WIFO

ÖSTERREICHISCHES INSTITUT
FÜR WIRTSCHAFTSFORSCHUNG

WORKING PAPERS

The EU Emission Trading Scheme

Allocation Patterns and Trading Flows

**Claudia Kettner, Daniela Kletzan-Slamanig,
Angela Köppl**

The EU Emission Trading Scheme

Allocation Patterns and Trading Flows

Claudia Kettner, Daniela Kletzan-Slamanig, Angela Köppl

E-mail addresses: Claudia.Kettner@wifo.ac.at, Daniela.Kletzan-Slamanig@wifo.ac.at, Angela.Koeppl@wifo.ac.at

The EU Emission Trading Scheme – Allocation patterns and trading flows

Claudia Kettner[*,†], Daniela Kletzan-Slamanig[*], Angela Köppl[*]

Abstract

The EU Emission Trading Scheme (EU ETS) that covers emitters from industry and the energy sector representing 40% of the EU's total greenhouse gas emissions is the biggest implementation worldwide of a cap-and-trade scheme. The EU ETS has been the core instrument of European climate policy since its start in 2005.

Based on a database comprising more than 10,000 installations in 26 EU Member States, this paper provides a thorough analysis of the performance of the EU ETS in the period 2005 to 2010. In the first part, we analyse allocation patterns – i.e. the stringency of allocation caps and distribution issues – on Member State and sector level comparing the results of the EU ETS pilot phase and the first three years of the Kyoto phase. In the second part of the paper, we assess trading flows of European Allowance Units (EUAs) between Member States comparing the results for the first and second trading period. Furthermore, we analyse the use of credits from flexible mechanisms – Certified Emission Reductions (CERs) from CDM projects and Emission Reduction Units (ERUs) from JI projects – that installations may surrender since the beginning of the second trading period on country level.

Key words: emissions trading, EU Emission Trading System, empirical analysis

JEL codes: Q54, Q58

---

[*] Austrian Institute of Economic Research (WIFO)

[†] Corresponding author; claudia.kettner@wifo.at

1   Motivation

The EU Emission Trading Scheme (EU ETS) for industry and electricity and heat generation covers about 40% of total EU greenhouse gas emissions (60% of EU CO_2 emissions) and is the biggest implementation of a cap-and-trade mechanism worldwide. It is both a milestone in European climate policy and a strong incentive for starting similar activities in other regions of the world.

In the ETS pilot phase (2005 - 2007), however, substantial over-allocation of emission allowances in most EU Member States occurred and the overall emission cap was not stringent. Because of a more active role of the European Commission in the approval process of the Member States' National Allocation Plans for the second ETS period, the cap was binding in 2008 with verified emissions exceeding allocated allowances on aggregate by 8% (see Kettner et al., 2010). In the course of the economic crisis a strong decline in (EU ETS) emissions which mirrored the economic downturn occurred. As a result, in 2009 again a lose cap was observed.

The stringency of the national emission caps is one determinant of trading flows between countries. Countries that are short of allowances will either import allowances or borrow allowances – i.e. surrender allowances for compliance issued for the following trading year. Countries with a surplus of allowances will generally be exporters of allowances.

In this paper we present a thorough analysis of allocation patterns and trading flows in the EU ETS. We start by presenting the methodology and data sources for our analysis. Subsequently, we present the indicators for the stringency of the caps and the trading flows highlighting differences between the first and the second trading phase. The last section concludes.

2   Methodology

Installations covered by the EU ETS need to have an account at their national registries, which record the allocation and verified emissions per installation. Data collected by national registries are transferred to the European registry, the Community Independent Transaction Log (CITL).

Since April 2011, data on verified emissions and allocated allowances of installations for the EU ETS pilot phase (2005 - 2007) and the first three years of the second trading period (2008 and 2010) are available at the CITL. Using information from National Allocation Plans, a database was set up assigning the installation data to sectors. In addition to data on allocated allowances and verified emissions the CITL contains data on the allowances surrendered by an installation for compliance. In the "operator holding accounts", the originating countries of the allowances surrendered by each installation are collected.

2.1   Analysis of allocation patterns

The data analysis is performed for the pilot phase and the first three years of the second trading period. The analysis of allocation patterns is based on the indicators developed by Kettner et al. (2008):

- the short or long position of an installation as the difference between allocated and verified emissions of an installation
- the gross long position of a country or a sector as the sum of all long positions of installations in a country or a sector
- the gross short position of a country or a sector as the sum of all short positions of installations in a country or a sector
- the net long position of a country or a sector as the difference of gross long positions and gross short positions of a country or a sector if this difference is positive
- the net short position of a country or a sector as the difference of gross long positions and gross short positions of a country or a sector if this difference is negative

With these four indicators (gross long, gross short, net short and net long) the differences between allocated allowances and actual emissions – the allocation discrepancies – are assessed on Member State, sector and installation level.

2.2 *Analysis of trading flows*

Based on data from the CITL operator holding accounts we perform an analysis of the trading flows within the EU ETS. For each installation we collect data on the allowances surrendered in the period 2005 to 2009 by originating country. These include the number of EUAs surrendered in the first and the second trading period as well as the number of project based credits – Certified Emission Reductions (CERs) from CDM projects and Emission Reduction Units (ERUs) from JI projects – surrendered for compliance in the second trading period.

The allowances surrendered are then aggregated on country level by summing up the installation results. Based on these data, we analyse the share of imported EUAs as well as of CERs and ERUs in surrendered allowances.[1] Furthermore, we assess the exports of EUAs, CERs and ERUs exports surrendered by another country. With respect to EUA trade we derive the following indicators for each of the EU Member States:

- the net exports of EUAs as the difference between EUA exports and imports if this difference is positive, and
- the net imports of EUAs as the difference between EUA exports and imports if this difference is negative.

3 Allocation patterns in the EU ETS

The Commission guidelines for the National Allocation Plans (COM 2003/830) aimed at setting a uniform framework for the Member States in their preparation of the first National Allocation Plans. Assuming that all countries had a similar interpretation of the EU guidelines, one had anticipated more or less congruent National Allocation Plans that exhibit similar stringencies of allocation caps. One had therefore expected that allocation discrepancies, the difference between allocated EU Allowances (EUAs) and verified emissions, at least for the EU-15 would not substantially differ between countries. This hypothesis was not supported by previous analyses of empirical data on emissions and allocation (Kettner et al. 2008; Ellerman et al. 2010). For 2008 and 2009 even larger variations in allocation discrepancies are found compared to the pilot phase.

The following analysis includes data on allocated allowances and verified emissions for the period 2005 to 2010 for 26 EU Member States. Bulgaria is not included in the analysis as data on verified emissions are not yet available. For Romania which joined the EU ETS in 2007 data for the first trading period are based on 2007 values instead of 2005 - 2007 averages.

3.1 *Stringency of the EU wide cap*

In the pilot phase and the second trading period the overall cap of the EU ETS is the result of the national emission caps set by Member States in their National Allocation Plans. In the ETS pilot phase (2005 - 2007) substantial over-allocation of emission allowances was observed in most EU Member States and the overall EU emission cap was not stringent in any year. Due to rising emissions in the EU ETS over the period 2005 to 2007 the surplus of allowances or the net long position declined, however, from year to year: While the EU ETS was in a net long position of 3.5% in 2005, for 2006 and 2007 a net long position of 1.3% and 0.8% respectively was observed (Figure 1).

---

[1] An analysis of intra-country trade and the effective transaction volume is not possible based on the CITL operator holding accounts.

Figure 1. Stringency of the EU-wide cap
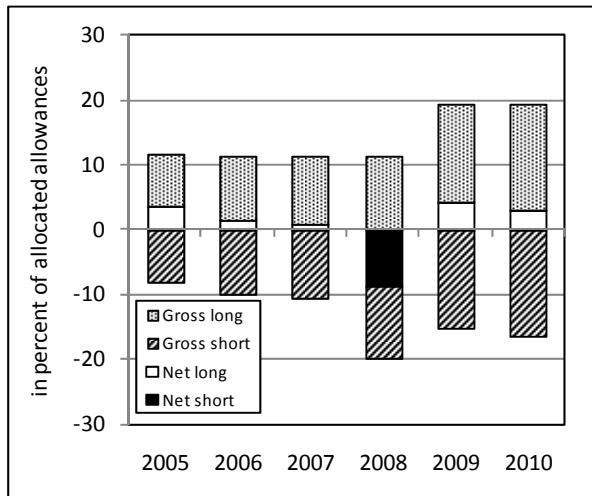
Source: CITL; authors' own calculations.

For the second trading phase the European Commission took more influence in the Member States' National Allocation Plans. Most proposed national caps had to be adjusted downwards by the Member States after the European Commission's review process. With cuts of 47% to 56% the Baltic States faced the strongest cuts (see Capoor and Ambrosi, 2008). For 2008, total allocated allowances were reduced by 285 Mt (14%) compared to the first trading phase (from 2,085 Mt to 1,800 Mt). EU ETS emissions, in contrast, only showed a minor decline of 5% between 2007 and the second trading phase (from 2,063 Mt to 1,958 Mt). For 2008 the overall EU cap was binding with verified emissions exceeding allocated allowances on aggregate by 8.8%. Under the assumption of a regular development of economic growth and production activities this would suggest an increased incentive for emission abatement measures resulting from the cap and rising allowance prices. For 2009, however, a totally different picture was observed: The unexpected exogenous shock of the economic crisis to the sectors/installations in the trading system translated into a sharp drop in verified emissions. Allocation again exceeded verified emissions showing a net long position of 4.1%. For 2010 emissions moderately increased, but allocated allowances still exceeded verified emissions by 2.9%.

3.2 The Member States evidence

The Member States' shares in total allocated allowances depend on both the size and the industry structure of the countries. With a share of 23% of total EU allocated allowances an outstanding share accrues to Germany which, together with Poland, Italy and the UK, accounts for more than half of the emissions covered by the EU ETS (see Table A-1 in the Appendix).

In Figure 2 the long and short positions by countries in the first and second trading phase are compared. As indicated in the figure, the market on aggregate was in a net long position in the first trading period. In the period 2005 to 2007 on average 2,085 Mt p.a. were allocated, but only 2,044 Mt of emissions were verified. On average over the three years, the market was long with 41 million of EUAs corresponding to 2.0% of allocated allowances. This net long position is the balance of a 239 Mt (11.5%) gross long position, the relative amount of allowances allocated to installations above their verified emissions, and a 198 Mt (9.5%) gross short position, the relative amount of allowances below their verified emissions. As indicated in Figure 2, only six out of the 26 countries were in a short position up to 18.7% (Ireland) in the first trading period. The remaining 19 countries were long up to 43.4% (Lithuania). The highest absolute net short position was realised in the UK with 36 Mt, the highest absolute net long results in Poland with 29 Mt.

In the first three years of the second trading phase the EU ETS on aggregate was in a net short position of 0.6% or 10 Mt. This was the result of a 310 Mt (17.2%) gross short position and a 299 Mt (16.6%) gross long position. Nine out of the 26 countries were in a net short position, the remaining 17 countries exhibited a net long

position. The highest relative net long position showed for Slovakia with 30%, the highest absolute net long position showed for Romania with 20 Mt. The highest percentage net short position accrued to the UK with 17%, the highest absolute net short position accrued to Germany with 57 Mt.[2]

Figure 2 shows that between the pilot phase and the first years of the Kyoto period substantial changes in allocation discrepancies can be observed for several Member States: In the first trading phase the New Member States generally exhibited higher net long positions than the EU-15 and only one of the New Member States (Slovenia) but five EU-15 countries were in a net short position. In the second trading phase these regional differences largely disappeared as a result of the Commission's intervention in National Allocation Plans. The Baltic States for instance showed the highest net long positions in the first trading period. This changed significantly in the second trading phase. Lithuania's net long position declined from 43.4% in the first trading period to 18.2% in 2008/09; the Latvian net long position fell from 27.5% to 12.2%. The 29.0% net long position of Estonia changed into a net short position of 3.2%. Developments in the Baltic States reflect that these countries faced the most severe cuts in allocation caps (47% - 56%) in the Commission review of National Allocation Plans for the second trading phase (Capoor and Ambrosi, 2008)[3].

Figure 2 also illustrates to which extent the net long or the net short position is influenced by the gross long and gross short positions of the countries. In the second trading phase differences between gross and net positions exceeded those of the first trading period. This points at larger national allocation discrepancies on installation level. Evidence from the years 2005 and 2006 showed that National Allocation Plans created substantial inequalities as to the allocation positions both on a country and installation level (Kettner et al., 2008). The analysis presented in this paper suggests that this proves even more true for the first three years of the second trading period as inequalities between countries and sectors were increasing.

---

[2] The aggregate figures for the second trading phase counterbalance differences between 2008 and the following two years (see Table A - 2 in the Appendix). In 2008 15 countries were in a net short position due to the more stringent caps demanded by the Commission. Due to the fall of emissions in the course of the economic crisis in 2009 only five out of the 26 countries were in a net short position. In 2010 a moderate increase of emissions was observed but still in 19 countries the caps were not binding.

[3] For the second trading period Member States' National Allocation Plans were cut by 10.4% in the Commission review. Only the caps of four countries (Denmark, France, Slovenia and UK) were not revised. Caps proposed by the new Member States were most strongly corrected downward (see e.g. Capoor and Ambrosi 2008). Nevertheless, in first instance the cuts in the national caps of Poland and Estonia demanded by the Commission were annulled by a judgment of the Court of 23 September 2009 (Case T-183/07 EC Commission v Poland (2009), Case T-263/07 EC Commission v Estonia (2009)).

Figure 2. Long and short positions by countries in the first trading phase (left) and in the second trading phase (right).
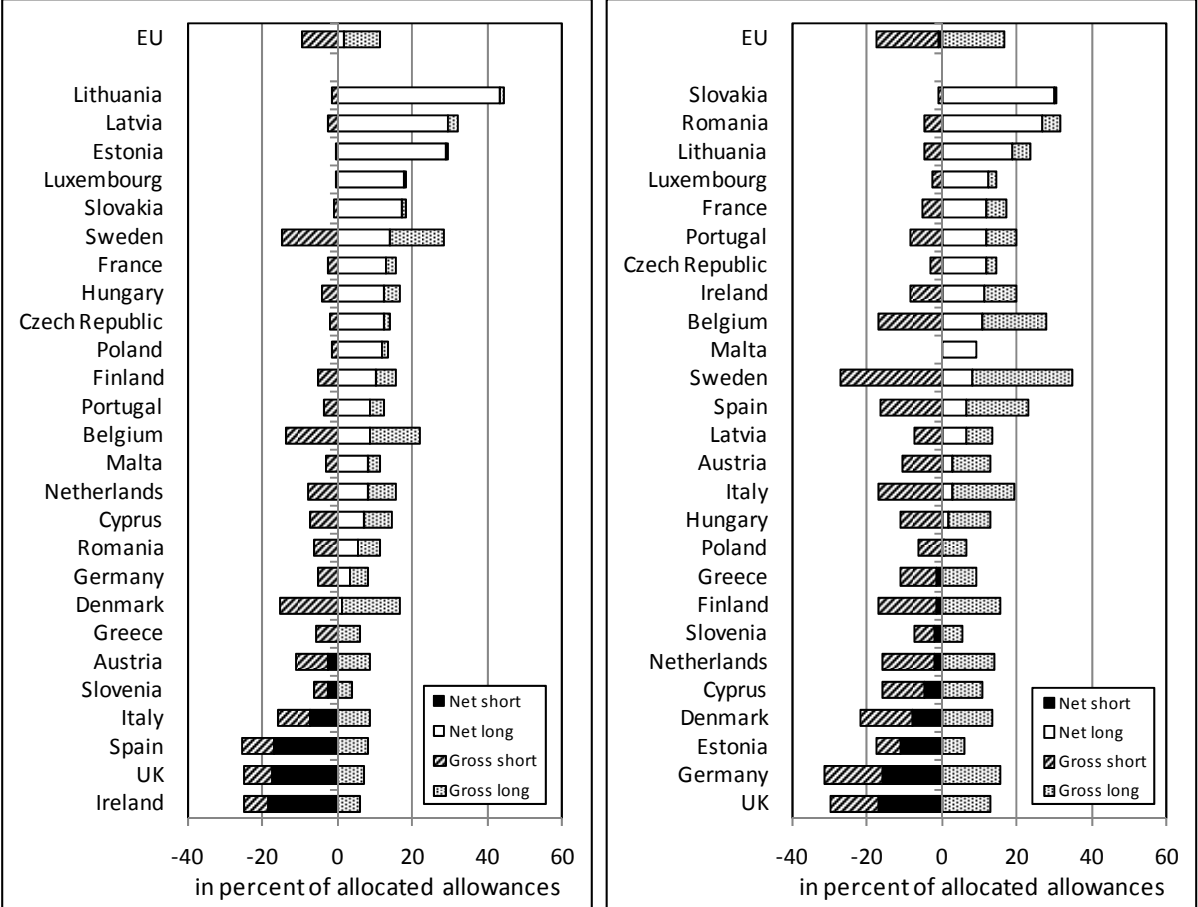
Source: CITL, authors' own calculations.

The net positions of the countries do not only reflect differences in the stringency of the national caps but also differences in abatement activities. Based on an analysis of economic activity, carbon intensity and energy intensity, Ellerman et al. (2010) estimate abatement in the pilot phase to amount to 210 Mt. Abatement is found to be significantly higher in the old Member States who account for 80% of emission abatement. Anderson and di Maria (2011) analyse abatement and over-allocation in the ETS pilot phase in a dynamic panel data model. Using data on historical CO_2 emissions, economic activity, electricity prices and climate factors they find a net abatement of 173.5 Mt (8% of allocated allowances) for the first trading period.

3.3   The sectoral evidence

In addition to the country level, the sectoral allocation discrepancies are assessed. Installations were assigned to the sectors "power and heat", "iron and steel", "cement and lime", "refineries", "pulp and paper", "ceramics", "glass" and "remaining industries" based on National Allocation Plans.

The sector "power and heat" dominates the EU ETS in both trading phases. In the pilot phase (2005 - 2007) more than 50% of allowances were allocated to this sector. The sectors "iron and steel" and "cement and lime" each accounted for 9% of total EU allocated allowances. In the second trading phase, the power and heat sector's share declined by 5% compared to the pilot phase. In contrast the shares of the other sectors showed a slight increase, especially the sectors "iron and steel" and "cement and lime" (see Table A - 3 in the Appendix).

Both in the first and second trading phase "power and heat" was the only sector in a net short position, i.e. only in this sector verified emissions on average exceeded allocated allowances. The net short position was even more pronounced in the second trading phase (-20% compared to -5%) again showing the impact of the European

Commission's revision of National Allocation Plans. All other sectors showed a rather pronounced net long position. In both trading phases, the highest net long position showed for "ceramics" and "iron and steel" (see Figure 3). These findings also hold for all years of the second trading phase. It has to be emphasised that the net long positions of the sectors "cement and lime", "ceramics" and "iron and steel" even in 2008 exceed the net long positions of the first trading phase (2005 to 2007) (see Table A - 4 in the Appendix).

Figure 3. Long and short positions by sectors in the first trading phase (left) and in the second trading phase (right).
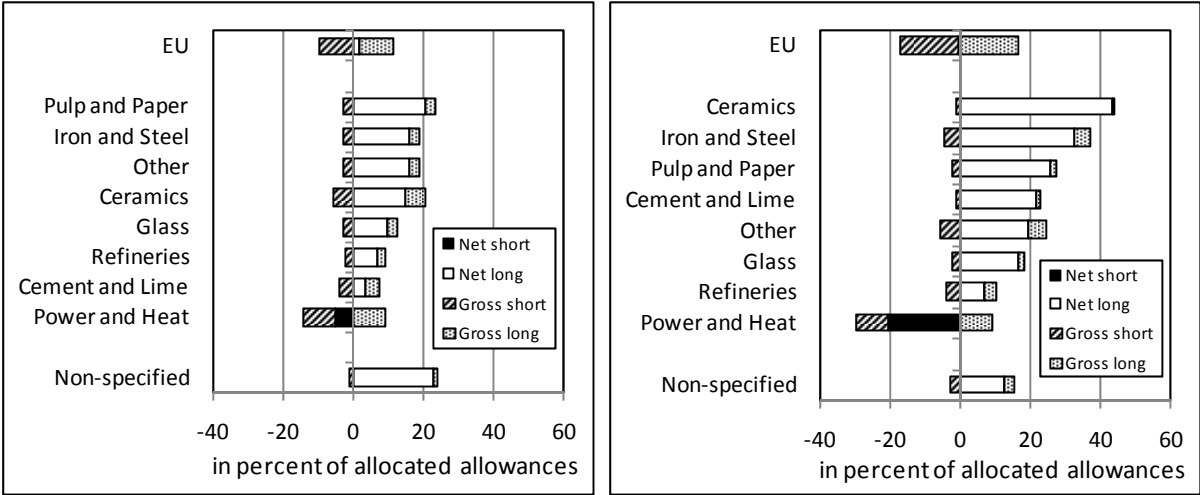
Source: CITL, authors' own calculations.

All other sectors showed a rather pronounced net long position. In both trading phases, the highest net long position showed for "ceramics" and "iron and steel". Sectoral differences in allocation patterns were analysed in various ex-ante and ex-post studies. Kolshus and Torvanger (2005) showed sectoral differences in the allocation of allowances motivated by competitiveness concerns differentiating between sectors not exposed to international competition (electricity, district heating, energy, cogeneration, power, heat and steam), and sectors exposed to international competition (refineries, iron and steel, cement, glass, lime, ceramics, pulp and paper and others). Ellerman et al. (2007) concluded that most Member States allocated fewer certificates to the energy sector not only because of competitiveness issues – i.e. the sector's opportunities to pass costs on the consumers – and relatively high abatement potential of the sector. These considerations are also taken up in the new ETS directive (Directive 2009/29/EC) with respect to different allocation provisions for sectors exposed to carbon leakage.

4   Trading flows in the EU ETS

In addition to allocation patterns in the EU ETS we assess trading flows of allowances between Member States. An analysis of EUA imports and exports in the first trading years has also been performed by Trotignon and Delbosc (2008) and Trotignon and Ellerman (2009). We extend this analysis on the one hand to the first two years of the second trading phase highlighting differences between the two trading phases. On the other hand, we assess the use of credits from flexible mechanisms that installations may surrender since the beginning of the second trading period on country level.[4]

4.1   Database and definitions

For the assessment of trading flows, a different database than for the analysis of long and short positions is used that covers the period from 2005 to 2009. In contrast to the previous analysis based on a sample of installations

---

[4] For an analysis of sectoral CER imports in the period 2008/2009 see Trotignon (2011).

for which data on verified emissions and allocated allowances was available for all years, now all installations are included in the database. This rests on the fact that only information on the originating registry of the surrendered EUAs, but not on the installation to which the allowances were initially allocated is available. Therefore it is not possible to isolate the sample installations.

For the analysis of allowances we use the following terms: Imported allowances are defined as allowances **surrendered** by an EU Member State originating from another registry. Exported allowances in turn are defined as allowances exported by one country and **surrendered** in another country. The analysis of trading flows hence may only include allowances that have been surrendered for compliance. Imports and exports of allowances that were not surrendered but banked by the installations cannot be considered due to data availability.

4.2   EUA trading

Figure 4 shows the largest exporters and importers of EUAs in the first and the second trading phase. On average over the first trading period (2005 – 2007) 120 million of EUAs originating from another registry were used for compliance every year. The surrender of foreign EUAs continuously increased over the first trading period (see Tables A - 5 – A - 7 in the Appendix) suggesting an increase in trading activity as agents accustomed to the new market. In 2005 net flows of allowances amounted to 34.6 million. In 2006 and 2007 the net trading flows increased to 85.1 million and 240.3 million respectively. In the second trading phase, the annual net flows of allowances have significantly increased compared to the first trading period: Net flows of EUAs peaked in 2009 at 183.5 million and were approximately 143 million in 2008 and 2010 (see also Tables A - 8 – A - 10 in the Appendix).

Figure 4 illustrates the largest net exports and imports of EUAs in the first and the second trading phase. In the first trading period the highest country shares in EUA imports accrued to the Netherlands (6.7 million), Italy (14.5 million), Spain (16.2 million), Germany (19.0 million) and the UK (43.9 million). In addition to these countries, in the second trading period also Belgium and Norway show high EUA imports.

The largest exporters of EUAs in the first trading period are Germany (9.2 million), the Netherlands (11.3 million), the Czech Republic (11.3 million), France (15.4 million) and Poland (18.9 million). In the second trading phase a large share in EUA exports accrues also to Spain and the UK. Germany's share in EUA exports has increased as well. In contrast, EUA exports from France and Poland have significantly declined (see also Table A - 11 and Table A - 12 in the Appendix).

Figure 4. EUA exports (left) imports (right) in million
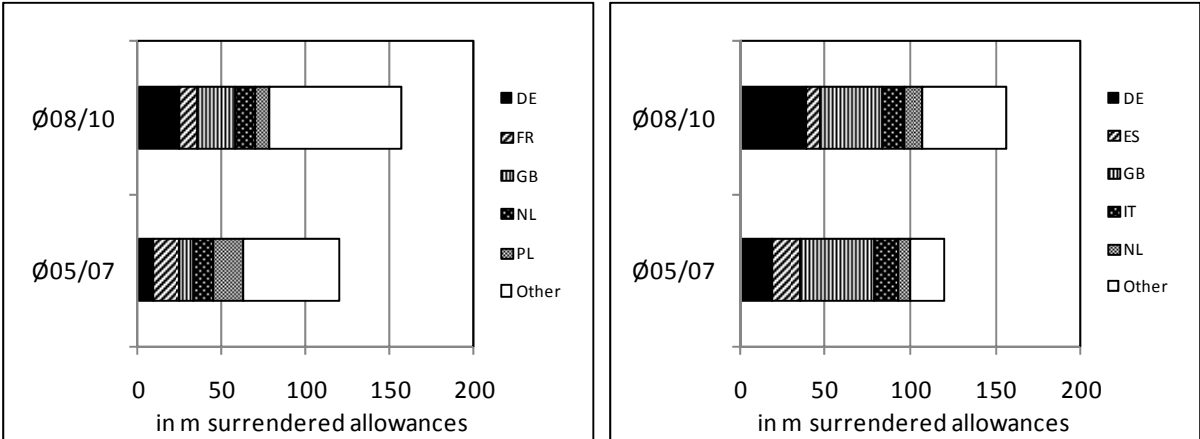
Source: CITL, authors' own calculations.

Figure 5 shows the EUA exports and imports by countries as a share of the countries' surrendered allowances. In the first trading period 16 countries were net exporters of EUAs, the remaining eight countries were EUA net importers. The Baltic States showed the highest relative net exports of EUAs of up to 64% for Lithuania. The

highest relative net imports (14.2%) resulted for the UK. As already expected, countries in a net short position have generally been net importing countries of EUAs. Germany and Romania have, however, been net importers of EUAs despite their net long position.[5]

In the second trading phase, so far eleven countries have been net importers of EUAs: Austria, Belgium, Denmark, Estonia, Finland, Germany, Ireland, Italy, Sweden, the UK and Norway. The remaining 16 countries were net exporters of EUAs. Norway, which joined the EU ETS in 2008 shows the highest relative net EUA imports. This results from Norway's decision not to allocate EU allowances to offshore oil companies, which in turn have to buy all of their allowances on the market. In the second trading phase relative net exports are generally lower than in the first trading phase. This mirrors the smaller long positions in the second trading period. Net imports and exports so far are in line with the net long and net short position of the countries.

Figure 5. EUA exports and imports in the first trading phase (left) and in the second trading phase (right)
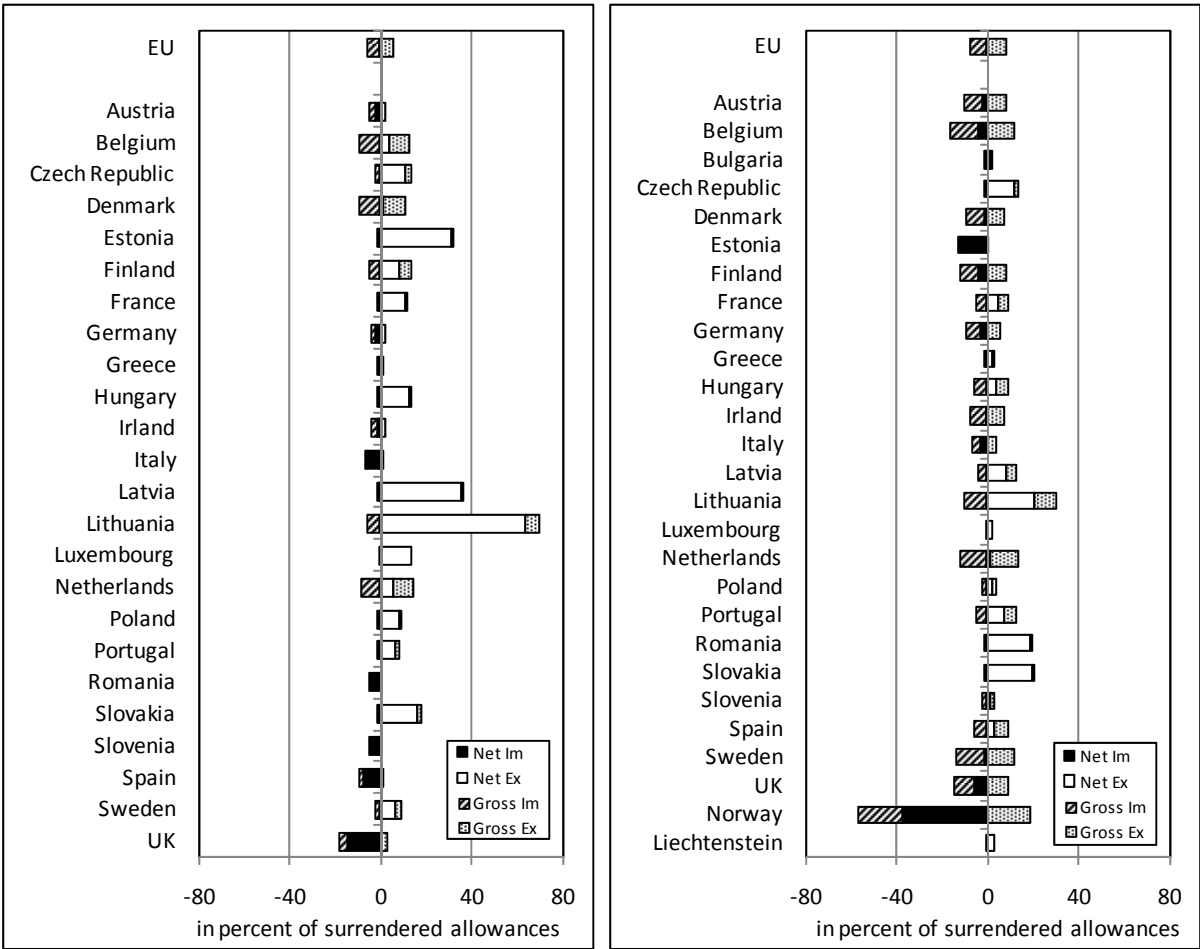
Source: CITL, authors' own calculations.

4.3 Credits from flexible mechanisms

Since the beginning of the Kyoto period in 2008 installations may also surrender credits from project based mechanisms for compliance. Linking of the EU ETS with the Kyoto project-based mechanisms, including Joint

---

[5] This does not result from the analysis of short and long positions based on the sample of installations for which data on allocation and verified emissions are available for all years. If all installations are included in the analysis of short and long positions even further deviations between net imports and net positions are observed.

Implementation (JI)[6] and the Clean Development Mechanism (CDM)[7], should increase the cost effectiveness of emission reductions. Directive 2003/87/EC, the so called "Linking Directive", provides the Criteria for the use of Kyoto credits for compliance in the EU ETS that shall ensure the environmental integrity of the scheme. The allowed maximum share of CER and JI credits in the second trading phase generally ranges between 7% and 20% of allocated allowances and is defined in the National Allocation Plans (see e.g. Sterk and Wang-Helmreich, 2008).

The European private sector is the largest buyer of CER credits (see Capoor and Ambrosi, 2009; Kossoy and Ambrosi, 2010). The share of CERs and ERUs in surrendered allowances is, however, relatively small compared to the share of EUAs and the limits defined in the National Allocation Plans. On average in the period 2008 to 2010 92.6 million of CERs and 7.8 million of ERUs have been submitted by the EU Member States. This corresponds to 4.6% and 0.4% of surrendered allowances respectively. The highest relative share in CER and ERU imports accrues to Lithuania (16%) and Slovakia (11%). In absolute terms, Germany, Spain, Italy and Poland have been the largest importers of credits from JI and CDM projects (see Figure 6 and Table A - 13ff in the Appendix).

Figure 6. CER and ERU imports in percent of surrendered allowances (left) and in million (right).
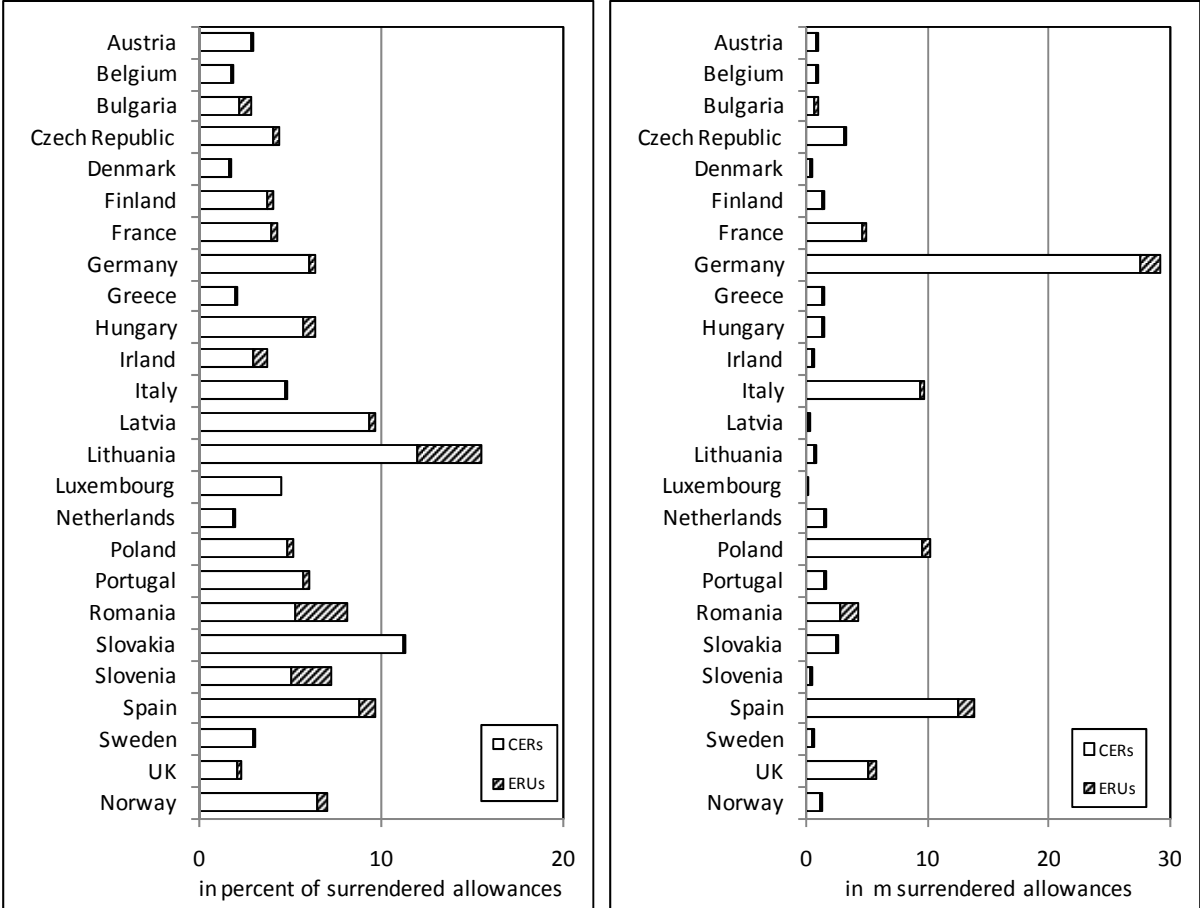
Source: CITL, authors' own calculations.

---

[6] The JI mechanism is defined in Article 6 of the Kyoto Protocol. Credits from project based emission reductions in Annex-I countries - so called Emission Reduction Units - may be used for compliance in other Annex-I countries.

[7] The CDM mechanism is defined in Article 12 of the Kyoto Protocol. Credits from project-based emission reductions in non-Annex-I countries – so called Certified Emission Reductions (CERs) – may be used for compliance in Annex-I countries.

The largest exporters of CERs and ERUs to the EU ETS are shown in Figure 7. Four countries dominate CER exports to EU Member States: China, India, South Korea and Brazil. Imports from these countries account for more than 95% of total EU CER imports. ERUs surrendered by EU installations mainly originate from the Ukraine which accounts for more than 50% of ERU imports. A significant share of ERUs (13%) also originates from Russia. One third of surrendered ERUs originates from EU Member States.

Figure 7. Exporters of CERs (left) and ERUs (right); average values for the second trading phase.
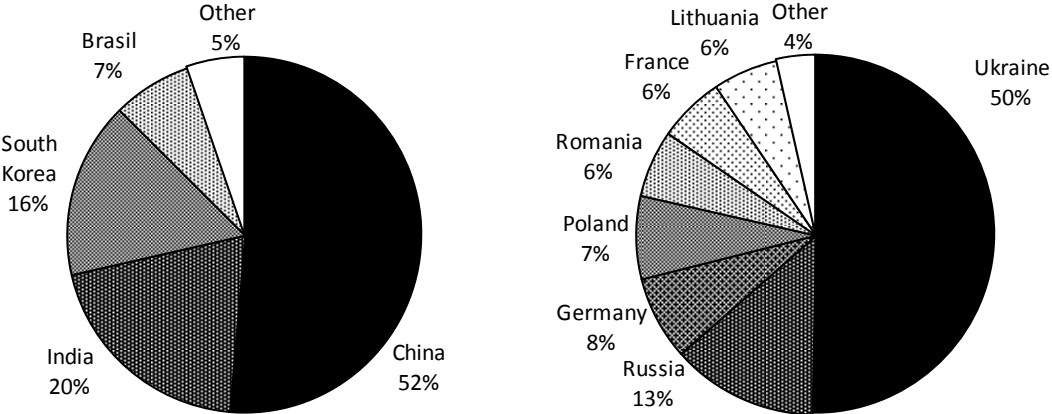
Source: CITL, authors' own calculations.

5   Conclusions

In the preparations of the second trading period the European Commission played a stronger role compared to the first trading period. National Allocation Plans had to be adjusted according to the Commission's demands in order to ensure that the overall Kyoto target of the European Union, a greenhouse gas emissions reduction of 8% by 2012 compared to 1990, stays in reach. The stronger role of the Commission was reflected in the higher overall stringency of the 2008 allocation caps compared to the first trading period. In 2009, however, the effects of the economic crisis became visible: Emissions plumped and hence the cap was not binding.

In the first trading phase regional differences in the stringency of the caps were observed: The New Member States generally exhibited higher net long positions than the EU-15 and only one of the New Member States (Slovenia) but five EU-15 countries were in a net short position. In the second trading phase these regional differences largely disappeared as a result of the Commission's intervention in National Allocation Plans. On the sector level a clear distinction between the energy sector and the manufacturing industries is found for both trading phases: On European level, the power and heat sector is the only sector in a net position, while for the other sectors a rather pronounced surplus of EU allowances is found.

In the first trading phase imported EUAs accounted only for a small share in surrendered allowances. In the second trading phase the share of imported EUAs in surrendered allowances increased significantly compared to the first trading phase. Net exports and net imports of EUAs by country correlate with the countries' net long and short positions respectively. Since the beginning of the Kyoto period in 2008 installations included in the EU ETS may also surrender credits from project based mechanisms for compliance. By now, the European private sector is the largest buyer of CERs. The share of CERs and ERUs in total surrendered allowances is, however, still relatively small.

References

Anderson, B. and C. di Maria (2011) Abatement and Allocation in the Pilot Phase of the EU ETS. Environmental and Resource Economics 48(1): 83-103.

Capoor, K. and P. Abrosi (2008) State and Trends of the Carbon Market 2008. The World Bank Working Paper, May 2008.

Capoor, K. and P. Abrosi (2009) State and Trends of the Carbon Market 2009. The World Bank Working Paper, May 2009.

Community Independent Transaction Log (2011) http://ec.europa.eu/environment/ets/.

Convery, F.J., A.D. Ellerman, and C. De Perthuis (2008) The European Carbon Market in Action: Lessons from the First Trading Period (Interim Report). MIT Joint Program on the Science and Policy of Global Change Report No. 162, June 2008.

Council Directive 2003/87/EC on Greenhouse Gas Emission Allowance Trading (2003).

Council Directive 2004/101/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms

Council Directive 2009/29/EC to improve and extend the greenhouse gas emission allowance trading scheme (2009).

European Court of First Instance (2009), case T-183/07 Poland vs. Commission and T-236/07 Estonia v Commission (Environment and consumers), Brussels.

Ellerman, A.D., F.J. Convery, C. de Perthuis et al. (2010) Pricing Carbon. The European Union Emissions Trading Scheme. Cambridge: Cambridge University Press.

Ellerman, A.D., B. Buchner and C. Carraro (eds.) (2007) Allocation in the European Emissions Trading Scheme: Rights, Rents and Fairness. Cambridge: Cambridge University Press.

Kettner, C., A. Köppl and S. Schleicher (2010) The EU Emission Trading Scheme: Insights from the first trading years with a focus on price volatility. In Dias Soares et al. (eds.) Critical Issues in Environmental Taxation VIII. Oxford: Oxford University Press. 187-225.

Kettner, C., A. Köppl, S. Schleicher and G. Thenius (2008) Stringency and distribution in the EU Emissions Trading Scheme: First Evidence. Climate Policy 8 (1): 41-61.

Kolshus, H.H. and A. Torvanger (2005) 'Analysis of EU Member States' National Allocation Plans', CICERO Working Paper 2.

Kossoy, A. and P. Ambrosi (2010) State and Trends of the Carbon Market 2010. The World Bank.

Trotignon, R. and A. Delbosc (2008) Allowance trading patterns during the EU ETS trial period: What does the CITL reveal? Caisse de Dépôts, Climate Report No 13.

Trotignon, R. and A.D. Ellerman (2009) Compliance behavior in the EU-ETS: Cross border trading, banking and borrowing. CEEPR Working Paper 08-12.

Trotignon, R. (2011) Combining cap-and-trade with offsets: Lessons from CER use in the EU ETS in 2008 and 2009. CDC Climate Working Paper Series, n°2011-03.

Sterk, W. and H. Wang-Helmreich (2008) Use of External Units in the European Union Emissions Trading System Post-2012. Wuppertal Institute, JIKO Policy Paper 3/2008.

Appendix

Table A - 1. Allocation and verified emissions by country in million tonnes

	Allocation								Verified emissions							
	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10
EU	**2,026.5**	**1,999.9**	**2,080.6**	**1,799.5**	**1,799.1**	**1,808.8**	**2,084.7**	**1,802.5**	**1,955.0**	**1,973.7**	**2,063.1**	**1,958.1**	**1,725.3**	**1,755.5**	**2,043.6**	**1,813.0**
Austria	31.0	31.3	31.3	27.8	27.7	27.9	31.2	27.8	32.2	31.7	31.7	30.1	24.0	26.8	31.9	27.0
Belgium	56.7	58.0	57.7	53.6	53.9	53.5	57.5	53.7	53.0	52.9	51.8	53.5	44.5	45.1	52.6	47.7
Cyprus	5.5	5.6	5.9	4.8	5.1	5.4	5.7	5.1	5.1	5.3	5.4	5.6	5.4	5.1	5.2	5.3
Czech Republic	93.9	93.9	93.9	84.9	85.2	85.3	93.9	85.1	80.2	81.3	85.4	80.0	72.2	73.3	82.3	75.2
Denmark	35.5	26.6	26.5	23.8	23.8	23.8	29.5	23.8	25.4	32.7	29.3	26.5	25.4	25.2	29.2	25.7
Estonia	16.7	18.2	21.3	11.4	11.4	11.4	18.7	11.4	12.6	12.0	15.3	13.2	10.2	14.4	13.3	12.6
Finland	44.2	44.2	44.2	35.0	35.2	35.4	44.2	35.2	32.7	44.1	42.0	35.0	32.9	39.1	39.6	35.7
France	142.5	142.0	141.9	125.7	124.8	128.4	142.1	126.3	125.7	122.6	122.4	119.5	106.1	107.9	123.6	111.2
Germany	475.7	477.7	479.6	365.4	367.9	377.0	477.7	370.1	457.2	460.2	470.0	447.6	405.6	429.4	462.4	427.5
Greece	70.8	70.8	70.8	62.8	62.4	63.5	70.8	62.9	71.0	69.0	71.6	69.0	63.3	59.1	70.5	63.8
Hungary	29.0	29.0	29.0	23.4	22.9	23.8	29.0	23.4	25.2	25.0	26.0	25.8	21.3	21.7	25.4	23.0
Ireland	16.7	16.7	16.7	17.6	17.6	17.7	16.7	17.6	20.0	20.2	19.3	17.9	14.8	14.1	19.8	15.6
Italy	212.4	201.3	199.5	195.4	190.4	182.0	204.4	189.3	221.8	221.5	215.4	205.5	170.2	175.4	219.6	183.7
Latvia	3.4	3.3	3.3	2.2	2.4	2.4	3.3	2.3	2.4	2.4	2.3	2.2	1.9	2.3	2.4	2.2
Lithuania	12.3	9.7	9.4	6.9	7.0	7.5	10.5	7.2	6.3	6.1	5.5	5.8	5.5	6.0	5.9	5.8
Luxembourg	3.1	3.1	3.1	2.5	2.5	2.5	3.1	2.5	2.6	2.7	2.5	2.1	2.2	2.3	2.6	2.2
Malta	2.1	2.2	2.3	2.1	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	1.9
Netherlands	82.4	82.3	82.4	69.0	71.6	71.3	82.4	70.6	76.9	73.7	76.8	73.8	71.0	71.5	75.8	72.1
Poland	234.1	234.1	234.1	188.1	188.8	191.8	234.1	189.6	200.9	207.6	208.2	194.4	183.1	190.4	205.6	189.3
Portugal	36.1	36.1	36.1	29.5	29.7	29.8	36.1	29.7	35.8	32.4	30.5	29.2	27.2	22.0	32.9	26.1
Romania	0.0	0.0	73.5	71.3	73.0	73.8	73.5	72.7	0.0	0.0	69.4	63.8	48.8	46.6	69.4	53.1
Slovakia	30.2	30.2	30.2	30.9	31.1	30.1	30.2	30.7	25.1	25.4	24.4	24.5	20.1	20.0	24.9	21.5
Slovenia	9.0	8.6	8.1	8.1	8.1	8.2	8.6	8.1	8.6	8.7	8.9	8.8	8.0	8.1	8.8	8.3
Spain	157.9	149.7	144.8	144.8	141.1	140.0	150.8	142.0	178.0	170.8	179.9	155.7	128.4	112.7	176.2	132.3
Sweden	21.4	21.6	22.0	20.4	20.7	20.9	21.7	20.7	18.6	19.2	18.2	19.1	16.6	21.3	18.7	19.0
UK	203.7	203.7	212.8	191.9	192.5	193.5	206.7	192.6	235.8	244.4	248.9	247.3	214.4	213.9	243.0	225.2

Table A - 2. Long and short positions by countries in million tonnes

	Gross short position								Gross long position								Net position							
	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10
EU	**164.7**	**199.5**	**221.0**	**360.3**	**273.0**	**295.6**	**198.0**	**309.6**	**236.2**	**225.6**	**238.5**	**201.7**	**346.8**	**348.9**	**239.1**	**299.2**	**71.5**	**26.1**	**17.5**	**-158.6**	**73.8**	**53.3**	**41.1**	**-10.5**
Austria	3.3	3.3	3.6	4.0	1.5	3.0	3.4	2.8	2.1	2.8	3.2	1.8	5.1	4.1	2.7	3.7	-1.2	-0.4	-0.5	-2.3	3.7	1.0	-0.7	0.8
Belgium	8.9	7.2	7.1	10.1	9.5	7.3	7.8	9.0	12.7	12.3	13.0	10.2	18.9	15.8	12.7	15.0	3.7	5.1	5.9	0.1	9.4	8.4	4.9	6.0
Cyprus	0.4	0.4	0.4	1.0	0.8	0.6	0.4	0.8	0.8	0.8	0.9	0.2	0.5	0.9	0.8	0.6	0.4	0.4	0.5	-0.8	-0.3	0.3	0.4	-0.2
Czech Republic	0.1	0.9	3.8	3.1	1.2	3.1	1.6	2.5	13.8	13.5	12.3	8.1	14.2	15.1	13.2	12.4	13.7	12.6	8.5	4.9	13.0	12.0	11.6	10.0
Denmark	0.1	8.0	5.4	5.0	5.3	5.0	4.5	5.1	10.2	1.8	2.6	2.4	3.7	3.6	4.9	3.2	10.1	-6.2	-2.8	-2.6	-1.6	-1.4	0.4	-1.9
Estonia	0.0	0.1	0.2	2.1	0.1	3.6	0.1	1.9	4.1	6.2	6.2	0.2	1.2	0.7	5.5	0.7	4.1	6.1	6.1	-1.9	1.1	-3.0	5.4	-1.2
Finland	0.4	3.5	2.8	3.9	5.2	8.8	2.2	6.0	12.0	3.5	5.0	3.8	7.4	5.1	6.8	5.4	11.5	0.1	2.2	-0.1	2.2	-3.7	4.6	-0.5
France	4.2	3.0	3.0	7.8	7.3	5.0	3.4	6.7	20.9	22.5	22.5	14.0	26.0	25.5	22.0	21.8	16.7	19.4	19.4	6.2	18.7	20.5	18.5	15.1
Germany	19.9	22.5	27.6	127.7	104.1	114.3	23.3	115.4	38.5	40.0	37.2	45.5	66.4	61.9	38.6	58.0	18.6	17.5	9.7	-82.1	-37.7	-52.4	15.3	-57.4
Greece	3.4	3.2	5.0	8.4	6.9	5.0	3.9	6.8	3.2	5.0	4.3	2.2	5.9	9.5	4.2	5.9	-0.2	1.8	-0.7	-6.2	-0.9	4.5	0.3	-0.9
Hungary	1.1	1.1	1.4	3.5	2.2	2.2	1.2	2.6	4.9	5.1	4.4	1.1	3.8	4.2	4.8	3.1	3.8	4.0	3.0	-2.4	1.6	2.1	3.6	0.4
Ireland	4.1	4.3	4.0	1.9	1.6	1.0	4.1	1.5	0.8	0.8	1.4	1.6	4.4	4.5	1.0	3.5	-3.3	-3.5	-2.5	-0.3	2.8	3.5	-3.1	2.0
Italy	27.4	37.3	33.2	34.8	26.3	33.8	32.6	31.6	18.0	17.2	17.3	24.7	46.5	40.3	17.5	37.2	-9.4	-20.2	-15.9	-10.1	20.2	6.6	-15.2	5.6
Latvia	0.0	0.1	0.1	0.2	0.1	0.3	0.1	0.2	1.0	1.1	1.2	0.2	0.5	0.3	1.1	0.3	1.0	0.9	1.0	0.0	0.4	0.0	1.0	0.2
Lithuania	0.0	0.2	0.2	0.2	0.2	0.7	0.1	0.3	6.1	3.8	4.2	1.3	1.6	2.2	4.7	1.7	6.0	3.6	4.0	1.1	1.5	1.5	4.6	1.3
Luxembourg	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.6	0.5	0.6	0.4	0.4	0.3	0.6	0.4	0.6	0.5	0.6	0.4	0.3	0.2	0.5	0.3
Malta	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.3	0.1	0.2	0.3	0.2	0.2
Netherlands	5.9	5.7	7.9	12.2	10.5	11.2	6.5	11.3	11.5	14.3	13.5	7.4	11.1	11.0	13.1	9.8	5.6	8.6	5.6	-4.8	0.6	-0.2	6.6	-1.5
Poland	2.1	3.4	5.8	14.2	8.9	13.3	3.8	12.1	35.3	29.9	31.7	7.9	14.6	14.6	32.3	12.4	33.2	26.5	25.8	-6.4	5.7	1.4	28.5	0.2
Portugal	1.8	1.3	0.6	3.0	3.5	0.8	1.2	2.4	2.1	5.0	6.2	3.3	6.0	8.6	4.4	5.9	0.3	3.7	5.6	0.2	2.5	7.8	3.2	3.5
Romania	0.0	0.0	4.5	6.1	2.0	1.6	4.5	3.2	0.0	0.0	8.6	13.6	26.2	28.7	8.6	22.8	0.0	0.0	4.1	7.5	24.2	27.2	4.1	19.6
Slovakia	0.1	0.6	0.2	0.3	0.2	0.3	0.3	0.3	5.2	5.4	6.0	6.7	11.2	10.4	5.5	9.5	5.1	4.8	5.8	6.4	11.0	10.1	5.3	9.2
Slovenia	0.1	0.4	1.1	0.9	0.4	0.5	0.5	0.6	0.5	0.2	0.2	0.2	0.5	0.6	0.3	0.4	0.4	-0.2	-0.8	-0.6	0.1	0.1	-0.2	-0.1
Spain	32.4	33.2	48.0	32.4	22.1	15.9	37.9	23.4	12.3	12.2	12.9	21.5	34.8	43.1	12.5	33.1	-20.1	-21.1	-35.1	-10.9	12.7	27.3	-25.4	9.7
Sweden	3.1	3.4	3.1	4.8	5.0	6.8	3.2	5.5	5.9	5.9	6.9	6.1	9.1	6.5	6.2	7.2	2.8	2.4	3.8	1.3	4.1	-0.3	3.0	1.7
UK	45.7	56.2	51.9	72.7	48.4	51.5	51.3	57.5	13.7	15.5	15.7	17.3	26.4	31.1	15.0	25.0	-32.1	-40.7	-36.1	-55.4	-22.0	-20.4	-36.3	-32.6

Table A - 3. Allocation and verified emissions by sector in million tonnes

	Allocation								Verified emissions							
	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10
EU	**2,026.5**	**1,999.9**	**2,080.6**	**1,799.5**	**1,799.1**	**1,808.8**	**2,084.7**	**1,802.5**	**1,955.0**	**1,973.7**	**2,063.1**	**1,958.1**	**1,725.3**	**1,755.5**	**2,043.6**	**1,813.0**
Cement and Lime	185.9	185.0	196.0	199.8	201.4	203.7	194.3	201.6	173.9	178.2	194.0	181.4	145.8	146.6	187.0	157.9
Ceramics	15.9	16.1	16.2	16.8	17.1	17.3	16.3	17.1	13.4	13.6	14.0	12.3	8.4	8.4	13.8	9.7
Glass	21.3	21.3	21.6	20.6	20.8	20.9	21.6	20.8	19.2	19.3	19.5	18.9	16.3	16.8	19.5	17.3
Iron and Steel	185.0	184.7	196.8	199.8	200.1	200.4	196.8	200.1	150.2	155.7	166.6	157.3	110.8	135.0	164.5	134.4
Power and Heat	1,217.0	1,193.4	1,230.5	954.1	946.3	947.5	1,240.1	949.3	1,249.4	1,260.9	1,307.8	1,220.9	1,106.6	1,103.7	1,300.1	1,143.7
Pulp and Paper	40.8	40.9	41.4	40.5	41.5	41.8	41.3	41.3	32.8	32.8	32.2	32.5	29.1	30.6	32.8	30.7
Refineries	147.1	145.8	151.7	143.9	144.6	148.2	152.4	145.5	137.3	136.0	141.8	141.5	133.7	130.6	141.6	135.3
Other	191.5	190.9	204.4	207.1	210.3	211.9	200.0	209.8	161.3	160.6	170.7	178.2	160.2	168.8	167.4	169.0
Non-specified	22.0	21.7	22.0	16.9	17.1	17.1	21.9	17.0	17.4	16.7	16.4	15.2	14.4	15.1	16.8	14.9

Table A - 4. Long and short positions by sector in million tonnes

	Gross short position								Gross long position								Net position							
	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10	2005	2006	2007	2008	2009	2010	Ø05/07	Ø08/10
EU	**164.7**	**199.5**	**221.0**	**360.3**	**273.0**	**295.6**	**198.0**	**309.6**	**236.2**	**225.6**	**238.5**	**201.7**	**346.8**	**348.9**	**239.1**	**299.2**	**71.5**	**26.1**	**17.5**	**-158.6**	**73.8**	**53.3**	**41.1**	**-10.5**
Cement and Lime	5.1	6.1	9.9	4.2	1.5	1.2	7.1	2.3	17.1	12.9	11.8	22.7	57.1	58.3	14.4	46.0	12.0	6.8	1.9	18.5	55.6	57.1	7.3	43.7
Ceramics	0.6	0.8	1.2	0.3	0.1	0.1	0.9	0.2	3.1	3.2	3.5	4.8	8.7	9.1	3.3	7.5	2.5	2.5	2.2	4.5	8.7	9.0	2.5	7.4
Glass	0.5	0.6	0.8	0.6	0.3	0.4	0.6	0.4	2.6	2.6	2.8	2.3	4.8	4.5	2.7	3.9	2.1	2.0	2.1	1.7	4.5	4.1	2.1	3.4
Iron and Steel	3.1	5.3	5.9	10.7	5.1	10.9	4.8	8.9	37.9	34.4	36.1	53.1	94.5	76.3	37.1	74.6	34.8	29.1	30.2	42.4	89.4	65.4	32.3	65.7
Power and Heat	147.5	177.0	190.1	323.9	250.7	265.4	174.0	280.0	115.1	109.5	112.8	57.1	90.4	109.2	114.0	85.6	-32.5	-67.5	-77.3	-266.8	-160.3	-156.2	-60.1	-194.4
Pulp and Paper	0.9	1.2	1.2	0.9	0.5	1.1	1.1	0.8	8.9	9.4	10.4	9.0	12.9	12.3	9.7	11.4	8.0	8.1	9.2	8.1	12.4	11.2	8.6	10.6
Refineries	2.6	2.9	5.0	6.6	5.0	3.9	3.6	5.2	12.4	12.7	14.9	8.9	15.8	21.5	14.4	15.4	9.8	9.8	9.9	2.4	10.8	17.6	10.8	10.3
Other	4.1	5.3	6.6	12.7	9.6	11.9	5.6	11.4	34.3	35.7	40.2	41.6	59.6	55.0	38.2	52.1	30.2	30.3	33.7	29.0	50.1	43.1	32.6	40.7
Non-specified	0.2	0.2	0.3	0.5	0.3	0.7	0.3	0.5	4.8	5.3	5.9	2.2	3.0	2.7	5.3	2.6	4.6	5.0	5.6	1.7	2.7	2.0	5.1	2.1

Table A - 5. Trading flows: Surrendered EUAs by originating country 2005 in millions

Originating Countries (columns) — **Surrendering Countries** (rows)

2005	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	Σ	Im
AT	32.53	0.03			0.03	0.32	0.03		0.00		0.16	0.06					0.00		0.01	0.15				0.01	0.01	0.03	**33.36**	0.84
BE		54.75				0.38	0.10				0.08	0.03															**55.39**	0.64
BG																												
CY																												
CZ					6.34							0.00														0.00	**6.35**	0.01
DE	0.02	0.08			0.65	467.56	0.01	0.01	0.01	0.09	0.36	0.46		0.06		0.01	0.02			0.24		0.03		0.05		0.27	**469.86**	2.29
DK	0.02	0.16			0.39	0.60	31.90	0.17	0.15	0.25	0.11	0.22				0.01	0.11		0.00	0.71	0.01	0.14		0.16		0.14	**35.37**	3.46
EE								12.59													0.07						**12.61**	0.02
ES	0.04	0.04			0.80	1.19	1.61	0.03	155.19	2.29	1.29	0.73		0.02	0.02		0.19		0.03	0.55		0.14		0.33		0.69	**165.18**	9.99
FI						0.00		0.02		33.02	0.00	0.00												0.00			**33.04**	0.02
FR		0.01			0.02	0.01				0.02	19.51	0.03					0.02									0.06	**19.71**	0.20
GB	0.01	0.85			2.73	1.75	0.69	0.90	0.01	0.42	3.02	230.57			0.04		0.17		0.17	0.86		0.01		0.04		0.22	**242.45**	11.88
GR													71.32														**71.32**	
HU														25.37													**25.37**	
IE		0.01				0.01	0.04	0.05	0.02	0.17	0.10	0.06			21.94					0.01							**22.40**	0.46
IT					0.01	0.13			0.01		0.21					89.97	0.00									0.00	**90.34**	0.37
LT										0.00							6.60		0.02								**6.63**	0.03
LU																		2.60									**2.60**	
LV	0.01								0.03								0.03		2.79	0.00							**2.85**	0.06
NL	0.00	0.20			0.72	0.35	0.05		0.01	0.21	0.21	1.22							0.00	77.49		0.00		0.04		0.06	**80.35**	2.86
PL																					204.76						**204.76**	
PT		0.15			0.22	0.05	0.00		0.06	0.01	0.02	0.46					0.00		0.01	0.04		35.48				0.01	**36.51**	1.03
RO																												
SE	0.01	0.02				0.02	0.03	0.02		0.21	0.01	0.02								0.04				19.05		0.01	**19.38**	0.33
SI																									8.73		**8.73**	
SK	0.03	0.01			0.03	0.02				0.00		0.00					0.00									0.47	**0.60**	0.13
Σ	**32.62**	**56.30**			**12.00**	**472.40**	**34.46**	**13.79**	**155.46**	**36.47**	**25.14**	**233.87**	**71.32**	**25.44**	**21.99**	**89.99**	**7.14**	**2.60**	**3.03**	**80.07**	**204.84**	**35.80**		**19.72**	**8.74**	**1.97**		**34.63**
Ex	0.09	1.55			5.67	4.84	2.56	1.20	0.26	3.46	5.63	3.30		0.07	0.06	0.02	0.54		0.24	2.58	0.08	0.32		0.67	0.01	1.50	34.63	

Table A - 6. Trading flows: Surrendered EUAs by originating country 2006 in millions

Originating Countries

Surrendering Countries

2006	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	Σ	Im
AT	29.84	0.17			0.16	0.41	0.08	0.16	0.03	0.16	0.22	0.12			0.00	0.04	0.10		0.10	0.55	0.15	0.00		0.02		0.26	**32.39**	2.55
BE		53.46			0.27	0.19	0.06		0.16	0.01	0.23	0.00		0.02		0.12	0.04			0.00	0.05					0.00	**54.75**	1.30
BG																												
CY																												
CZ	0.00				159.74	1.05		0.00	0.01	0.00	0.01	0.01				0.00				0.02	0.00			0.00	0.01	0.02	**159.79**	0.05
DE	0.03	0.87		0.01	1.05	472.47	0.34	0.52	0.19	0.27	0.72	1.39	0.04	0.46	0.68	0.22	0.99		0.09	1.23	1.29	0.11		0.17	0.03	0.37	**483.51**	11.05
DK					0.04	0.03	33.84	0.02			0.02	0.14				0.18	0.05			0.12	0.01	0.00		0.05	0.01	0.01	**34.28**	0.44
EE								2.43																			**2.43**	
ES	0.01	0.33			0.51	1.02	0.15	0.39	187.84	0.42	0.88	1.86	0.11	0.52	0.05	0.07	0.10	0.07		0.90	1.56	1.29		0.14		0.20	**198.42**	10.58
FI	0.03	0.02			0.35	0.07		0.10	0.02	42.61	0.26	0.25	0.04			0.07	0.08		0.03	0.10	0.60			0.08			**44.72**	2.11
FR					0.06	0.05			0.00		238.32	0.02	0.10	0.00		0.01					0.11					0.01	**238.69**	0.37
GB	0.11	2.17			3.74	2.47	0.88	3.80	1.34	1.46	4.00	216.23	0.84	1.06	0.04	0.35	1.29	0.26	0.28	4.18	2.52	0.78		0.52		3.15	**251.47**	35.24
GR											0.02	0.02	69.84	0.00							0.03	0.02					**69.94**	0.09
HU						0.00		0.01			0.01	0.00		26.02							0.01						**26.05**	0.03
IE	0.00	0.01			0.04	0.01						0.12			21.13	0.07		0.00		0.07	0.03						**21.72**	0.59
IT	0.04	0.65		0.01	2.54	2.53	0.18	0.26	0.47	0.77	2.81	2.09	0.18	0.74	0.03	330.42	0.23		0.08	0.62	2.31	0.32		0.31		0.43	**348.03**	17.61
LT		0.03			0.00	0.17					0.39	0.01	0.00	0.01			5.61			0.15	0.11					0.15	**6.40**	0.78
LU																		2.71									**2.71**	
LV																			2.94								**2.94**	
NL	0.02	0.05			0.02	0.05			0.03		0.17	0.44		0.01	0.01		0.15			75.60	0.13			0.01		0.03	**76.73**	1.13
PL					0.10						0.00	0.01								0.00	208.12						**208.26**	0.14
PT							0.00		0.00		0.02			0.01	0.01	0.02			0.00	0.00	0.01	33.02		0.00		0.01	**33.08**	0.06
RO																0.02												
SE	0.00				0.00	0.02		0.10		0.01	0.04	0.04	0.01								0.01			18.63		0.00	**18.88**	0.25
SI	0.02				0.01	0.03	0.01	0.02			0.01	0.01							0.00	0.01	0.10				8.51		**8.71**	0.20
SK		0.01			0.01			0.10			0.08					0.01	0.15		0.11	0.00	0.03					49.91	**50.40**	0.50
Σ	**30.11**	**57.75**		**0.02**	**168.64**	**479.51**	**35.60**	**8.14**	**190.08**	**45.72**	**248.18**	**222.76**	**71.16**	**28.85**	**21.95**	**331.41**	**8.75**	**3.05**	**3.64**	**83.38**	**217.18**	**35.55**		**19.95**	**8.51**	**54.39**		**85.07**
Ex	0.27	4.30		0.02	8.90	7.04	1.76	5.71	2.25	3.11	9.87	6.53	1.32	2.83	0.82	0.99	3.14	0.33	0.70	7.79	9.06	2.53		1.32	0.00	4.48		85.07

Table A - 7. Trading flows: Surrendered EUAs by originating country 2007 in millions

| 2007 | Originating Countries | | |
	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	Σ	Im
AT	30.42	0.00			0.11	0.31		0.00	0.01	0.04	0.14	0.08		0.03		0.01	0.03		0.04	0.13	0.37	0.01		0.01	0.01	0.03	**31.77**	1.35
BE	0.21	40.27			0.14	0.23	0.01	0.01	0.59	0.12	0.65	0.04	0.01	1.47	0.04	0.83	0.62	0.38	0.01	0.23	6.84	0.08		0.03		0.07	**52.87**	12.60
BG																												
CY																												
CZ	0.00	0.08		0.01	82.26	0.16	0.07	0.11	0.14	0.04	0.09	0.95		0.48		0.12	0.10	0.00	0.01	0.26	2.02	0.23		0.07		0.59	**87.79**	5.53
DE	0.44	3.07			5.37	450.05	0.52	0.83	0.82	2.47	5.68	6.56	0.05	2.07	0.18	1.04	1.38	0.28	0.18	5.89	4.03	0.82		1.00		1.04	**493.79**	43.73
DK	0.01	0.03			0.08	0.25	16.00	0.60		0.81	0.19	0.43		0.24			1.20			0.06	0.05	0.12		0.14		0.22	**20.45**	4.45
EE						0.03	0.00	24.92													0.04						**25.02**	0.09
ES	0.23	1.31			2.23	1.25	0.72	0.64	158.36	1.07	3.75	2.09	0.03	0.59	0.06	0.99	0.45	0.03	0.54	2.29	6.65	1.88		0.43		0.75	**186.33**	27.98
FI	0.17	0.09			0.57	0.15	0.06	0.15	0.01	38.73	0.62	0.53	0.21	0.02			0.13			0.04	0.50	0.14		0.25		0.10	**42.50**	3.77
FR	0.01	0.06			0.17	0.09	0.04		0.43	0.27	123.46	0.22	0.02	0.02		0.06	0.09			0.11	1.62	0.07		0.02		0.06	**126.86**	3.41
GB	0.28	7.07		0.14	7.36	7.07	3.13	0.59	1.25	3.23	13.57	172.30	0.33	1.75	0.08	3.09	3.95		0.30	13.49	15.24	0.99		0.63		0.96	**256.80**	84.50
GR	0.02	0.01				0.03					0.03	0.01	71.77	0.01			0.01			0.01	0.82	0.00				0.02	**72.71**	0.93
HU		0.01			0.15	0.03		0.03	0.02	0.12	0.13	0.01		27.09		0.12	0.03			0.02	0.23				0.00	0.02	**27.73**	0.65
IE	0.07			0.02	0.02	0.04	0.02	0.29	0.02		0.02	0.24		0.02	21.16	0.12	0.03	0.00	0.04	0.01	0.02	0.17		0.00		0.02	**22.45**	1.28
IT	0.41	0.53		0.21	1.14	2.75	0.48	1.79	1.05	0.30	3.52	2.04	0.07	0.34	0.06	211.59	0.90	0.01	0.77	0.54	4.81	0.88		0.26	0.05	2.50	**237.02**	25.44
LT						0.00		0.00		0.00						0.03	5.77		0.00		0.27	0.01				0.00	**6.10**	0.34
LU																		2.57									**2.57**	
LV																	0.03		2.82								**2.85**	0.03
NL	0.10	2.73		0.05	1.06	2.44	0.22	0.56	0.34	0.79	1.91	1.06	0.08	0.38	0.01	0.15	0.60	0.02	0.23	63.72	2.31	0.07		0.17	0.00	0.85	**79.86**	16.14
PL	0.04	0.18		0.01	0.07	0.20	0.10	0.00	0.09	0.00	0.26	0.61	0.02	0.07	0.00	0.03	0.02		0.04	0.02	207.96	0.02		0.01		0.25	**210.02**	2.06
PT	0.01					0.01	0.00	0.00	0.21		0.02	0.00		0.00		0.05				0.00	0.00	31.05		0.00			**31.36**	0.31
RO		0.01			0.74	0.04			0.01	0.03	0.05	0.01	0.18	0.25	0.13		0.07			0.23	1.39		66.28	0.18	0.03	0.03	**69.70**	3.42
SE	0.00	0.01			0.08	0.16	0.03	0.03	0.00	0.14	0.04	0.12		0.00			0.08	0.01	0.01	0.01	0.11	0.01		19.37		0.01	**20.20**	0.83
SI	0.02				0.01	0.37	0.01	0.05	0.06	0.00	0.02	0.18	0.00	0.01		0.02	0.02		0.04	0.09	0.09	0.02		0.04	8.14	0.00	**9.18**	1.04
SK	0.00	0.01			0.02			0.00			0.08	0.05		0.01		0.07	0.05			0.01	0.14					23.92	**24.37**	0.45
Σ	**32.44**	**55.50**		**0.49**	**101.58**	**465.66**	**21.42**	**30.64**	**163.42**	**48.16**	**154.25**	**187.53**	**72.78**	**34.86**	**21.71**	**218.21**	**15.53**	**3.29**	**5.07**	**87.14**	**255.51**	**36.57**	**66.28**	**22.62**	**8.24**	**31.43**		**240.34**
Ex	2.02	15.23		0.49	19.32	15.60	5.42	5.72	5.06	9.42	30.79	15.23	1.00	7.77	0.55	6.62	9.76	0.73	2.25	23.43	47.54	5.52		3.26	0.10	7.50	240.34	

Surrendering Countries

Table A - 8. Trading flows: Surrendered EUAs by originating country 2008 in millions

											Originating Countries																			
2008	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	LI	NO	Σ	Im
AT	26.46	0.09			0.30	1.37			0.06	0.03	0.60	1.22			0.01	0.00	0.05	0.01		0.20		0.03	0.62	0.02		0.01			**31.01**	4.55
BE	0.01	44.66			0.16	0.48	0.01	0.01	0.25	0.03	0.52	1.04	0.08		0.00	0.25			0.03	0.47	5.12	0.02	0.25	0.02	0.00	0.53			**54.00**	9.33
BG																														
CY																														
CZ	0.00	0.21			77.78	0.01			0.01			0.04				0.14				0.04			0.03			0.29			**78.55**	0.77
DE	0.99	3.55			10.72	409.74	0.85	0.00	2.98	0.79	5.21	6.57			0.03	0.09	0.52		0.03	7.48		0.32	0.05	0.61	0.06	0.80			**451.36**	41.62
DK					0.16	0.01	26.98			0.01		0.01				0.00					0.00	1.82		0.02		0.01			**29.02**	2.03
EE						0.01		13.47	0.00	0.00										0.10			0.02						**13.60**	0.13
ES	0.08	0.10			0.79	1.21	0.32	0.00	136.97	0.03	0.79	1.03	0.00		0.02	0.13	0.11			0.30	0.04	0.10	0.18	0.08	0.01	0.26			**142.55**	5.58
FI	0.03	0.33			0.13	0.73	0.01	0.01	0.07	35.86	0.05	1.17	0.06	0.00	0.01	0.09	0.47		0.02	0.05	0.12	0.09	0.11	0.11	0.04	0.17		0.19	**39.92**	4.07
FR	0.01	0.12			0.09	2.00			0.16	0.02	114.16	1.22	0.01		0.00	0.08	0.02			0.13	0.11	0.03	0.04	0.05		0.09			**118.35**	4.18
GB	0.07	1.14			1.81	10.38	0.27		1.61	0.40	2.48	232.15	0.17	0.00	0.13	0.86	0.04			6.96	0.01	0.96	0.01	0.23	0.00	0.20			**259.90**	27.75
GR									0.01	0.00	0.02		69.62									0.02							**69.66**	0.04
HU					0.02	0.12			0.33	0.00	0.03	0.29	0.00	31.18	0.00	0.01			0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.05		0.00	**32.09**	0.91
IE		0.22				0.22	0.04		0.11			0.23			18.62	0.01						0.00	0.21						**19.67**	1.05
IT	0.82	0.34			1.26	4.93	0.07		2.57	0.04	0.97	5.39	0.00	0.12	0.31	195.14	0.04			0.16	0.03	0.23	0.31	0.23		0.20		0.01	**213.18**	18.04
LT						0.12			0.06		0.04	0.04				0.01	5.25			0.02		0.02	0.07	0.03		0.06			**5.76**	0.51
LU																		2.01											**2.01**	
LV						0.01				0.06	0.02	0.02							2.55							0.00			**2.64**	0.09
NL		0.01			0.28	0.48	0.37		0.14	0.01	0.45	1.60	0.01			0.00	0.05	0.01	0.00	77.91		0.00	0.08	0.03		0.08			**81.52**	3.62
PL					0.07	0.12	0.00		0.22	0.00	0.11	0.16	0.00		0.00	0.15	0.03	0.01	0.01	0.01	198.15	0.00	0.13	0.01	0.00	0.05			**199.42**	1.27
PT	0.20				0.13	0.12	0.04		0.16	0.04	0.10	0.11	0.01			0.15				0.16		26.79	0.05	0.00	0.00	0.05			**27.92**	1.14
RO	0.00	0.40			0.07	0.10	0.00		0.12	0.01	0.04	0.11	0.01		0.00	0.06	0.00			0.01	0.02	0.01	61.67	0.00		0.03			**62.66**	0.99
SE	0.03	0.00			0.07	1.11	0.12		0.12	0.10	0.14	0.07			0.00	0.00	0.04		0.00	0.67		0.00	0.01	17.01	0.00	0.02		0.00	**19.51**	2.50
SI									0.00		0.00														8.05				**8.05**	0.00
SK	0.00	0.34							0.02			0.00								0.02	0.00					22.83			**23.22**	0.39
LI																											0.02		**0.02**	
NO	1.38	0.44			0.84	3.61	0.02		0.16	0.41	0.98	2.92	0.00		0.00	0.03	0.05			0.46	0.03	0.00	0.23	1.12	0.02	0.06		6.36	**19.14**	12.78
Σ	**30.11**	**51.96**			**94.73**	**436.86**	**29.12**	**13.49**	**146.15**	**37.84**	**126.69**	**255.37**	**69.99**	**31.31**	**19.14**	**197.20**	**6.67**	**2.03**	**2.64**	**95.14**	**203.65**	**30.45**	**64.10**	**19.56**	**8.18**	**25.77**	**0.02**	**6.56**		143.33
Ex	3.65	7.30			16.94	27.12	2.13	0.02	9.18	1.99	12.52	23.21	0.37	0.13	0.52	2.06	1.41	0.02	0.09	17.23	5.50	3.66	2.43	2.55	0.13	2.94		0.20	143.33	

Surrendering Countries

Table A - 9. Trading flows: Surrendered EUAs by originating country 2009 in millions

Originating Countries (columns) — **Surrendering Countries** (rows)

2009	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	LI	NO	Σ	Im
AT	26.10	0.03			0.04	0.05	0.00		0.13	0.04	0.07	0.03	0.01	0.01	0.01	0.15	0.04		0.00	0.03	0.01	0.01	0.08	0.04	0.01	0.02		0.00	**26.91**	0.81
BE	0.00	36.65				1.89	0.02		0.76	0.02	0.39	4.73	0.01	0.01	0.01	0.12	0.02			0.02	0.55	0.07	0.17	0.01	0.00	0.03		0.00	**45.54**	8.88
BG			69.92																		0.00								**69.93**	0.00
CY																														
CZ					69.88	0.34			0.00	0.01	0.01	0.00	0.13						0.02		0.02		0.23			0.03			**70.66**	0.79
DE	1.48	4.18			6.11	331.76	0.55	0.03	7.13	1.19	4.94	14.85	1.24	0.95	0.28	3.77	1.12		0.16	6.09	3.39	1.08	4.95	1.16	0.17	2.35		4.32	**403.28**	71.53
DK	0.04	0.02			0.15	0.00	21.62	0.00	0.09	0.02	0.07	0.27	0.02	0.03	0.01	0.16	0.01		0.01	0.01	0.09	1.33	0.16	0.08	0.00	0.10		0.11	**24.40**	2.78
EE		0.01						9.14	0.02		0.57	0.09	0.01									0.24				0.24			**10.07**	0.93
ES	0.03	0.14			0.09	1.80	0.27	0.00	130.42	0.28	0.61	0.87	0.06	0.18	0.06	0.24	0.20	0.00	0.02	0.10	1.22	0.39	0.41	0.11	0.03	0.25		0.05	**137.82**	7.40
FI	0.03	0.17			0.01	0.88	0.07		0.22	27.91	0.27	0.99	0.00			0.01	0.04		0.01	0.00	0.20	0.01		0.08	0.00	0.02		0.11	**31.02**	3.12
FR	0.01	0.27			0.02	0.07	0.00		0.91	0.00	104.39	0.27	0.00	0.28		0.12	0.00	0.01		0.01	0.05		0.23	0.01	0.00	0.22		0.00	**106.87**	2.49
GB	0.39	0.78			2.11	11.73	0.32	0.08	3.77	1.20	2.44	185.04	0.55	1.72	0.50	3.29	0.60	0.00	0.22	1.44	3.45	0.65	4.12	0.29	0.15	1.46		1.57	**227.85**	42.82
GR						0.00			0.03				63.46										0.00						**63.51**	0.04
HU	0.01	0.01			0.05	0.11	0.02	0.00	0.23	0.02	0.21	0.18	0.01	12.91	0.01	0.06	0.01	0.00	0.01	0.05	0.13	0.04	0.44	0.03	0.00	0.05		0.06	**14.66**	1.74
IE		0.27				0.06			0.01	0.02	0.02	0.01	0.08	0.01	16.32	0.09				0.14	0.01	0.01	0.02			0.03			**16.99**	0.67
IT	0.08	0.24			0.14	1.60	0.01	0.00	1.34	0.10	0.45	3.23	0.22	0.08	0.03	169.21	0.12			1.05	0.38	0.06	0.98	0.07	0.00	0.11		0.48	**180.00**	10.79
LT	0.00	0.09			0.03	0.00			0.05			0.00		0.02		0.02	3.75			0.11	0.01	0.00	0.15			0.00			**4.25**	0.49
LU																		2.16											**2.16**	
LV										0.04							0.01		1.95										**2.00**	0.05
NL	0.03	0.58			0.36	3.12	0.03	0.00	0.55	0.12	0.15	0.58	0.01	0.05	0.00	1.04	0.07	0.00	0.00	71.29	0.39	0.02	1.60	0.10	0.01	0.09		0.12	**80.31**	9.02
PL	0.01	0.06			0.08	0.58	0.00	0.00	0.18	0.02	0.11	0.41	0.08	0.02	0.02	0.10	0.20		0.00	0.09	178.30	0.03	0.09	0.05	0.00	0.03		0.01	**180.47**	2.17
PT	0.11	0.06			0.03	1.14	0.06		0.19	0.03	0.48	0.26			0.02	0.08	0.00			0.08	0.02	25.48	0.04			0.01			**28.11**	2.63
RO		0.15										0.00					0.01				0.00		45.09	0.12		0.12			**45.38**	0.28
SE	0.02	0.13			0.05	0.23	0.12	0.03	0.21	0.98	0.10	0.38	0.01	0.05	0.01	0.11	0.03	0.00	0.01	0.08	0.21	0.04	0.12	13.97	0.01	0.06		0.11	**17.08**	3.11
SI												0.00				0.00				0.00			0.00		7.55				**7.55**	0.00
SK		0.00			0.02				0.01				0.00	0.00					0.00	0.00	0.00		0.00			20.33		0.00	**20.37**	0.03
LI																											0.01		**0.01**	
NO	0.42	1.03			0.84	1.61	0.21	0.02	1.36	1.41	0.08	0.84	0.50	1.00	0.12	0.07	0.11		0.10	0.03	0.03	0.01	0.11	0.52	0.01	0.54		7.73	**18.68**	10.95
Σ	**28.75**	**44.84**	**69.92**		**80.11**	**357.00**	**23.30**	**9.32**	**147.60**	**33.37**	**115.35**	**213.03**	**66.33**	**17.31**	**17.40**	**178.65**	**6.35**	**2.21**	**2.52**	**80.60**	**188.45**	**29.22**	**59.00**	**16.52**	**7.95**	**26.10**	**0.01**	**14.67**		183.52
Ex	2.64	8.18			10.23	25.24	1.68	0.18	17.18	5.47	10.97	28.00	2.86	4.40	1.07	9.44	2.60	0.05	0.57	9.31	10.16	3.74	13.90	2.54	0.40	5.77		6.94	183.52	

Table A - 10. Trading flows: Surrendered EUAs by originating country 2010 in millions

2010		AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	LI	NO	Σ	Im
Surrendering Countries	AT	25.87	0.10			0.06	0.40	0.01	0.01	0.19	0.08	0.26	0.68	0.04	0.08	0.03	0.14	0.07		0.01	0.48	0.29	0.05	0.37	0.06	0.01	0.18		0.23	**29.72**	3.85
	BE	0.02	43.55	0.11		0.20	1.43	0.34		1.32	0.07	0.43	0.21	0.06	0.25	0.04	0.07	0.03	0.01	0.04	0.06	0.14	0.30	0.49	0.11	0.05	0.25		0.00	**49.58**	6.03
	BG			30.49										0.03								0.00								**30.53**	0.04
	CY																														
	CZ	0.00	0.02			69.15	0.30	0.00		0.10		0.00	0.21	0.00				0.00				0.05	0.01	0.52			0.04			**70.42**	1.27
	DE	0.03	0.11	0.05		0.11	411.18	0.00	0.00	0.75	0.07	0.07	1.52	0.07	0.09	0.03	0.90	0.12		0.00	0.16	0.13	0.03	0.19	0.52		0.05		1.52	**417.69**	6.51
	DK	0.04	0.04	0.00		0.12	0.02	20.10		0.22	0.04	0.13	0.29	0.07	0.06	0.02	0.23	0.03			0.03	0.20	0.10	0.25	0.28	0.02	0.16		0.07	**22.53**	2.43
	EE	0.03					0.16		10.50	0.07		0.44	0.01				1.39				0.46	0.52		0.66	0.08		0.03			**14.34**	3.84
	ES	0.20	0.09	0.02		0.11	0.48	0.04		95.14	0.19	0.56	2.82	0.05	0.13	0.18	0.84	0.06			2.07	0.59	0.37	1.29	0.07	0.01	0.11		0.59	**106.05**	10.90
	FI	0.03	0.16	0.01		0.07	0.34	0.03	0.02	0.52	30.13	0.41	1.84	0.20	0.02	0.40	0.24	0.17			0.06	0.14	0.19	0.25	0.15	0.01	0.80		0.06	**36.24**	6.11
	FR	0.01	1.04	0.17		0.20	1.23	0.05	0.00	0.72	0.18	100.49	0.28	0.04	0.01	0.00	0.52	0.02		0.04	0.57	0.90	0.01	2.87		0.01	0.80		0.04	**110.18**	9.70
	GB	0.53	0.47	0.35		2.28	7.57	0.89	0.00	2.30	0.23	1.56	192.92	0.72	1.08	1.30	3.93	0.65	0.06	0.11	2.40	3.30	0.87	2.80	0.47	0.11	2.02		1.00	**229.92**	37.00
	GR						0.03					0.04		56.14	0.00			0.00	0.06											**56.27**	0.13
	HU	0.04	0.01	0.02		0.12	0.02	0.00		0.19	0.01	0.11	0.16	0.03	19.63	0.01	0.06	0.02			0.04	0.17	0.02	0.20	0.18	0.00	0.05		0.00	**21.10**	1.47
	IE	0.00	0.26			0.03	0.72			0.26	0.00	0.05	0.79		0.01	13.75	0.02				0.02	0.09	0.12	0.01	0.01		0.07			**16.23**	2.48
	IT	0.03	0.37	0.23		0.10	3.30	0.24	0.00	0.97	0.07	1.30	1.70	0.34	0.36	0.09	164.89	0.05			0.24	0.33	0.12	1.30	0.13	0.08	0.16		0.18	**176.61**	11.72
	LT		0.14			0.04	0.00			0.02	0.00	0.49						4.60			0.10			0.03						**5.43**	0.84
	LU																		2.07											**2.07**	
	LV						0.01					0.01	0.02					0.07		2.79				0.01	0.10					**3.01**	0.22
	NL	0.12	0.27	0.10		0.13	1.88	0.22	0.00	0.65	0.21	2.00	2.84	0.01	0.33	0.01	3.38	0.02		0.01	64.77	1.86	0.54	2.56	0.12	0.01	0.36		0.01	**82.40**	17.63
	PL	0.02	0.04	0.07		0.07	1.38	0.14		1.92	0.14	1.28	1.54	0.04	0.09	0.01	0.48	0.03			0.27	175.88	0.18	0.43	0.01	0.03	0.20		0.07	**184.38**	8.50
	PT	0.00	0.00			0.00	0.02	0.01		0.27	0.01	0.01	0.03			0.02	0.02				0.00	0.00	22.19	0.00	0.01		0.01			**22.60**	0.41
	RO			0.02						0.00	0.00			0.01	0.02	0.01						0.00		39.01						**39.08**	0.07
	SE	0.03	0.00			0.04	0.45	0.08		0.22	0.56	0.07	0.45		0.00	0.01	0.33	0.07			0.04	0.14	0.01	0.05	19.23	0.01	0.02		0.01	**21.84**	2.61
	SI											0.00												0.47		7.15				**7.63**	0.48
	SK						0.00									0.17	0.01					0.01		0.00		0.03	17.09		0.01	**17.32**	0.23
	LI																											0.00		**0.00**	
	NO	0.10	0.20	0.24		0.17	1.35	0.09	0.05	1.71	0.07	0.40	1.96	0.09	0.03	0.11	0.59	0.15		0.02	0.26	0.50	0.14	0.36	0.06	0.03	0.20		7.08	**15.96**	8.88
	Σ	**27.10**	**46.88**	**31.91**		**72.99**	**432.28**	**22.26**	**10.58**	**107.54**	**32.06**	**110.12**	**210.34**	**57.92**	**22.18**	**16.18**	**178.03**	**6.16**	**2.14**	**3.19**	**72.02**	**185.26**	**25.26**	**54.16**	**21.58**	**7.51**	**22.62**	**0.00**	**10.86**		**143.34**
	Ex	1.22	3.33	1.42		3.84	21.10	2.16	0.07	12.39	1.93	9.63	17.42	1.79	2.55	2.42	13.15	1.56	0.07	0.40	7.26	9.38	3.07	15.15	2.35	0.35	5.53	0.00	3.79	143.34	

Originating Countries

Table A - 11. Trading flows: Average surrendered EUAs in the first trading period by originating country in millions

Originating Countries (columns) — **Surrendering Countries** (rows)

Ø2005/07	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	Σ	Im
AT	30.93	0.07			0.10	0.34	0.04	0.00	0.01	0.07	0.17	0.09		0.01	0.00	0.02	0.04		0.05	0.28	0.17	0.00		0.02	0.01	0.10	**32.51**	1.58
BE	0.07	49.49			0.15	0.27	0.06	0.06	0.25	0.04	0.32	0.03	0.00	0.50	0.01	0.32	0.22	0.13	0.00	0.08	2.30	0.03		0.01		0.02	**54.34**	4.85
BG																												
CY																												
CZ	0.00	0.03		0.00	82.78	0.05	0.02	0.04	0.05	0.01	0.03	0.32		0.16		0.04	0.03	0.00	0.00	0.09	0.67	0.08		0.02		0.20	**84.64**	1.86
DE	0.16	1.34		0.00	2.36	463.36	0.29	0.45	0.34	0.94	2.25	2.80	0.03	0.84	0.29	0.42	0.80	0.09	0.09	2.45	1.78	0.32		0.41		0.56	**482.39**	19.03
DK	0.01	0.06			0.17	0.29	27.25	0.27	0.05	0.36	0.11	0.26		0.10		0.00	0.44		0.00	0.30	0.04	0.09		0.12		0.12	**30.03**	2.79
EE		0.01				0.01	0.00	13.31													0.01			0.01			**13.35**	0.04
ES	0.09	0.56		0.00	1.18	1.16	0.82	0.35	167.13	1.26	1.97	1.56	0.04	0.38	0.04	0.35	0.25	0.03	0.19	1.25	2.74	1.11		0.30		0.55	**183.31**	16.18
FI	0.07	0.04			0.31	0.07	0.02	0.09	0.01	38.12	0.29	0.26	0.08	0.01		0.02	0.07		0.02	0.05	0.36	0.05		0.11		0.03	**40.09**	1.97
FR	0.00	0.02			0.08	0.05	0.01		0.14	0.10	127.10	0.09	0.04	0.01	0.02	0.02	0.04			0.05	0.58	0.02		0.01		0.04	**128.42**	1.33
GB	0.14	3.36		0.05	4.61	3.76	1.56	1.76	0.87	1.70	6.86	206.37	0.39	0.94	0.05	1.15	1.80	0.09	0.25	6.17	5.92	0.59		0.40		1.44	**250.24**	43.87
GR						0.00					0.02	0.01	70.98	0.00		0.01	0.00			0.00		0.01				0.01	**71.32**	0.34
HU						0.01						0.00		26.16		0.06				0.01	0.08				0.00	0.01	**26.38**	0.22
IE	0.03	0.01				0.02			0.01	0.10	0.04	0.14			21.41	0.06	0.01	0.00	0.01	0.03	0.02	0.06		0.00		0.01	**22.19**	0.78
IT	0.15	0.39			1.23	1.81	0.22	0.68	0.51	0.36	2.18	1.38	0.09	0.36	0.03	210.66	0.38	0.00	0.28	0.39	2.38	0.40		0.19	0.02	0.97	**225.13**	14.47
LT		0.01			0.00	0.06	0.02	0.00			0.13	0.00	0.00	0.01		0.01	5.99		0.01		0.13	0.00				0.00	**6.38**	0.38
LU																		2.63									**2.63**	
LV					0.01									0.00			0.02		2.85								**2.88**	0.03
NL	0.04	0.99		0.02	0.60	0.95	0.09	0.19	0.13	0.26	0.77	0.91	0.03	0.13	0.01	0.05	0.25	0.01	0.08	72.27	0.81	0.03		0.08	0.00	0.31	**78.98**	6.71
PL	0.01	0.06		0.00	0.06	0.07	0.03	0.00	0.03	0.00	0.09	0.21	0.01	0.03	0.00	0.02	0.01		0.01	0.01	206.95	0.01		0.00		0.08	**207.68**	0.73
PT	0.00	0.05			0.07	0.02	0.00	0.00	0.09	0.00	0.02	0.15		0.00		0.02	0.00		0.00	0.01	0.00	33.18		0.00		0.01	**33.65**	0.47
RO		0.00							0.00		0.02		0.06	0.08	0.04		0.02			0.08	0.46		22.09	0.06	0.01	0.01	**23.23**	1.14
SE	0.00				0.03	0.06	0.02	0.05	0.00	0.12	0.03	0.06	0.00	0.00			0.03	0.00	0.00	0.00	0.04	0.00		19.02		0.00	**19.49**	0.47
SI	0.01				0.01	0.13			0.02		0.01	0.06	0.00	0.00		0.01	0.01		0.01	0.03	0.06	0.01		0.01	8.46	0.00	**8.87**	0.41
SK	0.00	0.01			0.02	0.01		0.03		0.00	0.07	0.02	0.00	0.00		0.03	0.07		0.04	0.00	0.06			0.00	0.00	24.77	**25.12**	0.36
Σ	**31.72**	**56.52**		**0.17**	**94.07**	**472.52**	**30.49**	**17.52**	**169.65**	**43.45**	**142.52**	**214.72**	**71.75**	**29.72**	**21.89**	**213.20**	**10.47**	**2.98**	**3.91**	**83.53**	**225.84**	**35.98**	**22.09**	**20.76**	**8.50**	**29.26**		**120.01**
Ex	0.79	7.03		0.17	11.30	9.16	3.25	4.21	2.52	5.33	15.43	8.35	0.77	3.56	0.47	2.54	4.48	0.35	1.06	11.26	18.89	2.79		1.75	0.04	4.50	120.01	

Table A - 12. Trading flows: Average surrendered EUAs in the second trading period by originating country in millions

Ø2008/10	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	LI	NO	Σ	Im
AT	26.15	0.07			0.13	0.61	0.01	0.00	0.13	0.05	0.31	0.64	0.01	0.03	0.02	0.10	0.04		0.00	0.24	0.10	0.03	0.36	0.03	0.01	0.07		0.08	**29.21**	3.07
BE	0.01	41.62	0.04		0.15	1.26	0.12	0.00	0.77	0.04	0.45	1.99	0.05	0.09	0.01	0.14	0.03	0.01	0.02	0.19	1.94	0.13	0.30	0.05	0.02	0.27		0.00	**49.70**	8.08
BG			33.47									0.12	0.01								0.00								**33.48**	0.01
CY																														
CZ	0.00	0.08			72.27	0.22	0.00		0.04	0.00	0.00	0.08	0.04			0.05	0.00		0.01	0.01	0.02	0.00	0.26			0.12			**73.21**	0.94
DE	0.83	2.61	0.02		5.65	384.22	0.47	0.01	3.62	0.68	3.41	7.65	0.44	0.34	0.11	1.59	0.59	0.01	0.06	4.58	1.17	0.48	1.73	0.76	0.08	1.07		1.95	**424.11**	39.88
DK	0.02	0.02	0.00		0.14	0.01	22.90	0.00	0.10	0.02	0.07	0.19	0.03	0.03	0.01	0.13	0.01			0.01	0.10	1.08	0.14	0.12	0.01	0.09		0.06	**25.32**	2.42
EE	0.01	0.00				0.06		11.04	0.03	0.00	0.34	0.03	0.00			0.46				0.19	0.17		0.23	0.03		0.09			**12.67**	1.63
ES	0.10	0.11	0.01		0.33	1.16	0.21	0.00	120.85	0.17	0.65	1.57	0.04	0.10	0.08	0.40	0.12	0.00	0.02	0.82	0.62	0.28	0.63	0.09	0.01	0.21		0.21	**128.81**	7.96
FI	0.03	0.22	0.00		0.07	0.65	0.04	0.01	0.27	31.30	0.24	1.34	0.09	0.01	0.14	0.11	0.22		0.01	0.04	0.15	0.09	0.12	0.11	0.02	0.33		0.12	**35.73**	4.43
FR	0.01	0.47	0.06		0.10	1.10	0.02	0.00	0.60	0.07	106.35	0.59	0.02	0.10	0.00	0.24	0.01	0.00	0.01	0.23	0.35	0.01	1.05	0.02	0.00	0.37		0.01	**111.80**	5.45
GB	0.33	0.80	0.12		2.07	9.90	0.49	0.03	2.56	0.61	2.16	203.37	0.48	0.93	0.64	2.69	0.43	0.02	0.11	3.60	2.25	0.83	2.31	0.33	0.09	1.23		0.86	**239.22**	35.85
GR			0.01			0.01			0.01	0.00	0.02	0.02	63.07			0.05	0.00					0.01	0.00						**63.14**	0.07
HU	0.02	0.01	0.01		0.06	0.09	0.01	0.00	0.25	0.01	0.11	0.21	0.02	21.24	0.01	0.05	0.01	0.00	0.01	0.03	0.11	0.02	0.22	0.07	0.00	0.05		0.02	**22.61**	1.37
IE	0.00	0.25			0.01	0.34	0.01		0.13	0.00	0.02	0.34		0.01	16.23	0.04			0.01	0.05	0.03	0.04	0.08			0.03		0.00	**17.63**	1.40
IT	0.31	0.32	0.08		0.50	3.28	0.11	0.00	1.63	0.07	0.91	3.44	0.19	0.19	0.14	176.41	0.07		0.00	0.48	0.25	0.14	0.86	0.14	0.03	0.16	0.00	0.22	**189.93**	13.52
LT	0.00	0.07			0.04	0.04			0.05		0.18	0.01	0.00	0.01		0.01	4.53			0.08	0.00	0.01	0.08	0.01	0.00	0.02			**5.15**	0.61
LU																		2.08											**2.08**	
LV						0.01		0.00		0.03	0.01	0.01				0.03			2.43				0.00	0.03		0.00			**2.55**	0.12
NL	0.05	0.29	0.03		0.26	1.83	0.21	0.00	0.45	0.11	0.86	1.67	0.01	0.12	0.00	1.47	0.05	0.00	0.01	71.32	0.75	0.19	1.41	0.08	0.00	0.18		0.04	**81.41**	10.09
PL	0.08	0.03	0.02		0.07	0.69	0.05	0.00	0.77	0.05	0.50	0.70	0.04	0.03	0.01	0.24	0.09		0.02	0.12	184.11	0.07	0.22	0.02	0.01	0.09		0.03	**188.09**	3.98
PT	0.04	0.02			0.05	0.43	0.03		0.21	0.03	0.20	0.13	0.00	0.00	0.01	0.08	0.00			0.08	0.01	24.82	0.03	0.00	0.00	0.02			**26.21**	1.39
RO	0.00	0.19	0.01		0.02	0.03	0.00		0.04	0.00	0.01	0.04	0.01	0.01	0.00	0.02	0.00			0.00	0.01	0.00	48.59	0.00		0.05			**49.04**	0.45
SE	0.03	0.04	0.00		0.05	0.60	0.11	0.01	0.18	0.55	0.10	0.30	0.00	0.02	0.00	0.15	0.05	0.00	0.01	0.26	0.12	0.02	0.06	16.74	0.01	0.03		0.04	**19.48**	2.74
SI					0.01	0.00	0.00		0.00		0.00	0.00	0.00	0.00		0.00				0.00			0.16		7.58				**7.74**	0.16
SK	0.00	0.11	0.01		0.01	0.00			0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00			0.00	0.01	0.01		0.00		0.01	20.09		0.00	**20.30**	0.22
LI																											0.01		**0.01**	
NO	0.63	0.55	0.08		0.62	2.19	0.11	0.02	1.08	0.63	0.48	1.91	0.19	0.34	0.08	0.23	0.10	0.05	0.04	0.25	0.18	0.05	0.23	0.57	0.02	0.27	0.00	7.05	**17.93**	10.87
Σ	28.65	47.89	33.95		82.61	408.71	24.89	11.13	133.76	34.43	117.39	226.25	64.75	23.60	17.57	184.63	6.39	2.13	2.78	82.59	192.46	28.31	59.09	19.22	7.88	24.83	0.01	10.70		156.73
Ex	2.51	6.27	0.47		10.34	24.49	1.99	0.09	12.92	3.13	11.04	22.88	1.67	2.36	1.34	8.21	1.86	0.05	0.35	11.27	8.35	3.49	10.49	2.48	0.30	4.75	0.00	3.64	156.73	

Column group: **Originating Countries** — Row group: **Surrendering Countries**

Table A - 13. Trading flows: Surrendered CERs and ERUs by originating country 2008 in millions

2008	AR	BO	BR	CL	CN	CO	EC	EG	GT	HN	ID	IL	IN	JO	KR	MX	MY	PE	PG	PH	PK	SV	VN	ZA	NZ	Σ
AT			0.35		0.21	0.00							0.23		0.26	0.00										**1.07**
BE			0.13		0.27								0.87		0.19	0.08										**1.55**
BG																										**0.00**
CY			0.01		0.14								0.10		0.06											**0.30**
CZ			0.15	0.02	0.37								0.41		0.89	0.01								0.00		**1.85**
DE			2.41		6.96								10.83		2.59	0.65	0.07				0.00		0.18			**23.72**
DK					0.29								0.08		0.21											**0.58**
EE																										**0.00**
ES	0.01		0.19	0.00	14.16	0.01	0.07			0.00			1.87		1.35	0.04	0.01				0.01					**17.72**
FI			0.02		0.27					0.00			0.32		0.43	0.20		0.00					0.20			**1.45**
FR			0.88		1.87								2.05		0.75	0.21										**5.76**
GB			0.80	0.31	1.11	0.00				0.01	0.00		1.24		0.41	0.60									0.05	**4.54**
GR			0.01		0.12	0.03							0.02											0.00		**0.19**
HU			0.14		0.68								0.85		0.10	0.01										**1.78**
IE			0.12		0.33								0.12		0.15											**0.71**
IT	0.00		0.29		3.51	0.00							1.08		1.81	0.04	0.03						0.65	0.00		**7.40**
LT			0.01		0.01								0.09		0.32	0.03										**0.47**
LU					0.07								0.02													**0.09**
LV					0.02										0.08											**0.10**
MT																										**0.00**
NL			0.22		0.39								0.80		0.58						0.00					**1.99**
PL	0.02		0.41	0.03	1.36					0.00			1.42		1.30	0.10								0.02		**4.64**
PT	0.01				0.32								1.00		0.64						0.01					**1.99**
RO	0.05				0.39								0.33		0.10	0.02					0.00					**0.89**
SE			0.06		0.13								0.39		0.02											**0.59**
SI	0.01		0.07	0.04	0.41								0.11		0.11	0.05										**0.80**
SK	0.00		0.13		0.47								1.10		0.39	0.01										**2.12**
LI																										**0.00**
NO					0.04								0.12		0.02									0.02		**0.21**
Σ	**0.10**		**6.42**	**0.40**	**33.91**	**0.04**	**0.07**			**0.01**	**0.00**		**25.44**		**12.78**	**2.04**	**0.10**	**0.00**			**0.03**		**1.03**	**0.05**	**0.05**	**82.48**

Originating Countries

Surrendering Countries

Table A - 14. Trading flows: Surrendered CERs by originating country 2009 in millions

2009	AR	BO	BR	CL	CN	CO	EC	EG	GT	HN	ID	IL	IN	JO	KR	MX	MY	PE	PG	PH	PK	SV	VN	ZA	Σ
AT			0.03	0.00	0.18			0.02					0.09		0.06										**0.39**
BE			0.06		0.44								0.07		0.06	0.01									**0.63**
BG																									
CY																									
CZ			0.36	0.00	0.44								0.43		1.75	0.01					0.04			0.00	**3.03**
DE	0.02	0.04	2.24	0.13	13.79				0.01		0.00	0.00	6.60		2.52	0.31	0.13				0.06		0.09	0.05	**26.00**
DK			0.01	0.00	0.08								0.01		0.03									0.00	**0.13**
EE																									
ES	0.00		0.46	0.08	5.87	0.00	0.00			0.00	0.01	0.00	0.98		0.64	0.09					0.00			0.01	**8.17**
FI			0.37	0.01	0.39				0.01	0.00			0.11		0.30					0.00			0.00		**1.20**
FR			0.45		1.69						0.00	0.07	0.82		0.84	0.03					0.01			0.01	**3.91**
GB	0.13	0.18	0.39	0.07	2.10					0.00		0.02	1.55		0.44	0.02		0.00			0.01			0.06	**4.95**
GR	0.00		0.01		0.05								0.04		0.03										**0.13**
HU	0.01		0.16		0.69								0.25		0.09	0.05								0.02	**1.28**
IE			0.01		0.16								0.04		0.01										**0.22**
IT	0.06		0.30	0.00	4.98			0.00				0.01	1.57		1.21	0.06	0.00				0.08			0.00	**8.29**
LT	0.02		0.06		0.73								0.14		0.13	0.00									**1.08**
LU					0.02																				**0.02**
LV			0.01		0.27								0.16		0.01	0.01					0.02				**0.48**
MT																									
NL	0.05		0.04		0.39				0.00				0.18		0.10						0.01				**0.76**
PL	0.07		0.78		4.72	0.00		0.01					2.31		2.24	0.05				0.00	0.06			0.04	**10.27**
PT			0.07		1.15								0.18		0.05									0.08	**1.53**
RO	0.22		0.19		2.01								0.64		0.32	0.00			0.02					0.01	**3.40**
SE			0.06	0.01	0.11	0.00				0.00			0.20		0.04									0.00	**0.43**
SI			0.04		0.24								0.08		0.01	0.01									**0.37**
SK			0.22	0.01	0.64							0.01	0.21		0.13	0.00								0.01	**1.23**
LI																									
NO	0.00				0.18								0.14		0.01									0.00	**0.33**
Σ	**0.58**	**0.22**	**6.35**	**0.31**	**41.34**	**0.01**	**0.00**	**0.03**	**0.02**	**0.00**	**0.02**	**0.10**	**16.79**		**11.00**	**0.65**	**0.13**	**0.00**	**0.02**	**0.00**	**0.28**		**0.09**	**0.31**	**78.24**

Originating Countries

Surrendering Countries

Table A - 15. Trading flows: Surrendered ERUs by originating country 2009 in millions

2009	Originating Countries											Σ
Surrendering Countries	BG	CZ	DE	FR	HU	LT	PL	RO	NZ	RU	UA	
AT											0.00	**0.00**
BE											0.00	**0.00**
BG												
CY												
CZ					0.10							**0.10**
DE			0.21			0.00					0.47	**0.67**
DK												
EE												
ES											0.04	**0.04**
FI						0.00					0.13	**0.13**
FR				0.15							0.15	**0.30**
GB									0.02		0.20	**0.22**
GR											0.02	**0.02**
HU			0.01								0.01	**0.02**
IE												
IT											0.29	**0.29**
LT			0.02			0.01					0.43	**0.46**
LU												
LV											0.01	**0.01**
MT												
NL												
PL			0.00				0.00				0.26	**0.26**
PT												
RO			0.10								0.22	**0.33**
SE												
SI						0.04					0.13	**0.17**
SK												
LI												
NO			0.21									**0.21**
Σ			**0.54**	**0.15**	**0.10**	**0.05**	**0.00**	**0.00**	**0.02**		**2.36**	**3.23**

Table A - 16. Trading flows: Surrendered CERs by originating country 2010 in millions

														Originating Countries										
2010	AR	BO	BR	CL	CN	CO	EC	EG	GT	HN	ID	IL	IN	JO	KR	MX	MY	PE	PG	PH	PK	SV	VN	ZA	**Σ**
AT			0.12		0.79								0.22		0.07										**1.19**
BE			0.05		0.29								0.20		0.02	0.01									**0.57**
BG			0.02		1.76						0.05		0.10		0.25						0.11			0.00	**2.30**
CY			0.07		0.24								0.03		0.32										**0.65**
CZ	0.00		0.83		1.88							0.00	0.15		1.75	0.00					0.03		0.00	0.01	**4.67**
DE	0.13		1.57	0.10	16.98	0.01	0.00	2.92	0.02		0.00	0.06	2.98	0.24	7.75	0.22					0.07			0.32	**33.37**
DK			0.05		0.56					0.00			0.04		0.01										**0.65**
EE																									
ES	0.55		1.05	0.00	6.69			0.01		0.00		0.00	1.44		1.98	0.11	0.19	0.00			0.14			0.01	**12.17**
FI	0.01		0.07	0.11	1.05				0.01				0.14		0.24	0.01									**1.64**
FR	0.01		0.37		2.51								0.77		0.66	0.06					0.02			0.03	**4.41**
GB	0.01		0.65	0.15	4.20			0.05				0.00	0.48		0.56	0.10					0.00			0.01	**6.20**
GR			0.05		2.93								0.14		0.51	0.02							0.00		**3.65**
HU	0.00		0.05		0.91								0.07		0.01	0.11							0.00		**1.14**
IE	0.01				0.52								0.17		0.03										**0.73**
IT	0.18		0.96	0.09	8.16			0.03		0.00		0.05	1.46		1.48	0.07		0.00			0.15		0.01	0.25	**12.88**
LT			0.00		0.47								0.17			0.00									**0.65**
LU			0.02		0.16				0.00				0.01												**0.19**
LV					0.19								0.00		0.02										**0.21**
MT																									
NL			0.08	0.04	1.16			0.01				0.03	0.20		0.35	0.02					0.03		0.00	0.00	**1.92**
PL	0.11		0.77	0.05	7.97			0.02				0.00	1.75		2.80	0.28					0.03		0.14	0.00	**13.91**
PT			0.01	0.00	0.64	0.00		0.00					0.25		0.37						0.00				**1.28**
RO	0.01		0.11	0.02	3.09								0.76	0.00	0.30	0.01					0.01		0.02		**4.33**
SE			0.04		0.42								0.31		0.02	0.00						0.00			**0.79**
SI			0.01		0.06							0.00	0.01		0.02	0.02									**0.12**
SK	0.00		0.05		2.48							0.08	0.93		0.76	0.03					0.03			0.00	**4.36**
LI																									
NO	0.03		0.36		1.39	0.10					0.00		0.79		0.51	0.04		0.00		0.00				0.00	**3.23**
Σ	**1.05**		**7.35**	**0.56**	**67.49**	**0.11**	**0.00**	**3.04**	**0.03**	**0.00**	**0.05**	**0.22**	**13.55**	**0.24**	**20.80**	**1.10**	**0.19**	**0.00**		**0.00**	**0.62**	**0.00**	**0.17**	**0.63**	**117.22**

Surrendering Countries

Table A - 17. Trading flows: Surrendered ERUs by originating country 2010 in millions

2010		BG	CZ	DE	FR	HU	LT	PL	RO	NZ	RU	UA	Σ
Surrendering Countries							**Originating Countries**						
	AT						0.01						**0.01**
	BE						0.00					0.07	**0.08**
	BG	0.35	0.04					0.01				0.30	**0.70**
	CY												
	CZ		0.01				0.08	0.35				0.21	**0.66**
	DE			0.46	0.40	0.01	0.34	0.33	0.55	0.00	0.29	1.82	**4.19**
	DK						0.00						**0.00**
	EE												
	ES	0.01	0.01	0.45	0.20	0.05	0.17	0.62	0.01	0.00		2.05	**3.57**
	FI						0.07	0.02		0.01		0.06	**0.15**
	FR			0.00	0.03			0.01				0.64	**0.68**
	GB				0.19	0.03	0.16	0.09	0.16	0.12		0.88	**1.63**
	GR								0.01			0.00	**0.01**
	HU					0.01	0.18	0.11	0.01			0.19	**0.49**
	IE				0.02	0.00	0.10					0.27	**0.39**
	IT						0.00		0.10			0.36	**0.46**
	LT						0.09		0.03			0.07	**0.18**
	LU												
	LV									0.02		0.02	**0.02**
	MT												
	NL						0.01	0.02				0.05	**0.08**
	PL	0.01		0.04	0.20	0.01	0.11	0.10	0.12			1.23	**1.80**
	PT			0.16	0.15							0.01	**0.32**
	RO				0.02		0.00	0.04	0.29		2.80	1.00	**4.15**
	SE						0.00						**0.00**
	SI				0.02		0.01	0.05	0.13			0.17	**0.38**
	SK						0.00					0.01	**0.01**
	LI												
	NO			0.11	0.01		0.00		0.01				**0.14**
Σ		**0.37**	**0.06**	**1.22**	**1.24**	**0.09**	**1.33**	**1.75**	**1.41**	**0.13**	**3.09**	**9.41**	**20.11**

Table A - 18. Trading flows: Average surrendered CERs in the second trading period by originating country in millions

												Originating Countries														
Ø2008/10	AR	BO	BR	CL	CN	CO	EC	EG	GT	HN	ID	IL	IN	JO	KR	MX	MY	PE	PG	PH	PK	SV	VN	ZA	Σ
AT			0.17	0.00	0.40	0.00		0.01					0.18		0.13	0.00									**0.88**
BE			0.08		0.33								0.38		0.09	0.03									**0.92**
BG			0.01		0.59						0.02		0.03		0.08						0.04			0.00	**0.77**
CY			0.02		0.13								0.04		0.13										**0.32**
CZ	0.00		0.45	0.00	0.90							0.00	0.33		1.46	0.01					0.02		0.00	0.01	**3.18**
DE	0.05	0.01	2.07	0.08	12.58	0.00	0.00	0.97			0.00	0.02	6.80	0.08	4.29	0.39	0.07				0.04		0.09	0.12	**27.70**
DK			0.02		0.31		0.00			0.00			0.04		0.08									0.00	**0.45**
EE																									
ES	0.19		0.57	0.03	8.91	0.00	0.02	0.00		0.00	0.00	0.00	1.43		1.33	0.08	0.06	0.00			0.05			0.01	**12.69**
FI	0.00		0.16	0.04	0.57				0.01	0.00			0.19		0.32	0.07		0.00		0.00			0.07		**1.43**
FR	0.00		0.57		2.02						0.00	0.02	1.21		0.75	0.10					0.01			0.01	**4.69**
GB	0.05	0.06	0.62	0.17	2.47	0.00		0.02		0.00	0.00	0.01	1.09		0.47	0.24		0.00			0.00			0.02	**5.21**
GR	0.00		0.02		1.04	0.01							0.06		0.18	0.01								0.00	**1.32**
HU	0.00		0.12		0.76								0.39		0.07	0.06							0.00	0.01	**1.40**
IE	0.00		0.04		0.34								0.11		0.06										**0.56**
IT	0.08		0.52	0.03	5.55	0.00		0.01		0.00		0.02	1.37		1.50	0.05	0.01	0.00			0.08		0.22	0.08	**9.52**
LT	0.01		0.02		0.41								0.13		0.15	0.01									**0.73**
LU			0.01		0.08						0.00		0.01												**0.10**
LV			0.00		0.16								0.05		0.04	0.00					0.01				**0.26**
MT																									
NL	0.02		0.11	0.01	0.64			0.00	0.00			0.01	0.39		0.34	0.01					0.01			0.00	**1.56**
PL	0.06		0.65	0.02	4.68	0.00		0.01				0.00	1.83		2.11	0.14				0.00	0.03		0.05	0.02	**9.61**
PT	0.00		0.03	0.00	0.70	0.00		0.00		0.00			0.48		0.35						0.00			0.03	**1.60**
RO	0.09		0.10	0.01	1.83								0.58	0.00	0.24	0.01			0.01		0.00	0.00	0.01	0.00	**2.87**
SE			0.05		0.22	0.00				0.00			0.30		0.03	0.00								0.00	**0.60**
SI	0.00		0.04	0.01	0.23							0.00	0.07		0.04	0.03									**0.43**
SK	0.00		0.13	0.00	1.20							0.03	0.75		0.43	0.01					0.01			0.01	**2.57**
LI																									
NO	0.01		0.12		0.54	0.03					0.00		0.35		0.18	0.01		0.00	0.01	0.00				0.01	**1.26**
Σ	0.58	0.07	6.71	0.43	47.58	0.05	0.02	1.02	0.02	0.01	0.03	0.11	18.59	0.08	14.86	1.26	0.14	0.00	0.01	0.00	0.31	0.00	0.43	0.33	92.63

Surrendering Countries

Table A - 19. Trading flows: Average surrendered ERUs in the second trading period by originating country in millions

Ø2008/10	Originating Countries											Σ
	BG	CZ	DE	FR	HU	LT	PL	RO	NZ	RU	UA	
AT						0.00					0.00	**0.00**
BE						0.00					0.03	**0.03**
BG	0.12	0.01					0.00				0.10	**0.23**
CY												
CZ		0.00			0.03	0.03	0.12				0.07	**0.25**
DE			0.22	0.13	0.00	0.11	0.11	0.18	0.00	0.10	0.76	**1.62**
DK						0.00						**0.00**
EE												
ES	0.00	0.00	0.15	0.07	0.02	0.06	0.21	0.00	0.00		0.70	**1.21**
FI						0.02	0.01		0.00		0.06	**0.09**
FR			0.00	0.06			0.00				0.26	**0.33**
GB			0.06	0.06	0.01	0.05	0.03	0.05	0.06		0.36	**0.63**
GR								0.00			0.01	**0.01**
HU			0.00	0.00		0.06	0.04	0.00			0.07	**0.17**
IE				0.01	0.00	0.03					0.09	**0.13**
IT						0.00		0.03			0.22	**0.25**
LT			0.01			0.03		0.01			0.17	**0.22**
LU												
LV											0.01	**0.01**
MT												
NL						0.00	0.01				0.02	**0.03**
PL	0.00		0.01	0.07	0.00	0.04	0.03	0.04			0.49	**0.69**
PT			0.05	0.05							0.00	**0.11**
RO			0.03	0.01		0.00	0.01	0.10		0.93	0.41	**1.49**
SE						0.00						**0.00**
SI				0.01		0.02	0.02	0.04			0.10	**0.18**
SK						0.00					0.00	**0.00**
LI												
NO			0.11	0.00		0.00		0.00			0.00	**0.11**
Σ	0.12	0.02	0.59	0.47	0.06	0.46	0.58	0.47	0.07	1.03	3.92	**7.80**

Surrendering Countries