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Analysis of EU member states' national allocation plans

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Kvotestystemet omfatter CO₂ utslipp fra store kilder innen energi og varmeproduksjonen samt utvalgte energiintensive industrisektorer. EUs medlemsland har utviklet nasjonale tildelingsplaner som angir det totale antall utslippstillatelser og hvordan disse foreslås tildelt. Denne studien analyserer tilgjengelige nasjonale tildelingsplaner for å undersøke hvorvidt medlemslandene krever mindre fra sektorene omfattet av kvotestystemet enn de som ikke er omfattet, og hvorvidt enkelte sektorer omfattet av kvotestystemet har blitt favorisert i tildelingen. Tildelingene blir sammenlignet med tre referansepunkt (fremskrivninger, historiske utslipp og et kalkulert Kyotoprotokoll CO₂ mål). Analysen indikerer at den relativt sjenerøse tildelingen kun er et lite skritt mot å innfri landenes forpliktelser under Kyotoprotokollen. Tilgjengelig data indikerer at sektorer utsatt for internasjonal konkurranse har blitt favorisert i tildelingen. Dermed må sektorer som ikke er omfattet av kvotestystemet måtte redusere sine utslipp betraktelig for å nå Kyoto-forpliktelsene med mindre det blir ustrakt bruk av felles gjennomføring og den grønne utviklingsmekanismen.

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Abstract: The European Union's (EU) emissions trading scheme (ETS) started on 01 January 2005. The ETS covers CO₂ emissions from large emitters in the power and heat generation industry and selected energy-intensive industrial sectors. The EU member states have developed national allocation plans (NAP) stating the total quantity of allowances and how they propose to allocate them. This study analyzes available NAPs to examine whether EU countries require less from its ETS sectors than its non-ETS sectors and whether some ETS sectors have been favored in the allocation. Allocations are compared against three reference points (projected emissions, historical emissions and a calculated Kyoto Protocol CO₂ target). The NAP analysis indicates that the relative generous allocations are likely to result in minor steps towards meeting the countries' commitments under the Kyoto Protocol. Available data indicates that sectors exposed to international competition have been favored in terms of allocations. Therefore, non-ETS sectors in many countries have to substantially reduce their emissions to meet the Kyoto targets unless JI and CDM are used extensively.

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Contents

1. Introduction 1
2. Methodology and data sources 3
3. Main limitations and constraints 4
4. Preliminary results 5
 4.1 OVERVIEW 5
 4.2 ANALYSIS AT AGGREGATE LEVEL 6
 4.3 ANALYSIS AT AGGREGATE LEVEL – FOCUS ON EXPOSURE TO COMPETITION 8
 4.4 ANALYSIS AT COUNTRY LEVEL 11
5. Conclusions and policy implications 30

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1. Introduction

On 01 January 2005, the European Union's (EU) emissions trading scheme (ETS) started in the 25 EU member states. The ETS was established through the implementation of the EU Directive 2003/87/EC: "establishing a scheme for greenhouse gas emission allowance trading within the Community" (EU, 2003). The ETS covers only CO₂ emissions from large emitters in the power and heat generation industry and only selected energy-intensive industrial sectors: combustion plants, oil refineries, coke ovens, iron and steel plants and factories making cement, glass, lime, bricks, ceramics, pulp and paper. A size threshold based on production capacity or output determines whether plants in these sectors are included in the ETS. More than 11,400 installations are included, accounting for about 45% of the CO₂ emissions in the EU, or about 30% of its overall greenhouse gas (GHG) emissions (EU 2005a).

The ETS-Directive requires the member states to develop a national allocation plan (NAP) stating the total quantity of allowances and how they propose to allocate them. The NAPs have to be based on objective and transparent criteria, including those listed in Annex III to the Directive.¹ The NAPs were to be published and notified to the Commission and to member states by 31 March 2004 at the latest. However, only six of the original 15 EU member states (EU-15) submitted their NAP relatively on time and only a few of the 10 new EU member states were on time. The last NAP (Greek) was approved by the Commission as late as 20 June 2005.

An increasing number of NAP studies have been forthcoming. Zetterberg et al. (2004) examine a total of 12 NAPs in order to analyze the consistency of the NAP in relation to the member state's responsibility towards Kyoto and the EU burden sharing, the pressure on the sectors included in the ETS, allocation methodology and consistency with the Annex III criteria of the ETS Directive. The study found that allocations to the ETS sectors usually are higher than their current emissions. Additionally, the analysis showed that the ETS sectors are treated more favorably than the non-ETS sectors in terms of sharing the responsibility for reaching the member states' Kyoto Protocol targets.

Gilbert et al. (2004) examine a total of 18 NAPs to analyze the progress towards meeting the Kyoto Protocol target and the assessment of the development of emissions, and a detailed evaluation against all the Annex III criteria. The study found that the allocations generally are below expected Business-As-Usual (BAU) emissions and that the allocations to the ETS sectors generally are less strict than would be required if these sectors were to make a contribution to meeting the Kyoto Protocol targets equal to that of other sectors.

Betz (2004) present and evaluate the main features of a total of 16 NAPs. If the NAPs are not significantly modified, quantitative and qualitative analysis leads to the conclusions that i) the EU ETS is not likely to result in major emissions reductions in 2005-2007; ii) member states are generous in their allocations to ETS sectors at the cost of other sectors and the general taxpayer; iii) competitive distortions are likely to arise from different national interpretations and from the partial-system character of the EU ETS; iv) barriers to economic efficiency will arise from a probable EU ban on banking and ex-post adjustments of allocations to

¹ See Annex 1 for criteria.

newcomers; and v) transaction costs are expected to be high compared to costs for compliance.

The Swedish Energy Agency (STEM, 2005) examines 24 NAPs to examine how new entrants are handled, allocations to the ETS industries and whether competition from outside the EU has influenced the allocations. The study found that all countries have reserves for new entrants, but that the size and method of allocating these vary. Generally, the reserves will be allocated on a first come, first serve basis. The allocation to the ETS industries is generally more generous than the allocation to the energy sector, if compared to historic emissions and estimated BAU emissions. A common reasoning is that the potential emission reductions in the energy sector are higher, and that the industry is more exposed to international competition. Only a few countries explicitly state that allocations to the ETS industries are influenced by concerns for competition from outside the EU, while other NAPs seem to have been influenced by this concern (STEM, 2005).

Grubb et al. (2005) compares the total allocations in 25 NAPs and compares these against historic emissions, projections, and national Kyoto targets. Most phase I allocations are found to be excessive on all these measures. Only two countries (Germany and Slovenia) have not allocated more than they did on average between 1998-2002 and the aggregate cutback from BAU projections are only 1 percent. Thus, the ETS sectors are not on course for their Kyoto targets.

In October 2005, two reports (ILEX, 2005 and Oko, 2005) commissioned by WWF were released. Both reports analyzed the NAPs for the UK, Germany, Italy, Spain, Poland and the Netherlands against criteria for environmental effectiveness and economic efficiency. They also provide "best practice" recommendations for the second phase as well as key proposed improvements for each country. The ILEX report focuses on cap-setting and finds that none of the caps meet all the criteria for environmental effectiveness. Other findings are that the relationship between the cap and the Kyoto target should be explained and that the implied abatement burden on non-ETS sectors should be set out clearly and justified. The Oko report focuses on allocation provisions, especially in the power sector. The report finds that the flexibility given for the implementation by the member states has led to a variety of implementation approaches. Much stronger harmonization and convergence will be needed for the next phases of the EU ETS.

The Carbon Trust (2004) has studied the implications of the EU ETS for industrial competitiveness in the UK and wider EU. The impact on the competitiveness of a given sector will depend upon the price and allocation of emission allowance, and upon the sector's energy intensity and ability to pass on any cost increase. The study concluded that the EU ETS is unlikely to reduce the profitability of most industrial sectors. However, the steel sector may struggle to maintain its profitability if the cost of allowances is high (25 USD/Mt CO₂). The aluminum sector (non-ETS sector) looks to be losing from the EU ETS. This is due to the sector's extremely high electricity intensity and because aluminum is a global commodity.

This study originally intended to undertake a statistical analysis of the allocations at the installation level. However, the lack of data at installation level prevented such an analysis. Instead, this study therefore examines whether EU countries require less from its ETS sectors than its non-ETS sectors and whether some ETS sectors have been favored in the allocation.

We examine whether the allocation to sectors has systematic bias in one particular direction, i.e. whether allocations to sectors exposed to international competition are more generous. Allocations at national level, to groups of ETS sectors and to specific ETS sectors are compared against three reference points (projected emissions, historical emissions and a calculated 2006 Kyoto Protocol CO₂ target).

This study has some clear similarities to the earlier mentioned studies in that they all analyze the allocation of allowances. However, they differ in approach and coverage. This study is more quantitatively focused and consistently compares allocations against the three reference points (where possible). Whereas some of the other studies for instance focus just on the ETS sectors or on the industry sectors, this study covers the national level (ETS vs non-ETS), aggregate level (exposure to international competition) and specific ETS sectors. This study is less technical in that it does not go into details on the allocation criteria, allocation methodologies etc, and it does not go in detail on the use of the Clean Development Mechanism (CDM) and Joint Implementation (JI) mechanisms.

2. Methodology and data sources

In order to examine how the ETS sectors have been allocated through the NAP process, we suggest three reference points to compare the allocations in the NAPs against. **Figure 1** illustrates the differences between the allocation for 2006 and:²

- A) Projected emissions (Business as Usual (BAU)) in 2006;
- B) Historical emissions in 2000;
- C) 2006 Kyoto Protocol CO₂ target

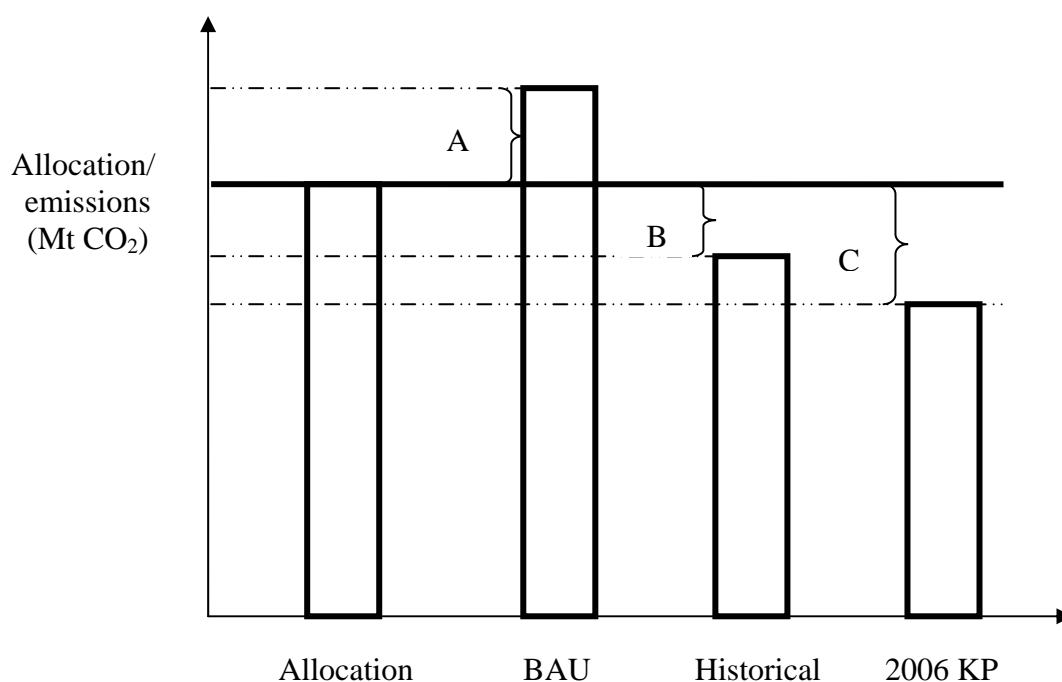


Figure 1. Illustration of NAP allocation vs BAU, historical and 2006 KP

² The differences in Figure 1 are only illustrative.

The BAU and historical emissions provide two reference points to compare the allocations against. However, they say little on the progress towards meeting the targets of the Kyoto Protocol. We therefore calculate a third reference point, called 2006 Kyoto Protocol CO₂ target (2006 KP). This target assumes that all sectors and all gases contribute equally in meeting a country's commitments under the Kyoto Protocol. There are three steps in calculating the 2006 Kyoto Protocol CO₂ targets:

- 1) The total 2006 target for all GHGs in 2006 is calculated by linear interpolation.
- 2) The total 2006 target for CO₂ in 2006 is calculated by multiplying the 2006 target for all GHGs by the average share of CO₂ of all GHGs in the period 1990-2002.³
- 3) The total 2006 target for CO₂ in 2006 is multiplied by the whole ETS sector or individual ETS sectors' projected shares of total CO₂ emissions in 2006 (BAU in NAPs) in order to estimate their 2006 Kyoto Protocol CO₂ targets.

The main data source is the European Commission's webpage on NAPs that contains links to most of the initial NAPs notified to the Commission and the Commission Decision on each plan.⁴ Since many of the NAPs have been modified since the initial notifications, we have searched for more recent versions of the NAPs, mainly through the responsible ministry or other responsible institution. Where NAPs do not contain all the necessary information, other sources such as GHG inventory submissions (UNFCCC, 2004), the National Communications (UNFCCC, 2005), Zetterberg et al. (2004), Gilbert et al. (2004), STEM (2005) and others have been used.

3. Main limitations and constraints

Previous studies have been constrained by the lack of data availability. More data has become available but much less than expected. There is still a serious lack of data, mainly for historical and projected emissions but also for allocations.

Member states are not required to translate their NAPs into English, but they are encouraged to provide courtesy translations. However, several NAPs are not available in English.

Many of the available NAPs are available only in draft forms, i.e. initial national allocation plans as notified to the European Commission. It is known that several plans have been amended before or after the Commission decision. Even though countries can not change the overall cap agreed with the European Commission, they are free to shuffle allowances around as long as the total cap is not changed. This analysis is based on available information, but recognizes that changes in allocations may occur.

³ Using a single year as reference point for the CO₂ share could influence the figures due to variations between years. On the other hand, using the average for 1990-2002 will not give an indication of any general trend (whether the CO₂ share is becoming larger, smaller or unchanged). The background data shows that the shares do not vary much within the time period investigated, so the resulting differences will be small. Gilbert et al. (2004) uses linear interpolation or trend analysis to estimate the 2006 fraction of CO₂ as share of total GHG emissions in 2006.

⁴ http://europa.eu.int/comm/environment/climat/emission_plans.htm

Some NAPs do not provide information on allocations at sector level. Additionally, the NAPs differ in how they present the allocations at sector level. Some are for the whole period 2005-2007, some for every year, some are average for the period 2005-2006 while some are for a single year (2006).

An additional difficulty is that countries do not use a common definition when grouping sectors. The use of mineral oil refineries is quite consistent across countries. However, a wide range of terms are used to cover other energy activities. Examples are electricity, district heating, energy, combined heat power (CHP), power, heat, cogeneration and steam. This makes comparisons across countries more difficult. Sectors such as iron and steel, cement, glass, lime, ceramics and pulp and paper are relative consistent, but some countries group for instance cement and lime together. Additionally, countries use sectors that no other country uses, examples are refractory products, sugar, textiles, chemicals, food, services, wood, and mechanical structures and steel engineering,

A common definition of BAU emissions is not present and the NAPs differ in the level of details in terms of BAU emissions. In some cases where the NAPs do not state BAU emissions for non-ETS sectors and/or total BAU emissions, secondary sources have been used.

Not all NAPs provide information on historical emissions, and countries use different base years. 2000 is used as a common base year in this study but other base years have been used in cases where 2000 data is not available.

The countries differ in use and specification of allowances for reserves for new entrants, for early action and for auction.

4. Preliminary results

The results presented in this section should be considered as preliminary since they for some countries are based on draft NAPs. Additionally, there are gaps that could be filled if more information becomes available.

4.1 Overview

The EU ETS covers about 11,400 installations, ranging from 2 in Malta and 13 in Cyprus to 1,172 in France and 1,849 in Germany. Over the period 2005-2007, a total of about 6,550 Mt CO₂ in allowances are included (EU, 2005b). **Figure 2** shows the average annual allocations in Mt CO₂ under the EU ETS for all 25 EU countries.⁵

⁵ Malta and Cyprus are included in Figure 2 but not in the remaining analysis since they are not Annex I countries.

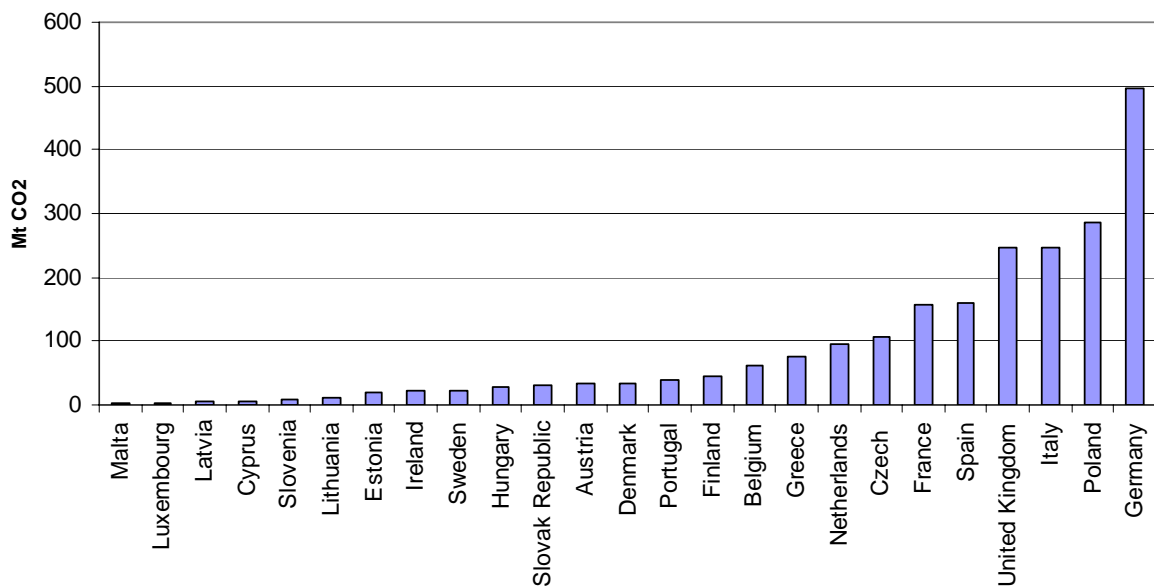


Figure 2. Average annual allocations (Mt CO₂) under the EU ETS 2005-2007.

18 of 25 NAPs provide information on allocations to specific sectors. The available information shows that the energy/electricity sector in total receives the lion's share, about 67 percent. The second largest allocation is to the iron and steel sector (8 percent) while other important sectors are cement (7 percent) and refineries (6 percent) while the sectors lime, glass, ceramics and paper & pulp receive about 1-2 percent each. These aggregate shares will naturally differ between countries.

4.2 Analysis at aggregate level

This section analyzes the NAPs at an aggregate level, that is, for the ETS sector as a whole. With available information, we compare allocations to the ETS sectors as a whole with their historic emissions, their BAU emissions and their 2006 Kyoto Protocol CO₂ target.

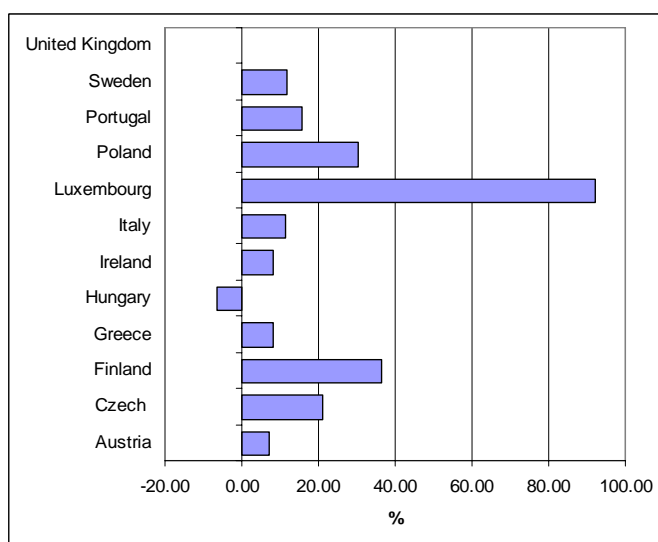


Figure 3. Allocation in 2006 relative to historic emissions in 2000

12 countries provide sufficient information for comparing allocations against the historic emissions (see **Figure 3**). It should however, be noted that some countries have chosen a different base year than 2000. These are Hungary (2001), Ireland (average 2002-2003), Luxembourg (2001), Sweden (average 1998-2001) and the United Kingdom (average 1998-2003). With the exception of Hungary (-1.6%) all countries allocate more than the base year. It is worth pointing out that the United Kingdom is only allocating 0.09% more than the historic emissions to its ETS sectors. The total allocations in 2006 for the 12 countries are 13.5 percent higher than in their base years.

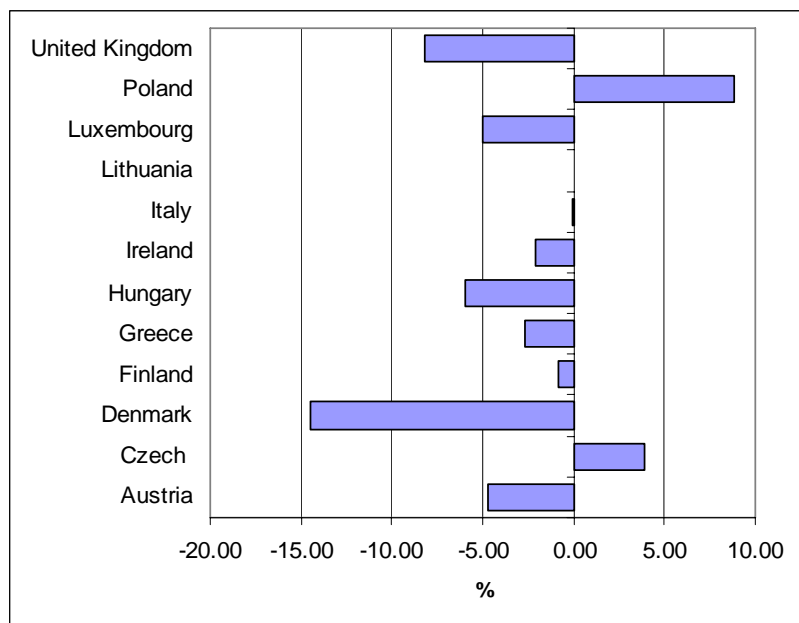


Figure 4. Allocation in 2006 relative to BAU emissions in 2006

12 countries provide sufficient information for comparing allocations against projected emissions in 2006 (see **Figure 4**). Most countries allocate less than the BAU emissions, but exceptions are Poland, Lithuania (only by 0.02%) and the Czech republic. The largest cuts compared to the BAU emissions are in Denmark (almost 15%) and the United Kingdom (about 8%). The environmental effectiveness of the EU ETS can be questioned since the total allocations in 2006 for the 12 countries are only 0.6 percent lower than their total BAU emissions in the same year.

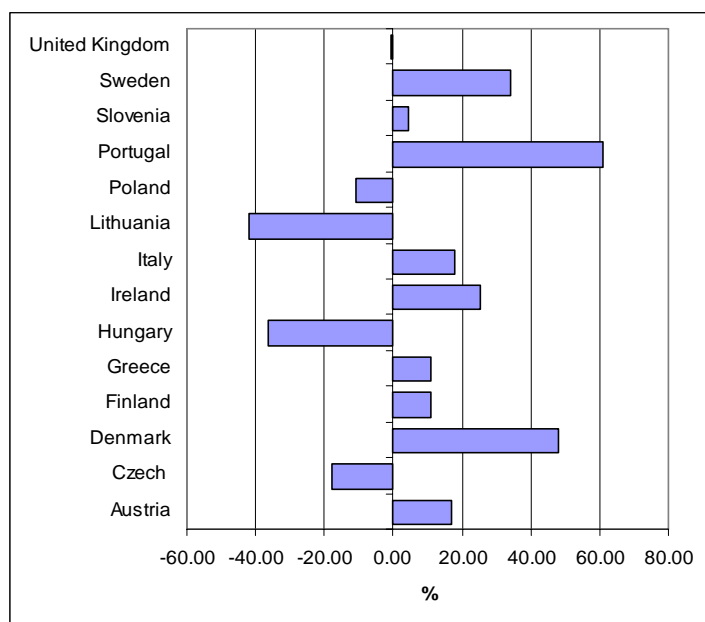


Figure 5. Allocation to ETS sectors in 2006 relative to 2006 Kyoto Protocol CO₂ target.

Figure 5 compares the allocations to the ETS sectors against the calculated 2006 Kyoto Protocol CO₂ target. It is clear that countries in Eastern Europe (Poland, Lithuania, Hungary and the Czech republic) are allocating less to its ETS sectors than if all sectors and all gases were to equally contribute to meeting the countries' commitments under the Kyoto Protocol. This can be explained by the economic recession in the early 1990s that significantly reduced emissions in these countries. As a result, their current emissions are actually lower than their commitments under the Kyoto Protocol. The United Kingdom is also allocating less than the ETS sectors' 2006 KP target, but this is because the country is already below its Kyoto Protocol target for 2008-2012. The remaining countries are allocating more to its ETS sectors than their 2006 Kyoto Protocol CO₂ targets. The most extreme cases are Portugal (61%), Denmark (48%) and Sweden (34%).

4.3 Analysis at aggregate level – focus on exposure to competition

Whereas section 4.2 analyzed allocations to the ETS sectors as a whole, this section examines the ETS sectors more detailed. Since data difficulties makes comparisons across sectors difficult, we have first chosen to aggregate sectors according to their exposure to international competition. The concern for international competition is reflected in the ETS-Directive (EU, 2003). Criterion 11 in Annex III of the ETS-Directive states that *“The plan may contain information on the manner in which the existence of competition from countries or entities outside the Union will be taken into account.”*⁶ The sectors electricity, district heating, energy, combined heat power (CHP), power, heat, cogeneration and steam are considered to be less exposed to international competition, and are hereafter called ‘non-exposed’. The

⁶ The STEM (2005) study finds that allocations have been influenced by concerns for exposure to competition. The NAPs of Finland, Ireland, the United Kingdom, Sweden and the Netherlands explicitly state that the concern for exposure to competition was considered in the allocations. However, the study also finds that other NAPs show signs of exposure to competition influencing allocations.

remaining sectors (refineries, iron and steel, cement, glass, lime, ceramics, pulp and paper and others) face international competition and are hereafter called 'exposed'.

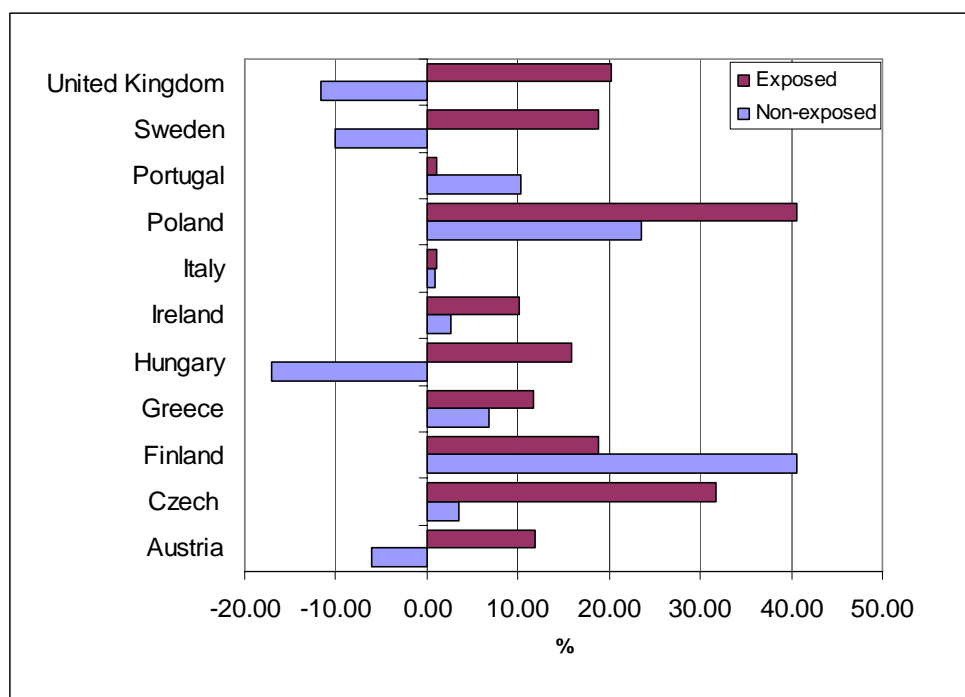


Figure 6. Allocation in 2006 relative to historic emissions.

A common assumption is that countries are more generous in their allocations to the sectors exposed to international competition. This is because one expects that the sectors less exposed to international competition would be able to pass the costs on to its consumers. **Figure 6** compares allocations with the historic emissions for the exposed and non-exposed sectors in the EU ETS. Available data indicates that 9 of 11 countries have allocated relatively more to their exposed sectors than their non-exposed countries. The two exceptions are Finland and Portugal. Although historic emissions give an indication, they may not be the best reference point against which to compare allocations since there may have been structural changes and closures.

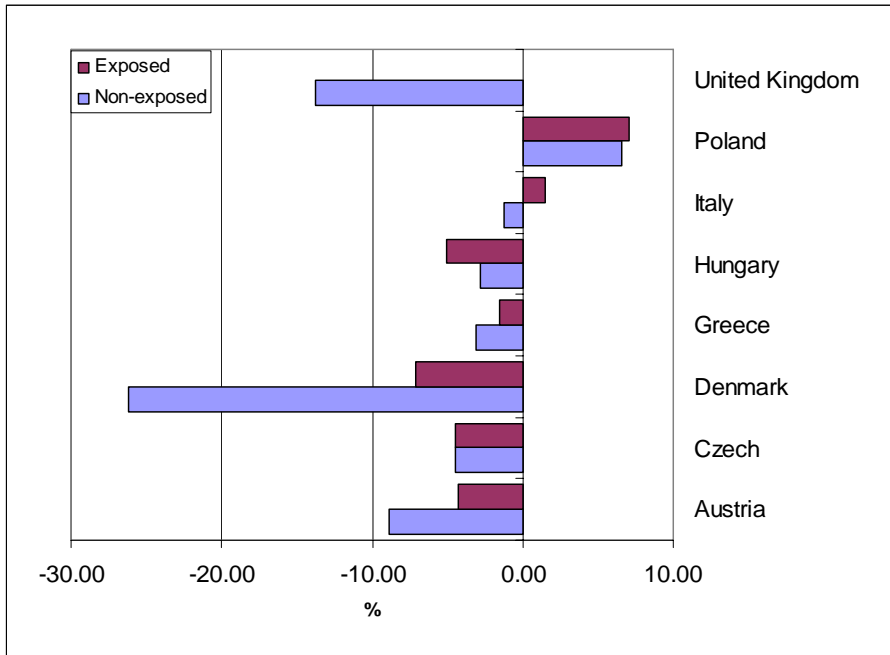


Figure 7. Allocation in 2006 relative to BAU emissions.

Comparing allocations against projected BAU emissions could give a better indication of the potential differentiation between exposed and non-exposed sectors. The lack of data only allows comparisons for 8 countries, but **Figure 7** shows that only Hungary has allocated relatively more to their non-exposed sectors.⁷ This indicates that sectors exposed to international competition may have been favored in the allocation of allowances.

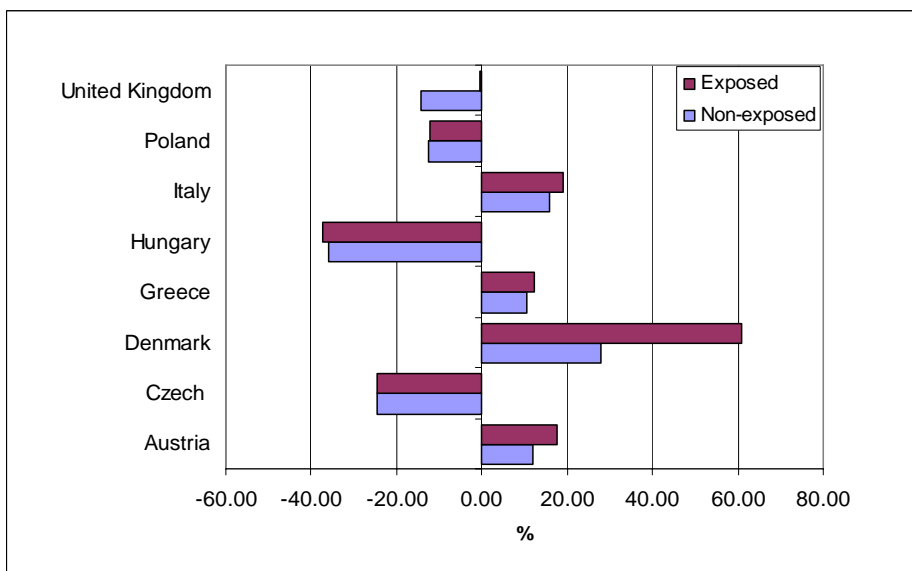


Figure 8. Allocation in 2006 relative to 2006 Kyoto Protocol CO₂ target.

Figure 8 compares the allocations to the exposed and non-exposed sectors against the calculated 2006 KP targets. It is clear that Hungary is the only country that favors the non-exposed sectors. The Czech republic is equal in its allocations whereas the remaining

⁷ The exposed sectors in the United Kingdom are in fact given allocations equal to their BAU emissions. The non-exposed sector (power stations) is allocated almost 14% less than its BAU emissions.

countries have favored the sectors exposed to international competition in the allocation of allowances. Austria, Denmark, Greece and Italy are all allocating more than the 2006 KP targets. The explanation for this could be that the countries expect non-ETS sectors (and gases) and the use of the Clean Development Mechanism (CDM) and Joint Implementation (JI) to contribute more in fulfilling the Kyoto Protocol commitments.

4.4 Analysis at country level

Although data availability is constrained, it is interesting to analyze each country and its sectors separately. Data availability varies and the extent of analysis therefore also varies.

4.4.1 Austria

Figure 9 shows that Austria emitted a total of 66.1 Mt CO₂ in 2000. The ETS sectors accounted for almost 31 Mt CO₂, or about 46 percent. Austria's CO₂ emissions are projected to increase to 68.2 Mt CO₂ in 2006, and the increase is strongest in the ETS sectors. The 2006 Kyoto Protocol CO₂ target for Austria has been calculated to a total of 55.9 Mt CO₂.

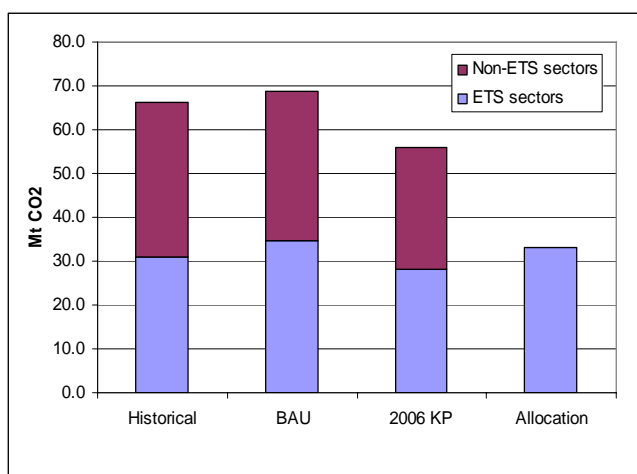


Figure 9. Austria's historic emissions, BAU, 2006 KP and allocation in 2006.

In its NAP, Austria has allocated a total of 99 Mt CO₂ for the period 2005-2007, or 33 Mt CO₂ per year to 205 installations. This allocation is almost 16 percent more than they should according to their 2006 KP targets. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 32.6 percent compared to BAU.

A total of 0.33 Mt CO₂ (1% of total allowances) is held as a reserve for new entrants each year on a 'first come, first served' basis.

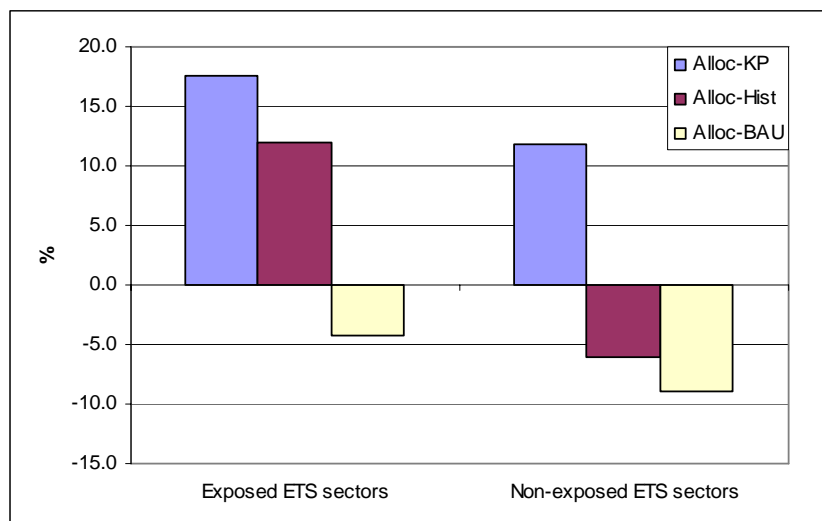


Figure 10. Austria's allocations to aggregated sectors in 2006.

In Austria, the exposed sectors were allocated about 12 percent more than their 2000 emissions and about 4 percent less than their BAU emissions (see **figure 10**). The non-exposed sectors received 6 percent less than their 2000 emissions and 9 percent less than their BAU emissions. All sectors received more than they should according to the 2006 KP target, but the exposed sectors received relatively more.

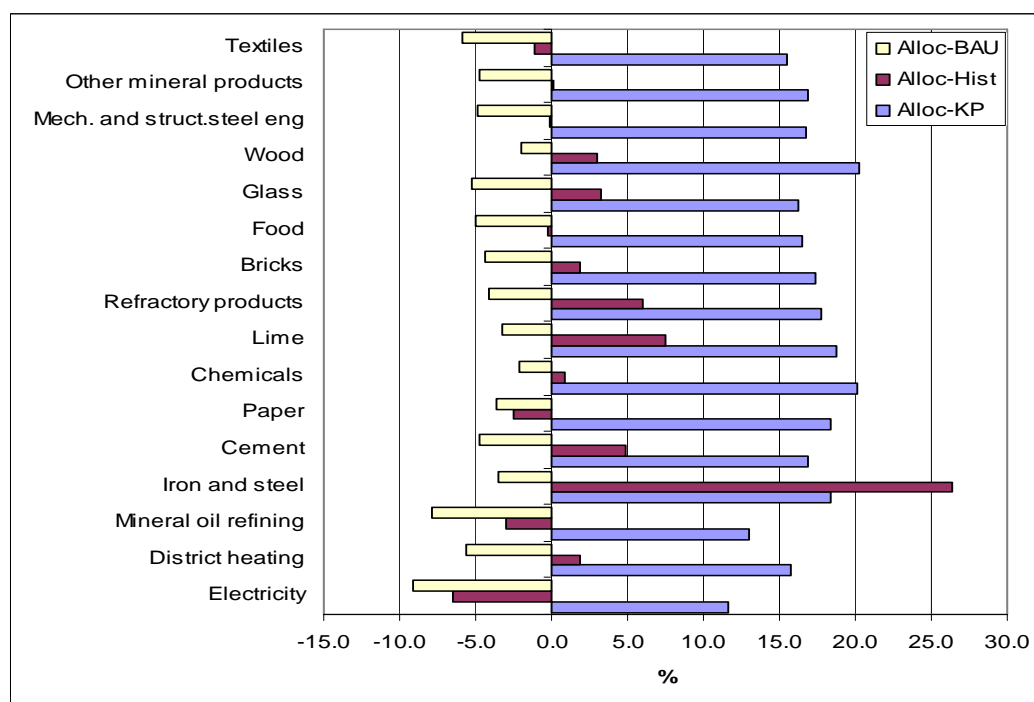


Figure 11. Austria's allocations to individual ETS sectors in 2006

Although the exposed sectors as a whole received more than their historic emissions, **figure 11** shows that some sectors in fact received less. These are the mineral oil refining, paper, food and textiles sectors. Within the non-exposed sector, the electricity sector received less than its historic emissions while the district heating sector received more. All sectors received less than their BAU emissions, ranging from 2 percent in the wood sector to 9.1 percent in the

electricity sector. All sectors received more than their calculated 2006 KP targets, ranging from 11.6 percent to 20.2 percent.

4.4.2 Belgium

Due to Belgium's federal structure and distribution of power, Belgium's NAP has been split into three regional contributions (Walloon, Flemish and Brussels Capital regions) and one federal contribution. The 'sub-NAPs' do not present the information in a uniform way, so it is difficult to extract and present data for Belgium as a whole. According to EU (2005b), Belgium's NAP has allocated a total of 188.8 Mt CO₂ to 363 installations for the period 2005-2007.

4.4.3 Czech republic

Figure 12 shows that the Czech republic emitted a total of 123.6 Mt CO₂ in 2000.⁸ The ETS sectors accounted for 89 Mt CO₂, or about 72 percent. The CO₂ emissions are projected to decrease to 120.7 Mt CO₂ in 2006. The Czech republic is already below its Kyoto Protocol targets, so the 2006 KP is not so relevant in this case.

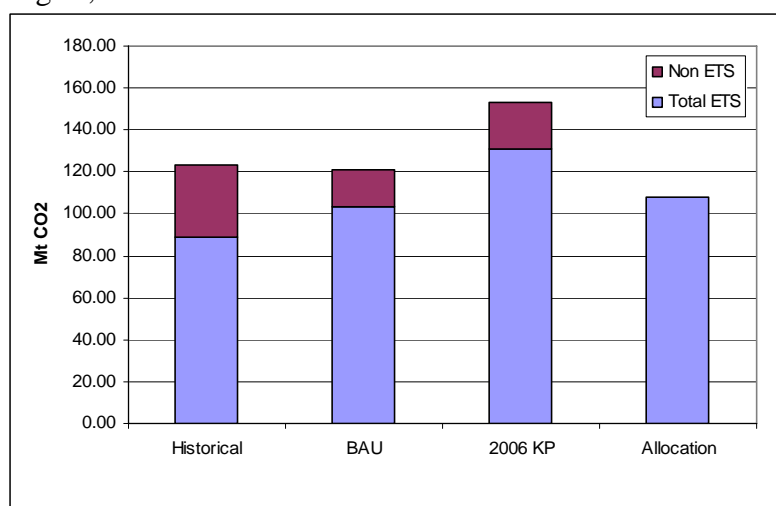


Figure 12. Czech republic's historic emissions, BAU, 2006 KP and allocation in 2006.⁹

In its draft NAP dated 29 September 2004, the Czech republic has allocated a total of 323 Mt CO₂ for the period 2005-2007, or 107.7 Mt CO₂ per year to 435 installations.¹⁰ A total of 3 Mt CO₂ is held as a reserve for new entrants each year.

⁸ The NAP does not provide details on emissions for the non-ETS sectors. The National Communication has been used to estimate historic, BAU and 2006 KP emissions for the non-ETS sectors.

⁹ Allocation includes 8.66 Mt CO₂ for early action and reserves.

¹⁰ In its press release on 20 June 2005, the EU states that the total for 2005-2007 is 292.8 MT CO₂. However, no new information has been found since the draft NAP dated 29.09.04.

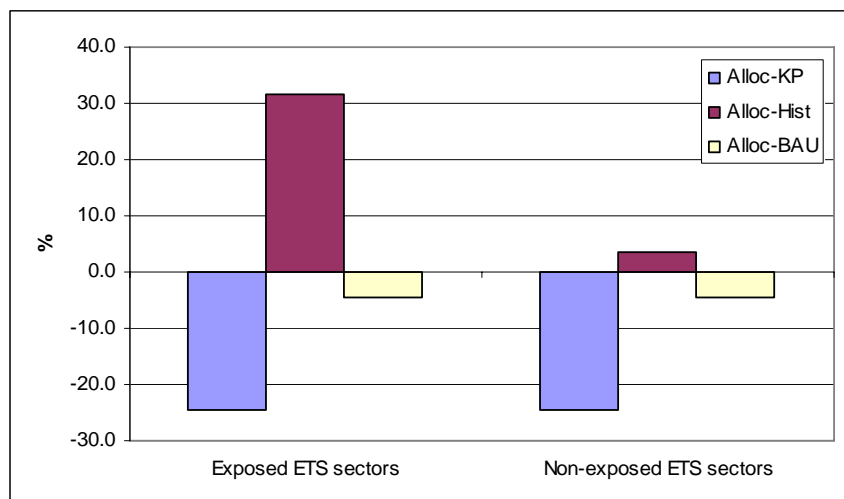


Figure 13. Czech republic's allocations to aggregated sectors in 2006

The Czech exposed sectors received almost 32 percent more than their historic emissions while the non-exposed received only 3.5 percent more (see **figure 13**). However, both the exposed and non-exposed sectors received 4.5 percent less than their BAU emissions and 24.6 percent less than their calculated 2006 KP targets.

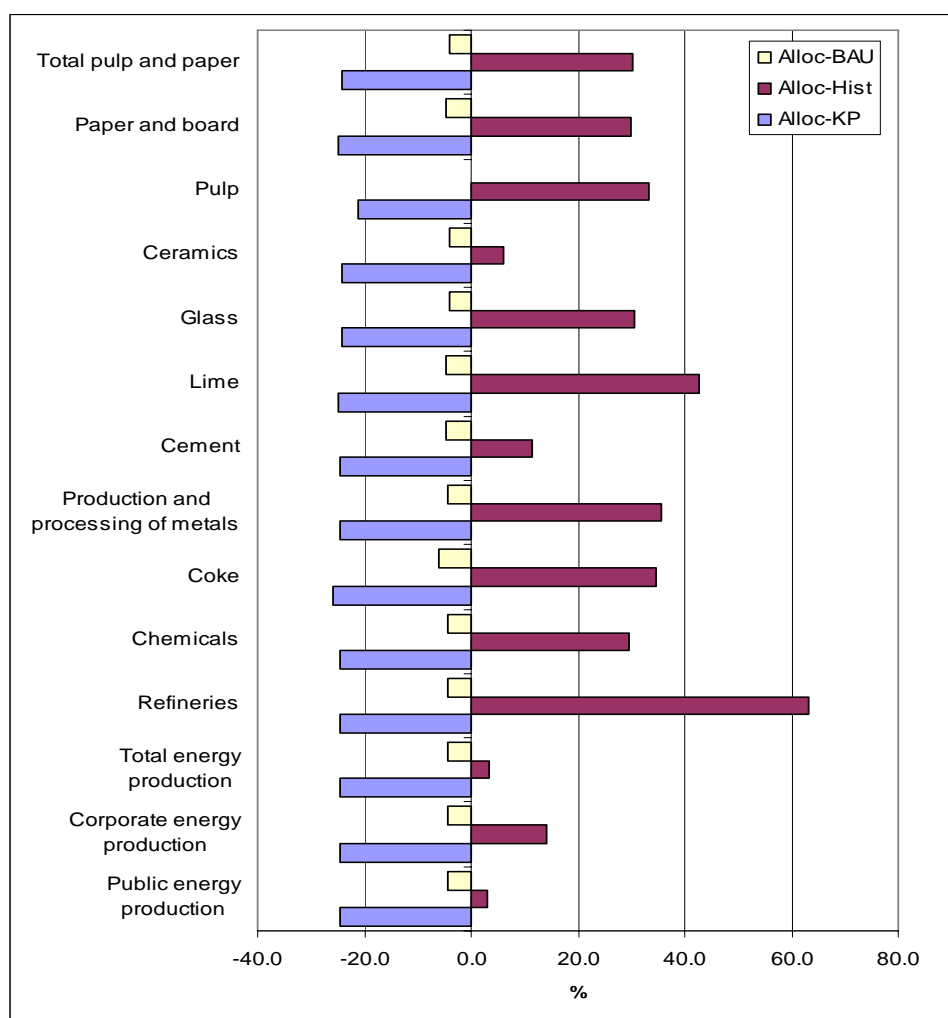


Figure 14. Czech republic's allocations to individual ETS sectors in 2006.

Figure 14 shows that there are differences when comparing individual ETS sectors. While the public energy production sector receives about 3 percent more than its emissions in 2000, the corporate energy production sector receives about 14 percent more. The refineries sector receives 63 percent more than in 2000, while the sectors lime, production and processing of metals, coke and glass respectively receive 43, 36, 35 and 31 percent more than in 2000. Most of the ETS sectors receive about 4.5 percent less than their BAU emissions, but the coke sector receives 6 percent less and the pulp sector receives allocations equal its BAU emissions. All sectors receive about 21 to 25 percent less than their calculated 2006 KP targets.

4.4.4 Denmark

As seen in **figure 15**, Denmark emitted a total of 68.5 Mt CO₂ in 2000. The ETS sectors accounted for almost 31 Mt CO₂, or about 45 percent. Denmark's CO₂ emissions are projected to increase to 78.3 Mt CO₂ in 2006, and the increase is strongest in the ETS sectors. The 2006 Kyoto Protocol CO₂ target for Denmark has been calculated to a total of 45.19 Mt CO₂.

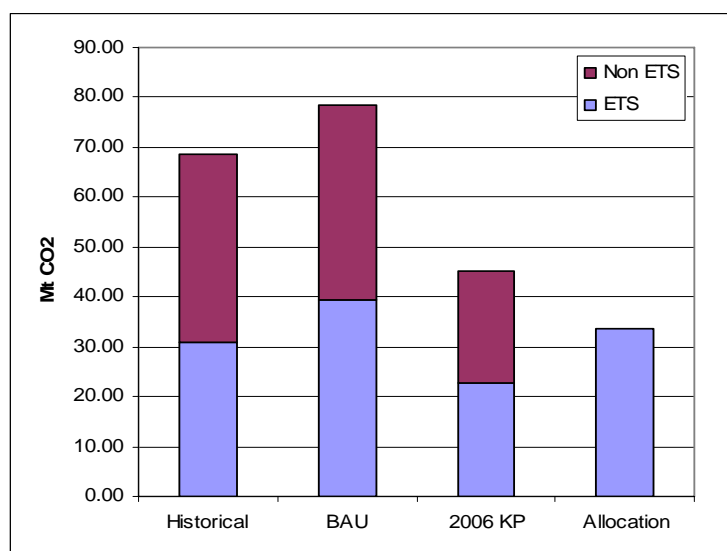


Figure 15. Denmark's historical emissions, BAU, 2006 KP and allocation in 2006.

In its NAP, Denmark has allocated a total of 100.5 Mt CO₂ for the period 2005-2007, or 33.6 Mt CO₂ per year to 378 installations. This allocation is about 48 percent more than they should according to their 2006 KP targets. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 70.3 percent compared to BAU.

A total of 1 Mt CO₂ is held as a reserve for new entrants each year on a 'first come, first served' basis.

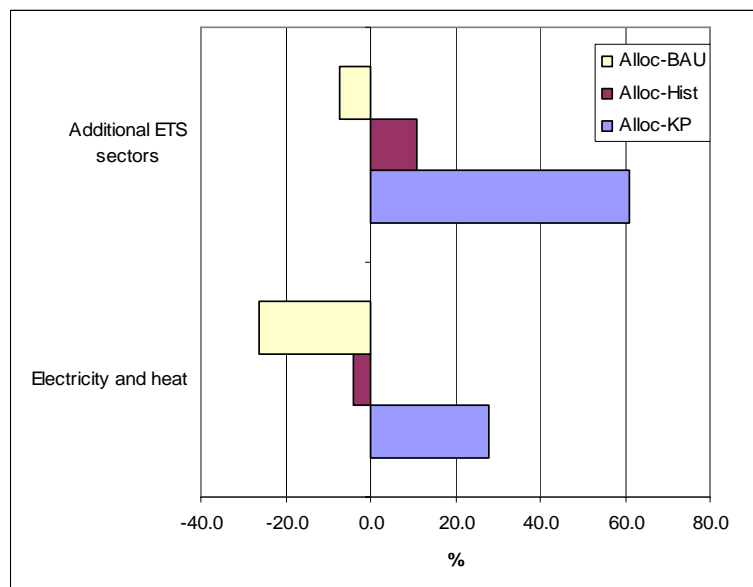


Figure 16. Denmark's allocations to ETS sectors in 2006.

The Danish NAP does not present allocations to individual ETS sectors. It only distinguishes between 'electricity and heat' and 'additional ETS sectors'. This is similar to this study's aggregation of sectors into 'non-exposed' and 'exposed'. The electricity and heat sector receives 4 percent less than its emissions in 2002 and 26 percent less than its projected emissions in 2006. The 'additional ETS sectors' receive nearly 11 percent more than their emissions in 2002 and only 7 percent less than the projected emissions. When comparing allocations against the calculated 2006 KP target, it is clear that allocations to the ETS sectors are generous.

4.4.5 Estonia

No NAP information is available in English. According to EU (2005b), Estonia will allocate a total of 56.85 Mt CO₂ for the period 2005-2007, or 18.95 Mt CO₂ per year to 43 installations.

4.4.6 Finland

Finland emitted a total of 63.1 Mt CO₂ in 2000. **Figure 17** shows that the ETS sectors accounted for about 33.4 Mt CO₂, or about 53 percent. Finland's CO₂ emissions are projected to increase to 71.3 Mt CO₂ in 2006, and the increase is strongest in the ETS sectors. The 2006 Kyoto Protocol CO₂ target for Finland has been calculated to a total of 63.7 Mt CO₂.

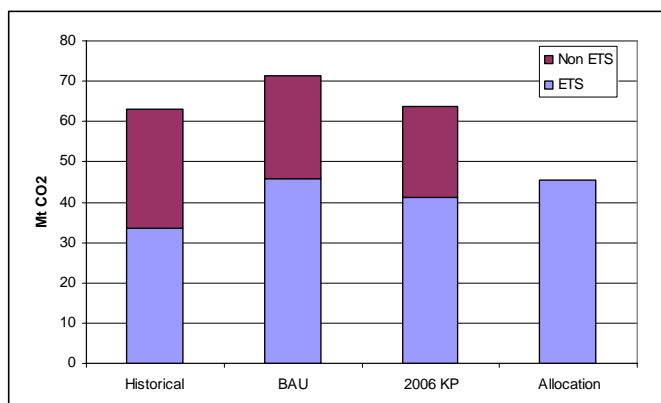


Figure 17. Finland's historic emissions, BAU, 2006 KP and allocation in 2006.

The Finnish NAP allocates a total of 136.5 Mt CO₂ for the period 2005-2007, or 45.5 Mt CO₂ per year to 535 installations. This allocation is about 11 percent more than the calculated 2006 KP target. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 28.3 percent compared to BAU.

A total of 0.83 Mt CO₂ (about 2% of total allowances) is held as a reserve for new entrants each year. If the reserve is not sufficient, missing allowances will be bought from the market or produced from projects linked to the EU ETS. If the reserve is too large, excess allowances will be sold on the market (Betz 2004).

The NAP does not present any projected emissions, so allocations for sectors can not be compared against BAU or 2006 KP. However, it is clear that the exposed sectors receive 40.6 percent more than in 2000 while the non-exposed sectors receive 18.9 percent more than in 2000.

4.4.7 France

No NAP information is available in English. According to EU (2005b), France will allocate a total of 469.5 Mt CO₂ for the period 2005-2007, or 156.5 Mt CO₂ per year to 1,172 installations. Betz (2004) reports that the size of the reserves for new entrants will be about 1.7-1.8 percent of the total allowances. The NAP does currently not provide sufficient information to undertake any further analysis.

4.4.8 Germany

Germany published a NAP in English in May 2004 that allocated a total of 1,497 Mt CO₂ to 1,849 installations for the period 2005-2007. This NAP does not state the allocations to the individual ETS sectors. However, the German Emission Allowance Trading Authority has published facts and data on the allocation (DEHST, 2004). 79 percent of the allocations or 1,171 Mt CO₂ are for energy installations. The three next largest sectors in terms of allocations are iron and steel, refineries and cement. Allocations can not be compared with historic or projected emissions since such data has not been made available.

A total of 3 Mt CO₂ is held as a reserve for new entrants each year on a 'first come, first served' basis. Excess allowances will be cancelled (Betz, 2004).

4.4.9 Greece

As seen in **figure 18**, Greece emitted a total of 104.1 Mt CO₂ in 2000. The ETS sectors accounted for almost 68.9 Mt CO₂, or about 66 percent. Greece's CO₂ emissions are projected to increase to 116.1 Mt CO₂ in 2006 with relatively similar growth rates in the ETS and non-ETS sectors. The 2006 Kyoto Protocol CO₂ target for Greece has been calculated to a total of 101.8 Mt CO₂.

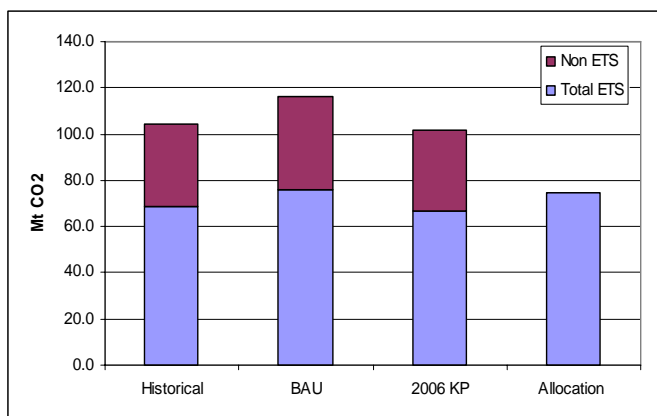


Figure 18. Greece's historic emissions, BAU, 2006 KP and allocation in 2006.

The Greek NAP has allocated a total of 223.3 Mt CO₂ for the period 2005-2007, or 74.4 Mt CO₂ per year to 141 installations. This allocation is about 11 percent more than they should according to their 2006 KP targets. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 32 percent compared to BAU.

A total of 3.16 Mt CO₂ is held as a reserve for new entrants each year.

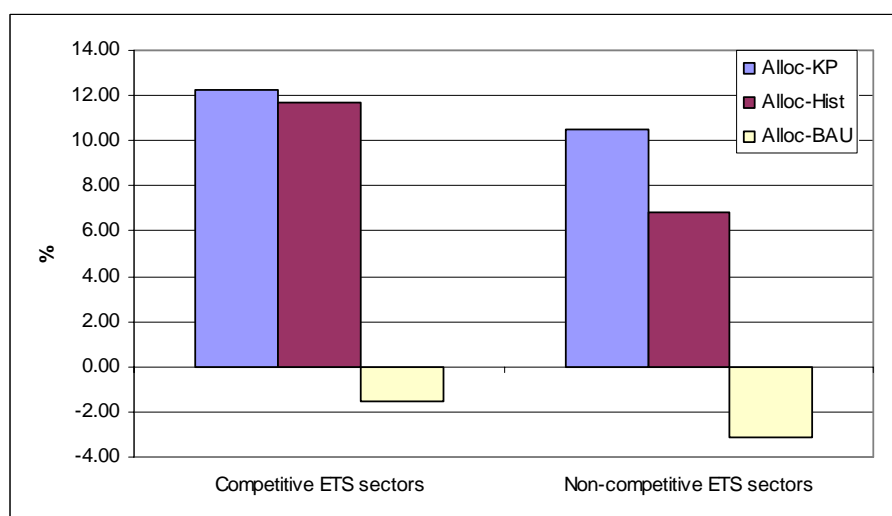


Figure 19. Greece's allocations to aggregated sectors in 2006.

The exposed sectors in Greece were allocated about 12 percent more than their 2000 emissions and 1.5 percent less than their BAU emissions (see **figure 19**). The non-exposed sectors received 7 percent less than their 2000 emissions and 3 percent less than their BAU emissions. All sectors received more than they should according to the 2006 KP target, but the exposed sectors received relatively more.

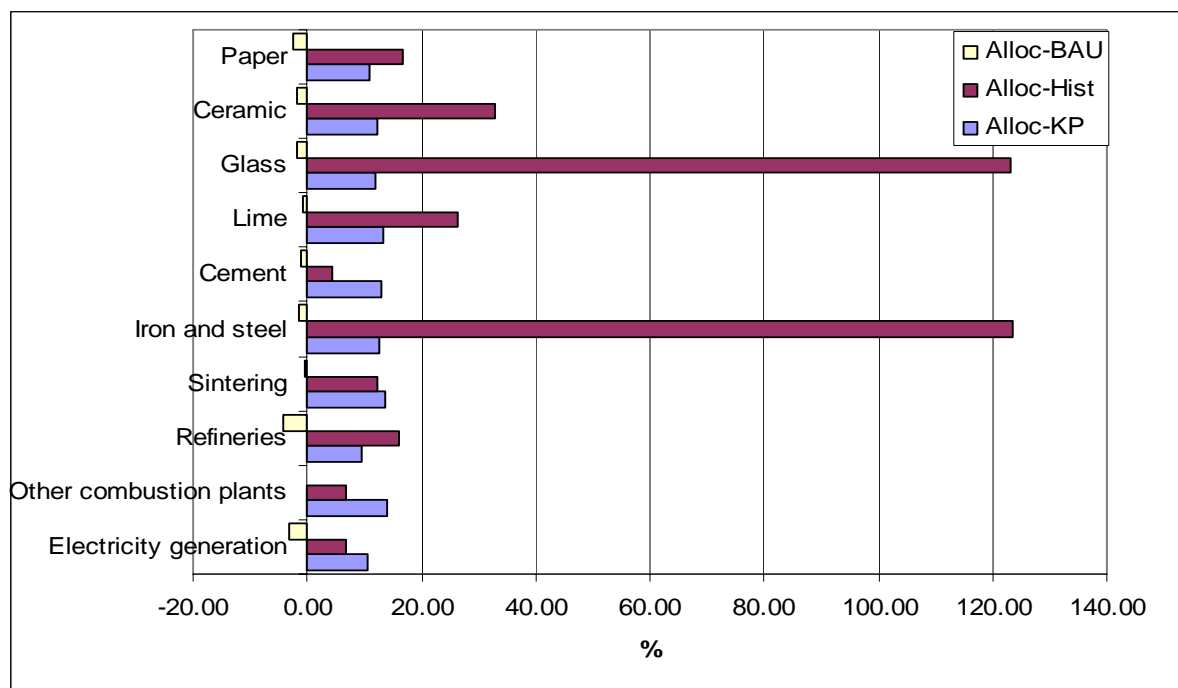


Figure 20. Greece's allocations to individual ETS sectors in 2006.

Even though the exposed sectors as a whole received 12 percent more than their historic emissions, **figure 20** shows that there are clear differences between individual sectors. For instance, the cement and electricity sectors received 4 to 7 percent more than in 2000, while the glass and iron and steel sectors received 123 percent more than in 2000. All sectors received less than their BAU emissions. The sectors that received the least compared to their BAU emissions are the refinery sector (4.0 percent), the electricity sector (3.1 percent) and the paper sector (2.6 percent). All sectors also received more than their calculated 2006 KP targets, ranging from 9.4 percent to 14.1 percent.

4.4.10 Hungary

The Hungarian NAP uses 2001 as the base year but does not state the non-ETS emissions for this year.¹¹ However, **figure 21** shows that the ETS sectors emitted 30.6 Mt CO₂ in 2001. The emissions from the ETS sectors are projected to slightly decrease to 29.7 in 2006. Hungary is already below its Kyoto Protocol targets, so the 2006 KP is not so relevant in this case.

¹¹ Hungary's 3rd National Communication states that the CO₂ emissions were 57.17 Mt CO₂.

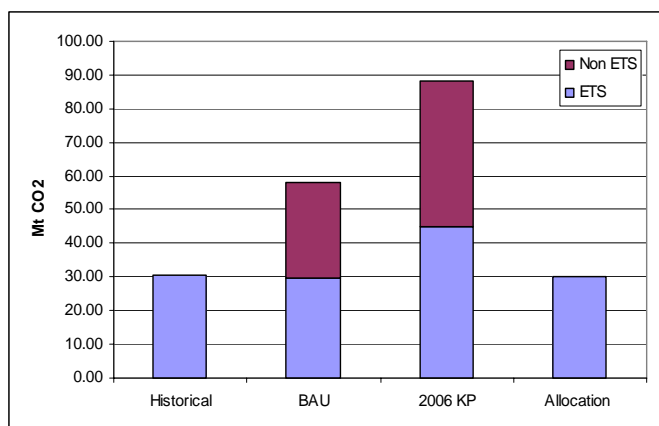


Figure 21. Hungary's historic emissions, BAU, 2006 KP and allocation in 2006.

The exposed sectors in Hungary received about 16 percent more than their emissions in 2001 while the non-exposed received 17 percent less than their 2001 emissions (see **figure 22**). The exposed and non-exposed sectors received 3 to 5 percent less than their BAU emissions and 36 to 37 percent less than their calculated 2006 KP targets.

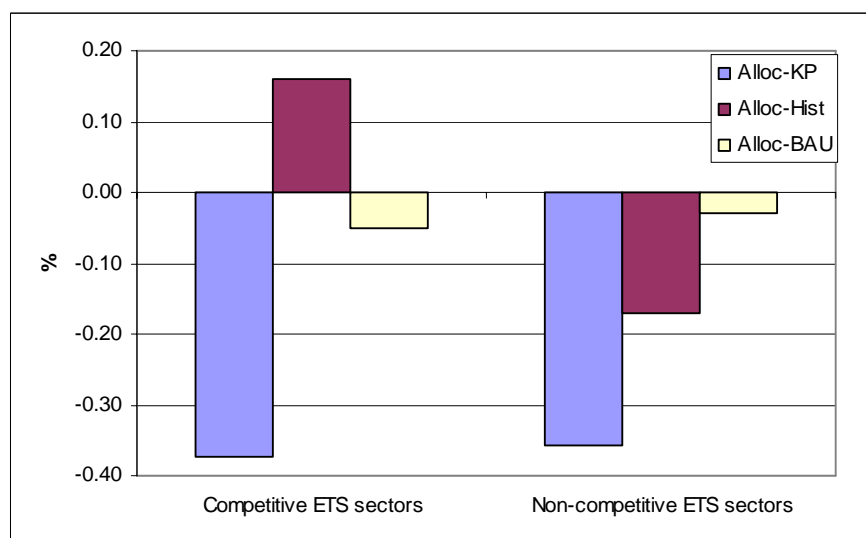


Figure 22. Hungary's allocations to aggregated sectors in 2006.

The power production and district heating sector received 17 percent less than its 2001 emissions while the lime and glass sectors received about 6 percent less than their emissions in 2001 (see **figure 23**). The remaining sectors received from 6.5 to 27 percent more than their 2001 emissions. All sectors received less than their BAU emissions, ranging from 2.8 to 5.1 percent. All sectors also received 36 to 37 percent less than their calculated 2006 KP targets

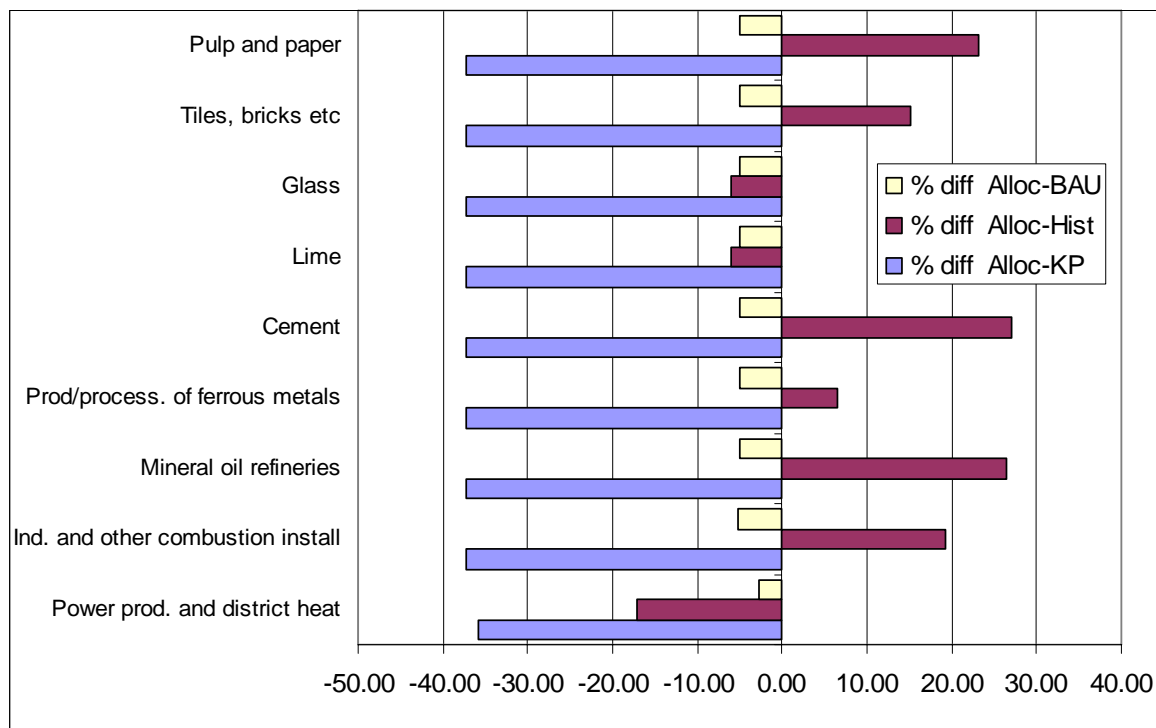


Figure 23. Hungary's allocations to individual ETS sectors in 2006.

4.4.11 Ireland

The Irish NAP does not state the non-ETS emissions in its base year (average 2002/03). However, **figure 24** shows that the ETS sectors emitted 20.6 Mt CO₂ in the base year. The emissions from the ETS sectors are projected to increase by 5 percent to 22.3 Mt CO₂ in 2006. The total 2006 Kyoto Protocol CO₂ target for Ireland has been calculated to 36.56 Mt CO₂.

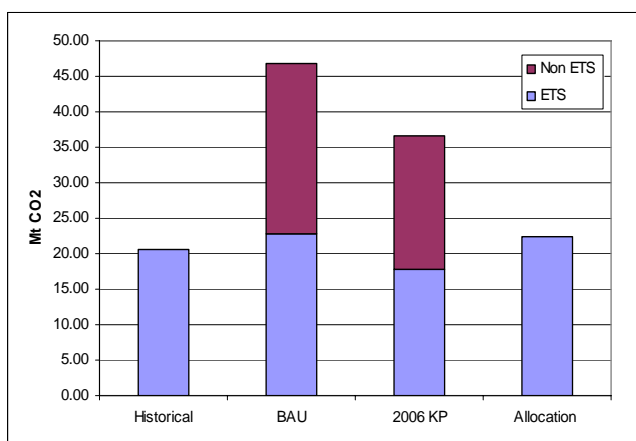


Figure 24. Ireland's historic emissions, BAU, 2006 KP and allocation in 2006.

The Irish NAP allocates a total of 67.0 Mt CO₂ for the period 2005-2007, or 22.32 Mt CO₂ per year to 143 installations. This allocation is 25.4 percent more than the calculated 2006 KP target. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 40.7 percent compared to BAU.

A total of 0.49 Mt CO₂ (2.1 % of total allowances) is held as a reserve for new entrants (0.33 Mt CO₂) and new CHP (0.17 Mt CO₂) for each year.

The NAP does not present any projected emissions, so allocations for sectors can not be compared against BAU or 2006 KP. However, the exposed sectors receive about 10 to 12 percent more than in their base year while the power generation sector only receives 2.7 percent more.

4.4.12 Italy

As seen in **figure 25**, Italy emitted a total of 462.1 Mt CO₂ in 2000. The ETS sectors accounted for almost 220.3 Mt CO₂, or about 48 percent. Italy's CO₂ emissions are projected to increase by 4 percent to 480 Mt CO₂ in 2006. The non-ETS sectors' emissions are projected to decrease by 3 percent while the ETS sectors' emissions increase by nearly 12 percent. The 2006 Kyoto Protocol CO₂ target for Italy has been calculated to a total of 409.5 Mt CO₂.

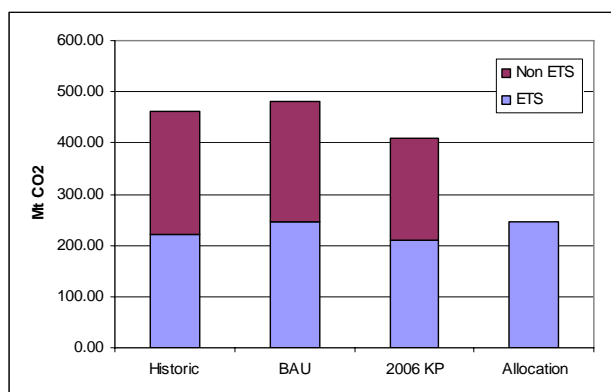


Figure 25. Italy's historic emissions, BAU, 2006 KP and allocation in 2006.

Italy's NAP has allocated a total of 741.9 Mt CO₂ to 1,240 installations for the period 2005-2007, of which 245.81 Mt CO₂ is for 2006.¹² This allocation is about 17 percent more than they should according to their 2006 KP targets. If one assumes compliance with the 2006 KP target and no use of JI and CDM, this implies that the non-ETS sectors would have to reduce their emissions by 30 percent compared to BAU.

According to the study by Betz (2004), Italy has a reserve of 22.6 Mt CO₂ (6 percent of total allowances) each year. The reserve's initial size depends on the growth of the emissions. The power generation sector receives the majority of the reserve. If the reserve is not sufficient, missing allowances will be bought from the market. If the reserve is too large, excess allowances will be distributed to existing installations using the same criteria as for the initial distribution.

¹² The EU (2005b) reports a total allowance of 697.5 Mt CO₂ instead of 741.9 Mt CO₂. Betz (2004) reports the total allowance to 837.4 Mt CO₂. The differences are probably based on different versions of the Italian NAP.

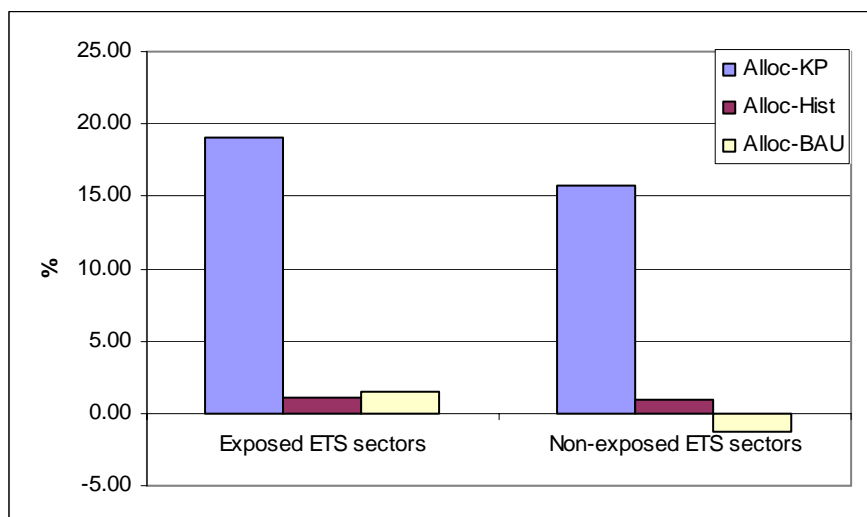


Figure 26. Italy's allocations to aggregated sectors in 2006.

Figure 26 shows that the exposed sectors in Italy were allocated about 1 percent more than their 2000 emissions and 1.5 percent more than their BAU emissions. The non-exposed sectors received 1 percent less than their 2000 emissions and 1.3 percent less than their BAU emissions. All sectors received more than they should according to the 2006 KP target, but the exposed sectors received relatively more.

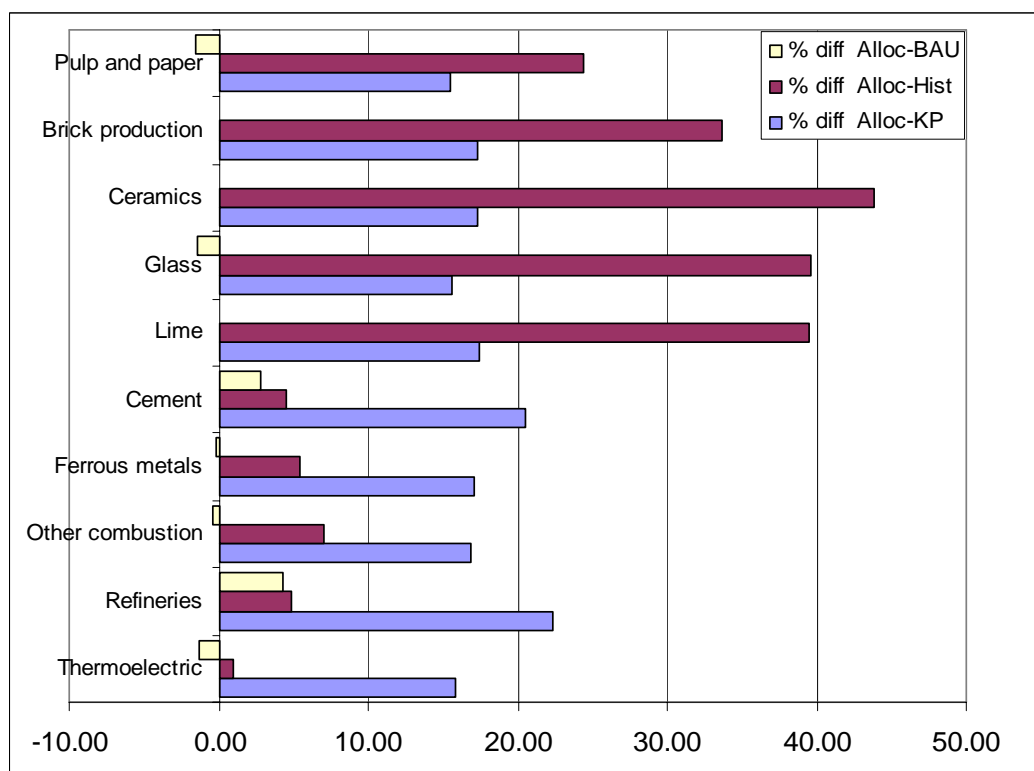


Figure 27. Italy's allocations to individual ETS sectors in 2006.

Figure 27 shows that there are clear differences between individual sectors. For instance, the ceramics, glass and lime sectors received 40 to 43 percent more than in 2000, while the thermoelectric sector only received 1 percent more than in 2000. In terms of BAU emissions, the thermoelectric, other combustion, ferrous metals, glass and pulp and paper sectors

received less than their BAU emissions in 2006. The ceramics and brick sector received allocations equal their BAU emissions while the allocations to the lime, cement and refinery sector exceeded their BAU emissions. All sectors also received more than their calculated 2006 KP targets, ranging from 15.6 percent to 22.4 percent more.

4.4.13 Latvia

The Latvian NAP has allocated a total of 13.7 Mt CO₂ to 95 installations for the period 2005-2007, of which 4.6 Mt CO₂ is for 2006. The majority of the allowances are for combustion installations (2.97 Mt CO₂ in 2006) whereas the remaining is distributed to the steel, cement, lime, ceramics and paper and pulp sectors. The Latvian NAP provides no information against which allocations can be compared.

A total of 1.57 Mt CO₂ is held as a reserve for the period 2005-07. The NAP does not currently provide sufficient information to undertake any further analysis.

4.4.14 Lithuania

Lithuania's NAP has allocated a total of 36.8 Mt CO₂ to 93 installations for the period 2005-2007, of which 12.3 Mt CO₂ is for 2006. The majority of the allowances are for energy enterprises, 7.24 Mt CO₂ in 2006.

A total of 1.84 Mt CO₂ is held as a reserve for the period 2005-07. The NAP does not currently provide sufficient information to undertake any further analysis.

4.4.15 Luxembourg

No NAP information is available in English. According to EU (2005b), Luxembourg will allocate a total of 10.07 Mt CO₂ to 19 installations for the period 2005-2007. The NAP does not currently provide sufficient information to undertake any further analysis.

4.4.16 Netherlands

According to EU (2005b), the Dutch NAP has allocated a total of 285.9 Mt CO₂ to 333 installations for the period 2005-2007. According to Betz (2004), 4.1 percent of total allowances are held as a reserve for unknown newcomer installations. If the reserve is too small, 'first come, first served' while abundant allowances are allocated proportionally for free to all covered installations. The NAP does not currently provide sufficient information to undertake any further analysis.

4.4.17 Poland

As seen in **figure 28**, Poland emitted a total of 314.8 Mt CO₂ in 2000. The ETS sectors accounted for 219.8 Mt CO₂, or about 70 percent. Poland's CO₂ emissions are projected to increase by 17 percent to 369.6 Mt CO₂ in 2006. The ETS sector is projected to increase it

emissions by 20 percent while the non-ETS sectors' emissions are projected to increase by 12 percent. Poland is already below its Kyoto Protocol targets, so the 2006 KP is not so relevant in this case.

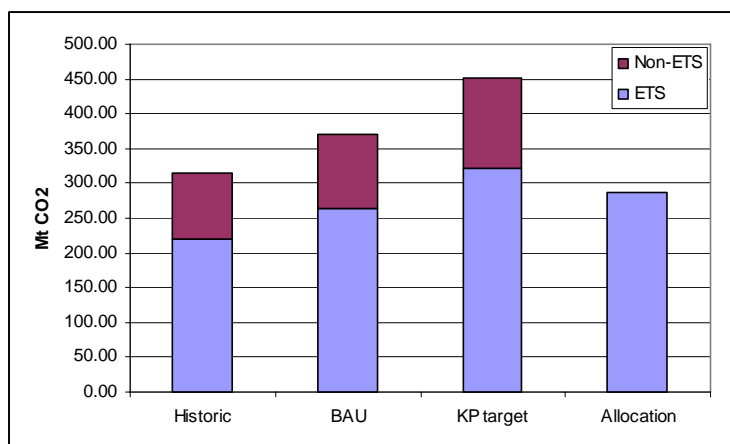


Figure 28. Poland's historic emissions, BAU, 2006 KP and allocation in 2006.

According to EU (2005b), Poland has allocated a total of 717.3 Mt CO₂ to 1,166 installations for the period 2005-2007. The total allowance differs from the total allowance stated in the English version of the NAP from 2004. In this NAP, Poland allocated a total of 842.0 Mt CO₂ for the period 2005-2007, or 280.7 Mt CO₂ per year.

A total of 3.3 Mt CO₂ is held as a reserve for new entrants each year.

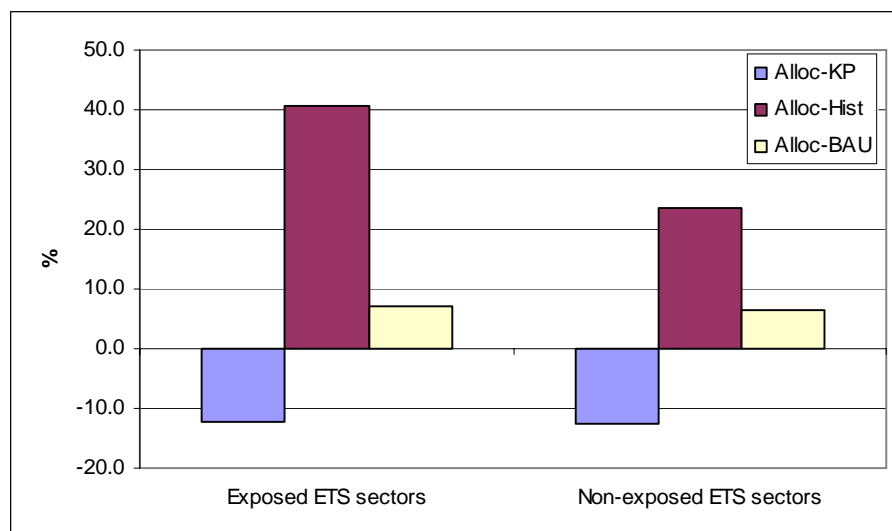


Figure 29. Poland's allocations to aggregated sectors in 2006.

The exposed sectors in Poland were allocated 40.5 percent more than their 2000 emissions and 7.1 percent more than their BAU emissions (see **figure 29**). The non-exposed sectors received 23.6 percent less than their 2000 emissions and 6.6 percent less than their BAU emissions. Since Poland already below its Kyoto Protocol commitment, all sectors received less than they should according to the 2006 KP target.

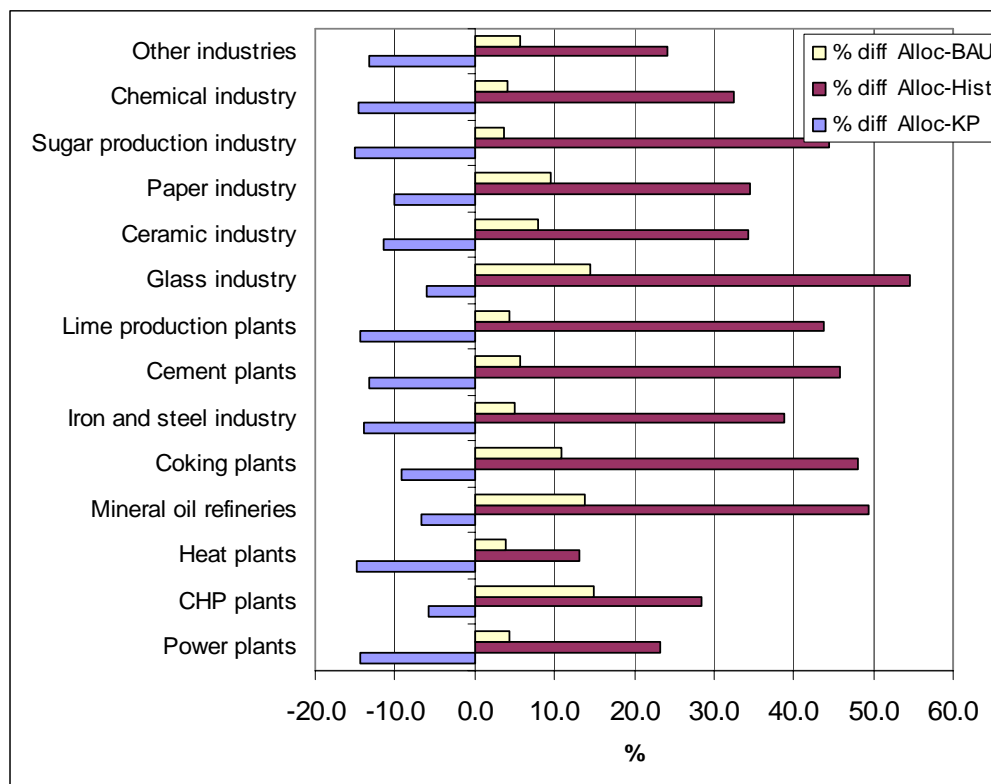


Figure 30. Poland's allocations to individual ETS sectors in 2006.

Even though the exposed sectors as a whole received more than 40 percent more than their historic emissions, **figure 30** shows that there are some differences between individual sectors. For instance, heat plants only received 13 more than in 2000, while sectors such as oil refineries and glass received around 50 percent more than their 2000 emissions. All sectors received less than their BAU emissions. The sectors that received the least compared to their BAU emissions are the sugar production industry (3.7 percent) and heat plants (4.0 percent) while CHP plants received the most (14.9 percent). All sectors also received less than their calculated 2006 KP targets, ranging from 6.1 percent to 14.7 percent.

4.4.18 Portugal

Portugal's ETS sectors emitted a total of 33.54 Mt CO₂ in 2000. According to EU (2005b), the Portuguese NAP allocates a total of 114.5 Mt CO₂ for the period 2005-2007 to 239 installations. The total allowance differs from the total allowance stated in the English version of the NAP from May 2004. In this NAP, Portugal allocated a total of 116.6 Mt CO₂ for the period 2005-2007, or 38.9 Mt CO₂ per year. This is nearly 16 percent more than the emissions in 2000.

The same NAP states that a total of 3.07 Mt CO₂ is held as a reserve for new entrants each year. Betz (2004) states that the annual reserve is 1.87 Mt CO₂. As long as allowances are available, they are allocated for free on a 'first come, first serves' basis. If exhausted, new entrants must buy allowances on the market. Remaining allowances will be auctioned in first trimester 2008.

The NAP does not present any projected emissions, so allocations for sectors can not be compared against BAU or 2006 KP. However, it is clear that the exposed sectors receive 1 percent more than in 2000 while the non-exposed sectors receive 10 percent more than in 2000. Examining individual ETS sectors shows large differences. The ferrous metals and paper and pulp sectors receive 67 percent and 28 percent less respectively than in the base year. The cogeneration and refining sectors however, receive 33 and 20 percent more respectively than in the base year.

4.4.19 Slovakia

Slovakia published a draft NAP in English in June 2004 but published a new NAP in Slovakian in February 2005. According to EU (2005b), Slovakia has allocated a total of 91.5 Mt CO₂ to 209 installations for the period 2005-2007. The majority of the allowances are for 'large sources of CO₂ emissions'. The NAP does currently not provide sufficient information to undertake any further analysis.

4.4.20 Slovenia

Slovenia published a draft NAP in Slovenian in April 2004 that provides little information on historic or projected emissions. The allocations to the ETS sectors are between power generation and the industry. Unfortunately, the NAP does not specify the industrial activities like steel, paper etc. According to EU (2005b), Slovenia has allocated a total of 26.3 Mt CO₂ to 98 installations for the period 2005-2007.

A total of 0.066 Mt CO₂ is held as a reserve for new entrants each year. The NAP does currently not provide sufficient information to undertake any further analysis.

4.4.21 Spain

The Spanish NAP allocates a total of 523.3 Mt CO₂ for the period 2005-2007 to 819 installations. Most of the allowances are for the electricity sector, but other important sectors are refineries, cement and iron and steel. The paper, pulp and cardboard sector receives 45 percent more than its emissions in 2000 while both the lime and glass sectors receive 17 percent more than their 2000 emissions. The allocations to the refineries are equal their 2000 emissions while the electricity and ceramics sectors are 1.6 and 7.8 percent respectively less than their 2000 emissions.

A total of 3.36 Mt CO₂ is held as a reserve for new entrants each year. The NAP does currently not provide sufficient information to undertake any further analysis.

4.4.22 Sweden

Sweden's NAP allocates a total of 68.7 Mt CO₂ for the period 2005-2007 to 499 installations. The steel sector receives the most allocations, followed by combustion installations in the energy sector and by the mineral industry. According to secondary sources, the ETS sectors

receive nearly 12 percent more than the average 1998-2001 emissions. The refineries receive 25.8 percent more than in the base year and the iron and steel sector receives 22.6 percent more. The combustion installations in the energy sector receive 10 percent less allocations than in the base year.

According to Betz (2004), a total of 0.8 Mt CO₂ is held as a reserve for new entrants each year. The NAP does currently not provide sufficient information to undertake any further analysis.

4.4.23 United Kingdom

Figure 31 shows that the United Kingdom emitted a total of 543.9 Mt CO₂ in its base year (average 1998-2003). The ETS sectors accounted for almost 245.4 Mt CO₂, or about 45 percent. The United Kingdom's overall CO₂ emissions are projected to only increase by 0.7 percent to 547.6 Mt CO₂ in 2006. However, the ETS sectors are projected to increase by 9 percent. The 2006 Kyoto Protocol CO₂ target for the United Kingdom has been calculated to a total of 550.6 Mt CO₂ (although it already is below its Kyoto Protocol target for 2008-2012).

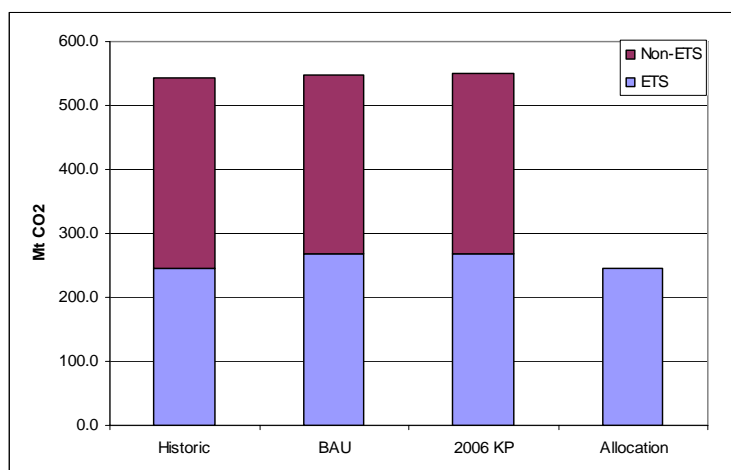


Figure 31. United Kingdom's historic emissions, BAU, 2006 KP and allocation in 2006.

In its NAP, the United Kingdom has allocated a total of 736.0 Mt CO₂ for the period 2005-2007, or 245.3 Mt CO₂ per year to 1,078 installations. This allocation is 8.7 percent less than it should be according to the UK's 2006 KP target. This is because the United Kingdom is already below its Kyoto Protocol target for 2008-2012.

Betz (2004) reports that a total of 18.9 Mt CO₂ (7.7% of total allowances) is held as a reserve for new entrants each year. Any surplus allowances remaining in the new entrant reserve at the end of the year will be auctioned off.

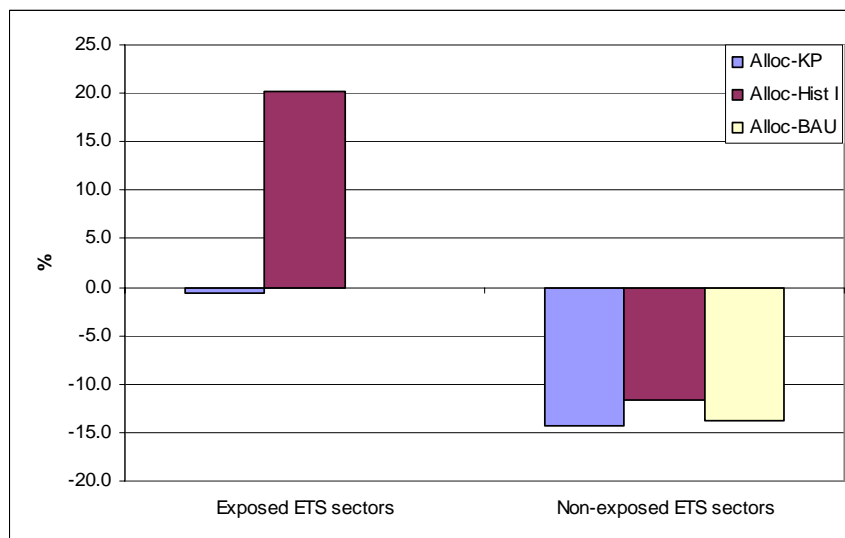


Figure 32. United Kingdom's allocations to aggregated sectors in 2006.¹³

The exposed sectors in the United Kingdom were allocated about 20 percent more than their 2000 emissions but the allowances were equal to their BAU emissions (see **figure 32**). The non-exposed sectors received about 12 percent less than their 2000 emissions and almost 14 percent less than their BAU emissions. All sectors received less than they should according to the 2006 KP target, but the non-exposed sectors received relatively less.

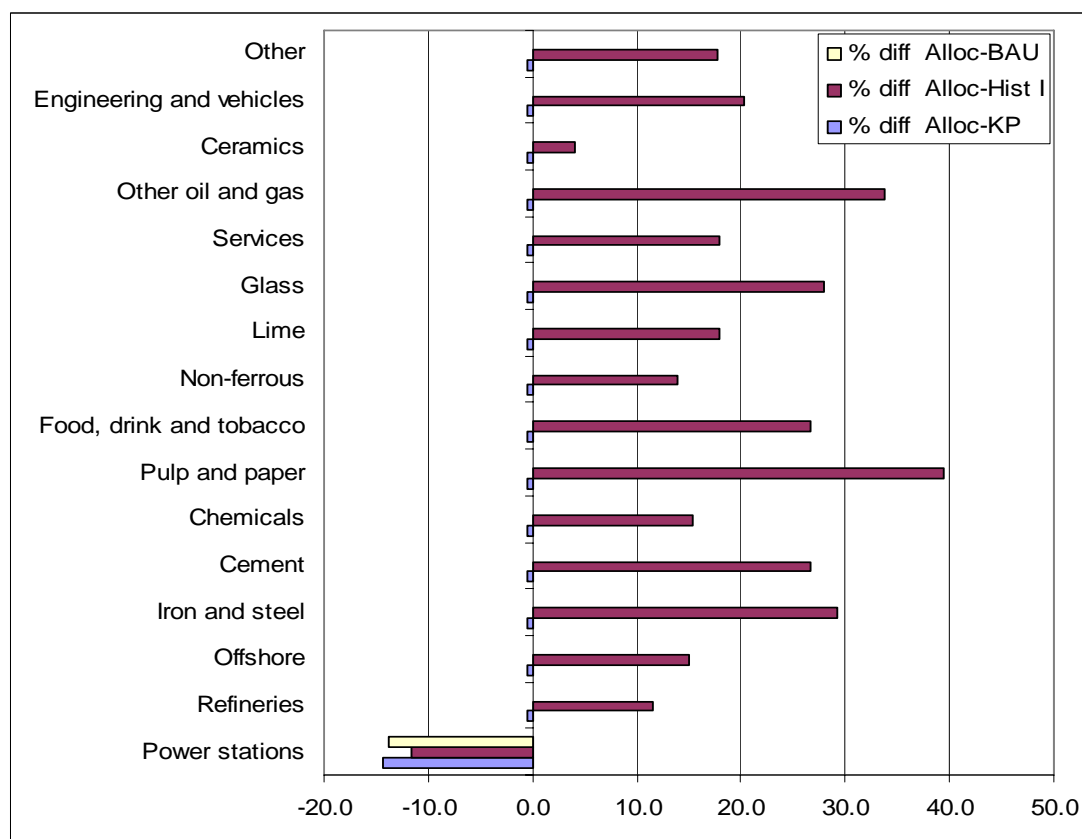


Figure 33. United Kingdom's allocations to individual ETS sectors in 2006.¹⁴

¹³ Allocations to exposed ETS sectors equal to BAU emissions.

¹⁴ With the exception of the power sector, allocations are equal to BAU emissions.

Although the exposed sectors as a whole received more than their historic emissions, **figure 33** shows that some sectors in fact received less. These are the mineral oil refining, paper, food and textiles sectors. Within the non-exposed sector, the electricity sector received less than its historic emissions while the district heating sector received more. All sectors received less than their BAU emissions, ranging from 2 percent in the wood sector to 9.1 percent in the electricity sector. All sectors received more than their calculated 2006 KP targets, ranging from 11.6 percent to 20.2 percent more.

5. Conclusions and policy implications

The purpose of this study was to examine whether EU countries require less from its ETS sectors than its non-ETS sectors and whether some ETS sectors have been favored in the allocation. In the process of gathering and analyzing NAP data, it became evident that the data availability was poorer than expected. In addition the lack of consistent definitions and grouping of sectors made comparisons across sectors difficult. We therefore chose to aggregate sectors according to their exposition to international competition. Section 3 explained the main constraints and limitations the analysis has faced. Thus the results should be considered as preliminary and caution should be taken when drawing conclusions.

Emissions trading could be an effective instrument in reducing emissions. However, the NAP analysis indicates that the relative generous allocations are likely to result in minor steps towards meeting the countries' commitments under the Kyoto Protocol. This implies that non-ETS sectors in many countries may have to substantially reduce their emissions unless JI and CDM are used extensively.

- 12 out of 25 countries provide sufficient information to compare allocations against historic emissions. Of these 12 countries, all but 1 (Hungary) allocate more to the ETS sectors in 2006 than the ETS sectors' historic emissions in 2000. The total allocations in 2006 for the 12 countries are 13.5 percent higher than in their base years.
- The allocations to the ETS sectors in 2006 tend to be less than the ETS sectors' BAU emissions in 2006. The 4 (out of 12 countries) exceptions are Poland, Luxembourg, Lithuania and the Czech republic. However, the total allocations in 2006 for the 12 countries are only 0.6 percent lower than their total BAU emissions in the same year.
- From an economic perspective, it is not an aim that all sectors and gases should contribute equally in meeting a country's commitments under the Kyoto Protocol. However, it is an interesting approach to examine the burden sharing. Allocations to the ETS sectors in 2006 tend to be less restricted than would be required if all sectors and all gases were to contribute equally. The exceptions are Poland, Lithuania, Hungary, the Czech republic and the United Kingdom. The explanation for this could be that these countries are already below their Kyoto target for 2008-2012 or that the countries expect non-ETS sectors (and gases) and the use of the CDM and JI to contribute more in fulfilling the Kyoto Protocol commitments.

- The available data indicates that the 'exposed' sector has been favored over the 'non-exposed' sector in terms of allocations. Data availability only allows for comparisons for 8 countries in terms allocations compared to BAU emissions. However, only Hungary has allocated relatively more to their non-exposed sectors. **Table 1** shows the average (across countries) bias according to the three alternative indicators (allocations against historic emissions, BAU and 2006 KP targets) for the exposed and non-exposed ETS sectors. A clear example of the biased allocation is the United Kingdom, where the 'exposed' sectors are given allocations equal to their BAU emissions. The 'non-exposed sector '(power stations) is allocated almost 14% less than its BAU emissions.

Table 1: Average allocations relative (%) to historical emissions, BAU and 2006 KP.

	Historical	BAU	2006 KP
Exposed	16.5	-1.7	4.4
Non-exposed	4.0	-6.7	-2.7

- The analysis also shows that that there are clear differences between allocations to individual ETS sectors and their projected emissions, historical emissions and the calculated 2006 Kyoto Protocol CO₂ target.

The NAP I process has been very lengthy and soon the process of preparing new NAPs will begin. The current 25 EU member countries and Bulgaria and Romania will have to submit Phase II NAPs to the Commission by 30 June 2006. Apparently, the EU is to clarify some issues and publish guidelines for the allocation process before the end of 2005. In this regard, it is important to draw some policy implications for the next NAP phase.

The findings in this study indicate that allocations for phase II must be more stringent in order to meet the Kyoto Protocol targets, both at the EU level and country level. A sector's exposure to international competition and its ability to pass on any cost increase to its customers may influence its allocations. The Carbon Trust (2005) study concludes that the EU ETS is unlikely to reduce the profitability of most industrial sectors (provided that the EU ETS is implemented in roughly equivalent ways), but that the steel sector could struggle to maintain its profits.¹⁵ Shielding sectors that should start adjusting now, could expose them for future risks. The phase II NAPs should therefore make it clear if and how, exposure to international competition has influenced the allocation of allowances.

The NAPs must also be clearer on the burden sharing between the sectors included in the ETS, and those that are left outside. More information on the policy targets and policy instruments for non-ETS sectors should be included. The coverage of the EU ETS could be expanded by including more sectors or by including non-CO₂ GHGs. Sector expansion could be difficult since these sectors are usually excluded due to the concern for international competition (aluminum) or because it may not be practical (households and types of

¹⁵ The European Commission's DG Environment has commissioned McKinsey & Company and Ecofys to monitor and review the EU ETS during 2005 and 2006. Among the purposes are to understand the actual impact of the EU ETS on competitiveness and to provide a fact base in order to evaluate the impact of expanding the EU ETS to other sectors and gases.

transportation). However, the EU Commissioner of Environment, Stavros Dimas, has signaled that aviation and maritime transport might be included in the next phase of the EU ETS.¹⁶ Other GHGs than CO₂ could in some sectors and countries represent significant emission reduction potentials, but the cost of monitoring, reporting and verification could reduce the cost-effectiveness. A study (Haydock et al., 2005) for the Department of the Environment, Food and Rural Affairs in the UK recommends that the UK does not include non-CO₂ GHG in Phase II. This is because there are very few sources where the environmental benefits may outweigh the costs and complexities of inclusion, namely nitric acid production, coal mining and foam blowing.

Finally, in the interest of transparency more efforts should be made to make phase II NAPs data available to the public. In order to facilitate comparisons, data should be made more uniform, e.g. in terms of sector definitions and grouping of sectors, and at least core data should be made available.

¹⁶ Speech by Stavros Dimas on EU Climate Change Policy. Conference of National Parliaments of the EU and the European Parliament – London – House of Commons. London, 21 November 2005.

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Annex 1. Criteria for national allocation plans (Annex III of the ETS-Directive)

1. The total quantity of allowances to be allocated for the relevant period shall be consistent with the Member State's obligation to limit its emissions pursuant to Decision 2002/358/EC and the Kyoto Protocol, taking into account, on the one hand, the proportion of overall emissions that these allowances represent in comparison with emissions from sources not covered by this Directive and, on the other hand, national energy policies, and should be consistent with the national climate change programme. The total quantity of allowances to be allocated shall not be more than is likely to be needed for the strict application of the criteria of this Annex. Prior to 2008, the quantity shall be consistent with a path towards achieving or over-achieving each Member State's target under Decision 2002/358/EC and the Kyoto Protocol.
2. The total quantity of allowances to be allocated shall be consistent with assessments of actual and projected progress towards fulfilling the Member States' contributions to the Community's commitments made pursuant to Decision 93/389/EEC.
3. Quantities of allowances to be allocated shall be consistent with the potential, including the technological potential, of activities covered by this scheme to reduce emissions. Member States may base their distribution of allowances on average emissions of greenhouse gases by product in each activity and achievable progress in each activity.
4. The plan shall be consistent with other Community legislative and policy instruments. Account should be taken of unavoidable increases in emissions resulting from new legislative requirements.
5. The plan shall not discriminate between companies or sectors in such a way as to unduly favour certain undertakings or activities in accordance with the requirements of the Treaty, in particular Articles 87 and 88 thereof.
6. The plan shall contain information on the manner in which new entrants will be able to begin participating in the Community scheme in the Member State concerned.
7. The plan may accommodate early action and shall contain information on the manner in which early action is taken into account. Benchmarks derived from reference documents concerning the best available technologies may be employed by Member States in developing their National Allocation Plans, and these benchmarks can incorporate an element of accommodating early action.
8. The plan shall contain information on the manner in which clean technology, including energy efficient technologies, are taken into account.
9. The plan shall include provisions for comments to be expressed by the public, and contain information on the arrangements by which due account will be taken of these comments before a decision on the allocation of allowances is taken.
10. The plan shall contain a list of the installations covered by this Directive with the quantities of allowances intended to be allocated to each.
11. The plan may contain information on the manner in which the existence of competition from countries or entities outside the Union will be taken into account.