoto Protocol, thereby committing itself to reduce total greenhouse gas emissions by 8 % until the period of 2008-2012 relative to the base year 1990. Via burden sharing, this emissions reduction target is distributed between the individual EU member states. As one of the most important policy measures facilitating greenhouse gas emissions reduction, emissions trading was established within the EU and officially introduced by January 2005. The EU directive 2003/87/EG provides the legal setting for EU emissions trading and is supplemented by a document giving guidance on emissions monitoring and reporting (EU 2004).

The general aim of the established emissions trading scheme (ETS) is to reduce CO<sub>2</sub> emissions the most cost effective way. The principle approach of ETS is as follows: National authorities distribute emission certificates among respective energy and industry sectors, plants or installations according to a national allocation plan.<sup>1</sup> The national allocation plan has to be submitted to the EU and is subject to approval by the European Commission. After the first trading period 2005-2007, the total amount of available emission certificates is generally reduced in future trading periods to meet CO<sub>2</sub> reduction targets of each individual EU member state<sup>2</sup>.

Annex I of the EU directive 2003/87/EG specifies plants and installations, which have to be included under ETS, but individual member states have considerable freedom regarding the decision on how to allocate emission certificates among the various energy and industry sectors within their country. Furthermore, differences with respect to national legislation could theoretically lead to the situation, that certain installations (e.g. steam crackers, ammonia plants) are excluded from emissions trading in some countries while they are included in others. In order to harmonize national emissions allocation and to avoid distortions of market competition within the EU, the EU Commission issued

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<sup>1</sup> Under the ETS, also other locations with power output of >20 MW<sub>th</sub> are included (e.g. in the Netherlands this criterion applies to some horticulture and university-hospital complexes).

<sup>2</sup> This is, however, not always the case. The amount of emission certificates depends on the balance between economic growth (in physical, CO<sub>2</sub>-relevant, terms) and the CO<sub>2</sub> reduction target. Thus, in the Netherlands for example, the amount of emission certificates in the first and second trading period will be about the same.

further guidance on national allocation plans for the second trading period between 2008 and 2012 (EU 2005b). Because plants and companies trade their emission certificates, i.e. buy or sell certificates depending on whether they emit more or less CO<sub>2</sub> compared to the certificates they possess, it is critical for the effectiveness of emissions trading that verification mechanisms are implemented in order to crosscheck whether the amount of emissions reported by individual companies are reliable.

In the course of the third phase of the NEU-CO<sub>2</sub> network, Work package III deals with emissions trading, thereby focusing on two principle points, namely (i) the mechanisms implemented by each EU member state to validate and verify emissions trading and (ii) the extent, to which emissions from the non-energy use of fossil fuels (e.g. resulting from steam crackers, ammonia plants) are covered by the ETS in each individual EU member state. These issues are of special importance in order to assure reliable emission estimates on the one hand and a consistent coverage of energy producers and industry by ETS throughout the European community on the other.

This report continues with a short section describing the objective of this work package (Section 2) and the approach used to obtain a more detailed insight in the national Emissions Trading Schemes (Section 3). In Section 4, we give the results of our study and we present selected findings based on a questionnaire issued by the **European Commission (DG Environment)** on consistency checks for ETS and GHG inventories. In Section 5 we discuss the major findings. Special attention is thereby paid to drawing conclusions and giving advice for future research regarding the improvements of emissions trading validation tools.

## **2 Objective**

The principle objective of this work package is to obtain an overview of the status of macro-validation of CO<sub>2</sub> emissions covered by the National Emissions Trading Scheme in the respective EU member states. Special attention is also paid to the extent to which

CO<sub>2</sub> emissions resulting from the non-energy use of fossil fuels are included under the ETS in the various EU member states.

### **3 Methodology**

To gain the required insight regarding verification measures applied and emissions covered by emissions trading at the level of individual EU member states, in a first step, organizations and individuals being in charge of emissions trading were identified. To this end, DG Environment was contacted for advice. As a result, a list with contact addresses of National Registries (Table 1) was received (DG Environment, 2005).

**Table 1:** List of national registries (EU 2005)

<b>Registry</b>	<b>Public Site URL</b>	<b>Registry Status</b>
Austria	<a href="http://www.emissionshandelsregister.at">http://www.emissionshandelsregister.at</a>	partially operational
Belgium	<a href="http://www.climateregistry.be">http://www.climateregistry.be</a>	partially operational
Cyprus	-	not operating
Czech Republic	<a href="http://www.ote-cr.cz">http://www.ote-cr.cz</a>	partially operational
Denmark	<a href="http://www.kvoteregister.dk">http://www.kvoteregister.dk</a>	partially operational
Estonia	<a href="http://khgregister.envir.ee">http://khgregister.envir.ee</a>	partially operational
Finland	<a href="http://www.paastokaupparekisteri.fi">http://www.paastokaupparekisteri.fi</a>	partially operational
France	<a href="https://www.seringas.caissedesdepots.fr">https://www.seringas.caissedesdepots.fr</a>	partially operational
Germany	<a href="https://www.register.dehst.de/">https://www.register.dehst.de/</a>	partially operational
Greece	-	not operating
Hungary	-	not operating
Ireland	<a href="http://www.etr.ie/">http://www.etr.ie/</a>	partially operational
Italy	-	not operating
Latvia	<a href="http://etrlv.lvgma.gov.lv/">http://etrlv.lvgma.gov.lv/</a>	not operating
Lithuania	<a href="http://etr.am.lt">http://etr.am.lt</a>	partially operational
Luxembourg	-	not operating
Malta	-	not operating
Netherlands	<a href="http://www.nederlandse-emissieautoriteit.nl">http://www.nederlandse-emissieautoriteit.nl</a>	partially operational
Poland	-	not operating
Portugal	-	partially operational
Slovakia (Slovak Republic)	-	not operating
Slovenia	-	partially operational
Spain	<a href="http://www.renade.es">http://www.renade.es</a>	partially operational
Sweden	<a href="http://www.utslappshandel.se/">http://www.utslappshandel.se/</a>	partially operational
United Kingdom	<a href="http://emissionsregistry.gov.uk">http://emissionsregistry.gov.uk</a>	partially operational

In a second step, a short questionnaire was developed. Special attention was thereby paid on the questions, (i) which verification measures for emissions trading are implemented in the individual states and (ii) to what extent emissions from the chemical industry (e.g. non-energy use emissions) are included in the ETS. A first draft version of this questionnaire was sent to all project partners with a request to comment on the contents. Upon receiving feedback, the questionnaire was revised and a final version was sent out to organizations or individuals being in charge for emissions trading in the individual EU member states (see Appendix A). An overview of the contact procedure is given in Table 2.

**Table 2:** Contact procedure and recipients of questionnaires

Countries Contacted by Project Partners	Countries Contacted by Project Leader (Utrecht University)	Countries Not Contacted*
Austria	Czech Republic	Cyprus
Belgium	Estonia	Hungary
Denmark	Finland	Luxembourg
Italy	France	Malta
United Kingdom	Germany	Portugal
Poland	Greece	Slovak Republic
	Ireland	Slovenia
	Latvia	
	Lithuania	
	The Netherlands	
	Spain	
	Sweden	

\* These countries were not contacted in the course of this project because contact addresses could not be identified.

In the course of this project, we followed up the completion of the questionnaire four times in the period of October 2005 to February 2006. In the last step of our survey, the responses to the questionnaire were collected and analyzed.

In the second part of our work, we reviewed and analyzed the results of the EU Workshop on data consistency between ETS and the national GHG inventories, which was held on the 9 - 10 February 2006 at the European Environmental Agency in Copenhagen, Denmark.

## **4 Results**

### **4.1 Results from the NEU-CO<sub>2</sub> Network**

Out of the 18 EU member states contacted in the course of our survey, 10 countries responded (Austria, Belgium, Finland, France, Ireland, Italy, The Netherlands, Spain, Poland and the UK). The agencies in charge of emissions trading for Belgium, The Netherlands<sup>3</sup>, and Spain were not able to fill out our questionnaire due to time constraints or heavy workload. The answers provided in the completed questionnaires by the remaining 7 countries (Austria, Finland, France, Ireland, Italy, Poland, and the UK) and

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<sup>3</sup> For the Netherlands, we received information from ECN, the Energy Research Center of the Netherlands (ECN 2006).

the additional information received for the Netherlands are given in the overview tables in Appendix B<sup>4</sup>.

Except for Poland, all EU member states responding to our questionnaire have already implemented emissions trading schemes (Table B2 in Appendix B). All respondents operationalize or plan to operationalize verification measures for emissions as they are reported under the ETS. However, none of the countries responding referred in their answers to the *characteristics* of emissions trading verification, i.e. outlining methodologies for micro and macro-validation but rather stated details for the formal organization of emissions verification. In all countries, National Accreditation Boards/Centres (e.g. France, Ireland, Poland) or Energy Market Authorities (Finland) are in charge of giving accreditation to so called ‘accreditation bodies’. These bodies could be national or international, private or public organizations, if they prove that they fulfill certain requirements set by the national accreditation boards, i.e. being able to perform a reliable outside assessment of CO<sub>2</sub> emissions. Apart from this information, no detailed insight into the applied verification measures could be obtained in the course of this project.

Also information given in the questionnaires regarding a possible crosscheck of emissions reported under the ETS with data from the official greenhouse gas (GHG) inventories remained vague. Italy and Poland plan to perform a crosschecks but give no detailed information. Ireland implemented crosschecks with GHG inventory data by March 2006 only for sectors that are wholly involved in emissions trading, i.e. the energy sectors, public electricity and heat production, petroleum refining, as well as cement manufacture and lime manufacture. In France, crosschecks are only performed for emissions released by industry. For the UK, the check will be conducted for respective industrial sectors as well. Finland and Austria already perform crosschecks for longer time periods. While no further details are given for Finland, Austria states that the data

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<sup>4</sup> Table B1 in Appendix B also includes the response given by ECN (2006) on our questionnaire for the Netherlands.

reported under the ETS are checked by inventory experts and will ultimately build up the basis for GHG inventory data for the industrial sector in the future.

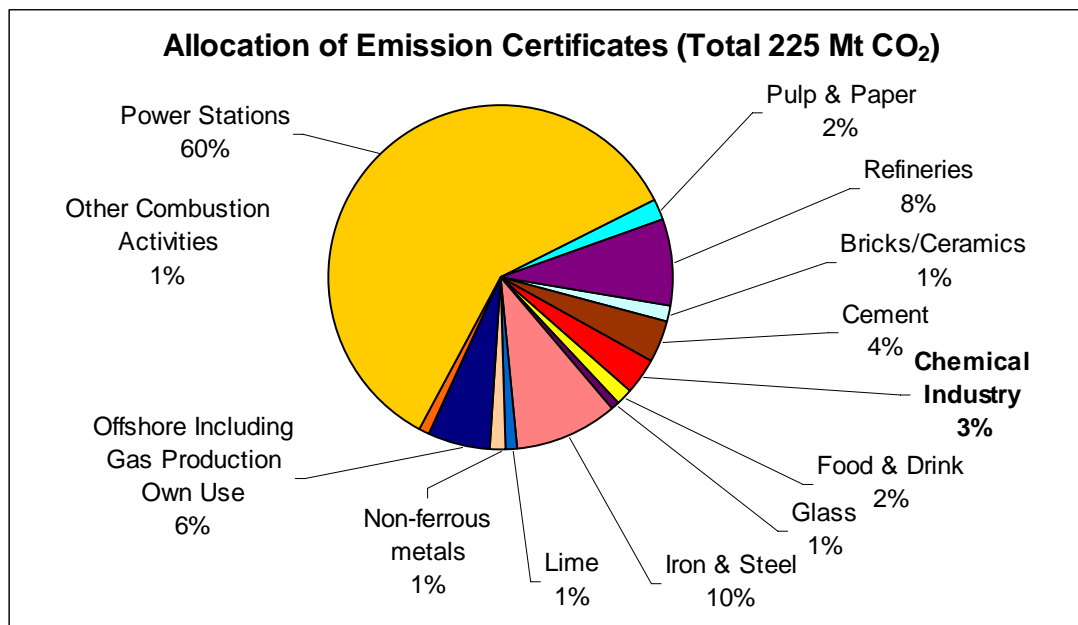
Regarding the expected uncertainties associated with emissions reported under the ETS, Poland, and Finland give no specific answers. Italy expects uncertainties not to be significant, i.e. below 3% of reported emissions. The UK expects uncertainties related to calibration and metering of fuel use but give no further specifications. Ireland expects the highest uncertainties to be associated with fuel oil metering in oil refineries. In contrast, Austria anticipates uncertainties related to the combustion of non-standardized fuel such as wastes and other residuals due to unknown fuel properties.

Of central importance with respect to the NEU-CO<sub>2</sub> Project was the question, whether the chemical industry participates in the emissions trading scheme. While Italy gives no answer to that question, the chemical industry is excluded from the emissions trading in Finland and Austria but it is included in Ireland and the UK (see Figure 1). Poland plans to operationalize its emissions trading scheme in the second quarter of 2006 and will include the chemical industry under the ETS as well<sup>5</sup>. By studying allocation plans we found furthermore that the chemical industry is excluded from emissions trading in Germany but it is included in The Netherlands (see Figure 2).

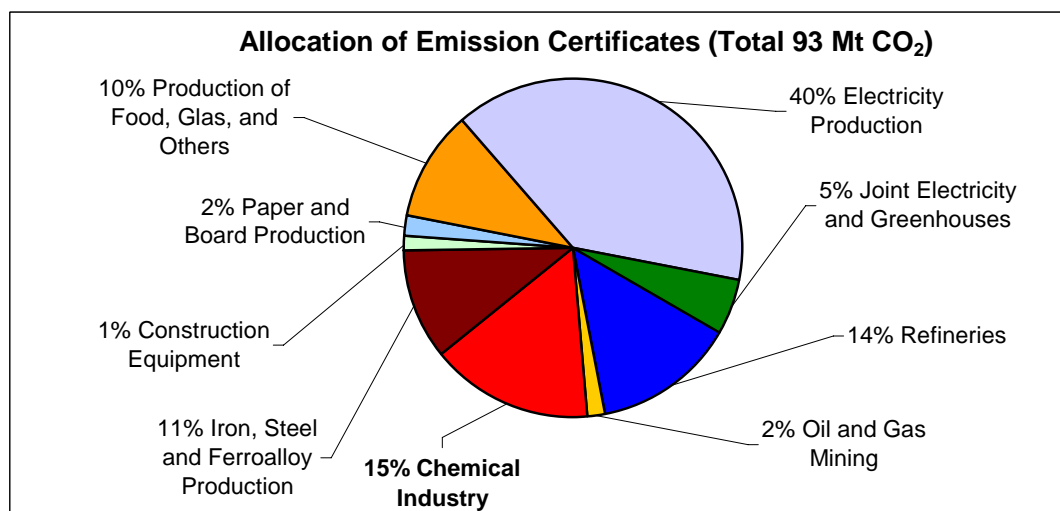
Except for Ireland, none of the countries reports experience related to emissions resulting from the non-energy use of fossil fuels. Ireland states that baseline data on CO<sub>2</sub> emissions for the years 2000-2003 was verified for all chemical plants covered by ETS.

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<sup>5</sup> We refer here to combustion installation with a primary purpose to generate process heat for e.g. steam cracking and a power output >20MW.



**Figure 1:** Distribution of emission certificates in the UK for the first trading period 2005-2007



**Figure 2:** Distribution of emission certificates in The Netherlands for the first trading period 2005-2007<sup>6</sup>

<sup>6</sup> In the Netherlands, out of a total of 95,5 Mt of allocated emissions 2,5 Mt are reserved for new installation while 93 Mt as specifically allocated to the respective industrial sectors (ECN 2006).

## 4.2 Results from the EU Questionnaire

Apart from our questionnaire, the EU Commission (DG Environment) issued their own questionnaire regarding the procedures for crosschecking emissions with official GHG inventory data in the individual EU member states. In the course of the NEU-CO<sub>2</sub> project (Phase III) we obtained the completed questionnaire for Denmark (Appendix C). In Denmark a crosscheck between ETS data sets and the GHG inventories is performed. The outcome of the crosscheck reveals that data from these two sources are in general consistent with each other<sup>7</sup>. The responses to the EU Commission's questionnaire as they were presented on a workshop in Copenhagen, Denmark (9-10 February 2006) yield the following results (EU 2006):

- In some countries, confidentiality of ETS data prevents cross-comparison and use of ETS data in the GHG inventories.
- Also institutional arrangements determine the extent, to which datasets from ETS and GHG inventories are crosschecked with each other.
- Some EU member states already use activity data at the level of individual plants as obtained under the ETS for verification of GHG inventory data (e.g. the Netherlands, Finland).
- The quality of the ETS data is generally regarded as rather good.
- Differences between ETS and GHG inventory data are generally minor and refer to applied emission factors, carbon storage fractions, and assumed activity levels (e.g. for the production of lime, cement, iron and steel).
- The use of ETS data generally improves the quality of GHG estimates, especially regarding industrial process emissions (e.g. from the iron and steel sector).
- Some countries used already ETS data for recalculating time series (including the base year of 1990) from the GHG inventories (e.g. France and Sweden).
- Several EU member states perform comparisons of activity data as crosscheck for data consistency between ETS and the GHG inventories.

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<sup>7</sup> The only exceptions from this are emissions from lime production, where significant differences between ETS and inventory data were identified in Denmark (see Appendix C).

Additional insight on ETS verification mechanisms in individual countries is gained from workshop presentations (EU 2006). The core findings are presented in Table 3.

**Table 3:** Overview on the status of data validation for ETS and GHG inventories (EU 2006)

Country	Data Validation	Characteristics and Explanation of Verification Mechanism
Czech Republic	yes	- detailed ETS data are available to GHG inventory makers
Denmark	yes	- formal agreement on data exchange between organization being in charge of emissions trading and GHG inventory preparation - confidentiality complicates the use ETS data for GHG inventory
Finland	yes	- integration of data from ETS and GHG inventories - use of ETS data to check quality of GHG inventories (e.g. identifying data gaps, crosschecking emission factors) - general consistency between energy balances, ETS, and GHG inventories
France	yes	- severe methodological differences between ETS and GHG inventory - ETS data partly used for GHG inventory improvement - no feedback to energy balances so far
Germany	partly	- ETS data could be used improving GHG inventories but confidentiality is a major problem
Ireland	yes	- data exchange between ETS and GHG inventory - ongoing discussion to organize feedback with energy balances
The Netherlands	yes	- consistency check between Annual Environmental Report, National Energy Balances and ETS - National Energy Balances major data source for GHG inventory - crosschecks are used for data revision as stated by the three sources
Sweden	yes	- ETS data are used for recalculation time series in the GHG inventory - errors and inconsistencies of 5% identified regarding activity levels and emission factors regarding energy conversion and industrial processes

For the Czech Republic detailed ETS data are available to inventory makers but no detailed information were further given in the workshop presentation (EU 2006). Data exchange between ETS and GHG inventories is regulated by formal agreements in Denmark but complicated by confidentiality issues. In France, ETS data are used to improve GHG inventories but still a lot of work is required to correct for methodological differences and inconsistent system boundaries. For Germany, confidentiality issues related to ETS data complicate data exchange between ETS and the GHG inventories. Ireland performs a cross check between ETS and GHG inventories. In the Netherlands, the Annual Environmental Report (AER), the National Energy Balances (NEB), and the data as included under the ETS are used for various crosschecks and revisions of data as stated by the three sources. In Sweden, cross-country comparison of data from ETS and

GHG inventories is complicated by inconsistent system boundaries of the various emission categories. In cases, where a comparison is possible (for around 100 plants, which are not further specified), emissions as stated in the GHG inventory are around 5% higher than the ones included under the National Allocation Plan (NAP). The differences mainly arise from discrepancies regarding activity data and emission factors. The data from the NAP are used to revise the GHG inventory in Sweden as far as possible.

## **5 Discussion**

The outcome of this survey revealed that macro-validation mechanisms for emissions trading are or will be operationalized by practically all EU member states. However, with respect to the initial objective of this work package, i.e. obtaining an overview on the status of macro-validation of emission from the non-energy use of fossil fuels, only little detailed insight could be obtained.

As the responses to our questionnaire show, all countries responding to our questionnaire plan to perform or already perform macro validation for total ETS CO<sub>2</sub> emissions included, i.e. comparing data from the ETS with the GHG inventory. Currently, Austria, Finland and Ireland perform such a crosscheck but provide little information on the actual procedure applied. Table 4 summarizes the results of our own questionnaire and the outcome of the workshop, as organized by DG-Environment.

Our questionnaire further revealed that in some countries the chemical industry is excluded from the ETS, while in others it is included. Although Appendix I of the EU-directive 2003/87/EC clearly indicates that combustion installations with a power output higher than 20 MW are subject to the ETS (EU 2003), installations such as steam cracker or ammonia plants are excluded in some countries. As in the case of Germany, chemical plants are excluded from emissions trading because they are authorized as industrial plants and not as combustion installations. The companies therefore claim that Annex I of the EU-directive 2003/87/EC does not apply to these installations (DEHST 2005).

**Table 4:** Overview table on the status of macro-validation for emissions included under the ETS

Country	Status of ETS Verification Measures*	Special Experiences Regarding Non-Energy Use of Fossil Fuels
Austria	Operational	None
Czech Republic	Operational	-
Denmark	Formal Agreement on Data Exchange	-
Finland	Operational	None
France	Operational	None
Germany	Partly Operational due to Confidentiality Issues	-
Ireland	Operational	Baseline data verified for chemical plants
Italy	Planned for mid 2006	None
The Netherlands	Operational	None
Sweden	Operational	None
Poland	Verification will be done upon implementing emissions trading scheme in the second quarter of 2006	None
UK	Operational	None

\*We refer here to the status of macro-validation as ‘operational’, if crosschecks between ETS and GHG inventories are performed, regardless whether the comparisons reveal only minor differences (as it is the case in e.g. Finland, Ireland, Sweden) or whether data analysis is complicated by inconsistent system boundaries (e.g. France).

The EU Commission is well aware of this problem and aims at harmonizing the ‘interpretation of combustion installation in Annex I of the Directive’ (EU 2005b). The Commission therefore regards the current situation as “highly unsatisfactory”, especially because “a consistent interpretation and coverage of combustion installations across Member States in the second trading period is vital in order to avoid significant distortions of competition throughout the Internal Market” (EU 2005b). The situation is further complicated due to the inclusion emissions resulting from the fuel use of chemical feedstock under industrial processes according to the revised 2006 IPCC guidelines (IPCC 2006)<sup>8</sup>; this makes accurate and comparable monitoring even more challenging.

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<sup>8</sup> The approach followed in the revised 2006 IPCC guidelines differs in that respect from the previous 1996 IPCC guidelines, which did not explicitly specify whether fuel use emissions resulting from feedstock use (e.g. in steam crackers or ammonia plants) has to be reported either under the source category ‘energy’ or ‘industrial processes’. In contrast, in the 2006 IPCC guidelines, fuel use emissions resulting from feedstock consumption are clearly considered as industrial process emissions unless they are, for example, combusted in the energy sector.

In this respect it seems to be of vital importance that the EU Commission outlines specifically, which industrial plants have to be included under the ETS because a clear distinction between combustion and process installation is not always straightforward due to legislation on the level of individual EU member states<sup>9</sup>.

Furthermore, the EU questionnaire reveals some insight into the practices of micro- and macro-validation of emissions reported under the ETS. To ensure EU wide accuracy of emissions reporting under the ETS, guidance on the validation processes seems advisable. Major difficulties for crosschecking data from ETS and GHG inventories seem to be related to inter-institutional data sharing, which is in many cases further complicated by confidential ETS data. Often system boundaries of ETS and GHG inventories are not consistent, which does not allow direct data comparison. It might therefore be useful in the future, to separately list also non-ETS emissions under the ETS (e.g., emissions resulting from fossil fuel use in installations <20 MW) in order to acquire complete overview of sector specific CO<sub>2</sub> emissions (EU 2006). Additional work also needs to be done in many EU member states linking and harmonizing data as collected for national energy balances, emissions trading, and GHG inventories. This will ultimately allow more consistent and reliable estimation of CO<sub>2</sub> emissions in the European Union.

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<sup>9</sup> The guidance from the year 2005 gives already some more detailed specifications: “Member States should therefore in any case include also combustion processes involving crackers, carbon black, flaring, furnaces and integrated steelworks”. This recommendation is, however, not implemented in the directive itself (ECN 2006).

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## Appendix A

This appendix presents the questions as stated in the questionnaire, which was sent to the respective EU member states as Excel data file.

**Table A1:** Questionnaire on methods for the verification of emissions trading

<b>Question 1:</b>	Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.
<b>Question 2:</b>	Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.
<b>Question 3:</b>	When do you expect the Emissions Trading Scheme to be established in your country?
<b>Question 4:</b>	Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.
<b>Question 5:</b>	When do you expect measures for verification of emissions trading to be established in your country?
<b>Question 6:</b>	Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!
<b>Question 7:</b>	Do you crosscheck the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?).
<b>Question 8:</b>	In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?
<b>Question 9:</b>	Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!
<b>Question 10:</b>	Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!
<b>Question 11:</b>	Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?
<b>Question 12:</b>	Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.

\* Non-energy use is defined here as the use of fossil fuels either as feedstock in the chemical industry or for the production of non-energy use refinery and coke oven products such as bitumen and lubricants.

## Appendix B

In this appendix we present the response received from the individual EU member states on our questionnaire. Table B1 contains a short summary, pointing out the core features of the response given. In Table B2 – Table B9, we include the original responses as given by the respective countries.

**Table B1:** Key features of the responses given to the NEU-CO<sub>2</sub> questionnaire

	Austria	Finland	France	Ireland	Italy	The Netherlands	Poland	UK
ETS since:	2004	2005		2005	2005	2004	not yet (expected for the second quarter of 2006)	2002
Implementation of ETS verification measures:	Yes	Yes	Yes	Yes	Not yet	Yes	Not yet	Yes
Characteristics of ETS verification:	Verification by experts, no general methodology outlined	Authority approves national ET verifiers	Verification by certified verification bodies	Accreditation given to ETS verifiers	Accreditation Body supervises ET verifiers	Emission protocols on a company level are verified by Dutch emission authority	Accreditation given to verifiers and regional environmental inspectorates	Accreditation of verification bodies for annual verifications
Cross-check with GHG inventory:	Yes, ETS data as base for the industrial sector in the GHG inventory	Yes, no details are given	Only for industrial process emissions	Under development for various sectors	Not yet	Yes, for total emissions and for emissions from energy production and industrial processes	Not yet but in planning for the future	Under development for: fuel use of industrial sectors
Sectors with highest uncertainty:	Non-standardized fuels (biomass, wastes, and residues)	Not mentioned	Sectors for which entire plants are not covered by ETS (e.g. carbon black production, non-ferrous metals industry)	Oil Refineries	No uncertainties higher than 3% expected	No uncertainties >3% are expected	Not specified	Not specified
Explanation of uncertainties:	Fuel properties	No	Fuel metering	Fuel Oil metering	No	No	No	Calibration and metering of fuel use
Experience with non-energy use:	No	No	No	Baseline data verified for chemical plants, refineries and power generation plants involved in ETS	No	No	No	No
Chemical industry included in ETS?	No, only power plants >20MW	No	Yes	Yes, if combustion installations >20MW	-	Yes	Yes, but no further specification given	Yes, combustion installations

**Table B2:** Response to the questionnaire from Austria

<b>Question 1:</b>	<b>Which governmental agencies or organization(s) are in charge of supervising Emissions Trading in your country? Please provide the address.</b> BMLFUW (Ministry for Environment) Stubenbastei 5, 1010 Wien UBA (Env Agency) Spittelauer Lände, 1090 Wien
<b>Question 2:</b>	<b>Is the Emissions Trading Scheme already established in your country? If YES, since when? If your answer is NO, continue with question 3.</b> YES, the first allocation plan was issued 2004, the relevant laws have been issued 2004 as well.
<b>Question 3:</b>	<b>When do you expect the Emissions Trading Scheme to be established in your country?</b>
<b>Question 4:</b>	<b>Are there any measures for verification of emissions trading implemented in your country? If YES continue with Question 6, if NO continue with question 5.</b> There are studies which serve as the basis of the allocation plan. The emission declaration of the companies has to be proved by authorized auditor. The emission reports can hereafter be verified by experts Commissioned by the ministry.
<b>Question 5:</b>	<b>When do you expect measures for verification of emissions trading to be established in your country?</b>
<b>Question 6:</b>	<b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b> The verification of the emission declaration (reports) is done by auditors, who are authorized for the respective branch. Courses are offered to guarantee a common quality of the approval.
<b>Question 7:</b>	<b>Do you cross-check the emissions included under the Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b> Yes the reported data are checked from the expert of the national inventory. The data will build the basis for the industrial sector data in future.
<b>Question 8:</b>	<b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b> uncertainties increase with variation of energy carriers, especially those that are not standardized (biomass, residues,...)
<b>Question 9:</b>	<b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b> see above, clear answer can be given after the next basic study for allocation plan (March 2006)
<b>Question 10:</b>	<b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use in general, (iv) Power Generation? Please describe the experience made!</b> Chemical industry processes excluded, only power plants >20 MW have been considered
<b>Question 11:</b>	<b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b> see docs enclosed

**Table B3:** Response to the questionnaire from Finland

<b>Question 1:</b>	<b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b> Ministry of Trade and Industry, has the general responsibility of the EU_ETS, - Address: Aleksanterinkatu 4, BOX 32, FIN-00230 Valtionneuvosto, Finland Energy Market Authority, competent authority in Finland. - Address: Lintulahdenkatu 10, FIN-00500 Helsinki, Finland
<b>Question 2:</b>	<b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b>  YES, since 1.1.2005
<b>Question 3:</b>	<b>When do you expect the Emissions Trading Scheme to be established in your country?</b>  
<b>Question 4:</b>	<b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b>  YES
<b>Question 5:</b>	<b>When do you expect measures for verification of emissions trading to be established in your country?</b>  
<b>Question 6:</b>	<b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b> The Energy Market Authority acts as the party that approves the national emissions trading verifiers. A precondition for the approval is that the party willing to become an emission trading verifier can prove with a reliable outside assessment that he fulfils the requirements set by Emissions Trading Act of Finland. This assessment is given on applications by the Finnish Accreditation Service (FINAS) of the Centre for Metrology and Accreditation. The competence of verifiers is evidenced with a statement or accreditation decision by FINAS. The criteria for assessing the competence of verifiers is defined in a decree of Ministry of Trade and Industry.
<b>Question 7:</b>	<b>Do you cross-check the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b>  YES, please contact Statistics of Finland, Kari Grönfors, e-mail kari.gronfors@tilastokeskus.fi, for further information.
<b>Question 8:</b>	<b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b>  No specific sectors or plants.
<b>Question 9:</b>	<b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b>  -
<b>Question 10:</b>	<b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b>  Emissions reporting has been piloting in all sectors during year 2005 by developing emission report forms and developing IT-system for emissions reporting
<b>Question 11:</b>	<b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b>  No

**Table B3 (continued):** Response to the questionnaire from Finland

<b>Question 12:</b>	<p><b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b></p> <p>Energy Market Authority and Ministry of Trade and Industry have prepared a verification guidance to be applied in Finland. This guidance will serve both the verifiers and the operators and will adopt EA Guidance for Recognition of Verification Bodies Under EU ETS Directive. This national verification guidance was published in September 2005 and will be available at <a href="http://www.energiamarkkinavirasto.fi">www.energiamarkkinavirasto.fi</a> (in finnish).</p> <p>Energy Market Authority has also arranged public conferences for both the operators and the verifiers to inform them the guidance and distribute information related to the verification and reporting.</p>
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**Table B4:** Response to the questionnaire from France

<b>Question 1:</b>	<p><b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b></p> <p>The MEDD (Ministère de l'Ecologie et du Développement Durable - Ministry of Ecology and sustainable development ) is in charge of supervising the Emissions Trading in France.</p> <p>Address : Ministère de l'Ecologie et du Développement Durable 20 avenue de Ségur - 75302 Paris 07 SP <a href="http://www.ecologie.gouv.fr">http://www.ecologie.gouv.fr</a></p>
<b>Question 2:</b>	<p><b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b></p> <p>Yes, a National Emissions Trading Scheme is already established in France since February 2005.</p>
<b>Question 3:</b>	<p><b>When do you expect the Emissions Trading Scheme to be established in your country?</b></p>
<b>Question 4:</b>	<p><b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b></p> <p>Yes, measures exist to verify emissions trading implemented in France.</p>
<b>Question 5:</b>	<p><b>When do you expect measures for verification of emissions trading to be established in your country?</b></p>
<b>Question 6:</b>	<p><b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b></p> <p>Emissions of CO<sub>2</sub> for the NAP (National Allocation Plan) have to be declared separately by plant operators at the same time as the annual pollutant emissions declaration (GEREP, Gestion Electronique du Registre d'Emissions Polluantes, Electronic Management of the Register of Pollutant Emissions). This declaration of CO<sub>2</sub> NAP emissions has to be first verified by a body which has been certified by the MEDD. Each year the MEDD allocates a certain amount of CO<sub>2</sub> allowances to each operators concerned and they have to comply with this amount in terms of CO<sub>2</sub> emissions. Otherwise, if their emissions are higher, they have to buy allowances on the market. On the other hand, if their emissions are lower, they can sell them on the market.</p>
<b>Question 7:</b>	<p><b>Do you crosscheck the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?).</b></p> <p>The approach has been as follows: no cross-check has been made for combustion, only for industrial processes (decarbonation). This check was performed by the industrial sector: emissions in the NAP have been estimated by the industrial sector. These emissions have been compared to the results of the National GHG Inventory. Emissions are correctly estimated if emissions estimated for the NAP are lower than national emissions, this occurred for cement and lime production. National emissions used in the inventory take into account all companies of these sectors, those concerned by the NAP and those not concerned). In the opposite case, national emissions considered are at least those of the NAP (this is the case for the glass and ceramic sectors). These comparisons have not been published.</p>
<b>Question 8:</b>	<p><b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b></p> <p>Sectors for which the entire plant is not covered by the NAP (some equipments are included, others are excluded). Examples: combustion installations (&gt;20 MW) in chemical industry, in non ferrous metal industry...</p> <ul style="list-style-type: none"> <li>o Black carbon production.</li> </ul>
<b>Question 9:</b>	<p><b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b></p> <ul style="list-style-type: none"> <li>o Difficulty to determine exactly the energy consumption of equipments covered by the NAP. Sometimes for example only one flow meter is available for different equipments not necessarily covered by the NAP.</li> <li>o Black carbon plant is considered as a combustion installation but this kind of installation requires a specific methodology for emission accounting.</li> </ul>
<b>Question 10:</b>	<p><b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b></p> <p>No feed-back experience at this time.</p>
<b>Question 11:</b>	<p><b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b></p> <p>Yes, there are several of these types of chemical plants included under the National Emissions Trading scheme.</p>

**Table B4 (continued):** Response to the questionnaire from France

	<b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b>
<b>Question 12:</b>	Documents requested are as follows: arrêté du 25 février 2005 modifié : you will find the list of plants concerned by the NAP arrêté du 28 juillet 2005 modifié: you will find rules for checking the conformity of declaration and how to declare emissions circulaire du MEDD du 26 sept 2005 (cf attached files): you will find rules for checking the conformity of declaration and how to declare emissions

**Table B5:** Response to the questionnaire from Ireland

<b>Question 1:</b>	<b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b>
	Emissions Trading Unit, Environmental Protection Agency, Regional Inspectorate, McCumiskey House, Richview, Clonskeagh Road, Dublin 14, Ireland
<b>Question 2:</b>	<b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b>
	yes since the 01 January 2005
<b>Question 3:</b>	<b>When do you expect the Emissions Trading Scheme to be established in your country?</b>
<b>Question 4:</b>	<b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b>
	Yes
<b>Question 5:</b>	<b>When do you expect measures for verification of emissions trading to be established in your country?</b>
<b>Question 6:</b>	<b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b>
	The Irish National Accreditation Board (INAB) are the body charged with the accreditation of verifiers in Ireland.  All Irish GHG annual verification bodies working in Ireland must be accredited by INAB in accordance with EN45011 and associated European co-operation for Accreditation (EA) Guidance documents EA-6/01 and EA-6/03. Verification bodies wishing to work in Ireland from other EU member states will need to be accredited to EN45011 and the associated guidance documents by another EA member accreditation body.
<b>Question 7:</b>	<b>Do you cross-check the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b>
	March 2006 is the first time emissions from the emissions trading scheme will be reported, for the year 2005. It is intended to cross check emissions reported by companies for the Inventory with emissions reported under the emissions trading scheme only for sectors that are wholly involved in emissions trading: such as the Energy Sectors, Public Electricity and Heat Production and Petroleum Refining and the Industrial Processes sectors cement manufacture and lime manufacture. It is likely that where complete sector information is available from emissions trading this data will be used in the Inventory.
<b>Question 8:</b>	<b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b>
	Oil Refineries
<b>Question 9:</b>	<b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b>
	Fuel Oil metering uncertainty higher than minimum tier requirements, specified in the EU Monitoring and Reporting Decision, for some individual fuel meters on site, so the company temporarily moved to a lower activity data tier. A higher tier must be achieved by August 2006.
<b>Question 10:</b>	<b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b>
	Baseline data on CO2 emissions for the years 2000-2003 was verified for all chemical plants, refineries and power generation plants involved in emissions trading, as specified in Annex 1 of the Emissions Trading Directive.
<b>Question 11:</b>	<b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b>
	Some pharmaceutical plants and organic chemical plants are included in the emissions trading scheme because they are combustion installations with a rated thermal input exceeding 20MW.
<b>Question 12:</b>	<b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b>
	Version 1 of the EU Emissions Trading Scheme Annual Verification Guidance Note is available for download from the EPA website. <a href="http://www.epa.ie/Licensing/EmissionsTrading/MonitoringReportingVerification/FileUpload,8173,en.pdf">http://www.epa.ie/Licensing/EmissionsTrading/MonitoringReportingVerification/FileUpload,8173,en.pdf</a>

**Table B6:** Response to the questionnaire from Italy

<b>Question 1:</b>	<b>Which governmental agencies or organization(s) are in charge of supervising Emissions Trading in your country? Please provide the address.</b> Ministry of Environment (Ministero dell'Ambiente e della Tutela del Territorio Via Cristoforo Colombo, n. 44 00147 - Roma ITALIA Phone: 06.57221 web: <a href="http://www.minambiente.it">http://www.minambiente.it</a>
<b>Question 2:</b>	<b>Is the Emissions Trading Scheme already established in your country? If YES, since when? If your answer is NO, continue with question 3.</b> Yes, since jan. 1, 2005
<b>Question 3:</b>	<b>When do you expect the Emissions Trading Scheme to be established in your country?</b>
<b>Question 4:</b>	<b>Are there any measures for verification of emissions trading implemented in your country? If YES continue with Question 6, if NO continue with question 5.</b> NO
<b>Question 5:</b>	<b>When do you expect measures for verification of emissions trading to be established in your country?</b> Within next months
<b>Question 6:</b>	<b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b> Verification Bodies supervised by an Accreditation Body
<b>Question 7:</b>	<b>Do you cross-check the emissions included under the Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b> Not yet
<b>Question 8:</b>	<b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b> In the sectors included in this initial phase of EU ETS we don't expect problems on uncertainties (< 3%).
<b>Question 9:</b>	<b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b> No particular problem to signal
<b>Question 10:</b>	<b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use in general, (iv) Power Generation? Please describe the experience made!</b> No experience to signal so far
<b>Question 11:</b>	<b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b> EU ETS Directive 2003/87/EC, European Commission's Guidelines for Monitoring and Reporting of GHG, Italian Implementation Law of the EU ETS directive ( <a href="http://www.minambiente.it/Sito/settori_azione/pia/att/pna_c02/docs/legge_30_12_04_n316.pdf">http://www.minambiente.it/Sito/settori_azione/pia/att/pna_c02/docs/legge_30_12_04_n316.pdf</a> )

**Table B7:** Response to the questionnaire from The Netherlands

<p><b>Question 1:</b></p>	<p><b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b></p> <p>Nederlandse emissieautoriteit (NEa) Center Court Prinses Beatrixlaan 2 2595 AL Den Haag telephone: 070 - 339 8961 fax: 070 - 339 1394 e-mail: nea@minvrom.nl or helpdesk.registratie@minvrom.nl (register). Monitoringsprotocol and licence demand can be send to mr. M.M.J. Allessie van de NEa. internet: <a href="http://www.vrom.nl/nea">http://www.vrom.nl/nea</a></p>
<p><b>Question 2:</b></p>	<p><b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b></p> <p>Yes; Augustus 20 2004</p>
<p><b>Question 3:</b></p>	<p><b>When do you expect the Emissions Trading Scheme to be established in your country?</b></p>
<p><b>Question 4:</b></p>	<p><b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b></p> <p>Yes; The emissions of the companies are verified.</p>
<p><b>Question 5:</b></p>	<p><b>When do you expect measures for verification of emissions trading to be established in your country?</b></p>
<p><b>Question 6:</b></p>	<p><b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b></p> <p><a href="http://www.vrom.nl/pagina.html?id=22540">http://www.vrom.nl/pagina.html?id=22540</a> First all companies have to make a monitoring protocol. The Dutch emission authority has verified those protocols; including visits of most companies. For the yearly emission at this moment three Dutch companies: "Pricewaterhouse Coopers", "Verificatiebureau Benchmarking Energie-efficiency (VBE)" and "Det Norske Veritas" are allowed to verify whether the emission are correct and conform the monitoring protocol and whether the monitoring protocol is still actual correct for the location. Companies can also use a accreditation company with the correct licences of on other country.</p>
<p><b>Question 7:</b></p>	<p><b>Do you crosscheck the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the sub-sectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?).</b></p> <p>Yes, there had been a check on total emissions when the first allocation plan was made. This check was also done for the National Inventory Report (NIR) 2005 by ECN for the total emission of the energy and industry sector. Difference between the total emissions in the basis data of NAP1 (2001/2002) and NIR 2005 is about 1 to 2%. It is not clear what causes the difference, so has NIR 2005 substantially changed compared to NIR 2004 for instance because product related emission are no longer in the producer sector but in the consumer sector (but there are at least 10 other possible reasons). For other projects ECN carried out also comparisons for industrial sectors using only the allocated emissions (the emissions of the trading companies in 2001 and 2002 on company or sectoral level are regarded by SenterNovem as confidential).</p>
<p><b>Question 8:</b></p>	<p><b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b></p> <p>Most problems occur with small companies (lack of know how), on places were waste gasses are used (calculations and measurements), with flares (calculations and measurements) and with process emissions (definition: "should they be reported as well because we can't do anything about this"); but the monitoring protocol and the verification will deal with these problems.</p>
<p><b>Question 9:</b></p>	<p><b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b></p> <p>(see above)</p>
<p><b>Question 10:</b></p>	<p><b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b></p> <p>It was find out refineries are not correctly reported in the NIR 2005, because of the changes in refinery gas compositions and fuel use in furnaces (partly reported in the energy statistics under energy transfer and not completely under final use).</p> <p>See "Regeling monitoring handel in emissierechten"</p>

**Table B7 (continued):** Response to the questionnaire from The Netherlands

<p><b>Question 11:</b></p>	<p><b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b></p> <p>Yes steam crackers are in the system; also the complete steel works. Process emission of ammonia production companies not, just like some other process emissions of chemical plants (for instance for Hydrogen production from natural gas). Anodes for aluminium production are excluded and lime stone use in some not designated sectors (food industry). Also carbon black production is still excluded in NAPI.</p>
<p><b>Question 12:</b></p>	<p><b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b></p> <p>See "Regeling monitoring handel in emissierechten"</p>

**Table B8:** Response to the questionnaire from Poland

<p><b>Question 1:</b></p>	<p><b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b></p> <p>In accordance with <i>greenhouse gases and other substances emissions allowances trading Act</i> (Journal of laws 281, listing 2784) the Ministry of the Environment is in charge of National Administrator. Ordinance of Minister of Environment about designated National Administrator of Emission Trading Scheme puts this role at on the Institute of Environmental Protection. the Administrator's duties are: 1) run the National Emission Allowance Registry, 2) maintain databases with installation information necessary to elaborate national allocation plans, 3) monitoring of functioning of the scheme, including overviews, analyses and assessment of its operation, 4) elaborate drafts national allocation plans, 5) render drafts national allocation plans accessible for social consultations, 6) elaborate reports concerning the scheme, 7) monitoring actions related to realization JI and CDM projects, 8) clarify intricacies, publishing news bulletins and preparing workshops about scheme.</p>
<p><b>Question 2:</b></p>	<p><b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b></p> <p>Emission Trading Scheme has not been yet implemented in Poland.</p>
<p><b>Question 3:</b></p>	<p><b>When do you expect the Emissions Trading Scheme to be established in your country?</b></p> <p>Institute for Environmental Protection is still working on implementation of the scheme. We assume that the scheme will be implemented in second quarter of year 2006</p>
<p><b>Question 4:</b></p>	<p><b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b></p> <p>Yes</p>
<p><b>Question 5:</b></p>	<p><b>When do you expect measures for verification of emissions trading to be established in your country?</b></p> <p>Verification will be executed based on the Ordinance of Minister of Environment about monitoring of greenhouse gas emissions involved in European Emissions Trading Scheme dated 12.01.2006, but verification for year 2005 will be based upon Commission Decision establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003,87,EC of the European Parliament and of the Council</p>
<p><b>Question 6:</b></p>	<p><b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b></p> <p>The greenhouse gases and other substances emissions allowances trading Act allows accredited verifiers and regional environmental inspectorates to verify annual emission reports. The requirements for accrediting as an emission reports verifiers are described in the proposal of a decree on requirements for emission trading verifiers (art. 43, p. 3). the decree proposal describes also the manner of approving of other Member States accreditation. the verifiers' registry will be prepared and run by the National Administrator (art. 43, p. 2). Polish Accreditation Centre (art. 43, p.1) will issue the accreditation to verifiers. The manner of verifying the annual reports is described in the Ordinance of Minister of Environment about monitoring of greenhouse gas emissions involved in European Emissions Trading Scheme dated 12.01.2006. the positively verified reports should be sent to the National Administrator and the competent authority by 31st March each year after the year of the annual report.</p>
<p><b>Question 7:</b></p>	<p><b>Do you cross-check the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the subsectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b></p> <p>Data reported by companies and used in the Emissions Trading Scheme will be compared to the data included in the national GHG Inventory and databases used to the environmental fee payment system. So far have none comparisons of that kind were done. Monitoring the scheme, analysing and assessing belong to the National Administrator's duties. We assume that National Administrator will administer such information and will have the possibility of its comparison and data recalculation for year 2004 and 2005, which is required by the law.</p>
<p><b>Question 8:</b></p>	<p><b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b></p> <p>At the moment it is hard to give the answer</p>
<p><b>Question 9:</b></p>	<p><b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b></p> <p>-</p>
<p><b>Question 10:</b></p>	<p><b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b></p> <p>-</p>

**Table B8 (continue):** Response to the questionnaire from Poland

<p><b>Question 11:</b></p>	<p><b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b></p> <p>Within the emissions Trading Scheme there are chemical plants, which major objective is not energy production but basic chemical substances inter alia in chemical industries at asphalt production</p>
<p><b>Question 12:</b></p>	<p><b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b></p> <p>Ordinance of Minister of Environment about monitoring of greenhouse gas emissions involved in European Emissions Trading Scheme states inter alia form of annual report and the way of its verification</p>

**Table B9:** Response to the questionnaire from the UK

<p><b>Question 1:</b></p>	<p><b>Which governmental agencies or organization(s) are in charge of supervising the Emissions Trading in your country? Please provide the address.</b>                  Department for Environment, Food &amp; Rural Affairs (Defra) has the main responsibility for UK Government Policy in the EU ETS. Please see <a href="http://www.defra.gov.uk/environment/climatechange/trading/eu/info/contacts.htm">http://www.defra.gov.uk/environment/climatechange/trading/eu/info/contacts.htm</a> for a list of useful contacts. Please also see separate organisation diagram Could also mention EA, SEPA, DOENI and DTi as EU ETS regulators, and EA as Registry Administrator</p>
<p><b>Question 2:</b></p>	<p><b>Is a National Emissions Trading Scheme already established in your country? If YES, since when (afterwards continue with Question 4)? If your answer is NO, continue with question 3.</b>                  Yes - UK ETS a voluntary scheme is running from 2002 -2006. The EU ETS started in 2005.</p>
<p><b>Question 3:</b></p>	<p><b>When do you expect the Emissions Trading Scheme to be established in your country?</b>                  The UK ETS is up and running as indicated above. The EU ETS has been underway since the 1/1/05, with verified annual emissions reports on the first year of monitoring data (2005) due by the 31/3/06</p>
<p><b>Question 4:</b></p>	<p><b>Are there any measures for verification of emissions trading implemented in your country? If YES continue afterwards with Question 6, if NO continue with question 5.</b>                  In the UK, measures for verification of annual reporting for the EU Emissions Trading Scheme were developed throughout 2005 and are now fully in place. Verification for UK ETS was already established.</p>
<p><b>Question 5:</b></p>	<p><b>When do you expect measures for verification of emissions trading to be established in your country?</b>                  Already established</p>
<p><b>Question 6:</b></p>	<p><b>Please state briefly the main characteristics of the verification scheme applied for Emissions Trading in your country!</b>                  The UK Government has issued Guidance on Annual Verification, and the UK Accreditation Service has now accredited nine verification bodies to perform annual emissions verifications. The Guidance explains the requirements of the ETS Directive and the Monitoring and Reporting Decision in practical terms. It aims to ensure good quality and consistent verification throughout the UK. Further information on the characteristics of the UK's verification process are available from: <a href="http://www.defra.gov.uk/environment/climatechange/trading/eu/permits/index.htm">http://www.defra.gov.uk/environment/climatechange/trading/eu/permits/index.htm</a> The UK accepts verification bodies accredited by other Member State's provided they are accredited by a member of the European co-operation for Accreditation (EA) according to the EA's guidance and the bodies' first verification in the UK is checked by the UK Accreditation Service and the verifier demonstrates appropriate knowledge of specific UK requirements.</p>
<p><b>Question 7:</b></p>	<p><b>Do you cross-check the emissions included under the National Emissions Trading Scheme and reported by the companies with data from the national GHG Inventory? If YES, please specify shortly the approach chosen! (e.g.: is the check performed for industry as a whole, by industrial sector or at the subsectoral level? Is the check performed by individual types of fuels and if so, for which? Is the outcome of the validation published anywhere and if so, please give the reference. Are there clear rules which consequences a mismatch has for the companies?)</b>                  The UK is currently developing processes to cross-check the emissions reports from the EU ETS with the emissions reported in the national GHG Inventory. The check will mainly involve fuel used by each industrial sector in the GHG Inventory for different types of fuel. However, it is important to take into account potential reasons for differences in the data such as different sources covered and different calculation methodologies.</p>
<p><b>Question 8:</b></p>	<p><b>In which sectors and for which plants do you expect the highest uncertainties related to emissions trading verification?</b>                  Highest uncertainties related to emissions trading verification are likely to come from installations where full calibrations of meters have not been performed recently, or where data has not been collected in compliance with monitoring and reporting plan requirements.</p>
<p><b>Question 9:</b></p>	<p><b>Please give a short explanation of problems associated with the emissions accounting in the specific plants mentioned above!</b>                  While the competent authority can require the necessary calibrations in improvement plans, there is a problem in the interim where operators and verifiers will be unsure of the accuracy of the meter readings, and how these affect materiality.</p>
<p><b>Question 10:</b></p>	<p><b>Has any specific experience been collected for either of the following sectors: (i) Chemical Industry, (ii) Refineries, (iii) Non-energy Use* in general, (iv) Power Generation? Please describe the experience made!</b>                  None as yet with annual verification. The UK Accreditation Service and Defra will be reviewing the verification process in due course and should have some information by June 2006. The UK Accreditation Service also performs ongoing surveillance of accredited verification bodies as they perform verifications.</p>
<p><b>Question 11:</b></p>	<p><b>Are chemical plants (other than refineries and power plants), e.g. plants with a primary purpose not to produce energy but basic chemicals (e.g. steam crackers) included under the National Emissions Trading Scheme?</b>                  Please see Annex I of the Emissions Trading Directive for what is included in the scheme <a href="http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_275/l_27520031025en00320046.pdf">http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_275/l_27520031025en00320046.pdf</a>. Other useful information is our guidance note at <a href="http://www.defra.gov.uk/environment/climatechange/trading/eu/pdf/eu-ets-guidance01.pdf">http://www.defra.gov.uk/environment/climatechange/trading/eu/pdf/eu-ets-guidance01.pdf</a> and also the installation level allocation table <a href="http://www.defra.gov.uk/environment/climatechange/trading/eu/nap/pdf/finalallocation.pdf">http://www.defra.gov.uk/environment/climatechange/trading/eu/nap/pdf/finalallocation.pdf</a></p>

**Table B9:** Response to the questionnaire from the UK

<b>Question 12:</b>	<b>Are there any documents prepared in your country, which define standards and approaches for emissions trading verification procedures? If so, please attach the document(s) to this file or please provide the reference. If this questionnaire has been filled by collection of information by phone or e-mail, please provide the name, affiliation and phone number or e-mail address of the person(s) contacted.</b> See Q4
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## Appendix C

In this appendix, the results of the voluntary questionnaire of the EU Commission on data consistency between national GHG emission inventories and the reporting under the EU ETS are given for Denmark (Kilde 2006).

*1. Give a short general description on how the GHG emission inventory and the ETS are organized and linked in your country (institutions, division of work and responsibilities). This information will facilitate to understand the answers to the questions posed in the following sections.*

The National Environmental Research Institute (NERI) is responsible for preparation of the GHG emission inventory and the Danish Energy Authority (DEA) is responsible for the ETS. NERI prepares the annual inventory with input from DEA - published energy statistics and unpublished statistics on energy consumption by major sources. Regarding industrial emissions, statistical data from Statistics Denmark combined with Environmental reports and information obtained from major sources are used for the inventory.

*2. Did you already use CO<sub>2</sub> emission estimates collected and the associated activity data under the EU emissions trading scheme (ETS) for the compilation of the national GHG inventory or are you planning to do?*

Yes.

Industrial processes: For some of the sources the ETS-data has been used for verification of the applied estimation methodology whereas the ETS-data for other sources in combination with information on the specific process has been used for development of emission factors/emission estimates.

*3. If YES, how do you ensure time series consistency of GHG inventories?*

*For emissions from fuel combustion:* For combustion related emissions the statistical information on fuel consumption compiled by DEA is used to ensure time series consistency.

*For emissions from industrial processes:* For process related emissions statistical information compiled by Statistics Denmark combined with statistical information provided by major sources are used to ensure time series consistency.

*4. If YES, what are your experiences regarding the quality of ETS data?*

Regarding information on emissions from industrial processes we find consistency between the GHG-data and the ETS-data as far as the data has been compiled by DEA and NERI. However, the GHG-inventory includes some sources that are not included in ETS due to limits for inclusion in the ETS.

*5. Did you already identify significant differences in CO<sub>2</sub> emission estimates for ETS activities<sup>10</sup> and corresponding inventory source categories?*

Yes. Lime production.

*6. If you answered with Yes in question 4, please describe the sources of differences (e.g. differences in activity data, emission factors, oxidation factors, conversion factors, gaps, methodologies, scope of sources at installations)*

Only one producer of lime is included in ETS.

*7. If you answered with Yes in question 4; did you perform recalculations for the inventory because of the differences identified or do you plan to perform such recalculations?*

No, because there are no thresholds in GHG inventories under the UNFCCC and EU MM.

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<sup>10</sup> ETS activity refers to activities listed in Annex I of Directive 2003/87/EC

8. *If you have not yet compared ETS data with inventory data, do you expect significant differences in plant-specific CO<sub>2</sub> emission estimates for ETS activities and corresponding inventory source categories?*  
No.

9. *Are the plant specific data (bottom-up) collected during preparation of National Allocation Plan (2005-2007) made available for compilers of the national GHG emission inventory in your country?*  
Yes, but only some of the detailed data (activity, emission factors, oxidation factors and conversion factors) are made available (indicate which ones). Emissions (energy related and process related) are available.

10. *Are the plant specific data for installations under the ETS collected annually by the competent authority going to be made available for compilers of the national GHG emission inventory?*  
Yes, all detailed data (like fuel use, production levels, emission factors, oxidation factors and conversion factors for process emissions) are made available

11. *Are there concerns related to data confidentiality that prevent access of inventory compilers to inventory-relevant EU ETS data that are available to competent authorities in your country?*  
No.

12. *Have any links between data collection systems for NAP elaboration and official statistics on energy or industry been established in your country or is this planned?*  
No.

13. *Do you know which ETS activities<sup>11</sup> have the same coverage as the corresponding IPCC source category in your country in terms of activity or CO<sub>2</sub> emissions? Please indicate those ETS activities and inventory source categories:*

No comparison has been made for the Energy sector.

Regarding industrial processes the same coverage has been identified for the following sectors:

Cement production

Production of bricks and expanded clay products

Limestone and dolomite use

Iron and steel production

For Lime production the coverage is not complete. Some of the consumers of limestone and dolomite will be below the threshold in the EU ETS.

14. *For those activities with difference in coverage, do you know the percentage share of each respective ETS activity in the corresponding IPCC source category in terms of activity or CO<sub>2</sub> emission coverage?*

Partly, for the following EU ETS activities and corresponding inventory source categories (Please indicate whether you can compare either activity data or emissions data)

For Lime production the coverage is approximately 65%.

15. *If you answered question 16 with YES, please give a brief explanation on the method you used to get information about the difference in coverage.*

In the GHG-inventory the emission from lime production is based on activity data provided by Statistics Denmark.

16. *If you answered the question 16 with NO, please indicate whether you already tried to quantify the difference in coverage and which problems you were facing.*

17. *Are the plant level data (activity, emission) collected for use in the ETS also used for other reporting obligations (e.g. LCP, EPER)?*

No. Possibilities have been investigated but no coordinated use of reporting to ETS has been set up so far. As regards LCP and EPER work is going on for standardisation, streamlining and coordination of data, also in connections to electronic reporting of data. As regards EPER

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<sup>11</sup> ETS activity refers to activities listed in Annex I of Directive 2003/87/EC

data is controlled and compared to available registration systems among which the ETS system. This is e.g. done through using the same identification system for enterprises in the EPER and the ETS systems.

*18. Are you willing to give a presentation in the workshop?*

Yes.

*19. If YES, proposed topic of the presentation:*

The ETS system in Denmark and its interplay with GHG inventories

*20. Any other comments, proposals or suggestions for preparation of and discussion at the workshop?*

NERI is working on a formal agreement with DEA with the purpose of utilising the information reported to DEA for the Energy sector as well as for the Industrial sector.