CREEA - Compiling and Refining Environmental and Economic Accounts

D6.3 Emission Allowances and Trading Accounts

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About CREEA

The main goal of CREEA is to refine and elaborate economic and environmental accounting principles as discussed in the London Group and consolidated in the future SEEA 2012, to test them in practical data gathering, to troubleshoot and refine approaches, and show added value of having such harmonized data available via case studies. This will be done in priority areas mentioned in the call, i.e. waste and resources, water, forest and climate change / Kyoto accounting. In this, the project will include work and experiences from major previous projects focused on developing harmonized data sets for integrated economic and environmental accounting (most notably EXIOPOL, FORWAST and a series of EUROSTAT projects in Environmental Accounting). Most data gathered in CREEA will be consolidated in the form of Environmentally Extended Supply and Use tables (EE SUT) and update and expand the EXIOPOL database. In this way, CREEA will produce a global Multi-Regional EE SUT with a unique detail of 130 sectors and products, 30 emissions, 80 resources, and 43 countries plus a rest of world. A unique contribution of CREEA is that also SUT in physical terms will be created. Partners are:

1. Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO), Netherlands (co-ordinator)
2. JRC -Joint Research Centre- European Commission (DG JRC IPTS), Belgium /Spain
3. Universiteit Leiden (Unileiden), Netherlands
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11. SERI - Nachhaltigkeitsforschungs Und –Kommunikations Gmbh (SERI) Austria
12. European Forest Institute (EFI), Finland / Spain

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Executive Summary

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets. With the commitments to decrease GHG emissions, Parties to the Kyoto Protocol have also agreed to annually report their greenhouse gases. The targets can be met either through reduction of emissions in the country itself, or by means of trading of emission allowances through one of the flexibility mechanisms included under the Kyoto Protocol (emission trading, joint implementation and clean development mechanism).

The data generated by the annual reports consists both of emissions and of flows of money. They can provide understanding of the functioning of this economic instrument and how it affects emissions and industries. To make this analysis, the System of Environmental-Economic Accounts (SEEA) is a relevant tool to understand true connections between environment and economy.

This report summarizes what kind of information is available about the flexible mechanisms of the Kyoto Protocol and investigates whether the available data can be used in filling the Standard Tables developed in the work a SEEA. Moreover, it identifies and describes two case studies from the EU ETS: Denmark and the Netherlands.

It is concluded that the currently available datasets are insufficient to develop a methodology that will allow to quantitatively express economic intensities related to the flexible mechanisms of emission trading, joint implementation and clean development mechanism. For many datasets, the level of detail is insufficient. In cases when more detailed data are available, confidentiality is a major obstacle for the data to be used in SEEA.

1 Introduction

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change[1]. The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh in 2001, and are called the "Marrakesh Accords".

Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities".

The major feature of the Kyoto Protocol is that it sets binding targets for 38 industrialized countries[2] and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of five per cent reduction against 1990 levels over the five-year period 2008-2012 (see Table 14 in Annex I where parties and their commitments under the Kyoto Protocol are listed).

The major distinction between the Kyoto Protocol and the Convention on Climate Change is that while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to decrease these.

With the commitments to decrease GHG emissions, Parties to the Kyoto Protocol have also agreed to annually report their greenhouse gases. The targets can be met either through reduction of emissions in the country itself, or by means of trading of emission allowances through one of the flexibility mechanisms included under the Kyoto Protocol[3] (emission trading, joint implementation and clean development mechanism).

The data generated by the annual reports consists both of emissions and of flows of money. They can provide understanding of the functioning of this economic instrument and how it affects emissions and industries. To make this analysis, the System of Environmental-Economic Accounts (SEEA) is a relevant tool to understand true connections between environment and economy.

1.1 Purpose of deliverable 6.3

The main task of this deliverable is to study what kind of information is available about the flexible mechanisms of the Kyoto Protocol. These mechanisms lead to investments in one country and costs in another that could be identified separately in an integrated environmental and economic accounting system. In the work to create a SEEA (System of Environmental-Economic Accounts) standard, some Standard Tables have been agreed for the reporting of the physical and monetary flows involved in these mechanisms. The

[1] http://unfccc.int/2860.php

[2] At the time of signing the KP, 39 Parties, including the European Union, were listed as "Annex I" Parties that agreed to quantitative emission reduction targets. Since then four more Parties have joined the Annex I status. The USA decided not to ratify the KP and Canada recently withdrew.

[3] Article 17, Kyoto Protocol

purpose of this task was to investigate whether this kind of data is available to fill those tables in.

Two case studies from the EU ETS were identified and described: Denmark and the Netherlands. They have made pilot studies but no general data gathering and reporting on an EU level is yet in place.

Furthermore the goal of this task was to check the feasibility of the development of a methodology for the Kyoto issues and mechanisms which will allow for quantitatively express economic intensities related to the flexible mechanisms of emissions trading, joint implementation and clean development mechanism.

1.2 This report

After introduction, the Kyoto mechanisms (emission trading, clean development mechanism and joint implementation) are summarized. Next, the available Kyoto Protocol data and EU emission trading information are analysed. One chapter is devoted to EU emissions trading in the SEEA including an example from Denmark and the Netherlands. Finally the conclusions of this deliverable are formulated.

2 The Kyoto mechanisms

Countries with commitments under the Kyoto Protocol to limit or reduce greenhouse gas emissions must meet their targets primarily through national measures. As an additional means of meeting these targets, the Kyoto Protocol introduced three market-based mechanisms, thereby creating what is now known as the "carbon market."

The Kyoto mechanisms are[4]:

- Emissions Trading[5];
- The Clean Development Mechanism[6] (CDM);
- Joint Implementation[7] (JI).

The aims of these mechanisms are:

- To stimulate sustainable development through technology transfer and investment.
- To help countries with Kyoto commitments to meet their targets by reducing emissions or removing carbon from the atmosphere in other countries in a cost-effective way.
- To encourage the private sector and developing countries to contribute to emission reduction efforts.

JI enables industrialized countries to carry out joint implementation projects with other developed countries, while the CDM involves investment in sustainable development projects that reduce emissions in developing countries.

Within the provisions of the flexible mechanisms, domestic or regional emissions trading schemes may be established as climate policy instruments at the national and the regional levels. Under such schemes, governments set emissions obligations to be reached by the participating entities (companies or facilities) and allow these entities to trade emission allowances amongst each other. The European Union emissions trading scheme (EU ETS) is the largest scheme in operation.

Emission trading and the carbon markets associated with it are a key tool for ensuring a cost effective reduction of emissions worldwide. JI and CDM are the two project-based mechanisms which feed the international carbon market, whereas domestic or regional emission trading schemes feed the domestic or regional markets respectively.
State and Trends of the Carbon market Report 2012 (World Bank, 2012) describes a carbon market that grew in total value by 11% in 2011, to $176 billion (€126 billion), and where transaction volumes reached a new high of 10.3 billion tons of carbon dioxide equivalent (CO_2e). European Union allowances accounted for 84%, secondary CDM[8]

[4] http://unfccc.int/kyoto_protocol/mechanisms/items/1673.php
[5] http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php
[6] http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php
[7] http://unfccc.int/kyoto_protocol/mechanisms/joint_implementation/items/1674.php
[8] Purchased from the secondary market (resold from a marketplace)

accounted for 13% and primary CDM[9] accounted for 1.7% of global carbon market value in 2011 (Carbon Finance at the World Bank, 2012[10]).

These flexible mechanisms regard agreements between countries and must be seen as distinct from the facility level emissions trading as implemented in for instance the EU-ETS. Where companies from two different countries trade emission allowances, this will obviously also result in a change of the assigned amounts for the Parties involved. The latter must be seen as a commodity trade in between economic entities[11], whereas the former are agreements between governments[12].

2.1 Emissions trading

Parties with commitments under the Kyoto Protocol[13] have accepted targets for limiting or reducing emissions. These targets are expressed as levels of allowed emissions, or "assigned amounts", over the 2008-2012 commitment period.

Emissions trading, as set out in Article 17 of the Kyoto Protocol, allows countries that have emission units to spare - emissions allowed but not "used" - to sell this excess capacity to countries that are over their targets. Thus, a new commodity was created in the form of emission reductions or removals. Since carbon dioxide is the principal greenhouse gas[14], people speak simply of trading in carbon. Carbon is now tracked and traded like any other commodity. This is known as the "carbon market".

More than actual emissions units (assigned amount units, AAU's) can be traded and sold under the Kyoto Protocol's emissions trading scheme. The other units which may be transferred under the scheme, each equal to one tonne of CO_2, may be in the form of:

- A removal unit (RMU) on the basis of land use, land-use change and forestry (LULUCF) activities such as reforestation, issuer: National registry.
- An emission reduction unit (ERU) generated by a joint implementation project, issuer: National registry.
- A certified emission reduction (CER) generated from a clean development mechanism project activity, issuer: CDM registry

Transfers and acquisitions of these units are tracked and recorded through the registry systems[15] under the Kyoto Protocol. An international transaction log[16] ensures secure transfer of emission reduction units between countries (see also chapter 3).

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[9] Purchased from the primary market (from original party that makes the reduction)

[10] http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/State_and_Trends_2012_Web_Optimized_19035_Cvr&Txt_LR.pdf

[11] See Emissions Trading The "carbon market" http://unfccc.int/kyoto_protocol/background/items/2880.php

[12] See International Emissions Trading; http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php

[13] In the Kyoto Protocol these are called "Annex B Parties", virtually the same as the list of "Annex I Parties" in the UNFCCC successive decisions by the COP have slightly changed this list, Table 14 in Annex I to this report provides the complete list as of February 2013

[14] The other GHG include: CH4;N2O;HFCs;PFCs;SF6

[15] http://unfccc.int/kyoto_protocol/registry_systems/items/2723.php

[16] http://unfccc.int/kyoto_protocol/registry_systems/itl/items/4065.php

Domestic and regional emission trading schemes can be seen as a tool for individual entities or companies to take part in this international emission trading mechanisms. The registry systems essentially keep track of the consequences of the trade for meeting the national targets.

2.2 Joint Implementation

The mechanism known as "joint implementation (JI)" is defined in Article 6 of the Kyoto Protocol. Joint implementation is a project-based mechanism by which one Annex I Party[17] can invest in a project that reduces emissions or enhances sequestration in another Annex I Party and receive credit for the emission reductions or removals achieved through that project. The unit associated with JI is called an emission reduction unit (ERU). ERUs are converted from existing AAUs and RMUs before being transferred. JI does not affect the total assigned amount of Parties collectively; rather it redistributes the assigned amount among them (UNFCCC, 2008)[18].

Joint implementation offers Parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.

2.3 Clean Development Mechanism (CDM)

The Clean Development Mechanism (CDM) is defined in Article 12 of the Protocol. The CDM is also a project-based mechanism. CDM credits may be generated from emission reduction projects or from afforestation and reforestation projects in non-Annex I Parties[19]. Unlike emissions trading and JI, projects under the CDM create new Kyoto units and their acquisition by Annex I Parties increases both the total assigned amount available for those Annex I Parties collectively and their allowable level of emissions. As a result, CDM projects must meet detailed requirements and follow exact procedures and steps for the validation and registration of projects and the verification and certification of emission reductions and removals. These steps, largely carried out by designated operational entities (DOEs), ensure that reductions or removals associated with projects are additional to what would otherwise occur in the absence of the projects. Additional rules apply to afforestation and reforestation projects.

CDM projects result in three types of Kyoto units. Certified emission reductions (CERs) are issued for projects that reduce emissions, while temporary CERs (tCERs) and long-term CERs (lCERs) may be issued for projects that enhance removals through afforestation and reforestation projects.

The CDM Executive Board supervises the CDM, under the authority and guidance of the CMP. The Executive Board is responsible for registering projects, approving

[17] List of non-Annex I Parties to the Convention: http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php

[18] UNFCCC, Kyoto Protocol reference Manual. On accounting of emissions and assigned amount. (2008) http://unfccc.int/resource/docs/publications/08_unfccc_kp_ref_manual.pdf

[19] List of non-Annex I Parties to the Convention: http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php

methodologies for determining project baselines and monitoring emission reductions, and for issuing CERs. It is also responsible for the accreditation of DOEs[18].

The mechanism is seen by many as a trailblazer. It is the first global, environmental investment and credit scheme of its kind, providing a standardized emissions offset instrument, CERs.

A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers.
The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.

Operational since the beginning of 2006, the mechanism has already registered more than 1,650 projects and is anticipated to produce CERs amounting to more than 2.9 billion tonnes of CO_2 equivalent in the first commitment period of the Kyoto Protocol, 2008–2012 (see also section 5.1).

3 Registry systems under the Kyoto Protocol

Emission targets for industrialized country Parties to the Kyoto Protocol are expressed as levels of allowed emissions, or "assigned amounts", over the 2008-2012 commitment period. Such assigned amounts are denominated in tonnes (of CO_2 equivalent emissions) known informally as "Kyoto units". With the establishments of a Party's assigned amount the Party does have a quantified Kyoto units account, which in fact reflects a commodity on the market.

The ability of Parties to add to their holdings of Kyoto units (e.g. through credits for CDM or LULUCF activities) or move units from one country to another (e.g. through emissions trading or JI projects) modifies the Party's Kyoto units account. The registry systems under the Kyoto Protocol are set up to track changes in these accounts and to ensure integrity of the trade by ensuring consistency of the Kyoto unit accounts of all holders (trading Parties and entities) at all times.

Registries therefore record the holdings of Kyoto units, and any transactions involving them, through a structure of accounts. This is similar to the way that banks record balances and movements in money using accounts allocated to individuals or other entities.

Two types of registry are being implemented:

- Governments of the 38 Parties[17] are implementing national registries[20], containing accounts within which units are held in the name of the government or in the name of legal entities authorized by the government to hold and trade units.
  Each registry will operate through a link established with the International transaction log put in place and administered by the UNFCCC secretariat. The International Transaction Log (ITL) verifies registry transactions, in real time, to ensure they are consistent with rules agreed under the Kyoto Protocol. The ITL requires registries to terminate transactions they propose that are found to infringe upon the Kyoto rules.
- The UNFCCC secretariat, under the authority of the CDM Executive Board, has implemented the CDM registry[21] for issuing CDM credits and distributing them to national registries. Accounts in the CDM registry are held only by CDM project participants, as the registry does not accept emissions trading between accounts.

In addition to recording the holdings of Kyoto units, these registries "settle" emissions trades by delivering units from the accounts of sellers to those of buyers, thus forming the backbone infrastructure for the carbon market.

[20] http://unfccc.int/kyoto_protocol/registry_systems/registry_websites/items/4067.php
[21] http://cdm.unfccc.int/Issuance/index.html

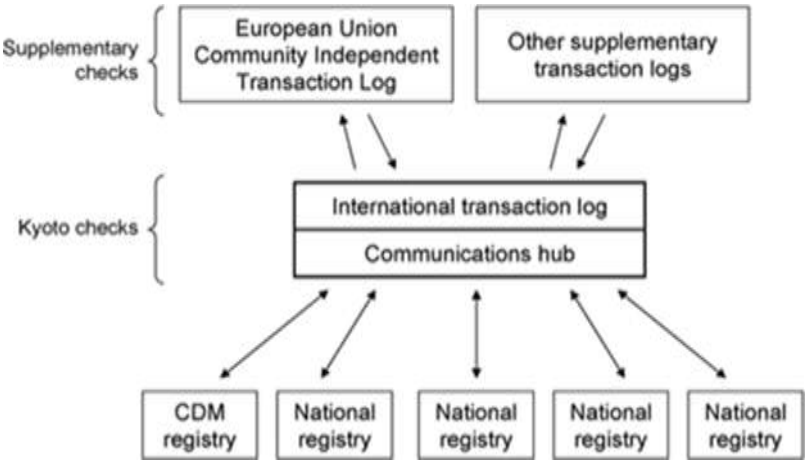


Figure 1 Registry systems under the Kyoto Protocol.

In verifying registry transactions, the ITL provides an independent check that unit holdings are being recorded accurately in registries. After the Kyoto commitment period is finished, the end status of the unit holdings for each Party (Annex I to this report) will be compared with the Party's emissions over the commitment period in order to assess whether it has complied with its emission target under the Kyoto Protocol.

3.1 International Transaction Log

The International Transaction Log (ITL) verifies transactions proposed by registries to ensure they are consistent with rules agreed under the Kyoto Protocol. It keeps track of various types of UN credits.

Each registry sends transaction proposals to the ITL, which checks each proposal and returns to the registry its approval or rejection. Once approved, registries complete the transaction. In the event that a transaction is rejected, the ITL sends a code indicating which ITL check has been failed and the registry terminates the transaction.

The technical specifications: Data Exchange Standards for registry Systems under the Kyoto Protocol[22], have been developed to coordinate the electronic messaging that occurs between registry systems when processing transactions. They coordinate the functions of systems when processing transactions and they define technical requirements for the communication between the ITL and registries. They also define the checks performed by the ITL, embodying the policy rules agreed by Parties for the accounting of their assigned amounts and their use of the Kyoto mechanisms.

The types of Kyoto units and transactions enabled by these standards are summarized in the tables below (Table 1 and Table 2).

[22] http://unfccc.int/files/kyoto_protocol/registry_systems/registry_status/application/pdf/des_full_v1.1.9_formatted.pdf

Table 1 Kyoto units.

Unit	Unit name	Issuer	Description	Kyoto Protocol
AAU	Assigned Amount Units	National registry	Units representing the initial assigned amount of each Annex B Party[17]	Article 3.7
RMU	Removal Units	National registry	Units given for net removals from land use, land-use change and forestry activities	Article 3.3, 3.4
ERU	Emission Reduction Units	National registry	Units converted from AAUs or RMUs on the basis of JI projects	Article 6
CER	Certified Emissions Reductions	CDM registry	Credits given for emission reductions certified for a CDM project	Article 12
tCER	Temporary CERs	CDM registry	Credits given for emission removals certified for an afforestation or reforestation CDM project (to be replaced upon expiry at end of the second commitment period)	Article 12
lCER	Long-term CERs	CDM registry	Credits given for emission removals certified for an A&R CDM project (to be replaced upon expiry at end of the project's crediting period or in event of storage reversal or non-submission of a certification report)	Article 12

Table 2 Kyoto transactions types.

Transaction name	Description
Issuance	Initial creation of an AAU, RMU, CER, tCER or lCER
Conversion	Transformation of an AAU or RMU into an ERU based on a JI project
External transfer	External transfer of a unit from one registry to another registry
Cancellation	Internal transfer of a unit to a cancellation account, in order that it may not be used for compliance with an emission target
Replacement	Internal transfer of a unit to a replacement account, in order to replace tCERs or lCERs when required
Retirement	Internal transfer of a unit to a retirement account, in order that it can be used by the Annex B Party for compliance with its emission target
Carry-Over	Change of validity an AAU, ERU (only those converted from AAUs) or CER from one commitment period to the next
Expiry date change	Change in the expiry date of a tCER or lCER
Internal transfer between holding accounts	Internal transfer of a unit between holding accounts within the same registry (the ITL does not verify such transactions but forwards them to the CITL to allow their verification under the EU trading scheme)

Annual reports of the administrator of the international transaction log under the Kyoto Protocol are available online[23]. This annual reports provide yearly information on the activities of the ITL administrator e.g. presented in Annex II: Table 15 and Table 16.

3.2 Kyoto Protocol data

Parties which have obligations under the Kyoto Protocol (Annex I to this report) are required to report data on the issuance and transactions of AAUs, ERUs, CERs, RMUs and also on various parameters and definitions that are necessary for accounting under the Kyoto Protocol. This information, reported by the Parties, is stored in a database from which the following information is available online[24]:

- Base year data[25]: it contains information on the emission levels in the base year under the Kyoto Protocol, as well as information on national emission reduction targets in the first commitment period 2008-2012;
- Compilation and accounting reports[26]: it provides access to annual compilation and accounting reports (C&A) under the Kyoto Protocol;

[23] http://unfccc.int/kyoto_protocol/registry_systems/itl/items/4065.php
[24] http://unfccc.int/ghg_data/kp_data_unfccc/items/4357.php
[25] http://unfccc.int/ghg_data/kp_data_unfccc/base_year_data/items/4354.php

- Compilation and accounting data[27]: it provides access to information contained in the compilation and accounting database of the UNFCCC, such as total GHG emissions from Annex A[28] sources, net GHG emissions/removals from LULUCF activities and holding of Kyoto Protocol units (see also section 5.2.2).

All data are as officially reported by Parties and in accordance with the results of the review process[29].

[26] http://unfccc.int/ghg_data/kp_data_unfccc/compilation_and_accounting_reports/items/4358.php
[27] http://unfccc.int/di/FlexibleCADQueries.do
[28] http://unfccc.int/resource/docs/convkp/kpeng.pdf#page=19
[29] Articles 5, 7 and 8 of the Kyoto Protocol address reporting and review of information by Annex I Parties under the Protocol, as well as national systems and methodologies for the preparation of greenhouse gas inventories (http://unfccc.int/resource/docs/convkp/kpeng.pdf)

4 EU Emissions Trading System

4.1 The system

The European Commission, in particular DG Climate Action (DG CLIMA), developed and implemented the EU Emissions Trading System ("EU ETS")[30] and promotes its links with other carbon trading systems with the ultimate aim of building an international carbon trading market. Furthermore, it monitors the implementation of the "Effort Sharing Decision (ESD)"[31].

Emissions trading schemes may be established as climate policy instruments at the national level and the regional level. Under such schemes, governments set emissions obligations to be reached by the participating entities ("caps"). The European Union Emissions Trading Scheme is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively. Being the first - and still by far the biggest in operation - international system for trading greenhouse gas emission allowances, the EU ETS currently covers more than 11,000 power stations and industrial plants in 31 countries, as well as airlines.

The ESD concerns the reduction of greenhouse gas emissions by Member States of emissions from sources not covered under the EU ETS Directive. The effort of each Member State to contribute to meeting the Community's greenhouse gas emission reduction commitment for 2020 through limiting greenhouse gas emissions from sources outside the EU ETS should be determined in relation to the level of its 2005 greenhouse gas emissions, which is the latest available verified greenhouse gas emissions data. Effort sharing is based on the idea of solidarity between Member States and the need for sustainable economic growth across the Community and can be seen as an a priori emission trading with closed purses.

The EU ETS works on the "cap and trade" principle. A "cap"[32], or limit, is set on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. The cap is reduced over time so that total emissions fall. Within the cap, companies receive or buy emission allowances which they can trade with one another as needed. They can also buy limited amounts of international credits from emission-saving projects around the world.

Three phases of EU ETS

Launched in 2005, the EU ETS is now in its third phase, running from 2013 to 2020.
The first (2005-2007) and second (2008-2012) trading periods were governed by the 2003 Emissions Trading Directive[33] as amended by the 2004 "Linking Directive"[34], which recognised the use in the EU ETS of a limited amount of emission credits from the Kyoto Protocol's project mechanisms, the Clean Development Mechanism and Joint

[30] http://ec.europa.eu/clima/policies/ets/index_en.htm
[31] http://ec.europa.eu/clima/policies/effort/index_en.htm
[32] http://ec.europa.eu/clima/policies/ets/cap/index_en.htm
[33] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:EN:PDF
[34] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:338:0018:0023:EN:PDF

Implementation mechanism. In the first two phases, the cap on allowances was set at national level through national allocation plans (NAPs).

A major revision approved in 2009 in order to strengthen the system means the third phase is significantly different from phases one and two and is based on rules which are far more harmonised than before. The main changes are:

- A single, EU-wide cap on emissions is put in place, replacing the previous system of 27 national caps;
- Auctioning, not free allocation, is now the default method for allocating allowances. In 2013 more than 40% of allowances will be auctioned, and this share will rise progressively each year;
- For those allowances still given away for free, harmonised allocation rules apply which are based on ambitious EU-wide benchmarks of emissions performance;
- Some more sectors and gases are included.

As EU trading legislation sets in place rules over and above those agreed for the Kyoto Protocol, a supplemental transaction log has been implemented by the European Commission. The Community Independent Transaction Log has been in place since the start of the scheme in 2005 and EU registries are now operating with it.

4.2 EU Community Transaction Log

The EU's Community Independent Transaction Log (CITL)[35], which has been operational since 2005, is the central registry for tracking ownership of allowances in the EU ETS.
CITL which is also known as European Union Transaction Log (EUTL) is run by the European Commission, which checks and records all transactions between electronic registries set up by the countries participating to the scheme. It contains information on all installations covered by the scheme including their activity/sector, allocation and verified emissions on an annual basis. Transactions in EU allowances are therefore recorded automatically as transactions under the Kyoto Protocol. The CITL and Member State registries are connected to the UN's International Transaction Log since December 2008. The link means carbon credits issued under the Clean Development Mechanism can be transferred to the registries of EU Member States. The linking of the two systems enables companies to transfer certified emission reductions (CERs) issued under the CDM into their accounts in Member State registries. The two systems control and track transactions jointly. Currently, each Member State registry is connected to the CITL. After the ITL and CITL are connected, each Member State registry is connected to the ITL only and each transaction involving an EU Member State is passed on to the CITL for recording and additional checks.

[35] http://ec.europa.eu/environment/ets/

5 Availability of data

5.1 Clean Development Mechanism (CDM)

The CDM allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO_2, which can be used by industrialised countries to meet a part of their emission reduction targets under the Kyoto Protocol.

5.1.1 CDM registry

The CDM registry, administered by the secretariat under the guidance of the CDM Executive Board, is responsible for issuing CERs upon instruction by the Executive Board and distributing them to the accounts of project participants in Annex I Party national registries. The CDM registry must conform to the same technical standards as national registries.
The requirements for CDM registry[36] among others specify that the CDM registry is to be in the form of a standardized electronic database that ensures the accurate accounting of the issuance, holding and acquisition of CERs.

Publicly available information on the issuance of CERs section are available online.

5.1.2 CDM insight

Currently there are:

- 6497 registered CDM projects;
- 1 204 811 582 CERs Issued for Project Activities;
- 48 810 CERs Issued for Programme of Activities.

Data as of 26 February 2013[37].

Table 3 presents a CDM insight: data as of 31 December 2012[38]. It is an example of the available data. Moreover, information (excel data and graphs, e.g. Figure 2) on validation, registration, issuance, first issuance, methodologies, DNA (Designated National Authorities) of the CDM projects is available on the website[39].

[36] Requirements for CDM registry are presented in the UNFCCC report: Report of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its first session, held at Montreal from 28 November to 10 December 2005. Available at: http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=27

[37] http://cdm.unfccc.int/index.html

[38] http://cdm.unfccc.int/Statistics/Public/archives/201212/index.html

[39] http://cdm.unfccc.int/Statistics/Public/CDMinsights/index.html#val

Table 3 CDM insight - intelligence about the CDM at the end of december 2012.

Data as of: 31 December 2012 — Archives: Select

Number of CDM project activities that have issued CERs:	♥CERs issued	♦Potential supply of: ♠CERs to the end of the 1st KP commitment period (31 Dec. 2012)	CERs to the end of 2015	CERs to the end of 2020	CERs to the end of all current crediting periods
♦1986	1,154,664,328	1,755,899,529	2,676,208,896	3,107,529,728	3,113,089,320
♦Adjusted by past rate of issuance		1,405,740,288	2,094,624,128	2,389,277,952	2,392,689,664

Number of CDM project activities:	♦Potential supply of: ♠CERs to the end of the 1st KP commitment period (31 Dec. 2012)	CERs to the end of 2015	CERs to the end of 2020	CERs to the end of all current crediting periods
7510, of which:	2,216,171,008	4,760,382,080	7,619,723,264	8,071,658,496
5511 are registered	2,191,882,240	4,689,997,568	5,703,236,608	5,833,046,016
546 are requesting registration	4,604,896	137,067,328	369,327,488	407,627,584
1407 are pending publication	17,546,528	514,484,128	1,502,483,456	1,781,894,912
44 are review requested	1,304,460	17,387,650	42,899,808	47,313,816
2 are corrections requested	832,766	1,365,367	1,775,850	1,775,850

Notes:
♥ CERs issued include tCERs.
♦ The potential supply of CERs excludes CERs from projects undergoing validation, rejected or withdrawn and is based on average annual CERs such that all activities simultaneously deliver their expected annual average emission reductions equally across all years of all their respective crediting periods. Only CERs from projects for which the renewal of the crediting period has been approved are included.
♠ The past rate of issuance is the ratio of CERs issued over the expected CERs to be issued up to the date of the last issuance, capped to 1.
♣ CERs to the end of 1st. KP commitment period (31 Dec. 2012) include CERs potentially issued after 31 December 2012 for emission reductions that occured prior to 31 December 2012.

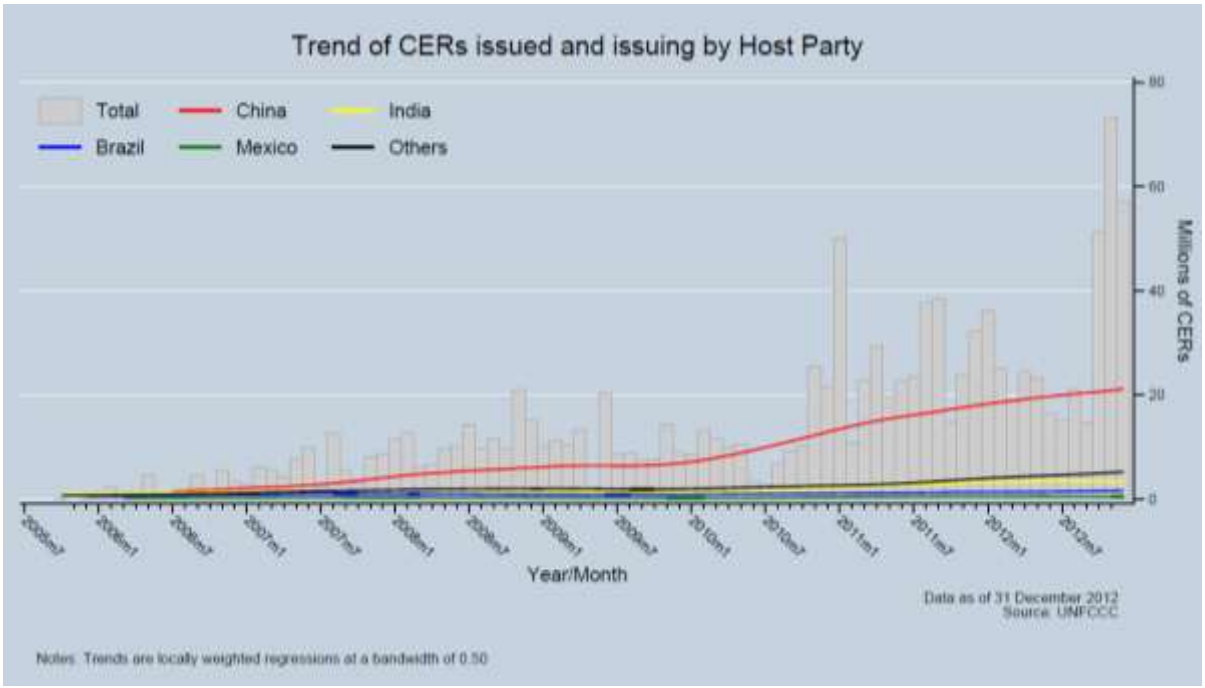


Figure 2 Trend of types of CERs issued and issuing.

5.1.3 Project Cycle search

The Project Cycle search tool[40] allows user to search for a specific CDM project, or a general project type, in any phase of the registration process from requesting registration to rejected/withdrawn.

From the advanced search, user can search CDM projects by:

- Sectoral scope (e.g. Energy industries, energy distribution, energy demand, manufacturing industries, chemical industries, construction, transport, mining/mineral production, metal production, fugitive emissions from fuels, solvent use, waste handling and disposal, afforestation and reforestation, agriculture);
- Scale (large, small);
- Methodology;
- Host country;
- Annex 1 county;
- Status (e.g. requesting registration, registered, review requested, under review, corrections, rejected, withdrawn);
- Registration date;
- Amount of reductions;
- Reference number;
- DOE.

5.1.3.1 Example of the available information about a CDM project

There are 6497 registered CDM projects. As an example the project for Netherlands is presented (Table 4 and Table 5).

Table 4 Example of the last registered project for Netherlands

Registered	Title	Host Parties	Other Parties	Methodology *	Reductions **	Ref
06 Jan 13	Sichuan Liangshan Huidong Yanba Bundled Hydro Power Project	China	Netherlands	ACM0002 ver. 12	93916	3108

* AM - Large scale, ACM - Consolidated Methodologies, AMS - Small scale
** Estimated emission reductions in metric tonnes of CO_2 equivalent per annum (as stated by the project participants)

Table 5 Project 3108: Sichuan Liangshan Huidong Yanba Bundled Hydro Power Project

Project title	Sichuan Liangshan Huidong Yanba Bundled Hydro Power Project - project design document (1203 KB) **PDD appendices** Appendix 1 - Enclosure (138 KB) Appendix 2 - Enclosure 1 (146 KB)

[40] http://cdm.unfccc.int/Projects/projsearch.html

	- registration request form (771 KB)
Host Parties	**China** , involved indirectly approval (52 KB) authorization (52 KB) Authorized Participants: Sichuan Huidong County Guangyuan Power Development Co., Ltd
Other Parties Involved	**Netherlands** , involved indirectly approval (349 KB) authorization (349 KB) Authorized Participants: MGM Carbon Portfolio, S.a.r.l
Sectoral scopes	1 : Energy industries (renewable - / non-renewable sources)
Activity Scale	LARGE
Methodologies Used	ACM0002 ver. 12 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources
Amount of Reductions	93,916 metric tonnes CO2 equivalent per annum
Fee level	USD 17283.2
Validation Report	**VVS/VVM version:** VVM 1.2 Validation report (1909 KB) **Public availability information** Link to information uploaded for public availability
Registration Date	06 Jan 13 (view history) completeness check: complete info & rep check: concluded
Crediting Period	06 Jan 13 - 05 Jan 20 (Renewable)
Requests for Issuance and related documentation	

5.2 Kyoto Protocol data

5.2.1 International Transaction Log (ITL)

The international transaction log (ITL), which is administered by the secretariat, verifies the validity of transactions of Kyoto units by national registries and the CDM registry. Whenever a registry undertakes a transaction that affects the Party's holdings of Kyoto units available for meeting its commitment, it communicates with the ITL. The ITL checks each transaction to ensure that it conforms to the general rules for accounting of assigned amount, as well as specific rules for the particular mechanism and transaction in question. The transaction will be approved only if it passes all these checks.

The annual reports of the administrator of the international transaction log provide information on the activities of the ITL administrator during one year. These reports also contains information on transactions of Kyoto Protocol units and they are available online[41].

The last UNFCCC Annual report of the administrator of the international transaction log under the Kyoto Protocol from 2010[42] provides following information:

- Registry status as at 31 October 2010
- Scale of fees and status of international transaction log fee payments for the biennium 2008–2009 as at 31 October 2010
- Scale of fees and status of international transaction log fee payments for the biennium 2010–2011 as at 31 October 2010
- Number of transactions proposed to the international transaction log from 1 November 2009 to 31 October 2010
- Number of Kyoto Protocol units subject to transactions proposed to the international transaction log from 1 November 2009 to 31 October 2010

5.2.2 Compilation and Accounting database (CAD)

The data reported by Parties under the Kyoto Protocol are accessible online through the Compilation and Accounting Data module of the interface (Figure 3). It provides access to some of the key accounting information recorded in the compilation and accounting database (CAD) of the UNFCCC with maximum flexibility in searching and retrieving data through user-defined data queries. Data are provided for the 38 Parties to the Convention that are also Parties to the Kyoto Protocol (Table 14 in Annex I).

[41] http://unfccc.int/kyoto_protocol/registry_systems/itl/items/4065.php
[42] http://unfccc.int/files/kyoto_protocol/registry_systems/registry_status/application/pdf/08.pdf

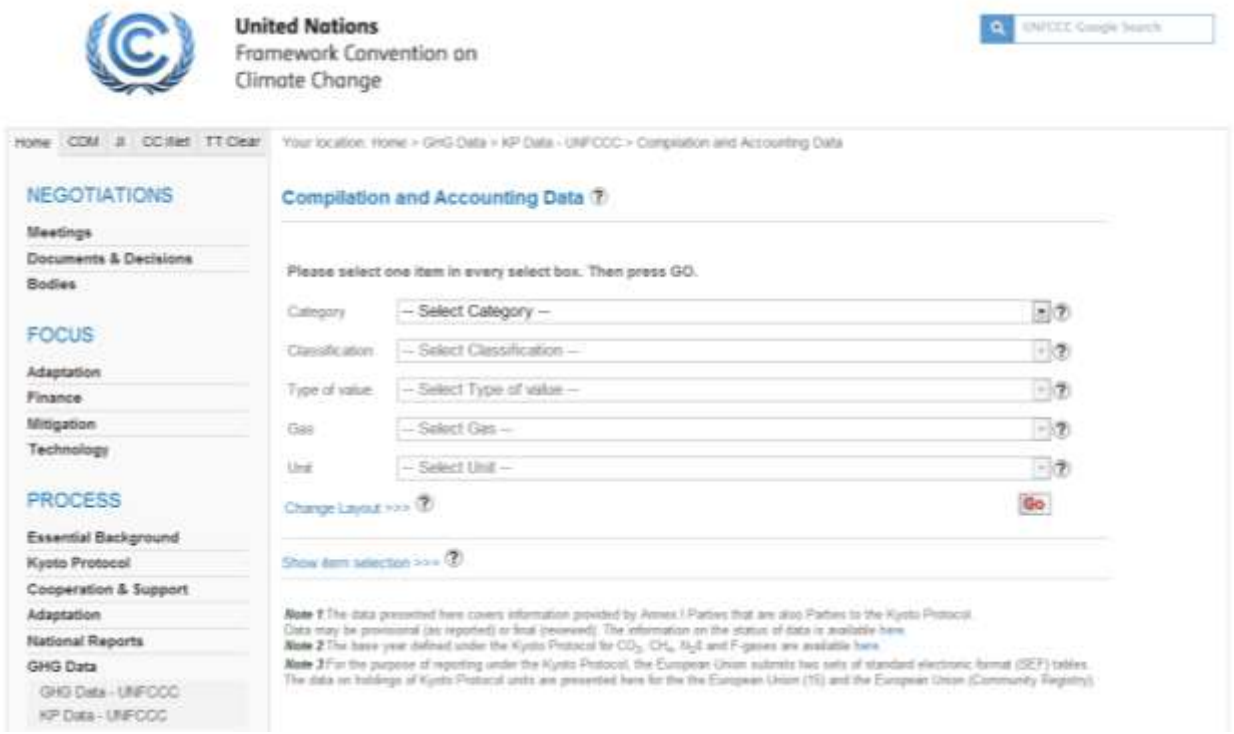


Figure 3 Compilation and Accounting Data interface.

The online help[43] provides explanation of the essential definitions and an online guide on how to query and access UNFCCC KP data.

5.2.2.1 Party

List of Annex I Parties that are also Parties to the Kyoto Protocol with commitments inscribed in Annex B to the Kyoto Protocol (Annex B Parties)[13], as well as major groups such as Annex B, Annex B EIT[44], and Annex B non-EIT[45]. The list is arranged in two categories - Groups; and Annex B Parties; the individual Parties are in alphabetical order.

5.2.2.2 Year

This list is context-dependent. When Accounting parameters is selected as the category, the selection available under the year is "Initial parameters", which is intended to indicate that data were fixed in the initial review report and remains the same for the entire commitment period. When the Total GHG emissions from Annex A sources or LULUCF activities is selected as the category, the list contains the five years of the first commitment period of the Kyoto Protocol, from 2008 to 2012 and, in addition, "Cumulative". When the Holding of the Kyoto Protocol units is selected as the category, the field contains "beginning of the year" and "end of the year", where the year referred to is the year prior to the submission year (i.e. in 2011, the year referred to is 2010).

5.2.2.3 CAD categories

The information presented in the compilation and accounting data interface are classified into four categories:

- Accounting parameters;

[43] http://unfccc.int/ghg_data/online_help/data_interface_help/items/6470.php
[44] Annex B Parties with economies in transition
[45] Annex B Parties that do not have economies in transition

- Total GHG emissions from sources listed in Annex A of the Kyoto Protocol (Annex A sources[28]);
- Emissions and removals from LULUCF activities (Articles 3.3 and 3.4 of the Kyoto Protocol);
- Holdings of Kyoto Protocol units.

Each category is further subdivided into subcategories.

- Accounting parameters:
  - Total GHG emissions for the base year;
  - Assigned amounts pursuant to Article 3, paragraph 7 and 8;
  - Total allowable issuance of RMUs from forest management activities;
  - Limits on net acquisition of CERs from afforestation and reforestation activities.
- Total GHG emissions from Annex A sources:
  - Energy;
  - Industrial processes;
  - Solvents and other product use;
  - Agriculture;
  - Waste.
- LULUCF activities (Article 3.3 and 3.4)
  - Article 3.3 activities:
    - Afforestation and reforestation;
    - Deforestation.
  - Article 3.4 activities:
    - Forest management;
    - Cropland management;
    - Grazing land management;
    - Revegetation.
- Holdings of Kyoto Protocol units:
  - Party holding accounts;
  - Entity holding accounts;
  - Article 3.3/3.4 net source cancellation accounts;
  - Non-compliance cancellation accounts ;
  - Other cancellation accounts ;
  - Retirement account ;
  - tCER replacement account for expiry ;
  - lCER replacement account for expiry;
  - lCER replacement account for reversal in storage;
  - lCER replacement account for non-submission of certification report.

5.2.2.4 Classification

The list contains “Total for category” and “No classification” and is context-dependent to the category or sub-category selected. When Total GHG emissions from Annex A sources or LULUCF activities category/sub-category or any of the subcategories under Holdings of Kyoto Protocol units is selected, then only "Total for category" is available in the Classification list. When a sub-category under Accounting parameters is selected, only “No classification” is available.

5.2.2.5 Type of value

The options provided in the list is dependent on the category/sub-category and classification selected. For example, "emissions" is shown for category Total GHG emissions from Annex A sources, and "net emissions/removals" for LULUCF activities category. For the sub-categories under the Holdings of Kyoto Protocol units, type of value refers to the different Kyoto Protocol units as follows (explained also in Table 1):

- AAUs - assigned amount units
- ERUs - emissions reduction units
- CERs - certified emission reductions
- RMUs - removal units
- tCERs - temporary certified emission reductions
- lCERs - long-term certified emission reductions
- Total - sum of all units in each type of account

5.2.2.6 Gas

List for the selection of GHGs and contains the following:

- Aggregate GHGs - sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6
- CO_2
- CH_4
- N_2O
- HFCs
- PFCs
- SF_6

The complete list is displayed only when the category "Total GHG emissions from Annex A sources" is selected, otherwise only "Aggregate GHGs" or "No Gas" is displayed.

5.2.2.7 Unit

The dropdown list contains units of the measurement of the accounting parameters, GHG emissions, net emissions/removals from LULUCF activities, and Kyoto Protocol units such as:

- ton CO_2 equivalent
- Gg CO_2 equivalent
- Mg CO_2 equivalent
- Tg CO_2 equivalent
- Pg CO_2 equivalent

5.2.2.8 Example of available data

The CAD module allows the user to download the query results in either Excel or CSV formats for use in further analysis.

Data on GHG emissions from Annex A sources and net emissions/removals from LULUCF activities activities are available for the first and second years of the first commitment period of the Kyoto the Kyoto Protocol. A cumulative sum of data submitted by Parties within the commitment period is commitment period is also available. For holdings of Kyoto Protocol units, data are available for the available for the beginning and end of the reported year. Units are held in the name of the

the government or in the name of legal entities authorized by the government to hold and trade and trade units, e.g. Table 6 and

Table 7.

Table 6 Party holding accounts in the end of 2011.

KP party	AAUs	CERs	ERUs	RMUs	Total
Australia	2957579143	51000		23032901	2980663044
Austria	358741349	17913705	3690176		380345230
Belgium	657281412	9228837	944375		667454624
Bulgaria	573599388	3713704	2214816		579527908
Canada	2791792771	331031			2792123802
Croatia					
Czech Republic	766345459	12041645	1813118		780200222
Denmark (KP)	284646779	5215928	6556578	624109	297043394
Estonia	144277134	957	13448		144291539
European Union (15)	20020137428	512910442	89695037	24434734	20647177641
European Union (Community Registry)	14770754	956471			15727225
Finland	354320630	7696314	1740825		363757769
France (KP)	2849444118	64120266	8597211	23810625	2945972220
Germany	4932839750	134057322	33868624		5100765696
Greece	633696722	6552420	33863		640283005
Hungary	515613606	4843873	1442518	43732	521943729
Iceland					
Ireland	298592471	10808105	524735		309925311
Italy	2383241381	52430414	2857200		2438528995
Japan	6123253385	120132385	5149772		6248535542
Latvia	85078648	802212	35521		85916381
Liechtenstein	1232234	184188		11879	1428301
Lithuania	181643170	2954837	3189320		187787327
Luxembourg	50478829	2472555	238361		53189745
Monaco					
Netherlands	1057489053	41608817	6912193		1106010063
New Zealand	306248485	2935654	530346	3900000	313614485
Norway	270075620	9057797	747944		279881361
Poland	2552344108	48517851	6514938		2607376897
Portugal	365518266	9415186	412799		375346251
Romania	1158302838	11217096	6338137		1175858071
Russian Federation	16589115196		4302755	4093685	16597511636
Slovakia	274764418	8611783	44596		283420797
Slovenia	91877990	1461604	920836		94260430
Spain	1649342835	71278224	12820559		1733441618
Sweden	366537224	5860888	1166003		373564115
Switzerland	290881886	21939124	7637735	889349	321348094
Ukraine	4445002700				4445002700
United Kingdom of Great Britain and Northern Ireland	3777966609	74251461	9331535		3861549605

Table 7 Entity holding accounts in the end of 2011

KP party	AAUs	CERs	ERUs	RMUs	Total
Australia	2907928612			23032901	2930961513
Austria	165151314	44			165151358
Belgium	452249605				452249605
Bulgaria	442937562	383370	941099		444262031
Canada	2791792771	331031			2792123802
Croatia					
Czech Republic	452995786				452995786
Denmark (KP)	188662626	753610	6265538	288245	195970019
Estonia	101775558		13448		101789006
European Union (15)	13299742924	34080296	16737452	24098870	13374659542
European Union (Community Registry)	14770754	956471			15727225
Finland	205522832	593188	426340		206542360
France (KP)	2269213954			23810625	2293024579
Germany	3112267083	1941653	4931830		3119140566
Greece	401140993				401140993
Hungary	431729115	2275578	137159	9118	434150970
Iceland					
Ireland	231112024				231112024
Italy	1602189698				1602189698
Japan	6082407744	40348937	2291242		6125047923
Latvia	74671083				74671083
Liechtenstein	1000966	180429		8221	1189616
Lithuania	160163624		41993		160205617
Luxembourg	41524876	1848635	39832		43413343
Monaco					
Netherlands	533219656	23172040	4866337		561258033
New Zealand	305642697	133150			305775847
Norway	197478782	2284852	95123		199858757
Poland	1807357553	622258	39940		1808019751
Portugal	255539763				255539763
Romania	980052706		800000		980852706
Russian Federation	16497081029			4093685	16501174714
Slovakia	184577328				184577328
Slovenia	60769496				60769496
Spain	1110942733	5771126	207575		1116921434
Sweden	286481641				286481641
Switzerland	229124568	28740		889349	230042657
Ukraine	4445002700				4445002700
United Kingdom of Great Britain and Northern Ireland	2444524126				2444524126

5.3 EU Emission Trading System (EU-ETS)

To extract data from the EU ETS one can visit the European Union Transaction Log, EUTL[35], where information such as allocation, surrenders and information on account holders can be found. According to the Registry Regulation 1193/2011 not all information

is public. The EUTL is the transaction hub for the EU ETS used to monitor and log the data in the Registries in the ETS. This prevents deviations and acts as a backup function for every single registry.

The available information include information about:

- NAP/NAT;
- CAAT/NAAT;
- Allocation/Compliance;
- Accounts;
- Operator Holding Accounts;
- Transactions.

From 15 January 2010, information on each completed transaction relevant for the registries system for year 2005 should be available. In accordance with Annex XIII (4) of Regulation EC/2010/920 and Annex XII (4) of Regulation EC/2011/1193 the information for each completed transaction recorded by the EUTL shall be displayed on 1 January of the fifth year after the recording of the information. Currently the latest available year is 2008. An example of information for one transaction is presented in **Error! Reference source not found.** and Figure 4.

Table 8 Example of information about transaction: NL7901

actions

Transaction Type	Transaction Date	Transaction Status	Transferring Registry	Transferring Account Type	Transferring Account Number	Transferring Account Holder	Acquiring Registry	Acquiring Account Type	Acquiring Account Number	Acquiring Account Holder	Nb of units	Options
3-0	2008-12-01 09:44:34.137	Completed	Netherlands	121	223	RWE Supply & Trading Netherlands B.V.	United Kingdom	121	768	EDF Trading Limited	865000	Details

Figure 4 Example of detail information about transaction: NL7901.

5.3.1 EU Emission Trading System data viewer

The data available in CITL (EUTL) is not easily accessible in a user-friendly format. The European Environment Agency (EEA)[46] and its European Topic Centre on Air and Climate Change (ETC/ACC)[47] developed the EU ETS data viewer[48], a tool to help exploring the information contained in the CITL. The EU ETS data viewer aims to support governments, market players and other stakeholders in their assessment of the EU ETS. The EU ETS data viewer provides aggregated data by country or country grouping, by sector and by year on the verified emissions, allowances and surrendered units of the more than 12000 installations covered by the EU ETS. The trading sectors are the nine sectors mentioned in Annex I of the Emission Trading Directive[49] and an additional category for opted in installations (see also section 5.3.1.5).

The latest version of the tool is based on data which was downloaded from the CITL into the EU ETS Data Viewer in March 2012, for the reporting years 2005 to 2010. Verified emissions, allocated allowances and surrendered allowances for the years 2008 to 2011 are based on data published on the 2nd of May 2012. The Manual of the EU ETS data viewer[50] explains some of the functions and underlying data of the EU ETS data viewer to support users in their analysis of the data contained in the CITL.

[46] http://www.eea.europa.eu/
[47] EEA/ACM replaces EEA/ACC http://acm.eionet.europa.eu/
[48] http://www.eea.europa.eu/data-and-maps/data/data-viewers/emissions-trading-viewer
[49] Directive 2009/29/EC of the European Parliament and of the council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community, Official Journal of the European Union, 5.6.2009
[50] http://www.eea.europa.eu/data-and-maps/data/european-union-emissions-trading-scheme-eu-ets-data-from-citl-4/eu-ets-data-viewer-manual/eu-ets-data-viewer-manual/at_download/file

5.3.1.1 Data availability

Out of the publicly available data according to Annex XVI of Commission Regulation 2216/2004[51] (Registries Regulation), the EU ETS data viewer contains for each installation covered by the ETS:

- the quantity of allowances allocated to and the verified emissions of that installation for the years 2005 to 2011;
- the activity under which the installation is registered;
- the amount of total units surrendered, the amounts of EUAs surrendered, the amounts of certified reduction units (CERs) and emission reduction units (ERUs) surrendered;
- the account status (open/closed).

The data contained in the CITL is undergoing constant changes, for examples due to:

- installations entering or leaving the EU ETS;
- addition of missing information, e.g. late verified emission reports;
- correction of emission reports or inaccurate data in national registries;
- court decisions on the allocation decisions.

In most cases these changes are small and have no significant effect on the overall analysis. The aggregated data presented in the EU ETS data viewer includes also data for installations with incomplete information (e.g. missing reports on verified emissions, ongoing court procedures on allocation, etc.).

5.3.1.2 Country

All countries participating in the emission trading system are included in the EU ETS data viewer. The user can select individual countries or country groups. Countries are sorted alphabetically followed by the country groups.
The EU ETS started with the EU-25 in 2005, but the number of countries covered has increased to 30. Bulgaria and Romania entered the EU ETS in 2007, Norway, Iceland and Liechtenstein joined in 2008. However, installations from Iceland will only participate in the EU ETS from 2013 onwards. Care has to be taken when analysing the time series for EU-27: due to the two latest EU Member States the time series jumps from 2006 to 2007. EU-27 figure for the total data 2005-2007 can be assessed but for Bulgaria and Romania only 2007 numbers are used in all cases. The time series for 'All countries' includes a further jump between 2007 and 2008 due to the inclusion of three non-EU countries. The user is advised to analyse the EU-25 group only for questions related to the entire period covered by the EU ETS (2005 to 2011). In addition, due to extension and increased harmonisation of the scope of the EU ETS between 2007 and 2008, aggregate emissions data and, in some cases, installation-level 2008 emissions data are not directly comparable in terms of their coverage to 2007 data.

5.3.1.3 Year

The European Emission Trading System is based on trading periods; coverage of installations and sectors as well as allocation rules might differ between trading periods. The first trading period (also called supplementary program commitment period) covered three years (2005-2007); the second trading period covers five years (2008-2012). Between the first and the second trading period no banking of EUAs was possible.

[51] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R2216:20090101:EN:PDF

The user can choose the following settings in the category 'year':

- 2005, 2006, 2007, 2008, 2009, 2010 or 2011: data for an individual year;
- total 1st trading period (05-07): sum of the three years (2005-2007) of the first trading period;
- total 2nd trading period (08-12): sum of the four years (2008 to 2011) of the second trading period where data is available.

Bulgaria and Romania only entered the EU ETS in 2007. If 2005 or 2006 is selected, no data is shown for all installations for these two countries. The same goes for the selection of the years 2005, 2006 or 2007 for Norway, Iceland and Liechtenstein which joined the EU ETS in 2008. However, there are no installations from Iceland participating in the EU ETS in the period from 2008 to 2012. As all combustion installations in Iceland have emissions below 25 000 t CO_2 per year Iceland was exempted from the requirement to submit a national allocation plan for the 2008-2012 period. From 2013 onwards primary aluminium smelters from Iceland will participate in the EU ETS.

5.3.1.4 ETS information

The CITL contains information on the verified emissions, the free allocation received and the surrendered units. The EU ETS data viewer gives the possibility to select one or several items described in Table 9.

Table 9 Information included in the CITL

Item	Description
Total EU allowances (EUAs)	Sum of free allocation and auctioning (see below):
• Freely allocated EUAs	Amount of free allocation received (does not include allowances bought, e.g. through auctioning).
• Auctioned or sold EUAs	Amount of EUAs auctioned or sold by Member States
Freely allocated EUAs (installations with emissions for 2008 until 2011)	Freely allocated EUAs of a subset of installation(s). Only installations that have verified emissions for the whole second trading period are included in this aggregate.
Verified emissions	Emissions of the installation(s) which have been testified by a verifier; for each tonne of CO_2-eq. emitted the operator has the obligation to surrender one emission trading unit.
Verified emissions (installations with emissions for 2008 until 2011)	Verified emissions of a subset of installation(s). Only installations that have verified emissions for the whole second trading period are included in this aggregate.
Total surrendered units	Different types of units are surrendered to comply with the legal obligation of the operator; each unit equals one tonne of CO_2-eq. These might include EUAs (European Allowance Units) allocated for free, bought at auctions or from other operators as well as CERs and ERUs (see below): Remark: only available aggregated by trading

	periods.
• Surrendered allowances (EUAs)	The surrendered EUAs are calculated by subtracting surrendered CERs and surrendered ERUs from the total surrendered. Remark: only available aggregated by trading periods.
• Surrendered CERs	CERs (Certified Emission Reductions) can be surrendered to comply with the legal obligation of the operator and originate from CDM projects; i.e. emission reduction projects in non-Annex 1 countries (countries without an emission reduction target under the Kyoto-Protocol, mostly developing countries). Remark: only available aggregated by trading periods.
• Surrendered ERUs	ERUs (Emission Reduction Units) can be surrendered to comply with the legal obligation of the operator and originate from JI projects; i.e. emission reduction projects in Annex 1 countries (countries with an emission reduction target under the Kyoto-Protocol, mostly industrialized countries). Remark: only available aggregated by trading periods.

EUAs auctioned or sold by governments are not recorded in the CITL. Therefore the number of EUAs auctioned or sold by governments has been collected from publications from the respective countries.

5.3.1.5 Sectors

Installations included in the CITL are grouped in different sectors according to Annex I of the EU Emission Trading Directive (Table 10). Users can select individual sectors or choose to select all sectors together. Sector 99 was included to cover other installations opted in under Article 24 of the EU ETS Directive. For example, Sweden decided to include all installations with a thermal input below 20 MW that are nevertheless connected to a district heating network with a total rated thermal input above 20 MW. In practice, the activity of an installation which is listed under sector 99 in the CITL is often not clear.

Table 10 Sectors included in the CITL

Sector code	Sector description
1	Combustion installations
2	Mineral oil refineries
3	Coke ovens
4	Metal ore roasting or sintering installations
5	Production of pig iron or steel
6	Production of cement clinker or lime
7	Manufacture of glass including glass fibre
8	Manufacture of ceramic products by firing
9	Production of pulp, paper and board
99	Other activity opted-in
All sectors	All sectors

5.3.1.6 Installation size

In the EU ETS data viewer, it is possible to limit the data to installations of a certain size category. The size categories are defined based on CO_2 emissions : large (>500 kt CO_2), medium (50-500 kt CO_2), small (25-50 kt CO_2), mini (<25 kt CO_2), zero, unknown and all sizes.
The CITL does not contain information on the size of an installation. As an approximation the maximum emissions of an installation over the time series were used to define the installation size.

5.3.1.7 Account status

The account status indicates whether an installation actively takes part in the trading system (open) or has left the system (closed). The account status always refers to the date of download.

5.3.1.8 Measures

The unit in which the information is downloaded from the CITL is tonnes of CO_2 equivalent / emission trading units. The EU ETS data viewer also gives the possibility to change the output values in kilo tonnes of CO_2 equivalents / 1000 emission trading units but also to show them in relative units. All CITL information data can be given in relation to the allocation allowances or in relation to the verified emissions.
There is also the option to show the number of installations. The CITL does not contain information on the status of an installation in a given year, i.e. whether it is a new entrant, existing installation or has been closed. A good indicator is whether an installations is participating in the system in a given year is that it has emissions in that year. Therefore the number of installations takes only into account installations for which emissions are available in the year shown.

5.3.1.9 Gases

In the first trading period only CO_2 emissions have been taken into account in the emission trading system. From the year 2008 on also N_2O emissions of nitric acid

production may be included in the system. Until now only Austria, the Netherlands and Norway decided to include such installations (the Netherlands and Norway are opting-in since 2008, Austria since 2010 and Italy and the UK since 2011).
The trading system is based on CO_2 equivalents, this means that it is not possible to distinguish whether an installation emitted CO_2 or N_2O or both, this makes it very difficult to track installations for which N_2O emissions are included in the system. The number of those installations is very limited, (for the year 2008 latest researches indicate that there are only 4 installations), this means that there is no essential change in the database from the year 2007 to 2008 due to the inclusion of those installations.

5.3.1.10 Examples of figures from the EU ETS viewer

Four figures below present the examples of available information from EEA EU ETS data viewer.

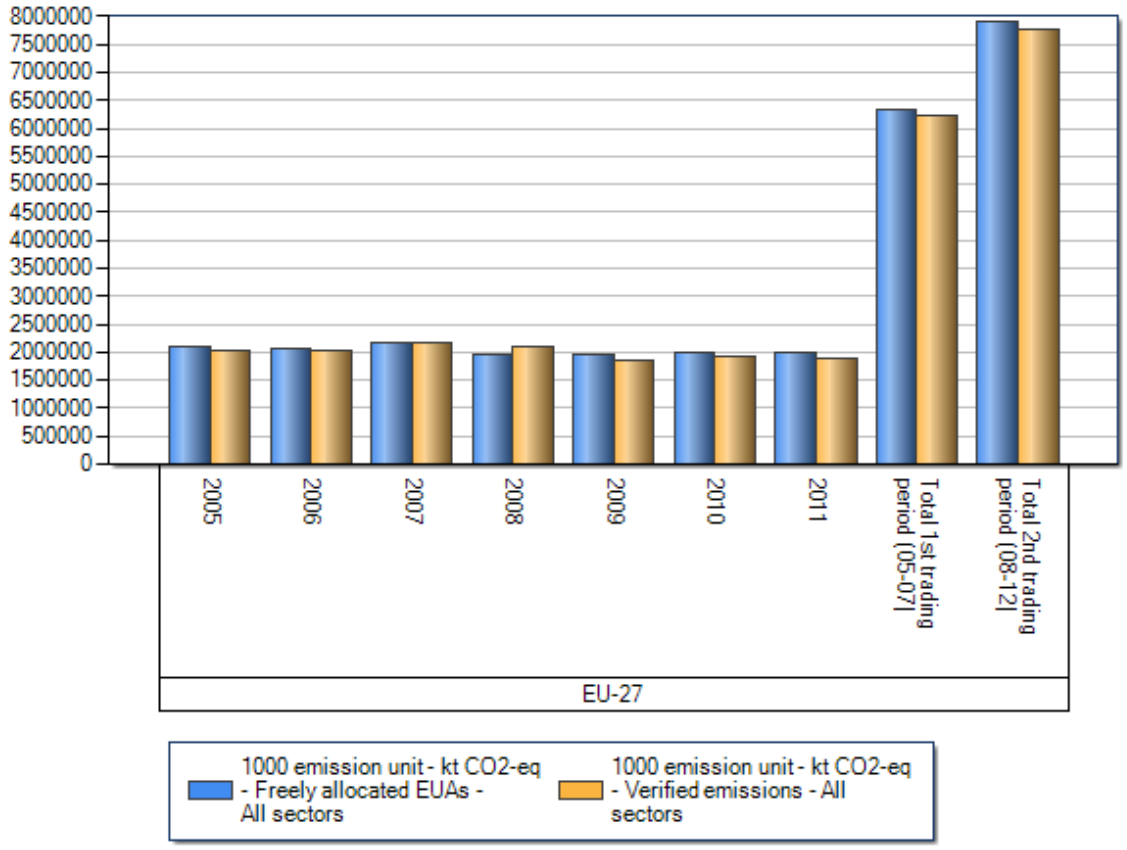


Figure 5 Freely allocated EUAs and verified emissions for all sectors in EU-27 per year and trading period (kt CO_2-eq).

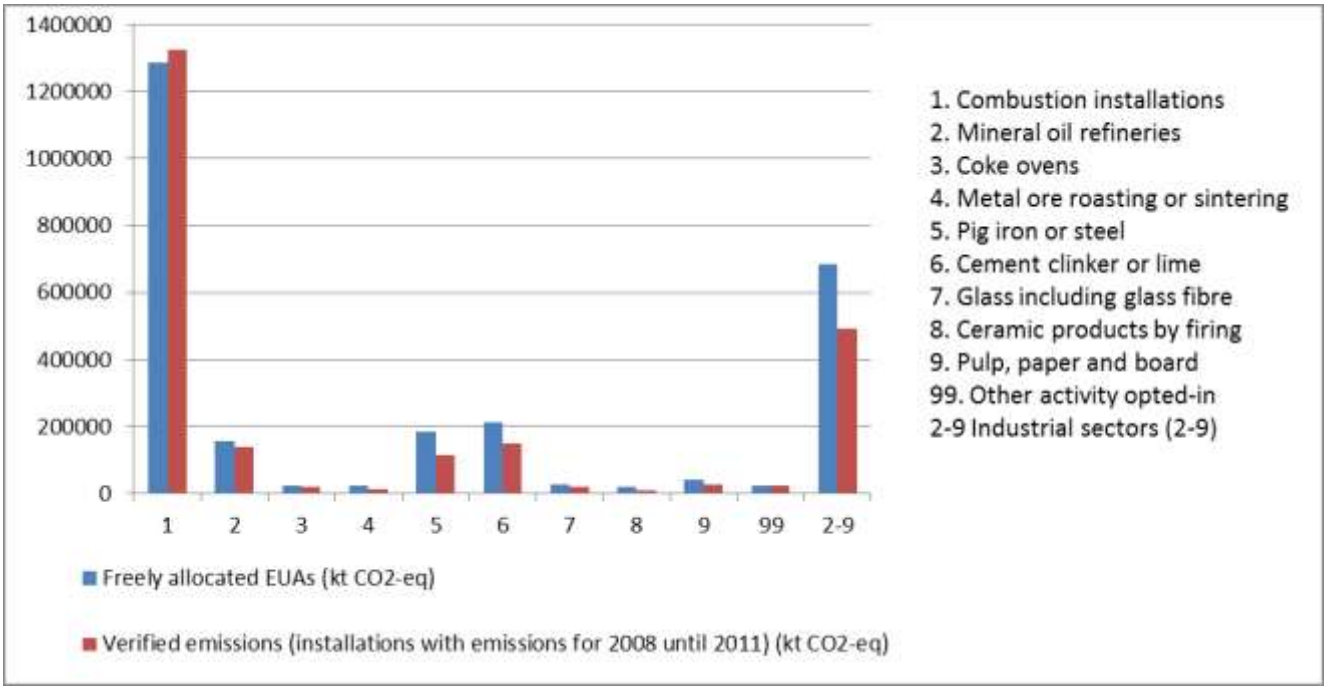


Figure 6 Freely allocated EUAs and verified emissions for EU-27 per sector in 2011 (kt CO_2-eq).

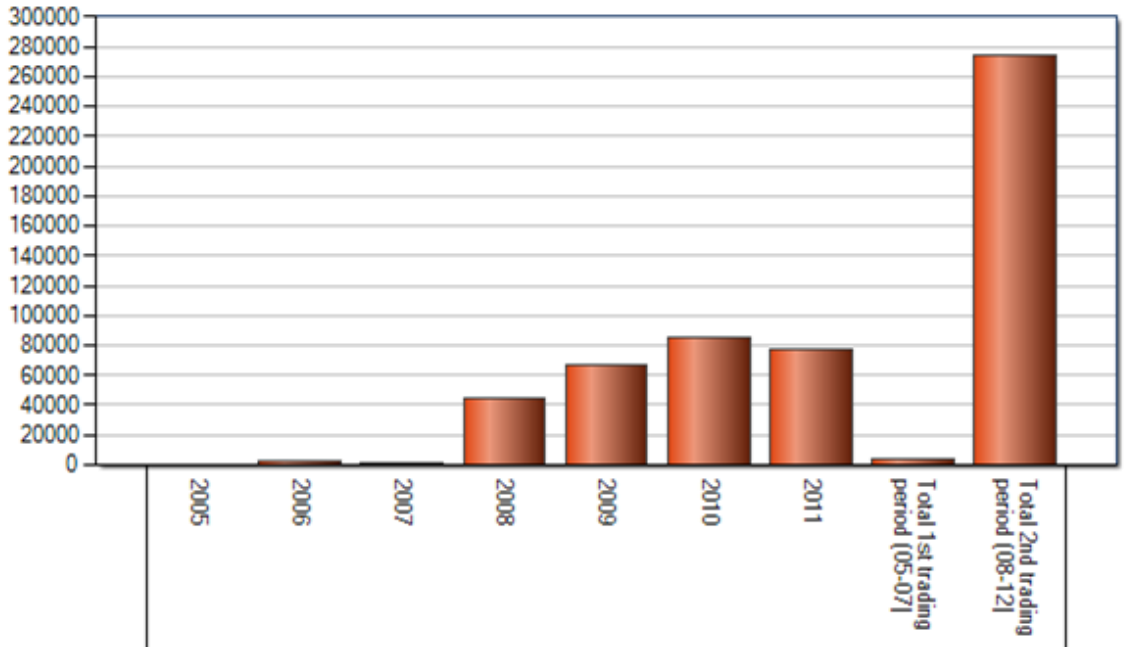
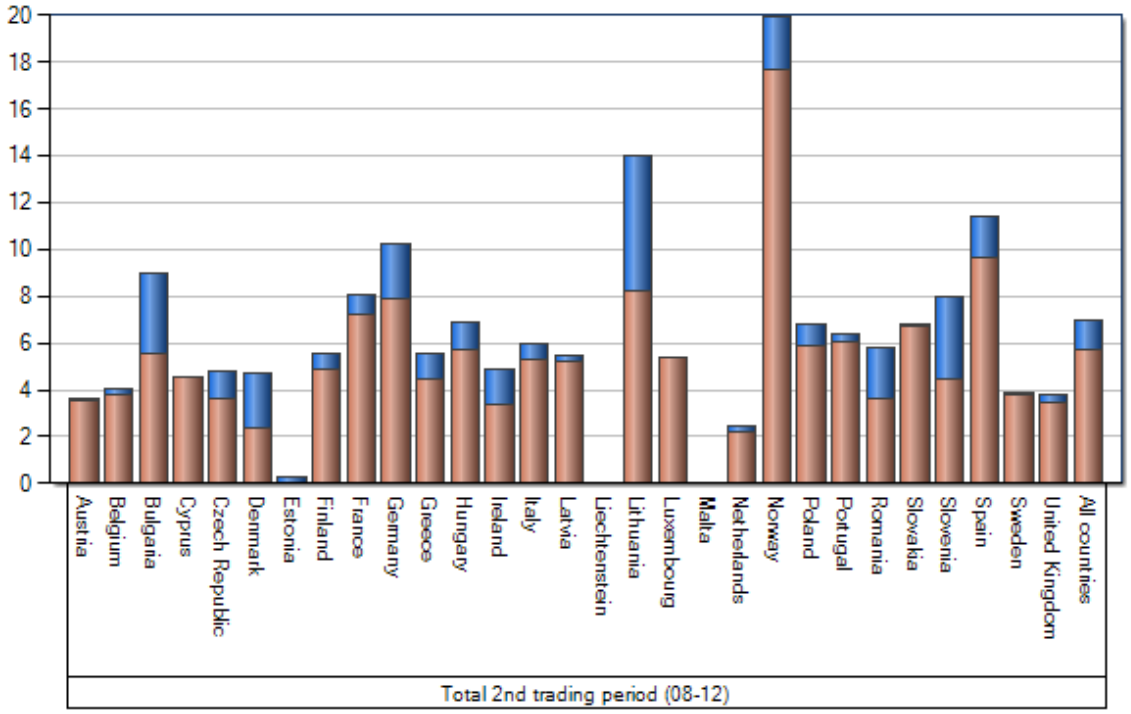


Figure 7 Auctioned or sold EUAs for all sectors in EU-27 per year and trading perion (kt CO_2-eq).



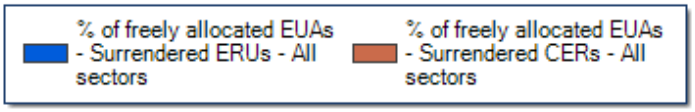


Figure 8 Surrendered CERs and ERUs per country in 2nd trading period (% of freely allocated EUAs).

6 EU emissions trading in the System of environmental and economic accounts (SEEA)

The analysis of resulting emissions, allocated rights and costs have so far mainly been a concern for researchers and for the national or international organizations that are in charge of the allocation and of the data registers. On the other hand, the statistical community has been considering how to interpret this new available dataset.

A discussion has taken place within the System of National Accounts, where the emissions trading needs to have a similar treatment in all countries in order to keep the system harmonized. In principle, this highly technical discussion decided to regard the permits as taxes, but taxes with unusual properties (OECD/Eurostat, 2010[52]). Had they been regarded as products, they would have distorting effects on macro aggregates. SNA News, The Recording of Emission Permits Issued Under Cap and Trade Schemes in the National Accounts, No 30/31 – February 2011[53].

The system for environmental and economic accounts (SEEA), needs to record the emission permits in more detail. There is an interest to follow both the emissions and the economic transfers, and also to be able to see the allocations by industry.

6.1 Denmark

In the writing of the SEEA standard, the issue was flagged on the research agenda. Denmark took the lead in writing a suggestion on what tables would be suitable. The aim of the tables is to sum up the information needed to make a thorough analysis of the relevant questions both from an economic and an environmental point of view (Olsen, 2008)[54].
Through country examples the research paper tested various tables that would make new comparisons possible. Below the main information items are listed. Table 11 shows one example of an industry breakdown and some of the main items recorded in the yearly balance.

A balance sheet is constructed for every industry and all the transaction with the allowances, with the stock at the beginning of the year, the grandfathered (explained below) and purchased permits, credits from JI and CDM projects, the amounts of used permits and the stock of the end of the year. This stock at the end of the year then forms the opening stock of the year after (which is showed in a new table).

The table concerns initial allocation of the number of tradable permits per year. Then, the number of grandfathered permits (i.e. freely allocated on the grounds of their old emission patterns) is compared with the verified emissions, and with the surrendered permits per year and per industry.

[52] http://unstats.un.org/unsd/nationalaccount/docs/report-EP.pdf
[53] http://unstats.un.org/unsd/nationalaccount/sna/nn30-31-En.pdf
[54] http://unstats.un.org/unsd/envaccounting/londongroup/meeting13/LG13_18a.pdf

Table 11 One of the Balance sheets (for year 2005) suggested for recording of emission permits in the SEEA (source: Olsen, 2008).

National Accounts Industries	Opening stock	Grand-fathered	Purchased	CDM credits	JI credits	Sold	Surrendered allowances	Surrendered (fines, etc)	Closing stock
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(=1+...+5-6-7-8)
	Mill. €								
Total	**0**	**636**	**NA**	**NA**	**NA**	**NA**	**451**	**0**	**186**
Households	0	0	NA	NA	NA	NA	0	0	0
Total industries	**0**	**636**	**NA**	**NA**	**NA**	**NA**	**451**	**0**	**186**
1 Agriculture, fishing and quarrying	0	52	NA	NA	NA	NA	40	0	12
2 Manufacturing	0	128	NA	NA	NA	NA	93	0	36
3 Electricity, gas and water supply	0	456	NA	NA	NA	NA	318	0	138
4 Construction	0	0	NA	NA	NA	NA	0	0	0
5 Wholesale and retail trade; hotels, rest.	0	0	NA	NA	NA	NA	0	0	0
6 Transport, storage and communication	0	0	NA	NA	NA	NA	0	0	0
7 Financial intermediation, business active.	0	0	NA	NA	NA	NA	0	0	0
8 Public and personal services	0	0	NA	NA	NA	NA	0	0	0

The data for a balance table was difficult to obtain from the registry, but in principle it should be available. The registry holds the information of what companies are involved, so a classification of the companies into industry groups must be made. The sector breakdown that has been used to present the emissions on a national scale has differed from the normal economic classification of the economic statistics and of the SEEA.

Another suggested presentation was the emissions under the EU ETS compared with the total emissions from the industries. This makes it visible what part of the emissions is covered by this scheme and what parts are not.

A few companies did not emit more than they had tradable permits for, and so the information about how many permits that were 'under-surrendered', and instead paid a fine for, are suggested to be presented by industry, together with the fines (not shown).

The overall method in the Danish study for establishing the monetary account is to multiply the amount of allowances by the observed market price for the allowances. Therefore, the monetary CO_2 permits accounts are valued at the average spot price.

The balance sheet on the value of the permits should also contain a column, which accounts for the changes in the total value of the permits caused by the rise or fall in the permit price. This column showing the revaluation could be added to the table as a ninth column.

Arranging the data as suggested will make other types of analyses possible. For example, it will make comparisons between different industries, and what part of the emissions are covered by this scheme, what parts are covered by environmental taxes and what may be subsidies.

An example of this is shown below. Figure 9 presents the share of CO_2 taxes, allocated emission trading permits, the CO_2 emissions occurring within the trading scheme and total CO_2 emission in Sweden by industry (NACE 1.1) in 2007. Every industry's data is related to the total amount of all industries so that the levels can be compared. For example NACE 40 (electricity, gas and heat production) has around 20 % of the emission permits which is roughly equal to the share of the emissions *within* the EU ETS. But when also taking account to emissions in industries *without* EU ETS, NACE 40 stand for less than 20 percent of the emissions. Looking at another active economic instrument, the CO2 tax, NACE 40 pays less than 10% of total tax revenue.

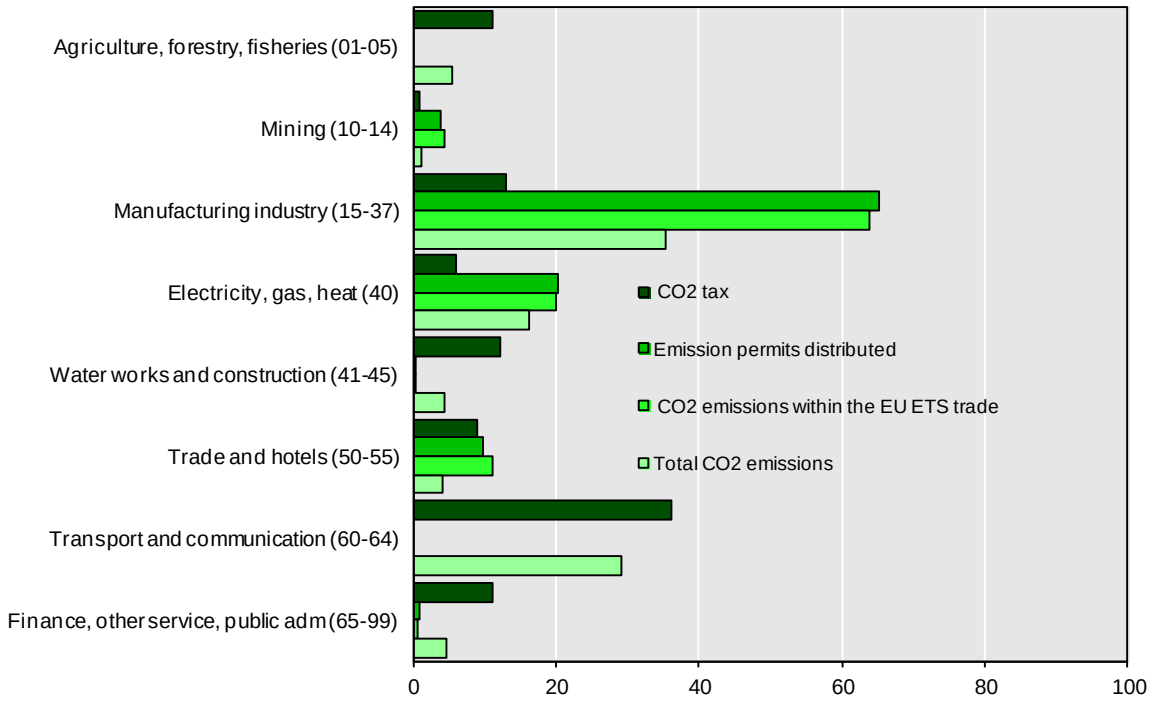


Figure 9 Distribution of CO2 tax revenues, emissions rights, CO2 emissions covered by the trading scheme and total CO2 emissions in Sweden by Industry (NACE) for 2007 (source: Statistics Sweden, 2010).

In 2007 several industries were not taking part in the emission trading scheme, e.g. agriculture, forestry and fishery, water works and construction as well as transport and communication. As shown the CO_2 tax revenues to the government vary depending on the economic activity. The transport and communication industry paid the highest fraction of CO_2 taxes in the economy (36%), while the manufacturing industry (including energy intensive activities such as steel manufacturing and pulp and paper manufacturing) paid about 13% of total CO_2 taxes.
The work to make a similar analysis comparing countries or for the EU as a whole has not been done. The countries have struggled to obtain such data, as the national registers where not always set up to deliver this kind of output.

The country that has had most success at gaining access to and presenting data from the national registry on EU ETS is the Netherlands. In subsection 6.2 examples of data presentation on the EU ETS in the Netherlands are shown.

6.2 The Netherlands

The national statistics institute in the Netherlands (CBS) and the Dutch emission authority has formed a collaboration where information is exchanged. CBS combines the identity of operator and person account holders with the Business register, the NACE classification is added and the result is sent to the Emission Authority. Subsequently they provide CBS with the trade / transaction at the meso level (NACE aggregates).
The resulting tables are presented in the yearly report Environmental Accounts of The Netherlands, the latest available has data from 2011[55].
Besides basic figures on trade volumes etc. a balance table is presented in the report. It follows the same step by step approach of the table proposed by Denmark (Olsen, 2008). Although this table does not have a NACE category breakdown it gives a complete picture over several years of trading.

Table 12 Balance sheet of CO_2 permits[1] from the Netherlands

	2005	2006	2007	2008	2009	2010	2011
	CO_2 permits (= tons of CO_2)						
1 Opening stock 1 January	–	80,055,818	77,954,443	86,087,847	87,856,973	100,974,058	111,941,342
2 Allocated free of charge (grandfathered)	86,093,888	86,949,294	87,233,598	76,801,532	83,703,076	84,974,375	88,831,673
3 Purchased - permits (allowances)	41,327,069	80,230,575	85,467,121	168,951,989	191,515,413	170,119,571	161,845,444
Of which free permits[2]	36,507,692	62,955,944	63,772,342	117,438,701	119,167,730	113,375,936	113,861,496
Of which non-free permits[3]						4,000,000	
Of which from ROW[4]	4,819,377	17,274,631	21,694,779	51,513,288	72,347,683	52,743,635	47,983,948
4 Purchased - credits				58,791,531	50,333,828	48,028,922	79,229,517
Of which purchased				30,841,275	25,789,984	25,822,587	43,313,69
Of which from domestic projects	–	–	–	–	–	–	–
Of which from ROW				27,950,256	24,543,844	22,206,335	35,915,821
5 Sold - permits (allowances)	52,534,809	96,145,634	86,725,533	180,136,186	178,637,082	173,362,339	156,197,411
Of which free and non-free permits[5]	42,545,762	71,652,275	65,984,722	127,074,283	108,276,031	113,609,251	108,641,695
Of which to ROW[4]	9,989,047	24,493,359	20,740,811	53,061,903	70,361,051	59,753,088	47,555,716
6 Sold - credits				31,525,560	46,462,897	40,534,779	49,640,885
Of which to other residents				16,539,418	23,754,984	22,524,463	27,528,136
Of which to ROW				14,986,142	22,707,913	18,010,316	22,112,749
7 Losses (cancelled permits)[6]	–	–	10	–	20	–	63,633
8 Surrendered, permits, credits, etc.	–	80,354,338	76,887,804	79,698,681	83,512,670	81,071,420	84,616,050
9 Closing stock	80,055,818	77,954,443	86,087,847	87,856,973	100,974,058	111,941,822	137,098,673

Source: Dutch Emissions Authority, 2012B; 2012C; Statistics Netherlands 2012.

1) Excluding non-residents with a (person) account in the Dutch CO_2 Emissions Trading Registry
2) Free permits are allowances originally obtained for free via grandfathering.
3) Non-free permits are allowances originally allocated via auctioning by the National Authority.
4) ROW: Rest of the World. This covers purchase from and sold to non residents abroad.
5) Distinction between free and non-free permits in their initial allocation cannot be made here, as sale of same permit can take place several times. Free permits are allowances initially obtained for free via grandfathering. Non-free permits are allowances initially allocated via auctioning by the National Authority.
6) Replaced, and handed over (voluntary and additional surrendered permits, etc.).

The report does provide some industry level data as in the example below which gives an understanding for how much CO_2 emissions within each industry are included within the trading scheme and how much is not included.

[55] http://www.cbs.nl/NR/rdonlyres/3F5F2C12-CB59-4C59-AE1A-FD46AF6D4DAD/0/2011c174pub.pdf

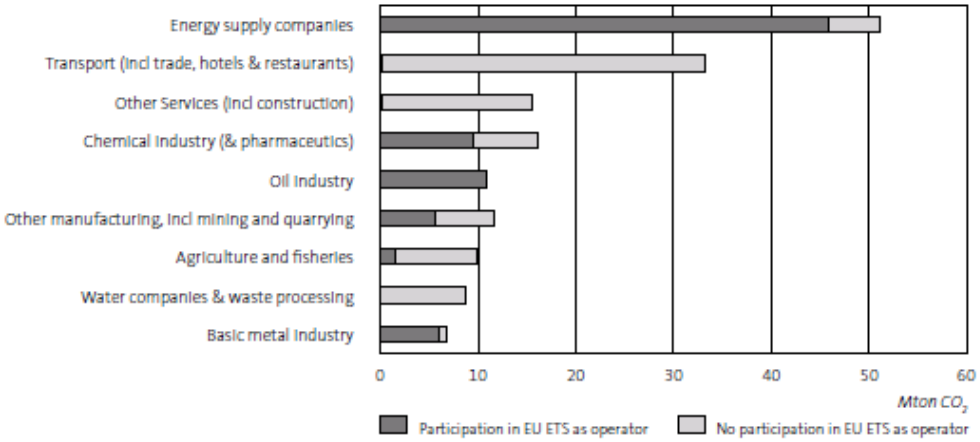


Figure 10 EU ETS participation in the Netherlands. CO_2 emissions of industries and the share of participation in the ETS as operators, 2011.

Furthermore CBS has proposed a format for a balance like that of Table 12 above but also including NACE categories. This format is presented below.

Table 13 Format from a balance sheet including NACE industries.

	Opening stock	Permits grand-fathered	Permits purchased	Permits purchased :Operators	Permits purchased : Persons	Permits purchased : by foreign accountholders	Permits Auctioned:	Permits sold:	Permits sold: Operators	Permits sold: Persons	Permits sold: by foreign accountholders	Permits surrendered	Other changes ** (fines, etc.)	Closing stock
Agriculture														
Mining														
Manufacturing														
Electricity & Gas supply														
Construction														
Trade, transport, hotelsrest.														
Inforamtion & Communication														
Financ. Services														
Other business activities														
Public administration and social security														
Subsidized education														
Health and social work activities														
Recreational, cultural and sporting activities														
Total industry														
Abroad														
Private (people, households)														
Total														
Foreign register														

This format would include only one year per table just like the proposition from Denmark. A new aspect is to include the information on type of account holder in the balance. Both the data on purchased and sold permits can then be divided upon operators and persons.

7 Conclusions

This report summarizes the currently available information and data on emission allowances and trading accounts at global and European level.

Our main conclusion is that the currently available datasets are insufficient to develop a methodology that will allow to quantitatively express economic intensities related to the flexible mechanisms of emission trading, joint implementation and clean development mechanism.

The Kyoto Protocol data (International Transaction Log and Compilation and Accounting database) give some basic overview of the trade with emission permits within the countries that have commitments under the Kyoto Protocol. However, data availability is poor and the data that is available is not in the necessary detail to allow use of these data in economic accounting systems. Emission reductions can be attributed to the country but not industry (sector).

Clean Development Mechanism data give a lot of information about the particular projects which are carried out under the CDM. Documents and descriptions of the project, project phase, parties involved, used methodologies and amount of reductions are available. The available information is broad and it would take a lot of time to analyse in detail how this can be used for the purpose of SEEA.

At European level, the data provided through the CITL and EU ETS data viewer give better understanding of the trade with emission permits within the EU. However, it still does not provide enough detail to match the propositions made within a SEEA context.

The sector classification used is not comparable to the industry classification commonly used in statistics (NACE). Also, data are often available only at more aggregated levels, partly due to confidentiality issues, and greenhouse gases are only available as aggregates since only CO2 equivalent emissions are shown (it is not possible to distinguish whether an installation emitted CO2 or N2O or both). These shortcomings limit the usability of the data and the possible analyses that can be done to a large extent. In most EU countries there is more than one economic instrument active in the climate area. For policy makers it is of importance to get a clear picture of how the different parts of the economy are affected by each instrument and also how the instruments interact. Using the same categorisation is a necessity to be able to make such comparisons.

One of the objectives of this deliverable was to be able to connect JI and CDM to the SEEA. But these are only provided for one full trading period, not on a year-by-year basis.
Other important data points would be the imports and exports of permits from the nation. A form of table on trade balance between nations could be created to view how permits are being bought and sold across borders.

The 5 year confidentiality on detailed data from the national registries delays evaluations of the EU ETS. The national statistical institutes have experience in working with confidential information from persons and enterprises. Aggregations can be made when presenting data so as not to disclose any sensitive information. To use this type of data for SEEA projects similar confidentiality would need to be ensured. Whether or not this is possible could be discussed with the owners of the EU ETS database, but most probably will be problematic, given the fact that the registries very much use systems that are similar to those used in the banking sector.

There is also a strong tradition within the statistical community of using administrative registries to extract valuable information and compiling it to statistics that can be used for research, policy, media etc. With access to the EU ETS data the national statistical institutes can provide useful statistics for decision making in the same way.

The Netherlands provides a good example of how such cooperation can be formed. Through the business registry NACE codes can be attached to each installation and more useable statistics can be compiled.

8 Literature

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Annex I: Parties that have commitments under the Kyoto Protocol

Table 14 Base year defined and emission reduction targets for the first commitment period under the Kyoto Protocol

Party	Base year defined under the KP [a]		Emission reduction/limitation target, % of base year level	
	CO_2, CH_4, N_2O	F-gases	Annex B	Article 4 [b]
Australia	1990	1990	108	-
Bulgaria	1988	1995	92	-
Canada [C]	1990	1990	94	-
Croatia	1990	1990	95	-
Czech Republic	1990	1995	92	-
Estonia	1990	1995	92	-
European Union	1990	1990-1995	92	92
Austria	1990	1990	92	87
Belgium	1990	1995	92	92.5
Denmark	1990	1995	92	79
Finland	1990	1995	92	100
France	1990	1990	92	100
Germany	1990	1995	92	79
Greece	1990	1995	92	125
Ireland	1990	1995	92	113
Italy	1990	1990	92	93.5
Luxembourg	1990	1995	92	72
Netherlands	1990	1995	92	94
Portugal	1990	1995	92	127
Spain	1990	1995	92	115
Sweden	1990	1995	92	104
United Kingdom	1990	1995	92	87.5
Hungary	1985-1987	1995	94	-
Iceland	1990	1990	110	-
Japan	1990	1995	94	-
Latvia	1990	1995	92	-
Liechtenstein	1990	1990	92	-
Lihuania	1990	1995	92	-
Monaco	1990	1995	92	-
New Zeland	1990	1990	100	-
Norway	1990	1990	101	-
Poland	1988	1995	94	-
Romania	1989	1989	92	-

Russian Federation	1990	1995	100	-
Slovakia	1990	1990	92	-
Slovenia	1986	1995	92	-
Switzerland	1990	1990	92	-
Ukraine	1990	1990	100	-

[a] Parties included in Annex I to the Convention may choose to use 1995 as the base year for total emissions of fluorinated gases, in accordance with Article 3, paragraph 8, of the Kyoto Protocol

[b] Fifteen member States of the European Union agreed to meet their targets jointly in accordance with Article 4, paragraph 1, of the Kyoto Protocol.

[c] Canada recently withdrew from the Kyoto Protocol

Source: http://unfccc.int/resource/docs/2012/cmp8/eng/09.pdf

Annex II: Example of the information on the activities of the ITL

Table 15 Number of transactions proposed to the ITL from 1 November 2009 to 31 October 2010

Registry	*Acquisition*[b]	*Transfer*[c]	*Forwarding*[d]	*Internal transfer*[e]	*Issuance*[f]	*Retirement*[g]	*Cancellation*[h]	*Total*
Australia	0	0	0	0	1	0	0	1
Austria	1 415	2 955	0	2 062	0	2	0	6 434
Belgium	531	640	0	1 566	0	2	1	2 740
Bulgaria	129	211	0	695	14	1	0	1 050
Clean development mechanism	0	83	2 903	0	1 072	0	0	4 058
Canada	0	0	0	0	1	0	0	1
Croatia	0	0	0	0	0	0	0	0
Czech Republic	1 655	1 841	0	3 331	77	0	0	6 904
Denmark	14 321	17 636	0	23 134	0	4	28	55 123
Estonia	313	359	0	217	6	2	1	898
European Community	8	20	0	107	4	0	22	159
Finland	622	565	0	3 135	0	2	6	4 330
France	15 981	14 526	0	113 115	10	2	54	143 688
Germany	9 304	6 770	0	20 895	7	52	91	37 119
Greece	75	463	0	1 037	0	2	0	1 577
Hungary	448	545	0	1 614	14	1	3	2 625
Iceland	0	0	0	0	0	0	0	0
Ireland	399	311	0	547	0	2	3	1 262
Italy	3 456	2 564	0	10 259	0	0	0	16 279
Japan	804	98	0	0	0	22	10	934
Latvia	89	164	0	428	0	2	0	683
Liechtenstein	1 047	1 136	0	742	0	0	0	2 925
Lithuania	118	338	0	696	8	2	0	1 162
Luxembourg	114	57	0	75	0	2	0	248
Netherlands	6 820	5 467	0	3 748	0	3	4	16 042
New Zealand	11	39	0	0	12	0	10	72
Norway	676	220	0	583	0	3	25	1 507
Poland	1 630	1 813	0	6 558	19	2	0	10 022
Portugal	688	834	0	1 150	0	3	0	2 675
Romania	675	1 161	0	1 631	3	2	0	3 472
Russian Federation	0	0	0	0	0	0	0	0
Slovakia	380	699	0	1 042	0	1	0	2 122
Slovenia	157	156	0	540	0	2	0	855
Spain	2 815	4 639	0	10 492	0	4	7	17 957
Sweden	1 116	811	0	3 207	0	2	357	5 493
Switzerland	1 740	4 872	0	0	0	0	314	6 926
Ukraine	2	78	0	0	44	0	0	124
United Kingdom	14 284	9 833	0	18 660	0	1	92	42 870
Total	**81 821**	**81 904**	**2 903**	**231 266**	**1 292**	**123**	**1 028**	**400 337**

[a] Completed transactions of assigned amount units (AAUs), emission reduction units (ERUs), removal units (RMUs), certified emission reductions, long-term emission reductions and temporary emission reductions have been accounted for.
[b] Acquisition from another national registry. See paragraph 30 of the annex to decision 13/CMP.1.
[c] Transfer to another national registry. See paragraph 30 of the annex to decision 13/CMP.1.
[d] Forwarding from the clean development mechanism (CDM) registry to a national registry. See paragraph 66 of the annex to decision 3/CMP.1. Note that this excludes transfers from the CDM registry to a national registry in support of the Adaptation Fund.
[e] Transfer within the registry. See paragraph 30 of the annex to decision 13/CMP.1.
[f] See paragraphs 23–29 of the annex to decision 13/CMP.1, paragraphs 64–66 of the annex to decision 3/CMP.1 and paragraphs 36 and 37 of the annex to decision 5/CMP.1. Issuance of ERUs by converting AAUs or RMUs is included.
[g] See paragraph 34 of the annex to decision 13/CMP.1.
[h] See paragraph 33 of the annex to decision 13/CMP.1.

Source:
http://unfccc.int/files/kyoto_protocol/registry_systems/registry_status/application/pdf/08.pdf

Table 16 Number of Kyoto Protocol units subject to transactions proposed to the ITL from 1 November 2009 to 31 October 2010

Registry	*Acquisition*	*Transfer*	*Net transfer[a]*	*Forwarding*	*Internal transfer*	*Issuance*	*Retirement*	*Cancellation*
Australia	0	0	0	0	0	2 957 579 143	0	0
Austria	84 477 503	64 460 870	-20 016 633	0	208 487 237	0	59 282 561	0
Belgium	49 892 344	56 654 037	6 761 693	0	354 741 232	0	101 717 718	578
Bulgaria	1 919 359	92 638 854	90 719 495	0	441 187 943	3 331 743	69 925 286	0
Clean development mechanism	0	7 734 981	7 734 981	269 773 747	0	245 496 675	0	0
Canada	0	0	0	0	0	2 791 792 771	0	0
Croatia	0	0	0	0	0	0	0	0
Czech Republic	108 498 302	200 712 337	92 214 035	0	643 203 034	1 685 935	0	0
Denmark	1 330 222 724	1 306 530 909	-23 691 815	0	1 488 297 741	0	52 031 351	19 594
Estonia	21 235 253	37 826 448	16 591 195	0	130 980 112	209 527	23 667 710	210 000
European Community	936 594	508 009	-428 585	0	38 715 589	37 598 471	0	15 059 418
Finland	27 488 216	28 420 742	932 526	0	246 014 197	0	70 362 856	5 205
France	1 441 327 555	1 410 406 028	-30 921 527	0	4 777 921 256	1 298 349	235 196 885	194 562
Germany	791 154 518	679 307 285	-111 847 233	0	9 261 082 026	1 006 334	904 961 597	422 831
Greece	2 300 529	12 696 252	10 395 723	0	794 938 601	0	133 515 465	0
Hungary	16 458 329	35 858 897	19 400 568	0	514 707 774	2 423 772	49 638 997	318
Iceland	0	0	0	0	0	0	0	0
Ireland	27 833 595	21 836 991	-5 996 604	0	423 587 709	0	37 597 064	2 549
Italy	199 661 186	196 477 359	-3 183 827	0	2 439 784 154	0	0	0
Japan	196 815 123	14 055 027	-182 760 096	0	0	0	58 792 339	18 418
Latvia	22 514 953	54 223 229	31 708 276	0	18 477 813	0	5 232 715	0
Liechtenstein	86 696 646	46 613 782	-40 082 864	0	25 260 690	0	0	0
Lithuania	6 339 580	14 537 805	8 198 225	0	91 711 376	1 697 573	11 892 935	0
Luxembourg	5 412 793	2 139 514	-3 273 279	0	33 601 997	0	4 280 589	0
Netherlands	519 514 182	517 686 778	-1 827 404	0	3 256 708 174	0	287 982 275	1 020
New Zealand	422 003	2 722 070	2 300 067	0	0	896 447	0	2 689
Norway	34 294 033	22 605 293	-11 688 740	0	208 619 630	0	38 559 339	28 971
Poland	54 423 513	83 991 902	29 568 389	0	2 453 760 008	3 541 257	394 880 479	0
Portugal	41 174 820	41 334 335	159 515	0	194 294 242	0	58 215 618	0
Romania	34 784 206	86 267 498	51 483 292	0	827 027 458	207 505	112 734 996	0
Russian Federation	0	0	0	0	0	0	0	0
Slovakia	14 569 441	47 018 928	32 449 487	0	173 986 647	0	46 931 916	0
Slovenia	2 412 697	2 163 148	-249 549	0	51 386 083	0	16 930 244	0
Spain	188 264 363	178 375 279	-9 889 084	0	2 034 025 995	0	300 364 261	550
Sweden	30 111 955	41 879 295	11 767 340	0	146 793 616	0	37 614 376	245 653
Switzerland	312 941 979	340 415 534	27 473 555	0	0	0	0	389 939
Ukraine	237 107	87 330 777	87 093 670	0	0	12 852 661	0	0
United Kingdom	1 395 072 226	1 321 712 415	-73 359 811	0	3 917 041 981	0	265 508 431	991 670
Total	**7 049 407 627**	**7 057 142 608**	**7 734 981**	**269 773 747**	**35 196 344 405**	**6 061 618 163**	**3 377 818 003**	**17 593 965**

[a] Net transfer is equal to transfer minus acquisition.

Source: http://unfccc.int/files/kyoto_protocol/registry_systems/registry_status/application/pdf/08.pdf