

# Denmark's National Allocation Plan 2008-12

12 March 2007

English courtesy translation of  
Denmark's National Allocation Plan  
notified to the European  
Commission 7 March 2007

# Contents

<b>SUMMARY</b>	<b>6</b>
<b>1 OBJECTIVE AND TIMETABLE</b>	<b>12</b>
<b>2 EU EMISSIONS TRADING SYSTEM</b>	<b>13</b>
2.1 EU EMISSIONS TRADING SYSTEM	13
2.2 CRITERIA FOR NATIONAL ALLOCATION PLANS	14
2.3 IMPLEMENTATION OF THE ETS DIRECTIVE IN DENMARK	16
2.3.1 <i>The Danish Act on CO<sub>2</sub> Allowances</i>	16
2.3.2 <i>The Danish Emissions Trading Registry</i>	16
<b>3 DENMARK'S CLIMATE OBLIGATIONS, STATUS OF EFFORTS TO DATE AND ASSESSMENT OF SUPPLEMENTARITY</b>	<b>18</b>
3.1 DENMARK'S CLIMATE OBLIGATIONS 2008-12	18
3.1.1 <i>Reference year compensation</i>	18
3.2 STATUS FOR PREVIOUS INITIATIVES TO REDUCE DANISH EMISSIONS OF GREENHOUSE GASES	19
3.3 ASSESSMENT OF DENMARK'S SUPPLEMENTARITY OBLIGATION	23
<b>4 OVERALL CONSIDERATIONS</b>	<b>25</b>
4.1 MAKING UP THE CLIMATE DEFICIT	25
4.2 COST-EFFECTIVENESS	26
4.3 COMPETITION AND OTHER CONSIDERATIONS	27
4.4 REDUCTION POTENTIALS FOR THE SECTORS	28
4.5 DIFFERENTIATION BETWEEN SECTORS AND INSTALLATIONS	29
4.6 EARLY EFFORTS AND CLEAN TECHNOLOGY	29
4.7 OTHER EU LEGISLATION OR INSTRUMENTS	29
<b>5 PROJECTION OF DANISH EMISSIONS AND REMOVALS OF GREENHOUSE GASES 2008-12</b>	<b>31</b>
5.1 REFERENCE PROJECTION FOR EMISSIONS OF GREENHOUSE GASES IN 2008-12	31
5.2 GENERAL REMARKS ON THE ASSUMPTIONS BEHIND THE PROJECTION	34
5.3 TRENDS IN GREENHOUSE GAS EMISSIONS FROM THE INDIVIDUAL SECTORS	35
5.4 ELECTRICITY IMPORTS AND EXPORTS	37
5.5 CO <sub>2</sub> REMOVALS BY FORESTS AND SOILS	38
5.5.1 <i>CO<sub>2</sub> removals by soils</i>	38
5.5.2 <i>CO<sub>2</sub> removals by forests</i>	39
5.6 UNCERTAINTIES	40
<b>6 ALLOWANCE ALLOCATION 2008-12</b>	<b>41</b>
6.1 INSTALLATIONS COVERED	41
6.2 SETTLEMENT OF THE TOTAL ALLOWANCE	41
6.3 ALLOCATION OF FREE ALLOWANCES TO EXISTING INSTALLATIONS	42
6.3.1 <i>Reference year</i>	43
6.3.2 <i>Criteria for allowance allocation to electricity producers</i>	43
6.3.3 <i>Criteria for allowance allocation to heat producers</i>	44
6.3.4 <i>Criteria for allowance allocation to installations in industries, including offshore</i>	44
6.4 ALLOCATION OF ALLOWANCES TO INSTALLATIONS ESTABLISHED AFTER 1 JANUARY 2004, BUT BEFORE 1 JANUARY 2007	45

6.5	ANNUAL ALLOCATION OF FREE ALLOWANCES	45
6.6	NEW ENTRANTS RESERVE	45
6.6.1	<i>Principles of allocation to new entrants</i>	46
6.6.2	<i>The size of the new entrants reserve</i>	47
6.6.3	<i>Criteria for allocation to new electricity producers</i>	48
6.6.4	<i>Criteria for allocation to new heat producers</i>	48
6.6.5	<i>Criteria for allocation to new entrants in industries and offshore</i>	48
6.7	POOL OF ALLOWANCES FOR CENTRAL-GOVERNMENT AUCTION/SALE	49
6.8	CLOSURE OF INSTALLATIONS	49
<b>7</b>	<b>NEW INITIATIVES FOR REDUCTION OF GREENHOUSE GAS EMISSIONS IN NON-ETS SECTORS</b>	<b>50</b>
7.1	INDICATOR	50
7.2	COST-EFFECTIVE MEASURES IN NON-ETS SECTORS	50
7.3	NATIONAL ENERGY STRATEGY AND DANISH INPUT TO THE EU ENERGY STRATEGY	51
7.4	MONITORING CO <sub>2</sub> REMOVALS BY FORESTS AND SOILS	51
<b>8</b>	<b>GOVERNMENT PURCHASE OF CO<sub>2</sub> CREDITS AND THE LIMIT FOR ENTERPRISE USE OF CREDITS</b>	<b>53</b>
8.1	PLANNED GOVERNMENT PURCHASES OF JOINT IMPLEMENTATION AND CLEAN DEVELOPMENT MECHANISM CO <sub>2</sub> CREDITS	53
8.2	STATUS FOR EFFORTS SO FAR	53
8.3	LIMIT ON ENTERPRISE USE OF JI/CDM CREDITS	54
8.4	ENCOURAGING FUTURE PURCHASES OF CO <sub>2</sub> ALLOWANCES/CREDITS BY DANISH ENTERPRISES	55
<b>9</b>	<b>PUBLIC HEARING</b>	<b>57</b>
<b>10</b>	<b>REFERENCES</b>	<b>58</b>
<b>11</b>	<b>LIST OF ANNEXES</b>	<b>61</b>
11.1	LIST OF INSTALLATIONS COVERED AND PRELIMINARY ALLOWANCE ALLOCATION	61
11.2	NAP STANDARD TABLES	70
11.3	ALLOCATION CRITERIA - KEY FIGURES	81

# Summary

Directive 2003/87/EC on trading in CO<sub>2</sub> allowances (the ETS Directive) in 2005 introduced a greenhouse gas emissions allowance trading scheme in the EU. The objective of the allowance scheme is to reduce emissions of greenhouse gases so that the EU and its Member States can meet their reductions commitments under the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the EU Burden-Sharing Agreement.

According to the ETS Directive, each Member State must prepare a national allocation plan before the trading period 2008-12, which sets out the total number of allowances the Member State intends to allocate for the period and describes how and to which installations the allowances will be allocated. The allocation plan must describe how the individual Member State intends to meet its emission reduction commitments for 2008-12, cf. the Kyoto Protocol and the EU Burden-Sharing Agreement.

Denmark is committed to reducing its national greenhouse gas emissions by 21 per cent in 2008-12, compared to 1990/95 level. This means that emissions must be reduced to an average 54.8 million tonnes of CO<sub>2</sub> equivalents annually for the period 2008-12.

The deficit between expected Danish emissions of CO<sub>2</sub> and the target Denmark is committed to achieving is 13 million tonnes for the period 2008-12. The allocation plan documents how this deficit will be reduced to zero. The tables below show that Denmark will meet its commitment through a combination of domestic and foreign environmental and energy measures by the government and by Danish enterprises with CO<sub>2</sub> emissions.

The main elements of the Danish allocation plan for 2008-12 are summarised in the tables below.

**TABLE 1: KEY FIGURES IN DENMARK'S NATIONAL ALLOCATION PLAN 2008-12**

	Expected annual CO <sub>2</sub> emissions 2008-12 (mill. tonnes)	Annual allowance allocation 2008-12 (mill. tonnes)	Annual allowance allocation 2005-07 (mill. tonnes) <sup>4</sup>
Electricity and heat production	20.5	15.8	21.7
Other industries, including offshore	9.2	8.2	9.2
New enterprises		0.5	1
Auctioning		0	1.7
Total CO <sub>2</sub> emissions/allowances in ETS sectors	29.7	24.5	33.5
Non-ETS sectors and gases in total <sup>1</sup>	38.1		
Total greenhouse gas emissions <sup>2</sup>	67.8		
Emission target <sup>3</sup>	54.8		
Deficit	13.0		

Notes:

1: Stated in CO<sub>2</sub> equivalents. Includes emissions of CO<sub>2</sub> by non-ETS sectors and emissions of other greenhouse gases than CO<sub>2</sub> by ETS as well as non-ETS sectors.

2: Stated in CO<sub>2</sub> equivalents.

3: Source .

4: Source (Reference 14).

**TABLE 2: HOW THE DEFICIT WILL BE ELIMINATED**

	Mill. tonnes annually
Deficit	13.0
Central government initiatives, including	-6.8
- monitoring CO <sub>2</sub> removals by sinks	-2.3
- new national measures within non-ETS sectors	-1.3
- JI/CDM credits, 2003-7	-3.2
To cover possible losses if, contrary to expectations, Denmark does not get compensation for the reference year, and/or to cover uncertainty in projections, inclusion of sinks etc., including	
- contributions from JI/CDM credits from 2008-09 resources	-0.3
- resources in reserve under section 35 of the Finance Act	-0.7
Central government initiatives in total	-7.8
Enterprises' commitment, including	-5.2
- electricity sector	-4.4
- other ETS enterprises (net) <sup>1</sup>	-0.8
Total	0

Notes:

1: A pool of 0.5 million tonnes/year for new entrants will be established, deducted from other enterprises' net contribution.

**TABLE 3: KEY CHARACTERISTICS OF DENMARK'S NATIONAL ALLOCATION PLAN 2008-12**

Factor	Description
Baseline projection (see section 5)	According to the baseline projection, Denmark's expected total emissions of greenhouse gases come to 67.8 million tonnes of CO <sub>2</sub> equivalents on average annually in the period 2008-12. Non-ETS sectors are expected to contribute approx. 38 million tonnes of CO <sub>2</sub> equivalents.
Reduction commitment (see section 3)	Under the EU Burden-Sharing Agreement, Denmark is committed to reducing its national greenhouse gas emissions by 21 per cent in 2008-2012, compared to levels in the reference year 1990.
Reservations concerning the reference year (see section 3.1.1)	The government maintains the opinion that Denmark should be compensated for the exceptionally large imports of electricity in the reference year 1990. The government is pending clarification by the EU as to this reference year problem. The government has decided that the result of the reference year problem will not influence the allocation of emissions allowances to ETS enterprises in 2008-12. The National Allocation Plan has been prepared with figures that have not been adjusted and in a way that allows for incorporation of the expected compensation at a later stage.
New initiatives in non-ETS sectors (see section 7)	A number of new initiatives will be carried out in the non-ETS sectors and these are expected to reduce emissions of greenhouse gases by 1.3 million tonnes of CO <sub>2</sub> equivalents annually in the period 2008-12, compared to the baseline projection. The type of initiatives to be carried out will be determined in connection with the government's forthcoming energy strategy.
Central-government purchase of credits (see section 8)	In the period 2003-07, the government set aside DKK 930 million for procurement of about 3.2 million CO <sub>2</sub> credits annually from Joint Implementation (JI) and Clean Development Mechanism (CDM) projects for use in the period 2008-12. An additional DKK 200 million will be set aside partially to cover the eventuality that, contrary to expectations, Denmark does not get compensation for the reference year, or to cover uncertainty in projections, which will mean an extra approx. 0.3 million tonnes annually in 2008-12. A further DKK 450 million will be set aside in reserve in the Finance Act to cover the eventuality that, contrary to expectations, Denmark does not get compensation for the reference year.
Removals of CO <sub>2</sub> (see section 5.5)	The government has decided to include removals of CO <sub>2</sub> by forests and soils (Article 3.4 of the Kyoto Protocol) in the calculation of Denmark's climate accounts for 2008-12, corresponding to about 2.0 million tonnes of CO <sub>2</sub> annually. Removals by forests established after 1990 (Article 3.3) will also be included, corresponding to 0.3 million tonnes of CO <sub>2</sub> annually.

Installations covered (see section 6.1)	As in 2005-07, Denmark has chosen to use the Commission's interpretation of which installations are covered by the allowance regulation.
Total emissions allowance (see section 6.2)	The total allowance is 122.5 million allowances, which is 24.5 million allowances annually.
Auctioning (see section 6.7)	No allowances will be set aside for auctioning in the period 2008-12. However, any surplus allowances from the new entrants reserve, and allowances left over from discontinued installations, may be sold/auctioned off.
New entrants (see section 6.6)	A pool of 2.5 million allowances (in total across a five-year period), corresponding to about 2 per cent of the total allowance, will be set aside for new entrants and new capacity in existing installations. Surplus allowances from this reserve may be sold/auctioned off.
Principles of allocation to new entrants (see section 6.6 and subsection, as well as section 11.3)	New entrants will be allocated allowances depending on their capacity or capacity expansion. Allowance allocation is based on key figures from benchmarks by the different types of production based on BAT (Best Available Technology). Figures have not been adjusted for "needs" or actual emissions. Allowance allocation is independent of fuel type and expected operation patterns for production. The key figures have been reassessed since the first allocation plan. Key figures for certain types of production have been reduced because production processes have been made more energy efficient. In addition, allocations to all types of new entrant have been reduced further by the same percentage as the reduction in the allocation to existing installations for 2008-12, compared with 2005-07.
Existing enterprises (see section 6.3)	An annual 24 million free allowances will be allocated to existing ETS enterprises.
Principles for allowance allocation to existing installations across sectors (see sections 4.3 and 6.3)	Industries, including offshore, will receive a total of free allowances corresponding to about 92 per cent of the allowance basis. Allowance allocation is differentiated so that free allowances will be allocated corresponding to about 87 per cent of fuel-related CO <sub>2</sub> emissions, and corresponding to about 98 per cent of process-related emissions in the reference years.  The heat-production sector will receive allowances corresponding to about 87 per cent of the allowance basis.  The electricity production sector will receive allowances corresponding to about 57 per cent of the allowance basis.  The electricity sector will receive allowances corresponding to a lower percentage of the allowance basis than the other sectors. This is because the electricity sector has a large

	<p>reduction potential, since CO<sub>2</sub> emissions can be reduced considerably if fuels emitting less CO<sub>2</sub> are used, for example natural gas and biomass. Furthermore, the electricity sector gains substantial windfall profits due to a higher electricity price following from the emissions trading scheme.</p>
<p>Methods of allowance allocation to existing enterprises in the individual sector (see section 6.3)</p>	<p>Electricity production: allocation of allowances according to historical electricity production.</p> <p>Heat production: allocation of allowances according to historical CO<sub>2</sub> emissions.</p> <p>Other industries, including offshore: allocation of allowances according to historical CO<sub>2</sub> emissions. Differentiation will be made between fuel-related and process-related emissions.</p> <p>Allocation will be based on the average historical emissions figure for the reference-year period 1998-2004 or the emissions figure for 2004 if this figure is higher than the average historical emissions figure. This is called the allowance basis. Allowances will be allocated for one year at a time.</p> <p>The specific allowance allocation broken down by the individual installation is in section 11.1</p>
<p>Limit on enterprise use of climate credits (see section 8.3)</p>	<p>The overall limit for enterprise use of JI/CDM credits is set at about 19 per cent of the allowance allocation. The overall limit is differentiated as follows: electricity production, which is to reduce emissions the most, receives a higher limit than other types of production. The limit is fixed individually for the individual installation. The limit for electricity production is fixed at approx. 32.5 per cent, while the limit for other production is fixed at approx. 7 per cent. For combined heat and power installations this means that they will get a weighted limit which depends on the ratio between electricity and heat production's respective percentage shares of the allowance basis. The limit for the individual installation may be exceeded in the individual year as long as the limit is not exceeded for 2008-12 as a whole. This setting of limits ensures that both the electricity sector and the other industries category will be allowed the opportunity to cover about 89.5 per cent of the expected need to purchase allowances with JI/CDM credits in the period 2008-12 (in addition to the free allowances they have been allocated). This distribution means that ETS installations as a whole can cover about 98 per cent of their expected allowance need with free allowances and JI/CDM credits.</p> <p>The specific limits for the individual installation's use of JI/CDM credits are in section 11.1</p>
<p>Closure (see section 6.8)</p>	<p>If an installation is discontinued or its production ceases, it will not receive allowances the subsequent year. The</p>

	allowance allocation will be cancelled from the first year following the year when the installation was discontinued. Unspent allowances which have been allocated to discontinued installations, or installations where actual production has ceased, may be sold/auctioned off.
Opt-in	Will not be used in 2008-12. New types of enterprise, sector or gas are not included.
Annual allowance allocation (see section 6.5)	A total of 20 per cent of allowances will be allocated each year in the period 2008-12, unless installations are discontinued.

# 1 Objective and timetable

Directive 2003/87/EC on trading in CO<sub>2</sub> allowances (the ETS Directive) in 2005 introduced a greenhouse gas emissions allowance trading scheme in the EU. The objective of the allowance scheme is to reduce emissions of greenhouse gases so that the EU and its Member States can meet their reductions obligations under the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the EU Burden-Sharing Agreement.

According to the ETS Directive, each Member State must prepare a national allocation plan before the trading period 2008-12, which sets out the total number of allowances the Member State intends to allocate for the period and describes how and to which installations the allowances will be allocated. The allocation plan must describe how the individual Member State intends to meet its emission reduction obligations for 2008-12, cf. the EU Burden-Sharing Agreement.

This report describes the principles behind Danish allocation of CO<sub>2</sub> allowances for the period 2008-12 as part of the EU system for trading CO<sub>2</sub> allowances.

The public has been involved in establishing the Danish national allocation plan through a hearing process in the period from 17 January to 7 February 2007.

In parallel with this process, a proposal for amending the Danish Act on CO<sub>2</sub> Allowances, which implements allocation of CO<sub>2</sub> allowances, has been submitted for public hearing.

After this public hearing, a few corrections have been made to the allocation plan, which the Minister for the Environment subsequently forwarded to the European Commission 7 March 2007. Over the following three months the Commission will take a position on the allocation plan. The Commission will be able to ask supplementary questions on the allocation plan and this can extend the Commission's approval procedure beyond the three months. The Commission will also be able to put forward requirements for changes to the allocation plan if it considers that the allocation plan has not been drawn up in accordance with the criteria in the ETS Directive. If the Commission so requires, Denmark can make changes in the allocation plan in order to obtain the Commission's approval of the plan.

Adoption by the Danish Parliament of the amendments to the Danish Act on CO<sub>2</sub> Allowances cannot enter into force until the Commission has approved the allocation plan. **Therefore, the allocation plan will remain preliminary until it has been approved by the Commission.**

Denmark is still awaiting clarification from the EU regarding the reference year problem.

## 2 EU emissions trading system

### 2.1 EU EMISSIONS TRADING SYSTEM

The EU ETS Directive introduced a greenhouse gas emissions allowance trading scheme for the EU from 2005 (REFERENCE 10).

The ETS Directive covers energy-producing installations with a rated thermal input (capacity) of more than 20 MW, as well as a number of installations for refining mineral oil, producing coke, producing and processing ferro metals, installations in the minerals industry, and in other activities such as manufacture of paper pulp, paper and cardboard, if the installation has a certain size. The scheme applies in all the EU Member States and covers more than 10,000 installations.

The objective of the trading scheme is to reduce emissions of greenhouse gases in order to meet the reduction obligations which the EU and Member States have accepted under the UN Climate Convention, the Kyoto Protocol, and the EU Burden-Sharing Agreement. The current trial period for the allowance trading scheme is from 2005-2007. The next trading period is from 2008 up to and including 2012.

Act no. 493 of 9 June 2004 on CO<sub>2</sub> allowances implements the ETS Directive in Denmark. In Denmark, a significant proportion of the energy sector and energy-intensive industries, including the offshore sector, is covered by the allowance scheme. A total of 380 installations were covered in the period 2005-07. 372 will be covered in the period 2008-12.

The amendment to the Danish Act on CO<sub>2</sub> Allowances in Act no. 410 of 1 June 2005 made it possible to use JI and CDM credits in the allowance scheme. The Act implements the EU Linking Directive (REFERENCE 24). However Act no. 410 did not implement the limit (cap) required in the Linking Directive for use of credits. This limit is established in this allocation plan.

The allowance scheme is central to the Danish Climate Strategy and it is vital if Denmark is to meet its international commitments under the EU Burden-Sharing Agreement. Trading in emissions allowances makes it possible to implement reductions initiatives in areas where the costs of reductions are lowest. This will mean cost-effective reduction efforts.

The allowance allocation places a limit on CO<sub>2</sub> emissions from enterprises covered by the scheme. However, individual installations may emit more than their individual allocation because of the possibility of buying and using (surrendering) CO<sub>2</sub> allowances from other installations and JI/CDM credits. As CO<sub>2</sub> emissions are a global environmental problem and they do not have an environmental impact precisely at the source of the emissions, it is irrelevant for the overall climate impacts whether the ETS leads to emissions reductions in Denmark or in other countries. The most important point is that emissions are reduced where it is most economically advantageous.

Each Member State will establish national allowance allocation on the basis of an overall assessment of expected trends in greenhouse-gas emissions up to 2012

compared with the national reduction target to which the State is committed under the EU Burden-Sharing Agreement. Furthermore, this will be balanced with any reduction opportunities in non-ETS sectors as well as state purchases of credits from projects in Eastern Europe and developing countries (Joint Implementation (JI) and Clean Development Mechanism (CDM) projects).

Individual installations covered by the allowance system are each allocated a number of free allowances, and by no later than 30 April in the following year they must return a number of allowances corresponding to the CO<sub>2</sub> emissions from the installation in the previous year. If, during a trading period, an installation emits more CO<sub>2</sub> than the allowances it was allocated, the enterprise must buy extra allowances. Enterprises can buy and sell allowances from and to each other across national borders so that the reduction in emissions takes place where it can be achieved most cheaply. Enterprises can also buy JI/CDM project credits. In this way it is possible for Danish installations covered by the allowances scheme collectively to emit more CO<sub>2</sub> than the allowances they have been allocated, provided they buy allowances or credits from abroad. According to the ETS Directive, each Member State must set a limit for use by installation units of JI/CDM credits. The limit must be set in relation to the allowance allocation for the individual installation, taking into account the supplementarity obligations of the Member State (see section 3.3).

According to Article 9 of the ETS Directive, before the trading period 2008-12 each Member State must prepare a national allocation plan stating the total quantities of allowances the relevant State will allocate during the period, including how and to which installations the State will allocate them.

## 2.2 CRITERIA FOR NATIONAL ALLOCATION PLANS

Annex 3 of the ETS Directive contains 12 criteria to be taken into account when preparing the national allocation plans. The plans must include the following elements:

- The plan must document how Member States will fulfil their Kyoto obligations (see section 3 of this plan), and allowance allocation must be consistent with the national climate obligations and the expected changes in emissions (see sections 3 and 5 of this plan). (Criteria 1 and 2).
- The plan must take account of the reductions potential of installations covered by the ETS Directive (see section 4.4 of this plan), and there must be information on how account is taken of any early action to reduce emissions by using clean technology (see section 4.6 of this plan). (Criteria 3, 7, and 8).
- The plan must not discriminate between companies or sectors in such a way as to unduly favour certain enterprises or activities (see section 4.5 of this plan). 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 (see section 4.3 of this plan). (Criteria 5 and 11).
- The plan must contain a list of the installations covered by the allowance scheme with the quantities of allowances intended to be allocated to each (see annex 11.1). (Criterion 10).

- The plan must contain information on the manner in which new entrants will be able to begin participating in the allowance scheme in the Member State concerned (see section 6.6 of this plan). (Criterion 6).
- The plan must establish a limit (cap) for use of JI/CDM credits by the ETS installations (see section 8.3 of this plan). (Criterion 12).
- The plan must also be consistent with other Community legislative and policy instruments (see section 4.7 of this plan). (Criterion 4).
- The plan must include provisions for involvement of the public before a decision on the allocation of allowances is taken. The public hearing is described in section 9. (Criterion 9).

Guidelines for the national allocation plans are also laid down in the Commission Communication COM/2003/0830 and these are further supplemented by guidelines regarding the trading period 2008-2012 in Commission Communication COM/2005/703 (Reference 11).

The Commission's guidelines on allocation plans describe how the Commission believes that the 12 criteria in annex 3 of the Directive should be interpreted. On the basis of experience of allocation plans from Member States for the trial period 2005-07, the Commission has drawn up supplementary guidelines for preparation of national allocation plans for the period 2008-12. Some of the main points from the Commission in this context are that:

- The Commission suggests that allocation plans should be transparent and comparable. Standard data tables have been drawn up in order to achieve more uniform reporting. These tables are reviewed in section 11.2 of this plan.
- The Commission urges Member States to prepare simpler plans in future, in particular with respect to allocation methods and rules on new entrants and closures. These elements are described in more detail in section 6.6 and section 6.8 of this plan.
- The Commission urges Member States to include all types of installation which meet the specified capacity requirement (20 MW). The Danish installations covered are described in section 6.1 and section 11.1 of this plan.
- The Commission urges increased use of allowance trading in setting an upper limit for the limit on allocation of allowances at national level which takes account of the economic and technological potential to cut emissions. The Commission has reported that it expects the overall allocation of allowances at EU level to be reduced. Setting the overall number of allowances is described in section 6.2 of this plan.
- The Commission urges Member States to realise the government purchase of project credits (described in section 8 of this plan) as well as to implement other policies and measures with consequential effects (described in section 7 of this plan).

This allocation plan has been designed in accordance with the ETS Directive and the Commission's guidelines for preparation of national allocation plans.

With the Commission Decision of 29 November 2006 on allocation plans for 2008-12 for 10 Member States, the Commission published a Communication (REFERENCE 12), which describes how Member States can calculate the maximum allowance allocation and the maximum limit for use of JI/CDM credits by ETS installations in a manner approved by the Commission. In setting the overall allowance allocation, the Commission has taken its basis in Member States' verified 2005 emissions from their ETS sector, adjusted for expected growth and changes in CO<sub>2</sub> intensity. The proposed allowance allocation and JI/CDM limit in this plan have been reconciled with the Commission's Decision of 29 November 2006.

## 2.3 IMPLEMENTATION OF THE ETS DIRECTIVE IN DENMARK

### 2.3.1 The Danish Act on CO<sub>2</sub> Allowances

In Denmark, allocation of free allowances to enterprises is laid down by law (see REFERENCE 6). The criteria for allocation are therefore set directly by the Danish Parliament which adopts these as part of the Danish Act on CO<sub>2</sub> Allowances. Allocation for the period 2008-12 to new and existing enterprises therefore requires amendments to the current Allowances Act. The amendments will be based on this allocation plan and any comments on this received from the Commission.

In addition to the specific allocation of allowances, the Allowances Act stipulates a number of framework conditions for the allowance system itself. These include in particular provisions on which enterprises are to be covered by the scheme, issue of emissions permits, and establishment of a monitoring plan for emissions as well as reports of such monitoring which are to be verified by an independent body. The Act also lays down the charge for operators which do not return an adequate quantity of allowances as well as penalty provisions for non-compliance with the Act. Finally, the Act contains rules on access to carry out CO<sub>2</sub>-limiting projects in other countries, the JI and CDM projects, and rules for using credits from JI/CDM projects in the allowance scheme.

### 2.3.2 The Danish Emissions Trading Registry

The Allowance Registry is the prerequisite allowing for allocation of allowances to relevant installations (operators) and enabling installations to buy and sell allowances.

The Allowance Registry is designed and operated according to the Commission Regulation on a standardised and secure registry system. The Danish Registry is part of the global Emission Trading Scheme. All registries approved for the scheme can communicate electronically with each other, which facilitates the transfer of allowances between accounts in the different countries.

All allowances and project credits are valid in all countries, regardless of who issued them. However, there are some types of project credit which the EU has decided may not be used by ETS enterprises. These are credits from nuclear plants and from removals of greenhouse gases from the atmosphere through land use and changes in land use and forestry, i.e. the Removal Units (RMUs).

The Danish Emissions Trading Registry acts as a type of Internet bank where the free allowances allocated annually are deposited in the respective enterprises' accounts. When allowances are deposited in an enterprise's account, they become the property of the enterprise. Therefore, enterprises can use the allowances as they wish. Enterprises can see their accounts on the Internet.

Once a year, ETS enterprises must report the size of their actual emissions in the previous year. After this, enterprises must return allowances to the Allowances Registry corresponding to their emissions for the year. If they do not return a sufficient quantity of allowances, in 2008-12 a charge of EUR 100 must be paid for each allowance they failed to return, and enterprises must also deliver the shortfall of allowances.

## 3 Denmark's climate obligations, status of efforts to date and assessment of complementarity

### 3.1 DENMARK'S CLIMATE OBLIGATIONS 2008-12

Denmark has an obligation to reduce its national emissions of greenhouse gases by 21 per cent in 2008-12 compared with the 1990/95 level, cf. the Kyoto Protocol and the EU Burden-Sharing Agreement. This means that emissions must be reduced to an average 54.8 million tonnes of CO<sub>2</sub> equivalents annually for the period 2008-12.

#### 3.1.1 Reference year compensation

In 1990, Denmark had particularly low emissions of CO<sub>2</sub> because of unusually high imports of electricity from hydro-power stations in Norway and Sweden. This means that the reduction of 21 per cent is based on an unusually low emissions level.

The emissions in the reference year are calculated in accordance with the methods stated in the Kyoto Protocol, including the IPCC guidelines for emissions inventories. These state that emissions are allocated to the country in which the emissions take place and not in the country, for example where the electricity is used. The imports of electricity in 1990 corresponded to 6.3 million tonnes of CO<sub>2</sub>, if the same amount of electricity had to be produced in Denmark. If Denmark itself had produced this amount of electricity in 1990, a 21 per cent reduction would mean Danish emissions would have to be reduced to an average of 59.8 million tonnes CO<sub>2</sub> equivalents in the period 2008-12, while with the current reference year they must be reduced to 54.8 million tonnes. I.e. the difference between the adjusted and the unadjusted reference years means that Denmark has a reduction burden of an extra 5 million tonnes CO<sub>2</sub> because of the extraordinary imports of electricity in 1990.

The Danish view was and remains that extraordinarily high imports of electricity in a single year should not mean that the Danish reduction obligation for the EU is to be calculated on the basis of the exceptionally low emissions in 1990.

In March 2002, Denmark had to accept the Council decision placing a legally binding obligation on Denmark to a 21 per cent reduction relative to the non-adjusted reference year. However, in a political declaration from the European Council of Ministers and the European Commission in connection with ratification of the Kyoto Protocol in 2002, Denmark was able to get an undertaking that account would be taken later of Danish reservations regarding the reference year.

There has been ongoing dialogue between Denmark and the Commission on compensation for the reference year.

On 17 October 2006, the Commission presented a proposal on transferring 5 million tonnes of CO<sub>2</sub> to Denmark. This possibility for compensation was a result

of a technical surplus of about 11 million tonnes CO<sub>2</sub> in relation to the total EU reduction obligation of 8 per cent. The Commission considers that it is legally possible for the Commission to allocate this surplus, which will be transferred to the EU allowance registry. The technical surplus is expected to be validated by the UN within the next 18 months.

It will probably not be possible to achieve more than 5 million tonnes' compensation. Similarly, there do not seem to be other ways of obtaining compensation. Allocation of 5 million tonnes from the EU registry is the Commission's only possibility under law.

The special Danish reference year problem was not resolved in connection with final establishment of the maximum permitted emissions quantities, as the Commission decided to exclude elements regarding compensation for Denmark for the unusually low reference-year emissions from the proposal voted on at the meeting of the Commission's Climate Committee on 3 November 2006. This meeting dealt with final establishment of permitted emissions quantities for EU Member States. At this meeting, no Member State spoke against the proposed compensation of 1 million tonnes/year for the Danish reference-year problem when in future, in connection with final verification by the UN of the EU's emissions quantities, the opportunities for compensating Denmark on the basis of the technical surplus of quotas will be considered.

On this basis, Denmark has prepared this allocation plan. The plan has been prepared on the basis of unadjusted figures, and so that it will be possible to incorporate the expected compensation at a later date.

In this context the Danish government has decided that the result of the reference-year matter will not influence allowances allocation to ETS enterprises in 2008-12.

The government's view remains that Denmark should be compensated for the exceptionally high imports of electricity in the 1990 reference year, and it awaits clarification from the EU.

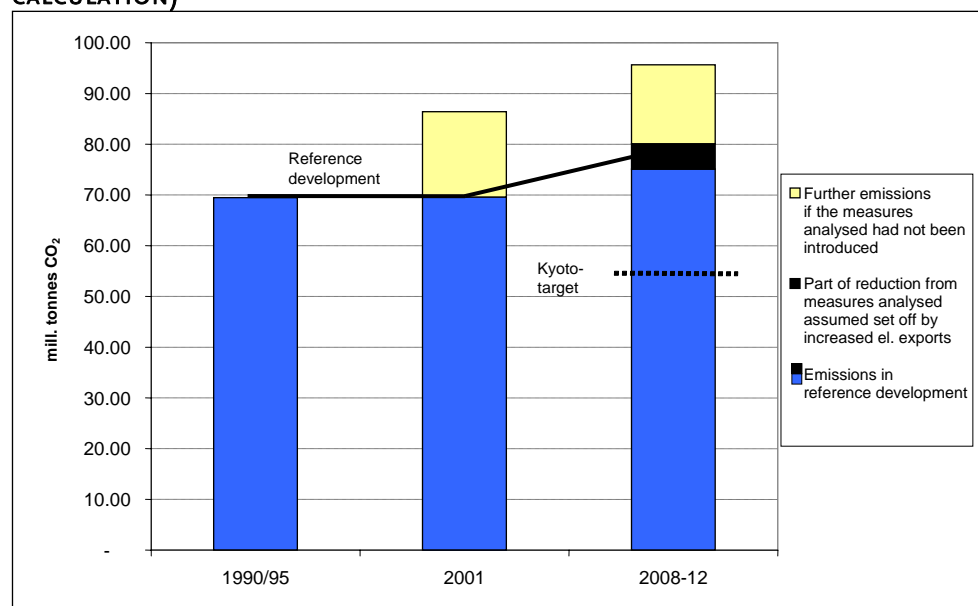
### 3.2 STATUS FOR PREVIOUS INITIATIVES TO REDUCE DANISH EMISSIONS OF GREENHOUSE GASES

Denmark has completed an analysis of efforts to reduce emissions of greenhouse gases in the period 1990-2001, the Measures Analysis, 2005, (Reference 9) see also. The Measures Analysis shows the impact of selected measures on emissions of greenhouse gases in the period 1990-2001, and it builds on a projection of Danish emissions of greenhouse gases in 2008-12, if the measures implemented between 1990 and 2001 had not been completed. The results of the Measures Analysis are shown in **FIGURE 1** and **TABLE 4**.

As the analysis was started in 2003, it should be noted that the analysis has been prepared in relation to the projection with existing measures, as reproduced in the third national communication to the Climate Secretariat.

Analyses show that average annual Danish emissions of greenhouse gases in 2008-12 would have been 95.6 million tonnes CO<sub>2</sub> equivalents, i.e. about 15.6 million tonnes CO<sub>2</sub> equivalents more than the with-measures projection from 2003, if measures implemented in 1990-2001 had not been initiated.

**FIGURE 1: DEVELOPMENTS IN TOTAL CO<sub>2</sub> EMISSIONS (STATED AS CO<sub>2</sub> EQUIVALENTS), WITH AND WITHOUT THE MEASURES ANALYSED (PRODUCTION-BASED CALCULATION)**



**TABLE 4: OVERVIEW OF TOTAL GREENHOUSE GAS EMISSIONS AND THE TOTAL REDUCTIONS DIVIDED BY SECTOR (FOLLOWING THE SECTOR DIVISION OF THE CLIMATE STRATEGY) IN MILLIONS OF TONNES OF CO<sub>2</sub> EQUIVALENTS PER YEAR**

Sector	1990/95 <sup>2)</sup>	2001			2008-12		
	Reference <sup>1)</sup>	Actual emissions <sup>1)</sup>	Actual emissions from measure	Emissions without measures	Emissions projection <sup>1)</sup>	Reduction from measures decided in period 1990-2001	Emissions without further measures
Energy	42.7	43.2	13.6	56.8	53.1	11.0/16.0 <sup>3)</sup>	64.1
Transport	10.7	12.6	1.3	13.9	14.6	1.7	16.3
Industry	0.3	0.7	0.0	0.7	0.7	0.4	1.1
Agriculture	14.4	11.7	1.6	13.3	10.8	1.9	12.7
Waste	1.3	1.2	0.2	1.4	0.9	0.5	1.4
Total	69.5	69.6	16.8 <sup>4)</sup>	86.2	80.1	15.6 /20.6 <sup>3)</sup>	95.7

Notes:

1) Source: REFERENCE 9.

2) 1990/95 indicates the emissions in the reference year. CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions have 1990 as the reference year, while the industrial gases have 1995 as the reference year. No corrections have been made for electricity imports/exports.

3) For measures in the energy sector, the full reduction is stated. The Danish Energy Authority estimates that approx. 5.0 million tonnes of this 20.6 million tonnes CO<sub>2</sub> annually will be offset by increased electricity exports based on the calculation assumptions of the Climate Strategy.

4) This 16.8 million tonnes CO<sub>2</sub> per year includes the full effect, i.e. it also includes the CO<sub>2</sub> reductions that domestic actions have led to abroad.

TABLE 5 is an overview of the measures introduced in the period 1990-2001. Amongst the measures introduced is a strong focus on renewable energy (from wind, biomass and waste) so that today renewable energy accounts for 15 per cent of gross Danish energy consumption, and 28.5 per cent of domestic electricity supply. In addition to this is expansion of decentralised cogeneration of heating and power and connections to district heating, energy-savings incentives for households and business, tightening of building regulations, high Danish taxes on fuels, ban on landfilling waste suitable for incineration, and action plans for agriculture.

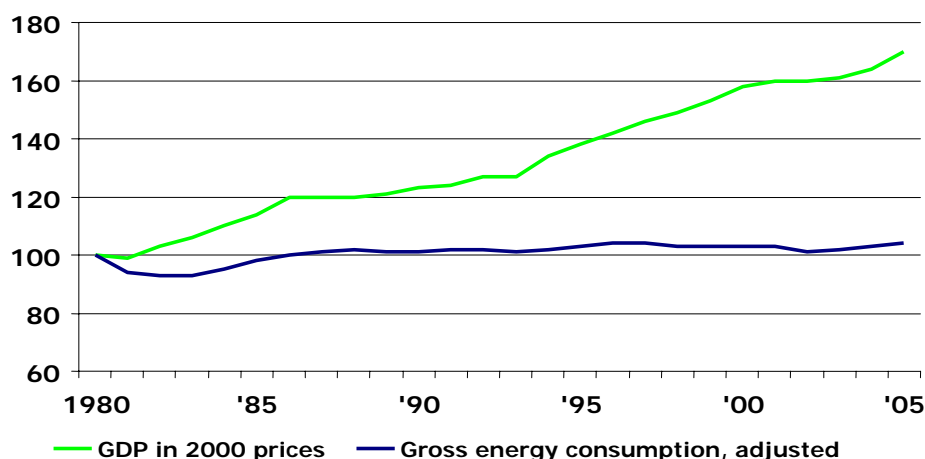
**TABLE 5 DENMARK'S MEASURES IN THE PERIOD 1990-2001**

Sector	Name of measure	Description of measure
Energy	Grants to private wind turbines	A public grant for electricity production (DKK 0.27/kWh) was given. Changed in 1999 to favourable payment rules (financed via electricity price) for electricity from wind-turbines.
	Electricity generation plant expansion using wind turbines	Power stations became subject to a requirement to install a certain number of wind-power installations on and offshore. Up to 1999 public production subsidies of DKK 0.1/kWh were granted for electricity from wind turbines owned by electricity power stations.
	Expansion in decentralised cogeneration of heating and power	Cogeneration of electricity and heating is primarily at central plants, but up through the 1990s a significant expansion of decentralised cogeneration of heating and power took place, partly by converting to district-heating plants. Incentives through purchase obligations (feed-in guarantees)/three-part tariffs, grants for electricity production etc.
	Agreement on use of biomass for electricity production	Order for large power plants to use a certain amount of biomass (straw and wood chips). This is as a subsidy for electricity production of DKK 0.1/kWh for biomass-based cogeneration of heating and power at central power stations owned by electricity power stations.
	Grants for energy savings in businesses	Subsidies were granted for investments in energy-efficient technologies; establishment of industrial combined heat and power; development, experimental and demonstration projects; consultancy for enterprises; as well as information etc.
	Grant to cover CO <sub>2</sub> tax (agreement scheme)	An energy agreement, typically for energy-intensive processes, provides reduction in the CO <sub>2</sub> tax of 22 percentage points. Involves certified energy management, special studies of important core processes, and implementation of projects with a payback period of less than four years.
	Grant for conversion of old dwellings to co-generated heat and power	Promoted connection of older dwellings (pre-1950) without central heating to district heating. The grant was for installation of central-heating and hot-water plant as well as connection, technical advice, administration etc.
	Grant to promote connection to coal-fired CHP	The grant encouraged the change from oil-fired plant to district heating in areas supplied by coal-based CHP.
	Grants for renewable energy	Grants for solar heating, heat pumps and biomass-fired boilers (woodchip-fired) to replace other types of heating in households.
	Building labelling	An energy label for houses to be sold with recommendations for the purchaser of cost-effective energy-savings measures. In larger buildings there is an energy management scheme with an annual review of the building.
	Changes to taxes on energy products	The CO <sub>2</sub> tax was introduced in 1993. The energy tax on electricity and coal increased as a result of the 1994 tax package (implemented in the period 1995-99) and energy taxes rose further as a result of the 'Witsun tax package' in 1998.
	Further energy measures	A number of further initiatives were implemented which have had a significant effect on Danish CO <sub>2</sub> emissions, but these were not subject to further analysis in the in the Measures Analysis. For more details see (REFERENCE 9).
Industry	Taxes on and regulation of use of industrial gases	Taxes on industrial gases and a ban on their use for certain applications.
Transport	Increased fuel taxes	Increases in taxes on petrol and diesel since 1990.
	Diverse measure to improve energy efficiency in Danish vehicles	Voluntary agreement between the European Commission and the car industry on improvements in the energy efficiency of passenger cars. Reorganisation of tax on new cars based on weight to a green registration tax from 1 July 1997.
Agriculture	Action plans for agriculture	Through reductions in the use of fertiliser, the Action Plan for the Aquatic Environment II and other action plans for agriculture have led to reductions in nitrous oxide (N <sub>2</sub> O) emissions
Waste	Collection of methane from rubbish tips	Subsidy for installing plant and, from 2001, an order to install plant to collect methane.
	Ban on landfilling waste suitable for incineration.	An administrative regulation in the form of a ban against landfilling waste suitable for incineration, effective from 1997.

Source: REFERENCE 9.

The numerous Danish energy and climate measures also explain why gross Danish energy consumption has remained more or less the same since 1980, despite GDP growth of almost 70 per cent in this period, as shown in figure 2.

FIGURE 2: CHANGE IN GDP AND GROSS ENERGY CONSUMPTION



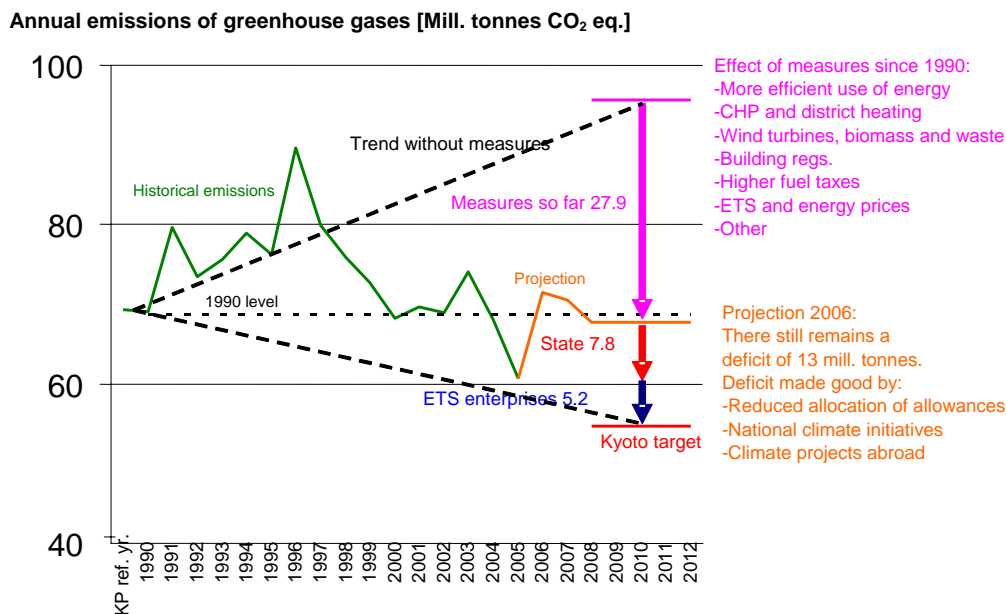
Since 2001, new initiatives have been implemented in Denmark which have reduced emissions of greenhouse gases further and have led to a new with-measures projection; the projection which forms the basis for the allocation plan 2008-12. Most importantly it has been decided to construct two new offshore wind parks, each of 200 MW, and a new Danish action plan for energy savings was adopted in June 2005. In addition to these, the EU common CO<sub>2</sub> allowance scheme has entered into force, and together with developments in the price of oil, this has had a great effect on the costs of using energy and thus domestic energy consumption. Furthermore, a number of other measures with an impact on emissions of greenhouse gases have been implemented, including Action Plan for the Aquatic Environment III and the general structural changes in agriculture. The new projection of Danish emissions of greenhouse gases shows that annual emissions in 2008-12 are now expected to be about 67.8 million tonnes CO<sub>2</sub> equivalents. Therefore there will be a further drop in annual emissions of 12.3 million tonnes CO<sub>2</sub> equivalents to a total effect of measures implemented since 1990 of 27.9 million tonnes CO<sub>2</sub> equivalents, including the effect of changes in energy prices and the allowances scheme on the Danish annual emissions in 2008-12, see FIGURE 3.

The effect of measures decided after 2001 is shown in TABLE 6.

TABLE 6: THE EFFECT OF INITIATIVES DECIDED IN THE PERIOD 2001-2006 AS WELL AS OTHER CHANGES IN FRAMEWORK CONDITIONS ETC.

Description of initiative	Expected reduction in emissions of greenhouse gases in 2008-12 Million tonnes/year
Additional offshore wind turbines in Denmark (2 x 200 MW), energy agreement March 2004	1.0
Energy-savings agreement June 2005	2.0
Action Plan for the Aquatic Environment III and structural development/CAP reform	0.4
Lower expected electricity generation because of the allowance scheme and capacity expansion in the Nordic region	4.5
Effects of higher expected oil prices and prices of allowances	2.4
Other changes in assumptions and models	2.0
Total included in the new projection	12.3

**FIGURE 3: THE EFFECT OF MEASURES TO DATE AND HOW THE CLIMATE TARGET 2008-12 IS TO BE REALISED**



Note: The green line illustrates the actual emissions up to 2004 and continues in orange for projected emissions from 2005-12.

### 3.3 ASSESSMENT OF DENMARK'S SUPPLEMENTARITY OBLIGATION

Supplementarity relates to the relationship between domestic initiatives and the use of the flexible mechanisms.

According to the Kyoto Protocol, use of the mechanisms under Article 6 (JI), 12 (CDM) and 17 (IET) constitutes a supplement to domestic efforts to reduce emissions of greenhouse gases. The background is that efforts in industrialised countries drive technological development and at the same time accord with the common agreement that industrialised countries should lead the way in endeavours to reduce global emissions. The wording used in the Protocol (“...supplemental to domestic action..”) is not explained in more detail and no more detailed requirements have been set on the size of the proportion of the total national reduction target that can be fulfilled via the flexible mechanisms. The Marrakesh Accord states that use of the flexible mechanisms should comprise a supplement to domestic efforts, and that domestic efforts thus should constitute a significant part of the overall effort (“... the use of mechanisms shall be supplemental to domestic action and that domestic action shall thus constitute a significant element of the efforts made by each Party...”).

On the basis of the Measures Analysis and the further domestic initiatives implemented since 2001 (see section above and figure 3), the government considers that Denmark already fulfils its supplementarity obligation for the period 2008-12, as Denmark has already implemented two-thirds of the required reduction measures without using the flexible mechanisms.

Further to this is the effect of the new domestic initiatives the government has decided to implement in connection with preparation of this allocation plan and the new Danish energy strategy, see section 7.

With the Commission decisions of 29 November 2006 regarding allocation plans from ten Member States for 2008-12, the Commission issued a Communication on how Member States can calculate the limit for use by ETS installations of JI/CDM credits which will be approved by the Commission (REFERENCE 12). The Commission states that Member States can meet up to one-half of the required reduction in emissions up to 2012 via JI/CDM credits, which means the remaining half must be achieved via reductions in national emissions. The proposals for state purchases of climate credits as well as the limit for use by enterprises of credits has been reconciled with the Commission Decision of 29 November 2006, for more detail see section 8.

## 4 Overall considerations

This chapter describes the overall considerations, principles and assumptions for setting the contribution to Denmark's reduction target from the ETS sector.

### 4.1 MAKING UP THE CLIMATE DEFICIT

The projection of expected Danish average greenhouse gas emissions in the years 2008-12 has been updated (for more details see section 5). The projection shows that, with the expected economic developments and the various policies and measures already adopted, emissions of greenhouse gases are expected to fall. However, emissions are expected to remain about 13.0 million tonnes CO<sub>2</sub> equivalents above the Danish reduction target, cf. the EU Burden-Sharing Agreement. In order to meet the target, Denmark must implement a number of initiatives to reduce the climate deficit.

In principle there are three types of possible initiatives to make up the climate deficit:

#### *1. State purchase of greenhouse gas emission credits*

Climate projects abroad are an important element in the government's Climate Strategy (REFERENCE 7). According to the Climate Strategy, buying CO<sub>2</sub> credits is primarily up to private enterprises subject to the regulations in the EU ETS Directive. However, through state purchases of emissions credits the government will help ensure that the market for these credits starts faster than would otherwise be the case. In addition to giving the market for climate projects a shove, state purchases of CO<sub>2</sub> credits will also help Denmark meet its international climate obligations in 2008-12. The efforts correspond to 3.2 million tonnes CO<sub>2</sub> per year in 2008-12. In addition to this, DKK 200 million has been earmarked to purchase credits to cover part of the deficit if, against expectations, Denmark does not obtain compensation for the reference year and/or to cover uncertainties in projections, and including CO<sub>2</sub> removals by the soil and forests etc., which will give an additional 0.3 million tonnes per year in 2008-12. Finally, resources have been earmarked as a reserve which can also be used to buy further credits for 2008-12 if, against expectations, Denmark does not obtain compensation for the reference year. State purchases of climate credits are described in more detail in section 8.

#### *2. Implementation of new national initiatives to reduce emissions of greenhouse gases from non-ETS enterprises and incorporation of CO<sub>2</sub> removals*

As described in section 7 establishment of the burden sharing between the ETS sector and the non-ETS sector is based on an analysis of which initiatives are expected to be the most cost-effective. The government has therefore earmarked resources to monitor CO<sub>2</sub> removals by the soil and forests and to implement new measures to reduce emissions of greenhouse gases from the non-ETS sectors. These initiatives will together reduce the deficit by 3.6 million tonnes per year in 2008-12.

#### *3. Adjustment of the allowances*

Making up the remaining climate deficit, after including the initiatives mentioned above, will be made the responsibility of ETS enterprises via adjustment of the allowance allocation (see more detailed description of the allowance allocation in

section 6). The government has decided that adjustment of the allowances is to cover 5.2 mill. tonnes CO<sub>2</sub> equivalents of the 13.0-million-tonne deficit annually. This means that the allowances will be set at 5.2 mill. tonnes less than the expected emissions from ETS enterprises in 2008-12.

Realisation of Denmark's climate target and making up the climate deficit in 2008-12 are illustrated in the table below.

**TABLE 7: COVERING THE CLIMATE DEFICIT 2008-12, MILL. TONNES CO<sub>2</sub> EQUIVALENTS**

	Mill. tonnes annually
Deficit	13.0
Central government initiatives, including	-6.8
- monitoring CO <sub>2</sub> removals by sinks	-2.3
- new national measures within non-ETS sectors	-1.3
- JI/CDM credits, 2003-7	-3.2
To cover possible losses if, contrary to expectations, Denmark does not get compensation for the reference year, and/or to cover uncertainty in projections, inclusion of sinks etc., including	
- contributions from JI/CDM credits from 2008-09 resources	-0.3
- resources in reserve under section 35 of the Finance Act	-0.7
Central government initiatives in total	-7.8
Enterprises' commitment, including	-5.2
- electricity sector	-4.4
- other ETS enterprises (net) <sup>1</sup>	-0.8
Total	0

Note:

1: A pool for new enterprises is to be set up of 0.5 mill. tonnes/year. This is deducted from other enterprises' contribution.

#### 4.2 COST-EFFECTIVENESS

In accordance with the government's Climate Strategy, the allocation plan emphasises that Danish climate efforts are to be cost-effective, so that the climate target can be realised as cheaply as possible. This involves the principle that the initiatives to realise the climate target implemented nationally should be cheaper than the expected future allowance price, adjusted for the net tax factor, cf. the Ministry of Finance Guidelines on macro-economic analyses. National reduction initiatives which are more expensive than this benchmark should, as a general rule, not be implemented.

The principle of cost-effectiveness means that reductions should be implemented for non-ETS greenhouse gas emissions, including emissions from the transport sector, households, agriculture, industry, and service enterprises, as well as energy producers, and emissions of greenhouse gases other than CO<sub>2</sub>, if such reductions initiatives can be implemented more cheaply than the benchmark based on the allowance price. A macro-economic assessment of a number of technologically possible domestic initiatives has been completed for the non-ETS sectors. In order to be able to compare the macro-economic unit costs of these domestic reductions initiatives with the allowance price in 2008-12, a number of analyses have been completed, and these have led to the assumption of an average allowance price in 2008-12 of DKK 150. It should be noted that this assessment is subject to considerable uncertainty. The analysis of cost-effective reductions initiatives for the non-ETS sectors is described in more detail in section 7. The same section also mentions that the state will earmark resources to implement cost-effective

reductions of emissions of greenhouse gases in the non-ETS sectors, as these initiatives will probably not be implemented without separate measures.

Denmark has decided to set-off removals of CO<sub>2</sub> by the soil and forests in the Danish climate accounts for 2008-12 in accordance with Article 3.4 of the Kyoto Protocol, as this is considered one of the cheapest initiatives to help realise the Danish climate target.

Cost-effectiveness considerations also require the limit on use by enterprises of JI/CDM credits to be set as high as possible, taking into account Danish compliance with the supplementarity principle and the Commission's guidelines.

#### 4.3 COMPETITION AND OTHER CONSIDERATIONS

To start, the ETS is harmful to the competitiveness of European ETS enterprises compared with competitors outside the EU because of the higher marginal costs.

There is a large difference between the competitiveness of different sectors and installations, and therefore differences in possibilities to pass on the costs of allowances to prices of goods. The consequences of the allowance system for individual enterprises can be very different from the consequences for the sector as a whole.

It has not been possible to take account of these differences in the allowance allocation as the Danish government wants to live up to the Commission's principle of using relatively simple criteria as far as possible when allocating allowances.

As the allowance system is common for all EU Member States, and as there is only limited electricity trading with countries outside the allowance system, to a large extent the electricity sector will pass on the costs of allowances through electricity prices, and therefore electricity consumers will have to pay high electricity prices as a result of the allowance system. Despite poorer competitiveness through higher production costs, overall the electricity sector will continue to see very good net revenues in 2008-12 from the allowance system.

As it will be harder for other ETS industries, including the offshore sector, than the electricity sector to make up additional costs, initially it will be more uncertain whether the number of free allowances allocated will be adequate to ensure that the sector as a whole will see positive net revenues from the allowance system. Some ETS industrial enterprises will suffer a loss to the extent that they cannot make up the higher marginal costs through increasing the sales price of their products.

The different competitive environment for different enterprises has been taken into account by granting a relatively larger allowance allocation to the industrial and offshore sectors, which are exposed to competition from enterprises outside the EU, than the electricity sector, which faces less competition. This is because of the extra revenues expected for the electricity sector as a result of the ETS.

The heat sector is to be allocated allowances in line with industry, i.e. it will be allocated free allowances corresponding to 87 per cent of its fuel-related emissions in the reference period. The Danish Act on CO<sub>2</sub> Allowances has led to an amendment in the District Heating Supply Act so that the value of surplus CO<sub>2</sub> allowances allocated for heating production is to be set off against the price of heat. The way this takes place is described in an executive order (Reference 6). For heat producers, any costs from buying allowances will lead to higher heat prices and thus will be paid for by the heat consumers. Even though the allocation of allowances will be reduced compared with the period 2005-07, it is unlikely that

there will be a significant increase in the average price of heat as a result of the allowance scheme.

Allocation to the individual sectors is described in TABLE 8.

**TABLE 8: ALLOCATION OF ALLOWANCES TO SECTORS 2008-12. WITHOUT POOL FOR NEW ENTRANTS**

	Industry <sup>2</sup>	Heating	Offshore	Elec. <sup>3</sup>	Total
% of allowance basis <sup>1</sup>	90%	87%	95% <sup>4</sup>	57%	71%
% of projected need	96%	94%	75% <sup>5</sup>	72%	81%

Notes:

1: The allowance basis is the average of the emissions in 1998-2004, or the emissions in 2004 if this is higher than the average for the period.

2: Average for fuel and process-related emissions. Fuel and process-related emissions are allocated corresponding to 87% and 98% of the allowance basis respectively.

3: Electricity production is allocated allowances corresponding to 0.388 allowances per MWh historical fossil, annual electricity generation in the reference period.

4: Individual installations within offshore which have had historical emissions in the reference period are granted free allowances corresponding to 87% of their fuel-related emissions, but as new installations have been established in the offshore sector which have not had emissions in the reference year, the sector as a whole has been allocated a greater percentage of the allowance basis than the other sectors.

5: Larger growth is expected in the offshore sector than in other sectors and the allocation to new installations has not been included in the 75%.

Account has been taken of the possibilities for existing installations to expand production capacity as well as opportunities for new enterprises to establish themselves in Denmark by earmarking a reserve of allowances for expansion of production and new installations in the same way as the principles in most other Member States.

After introduction of the CO<sub>2</sub> allowances system, Danish commerce not only pays CO<sub>2</sub> tax on the electricity it consumes, but it also pays for the increase in electricity prices arising from the ETS. Further to the proposed Danish energy strategy to follow up Energy 2025 (REFERENCE 20) the government will consider whether there is a need for adjustment in the CO<sub>2</sub> and energy-tax system.

#### 4.4 REDUCTION POTENTIALS FOR THE SECTORS

Allowance allocation takes overall account of the technological and economic potential of the individual sector to reduce CO<sub>2</sub> emissions. Therefore allowance allocation is more restrictive for electricity production than for other types of production. The reason for this is that production of electricity has a relatively large reduction potential as CO<sub>2</sub> emissions can be reduced considerably if fuels which emit less CO<sub>2</sub> are used, e.g. natural gas or biomass (in this context, biomass is considered as being CO<sub>2</sub>-neutral). Furthermore, electricity producers are better able to increase revenues from the higher price of electricity resulting from the allowance scheme.

Account is also taken of the fact that process emissions are more difficult to reduce than emissions related to combustion. More free allowances are allocated to process emissions than to fuel-related emissions. This takes account of the fact that

production processes with process emissions have generally a more limited reduction potential than other types of production.

All sectors are allocated fewer allowances than the expected future need.

#### 4.5 DIFFERENTIATION BETWEEN SECTORS AND INSTALLATIONS

Allocation of free allowances is differentiated between sectors according to the allowance basis of the sectors, cf. section 4.3 and section 6.3.

The limit on use by ETS installations of JI/CDM credits is differentiated in relation to the expected need to purchase allowances by the sector in excess of the free allowances allocated, cf. section 8.3.

More free allowances are allocated for process emissions than for fuel-related CO<sub>2</sub> emissions, see reasons in section 4.4.

The allocation of allowances between individual installations within each sector is according to standardised principles, see section 6.

#### 4.6 EARLY EFFORTS AND CLEAN TECHNOLOGY

In the allocation of allowances between the existing ETS installations, account is taken of any early reduction efforts, including use by enterprises of clean technology. This is done by allocating free allowances to electricity producers on the basis of historical production of electricity (a production-based 'benchmark') and by using a long reference period as the basis for allocating allowances to the other installations.

The principles for allocating allowances to new entrants and capacity expansion at existing installations also takes some account of the possibility of using clean technology. The allocation of allowances is based on key figures from BAT-based benchmarks for the different types of production. Allowance allocation is independent of type of fuel. Allocation is also re-assessed compared with the first allocation plan, and this is why some key figures have been reduced, as installations with these production processes have become more energy-efficient. Furthermore, allowance allocation to new entrants has been additionally reduced by the same reduction factor as for allocations to existing installations as compared to 2005-07.

#### 4.7 OTHER EU LEGISLATION OR INSTRUMENTS

The current Danish Act on CO<sub>2</sub> Allowances contains a provision which means that allocation of allowances is reduced or increased if emissions change by at least 10 per cent because of statutory requirements arising from Community law. The idea is that enterprises are to be rewarded/penalised if the EU places requirements through other 'legislation' with significance for CO<sub>2</sub> emissions. However, this must be Community legislation implemented in Danish law prior to presentation of the bill for the Allowances Act, i.e. before 31 March 2004.

According to the ETS Directive, Member States can also include such a provision in the second period if they so wish, but this allocation plan does not contain such a rule. This is because, firstly the rule is a sort of transitional rule and enterprises

have now had a number of years to get used to the allowances regulation. Secondly it is because of the desire to make allowance allocation as simple and transparent as possible. Finally, the limited quantity of allowances in the second period makes it necessary to ensure fair allocation to the same types of enterprise.

# 5 Projection of Danish emissions and removals of greenhouse gases 2008-12

## 5.1 REFERENCE PROJECTION FOR EMISSIONS OF GREENHOUSE GASES IN 2008-12

The projection forming the basis for the June 2005 report to the Commission on demonstrable progress, and which is included in the background material for both the report by the European Environment Agency on developments in greenhouse gases in Europe in 2006 and the latest progress report from the Commission of October 2006, has been updated in connection with this allocation plan. The primary changes are:

- A political agreement has been made on future energy saving initiatives (further reduction of about 2 million tonnes per year).
- The projection for the offshore sector has been updated (a reduction of about 1 million tonnes per year).
- An updated energy projection has been prepared in which the above has been included, and which is based on new energy-price prognoses from the International Energy Agency (November 2006) and new assumptions for the price of CO<sub>2</sub> allowances.

The projection is a "with measures" projection, which includes measures that have been or are expected to be implemented. The new projection is in REFERENCE 4 and is summarised in TABLE 9. It is clear that without further measures total annual Danish emissions of greenhouse gases are expected to average at about 68 mill. tonnes CO<sub>2</sub> equivalents in 2008-12.

Danish Kyoto accounting makes use of the possibility to include CO<sub>2</sub> removals by fields and forests which existed before 1990 in accordance with Article 3.4 of the Kyoto Protocol. It is estimated that this will reduce the climate deficit by about 2 mill. tonnes per year in the period 2008-12. In addition to this is a contribution from forests planted after 1990 of almost 0.3 million tonnes per year, which is also included in the Kyoto accounts. In total, the sinks are expected to contribute about 2.3 million tonnes per year in 2008-12.

**TABLE 9: EXPECTED DANISH EMISSIONS OF GREENHOUSE GASES AND EXPECTED CO<sub>2</sub> CREDITS FROM CO<sub>2</sub> REMOVALS BY SOILS AND FORESTS**

Million tonnes of CO <sub>2</sub> equivalents	Reference year 1990/95 <sup>1</sup>	2004	2005 <sup>3</sup>	Per yr. 2008-12
CO <sub>2</sub> (without removals)	52.7	54.0	50.4	54.7
Methane (CH <sub>4</sub> )	5.7	5.8	5.6	5.5
Nitrous oxide (N <sub>2</sub> O)	10.6	7.6	7.0	6.7
Industrial gases, HFCs, PFCs and SF <sub>6</sub>	0.3	0.8	0.8	0.9
<b>Total Danish emissions of greenhouse gases</b>	<b>69.3</b>	<b>68.2</b>	<b>63.9</b>	<b>67.8</b>
<i>Of which exports of electricity amount to (- means saved CO<sub>2</sub> from imports):</i>	-6.3	6.9	-1.1	3.6
Credits from removals of CO <sub>2</sub> by forests planted since 1990 cf. Article 3.3 of the Kyoto Protocol				0.262
Credits from removals of CO <sub>2</sub> by forests planted before 1990 cf. Article 3.4 of the Kyoto Protocol				2.0
Legally binding target under EU burden sharing (- 21 %)				54.8

Notes:

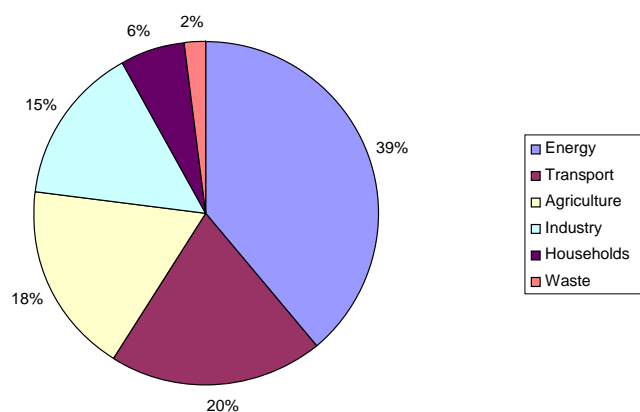
1: The reference year for CO<sub>2</sub>, methane and nitrous oxide is 1990. In accordance with the Kyoto Protocol, 1995 has been chosen for the reference year for industrial gases.

2: Emissions of CO<sub>2</sub> calculated under the Kyoto Protocol, as removals of CO<sub>2</sub> should be calculated as credits under Art. 3.3 and 3.4 of the Protocol.

3: Source: Reference 25.

FIGURE 4 and TABLE 10 show the break-down of greenhouse gas emissions by sector, developments in emissions from sectors from 1990 to 2004, and expected sector emissions in 2010.

**FIGURE 4: GREENHOUSE GAS EMISSIONS BROKEN DOWN BY ECONOMIC SECTOR INCL. ENERGY CONSUMPTION BY THE INDIVIDUAL SECTOR**



**TABLE 10: DANISH EMISSIONS OF GREENHOUSE GASES BROKEN DOWN BY SECTOR, MILL. TONNES CO<sub>2</sub> EQUIVALENTS**

Sector	1990/95	2004	2004 %	2005	Ave. 2008-12	Change from 1990/95 to 2008-12 (%)
Energy	26.6	26.6	39 %	23.1	27.9	+5 %
Industry	9.5	10.1	15 %	9.2	9.6	+1 %
Transport	10.7	13.6	20 %	13.8	14.2	+36 %
Agriculture incl. energy consumption and forests	15.8	12.3	18 %	12.2	11.8	-26 %
Households	5.2	4.3	6 %	4.2	3.8	-27 %
Waste incl. wastewater	1.5	1.4	2 %	1.4	1.3	-13 %
<b>Total</b>	<b>69.3</b>	<b>68.2</b>	<b>100 %</b>	<b>63.9</b>	<b>67.8</b>	<b>-2 %</b>

With emissions of 26.6 Mt CO<sub>2</sub> equivalents in 2004, the energy sector is the most significant sector (39 per cent of total greenhouse gas emissions) in a climate context. Next comes the transport sector, which accounted for 20 per cent of total emissions in 2004; a percentage which is expected to grow further in 2010, see FIGURE 6. Emissions from the agricultural sector fell from 1990-2004, accounting for 18 per cent of total emissions in 2004. Emissions from the agricultural sector are expected to stabilise up to 2010 with the current measures. Next comes industry with 15 per cent, households with 6 per cent, and the waste sector with 2 per cent of total emissions in 2004.

TABLE 9 and TABLE 10 also show preliminary figures for 2005 emissions which have just been reported to the European Commission by the National Environmental Research Institute of Denmark (NERI), (REFERENCE 25). The figures show that CO<sub>2</sub> emissions from the electricity and industry sectors fell in 2005 compared with the year before. One part of the explanation is the introduction of the EU ETS from January 2005. Another part of the explanation is greater production of hydro-electricity in Scandinavia. Production of hydro-electricity in Norway, Sweden and Finland was 112 per cent of a normal year's production. There is a certain, although not unambiguous, connection between surplus of water and imports of electricity. Danish imports of electricity also depend on capacity at other power stations and electricity consumption in the Nordic countries.

2005 resembles 1990 in that there was a water surplus of about 10 per cent compared with the normal year. Imports of electricity to Denmark were only 1.4 TWh, however, compared with 7 TWh in 1990. The difference in the impact on electricity imports is probably that electricity consumption in the other Nordic countries has grown by relatively more than in Denmark over the period, while electricity capacity in Denmark has grown relatively faster than in the other Nordic countries. Overall, 2005 was a relatively 'wet year' and this caused a certain amount of electricity imports to Denmark and therefore reduced CO<sub>2</sub> emissions about 1 million tonnes compared to a 'normal' year.

The break-down of the expected total emissions of greenhouse gases within and outside the EU allowance system is shown in TABLE 11 together with emissions in 2004 and allowance allocation in 2005-2007. The non-ETS sectors are expected to account for 56 per cent of total emissions in 2008-12. 44 per cent of national greenhouse gas emissions, or almost 55 per cent of CO<sub>2</sub> emissions are therefore expected to be covered by the allowance system in 2008-12.

**TABLE 11: BREAK-DOWN OF EMISSIONS OF GREENHOUSE GASES BY SECTOR, MILL. TONNES/YEAR**

	2004	2005	All. 2005-7	New projection 2008-12 Jan 2007
<b>ETS:</b>				
Energy sector (elec+heat)	*	18.2	21.7	20.5
Other ETS industry incl. offshore	*	8.2	9.2	9.2
Auction and new installations	*	-	2.7	
<b>Total ETS</b>	<b>*</b>	<b>26.4</b>	<b>33.5</b>	<b>29.7</b>
<b>Domestic (non-ETS):</b>				
Energy consumption in elec. & heat; refineries and manufacturing outside the allowances system; building and construction; service and households as well as other greenhouse gases from all sectors except, see below	40.1*	9.3		9.9
Industrial gases	0.8	0.8		0.9
Transport sector	13.6	13.8		14.2
Agriculture incl. energy consumption	12.3	12.2		11.8
Waste	1.4	1.4		1.3
<b>Total non-ETS</b>	<b>*</b>	<b>37.5</b>		<b>38.1</b>
<b>Total</b>	<b>68.2</b>	<b>63.9</b>		<b>67.8</b>

Note:

\* Emissions from activities subject to the 2005 allowances regulation have not been included in the emissions statement for 2004.

## 5.2 GENERAL REMARKS ON THE ASSUMPTIONS BEHIND THE PROJECTION

The projection of emissions of greenhouse gases linked to gross Danish energy consumption is based on the energy projection prepared by the Energy Authority using econometrically based projection models (REFERENCE 2 and REFERENCE 3). The energy projection includes all fuel-consuming sectors which, in addition to the energy sector, include the transport sector and military consumption, industry, agriculture, forestry and fisheries as well as households. Projections for other greenhouse gases and sub-sectors are of activity data based on more specific assumptions of determining factors for the relevant areas. The National Environmental Research Institute (NERI) has then prepared projections of greenhouse gases by multiplying the projections of energy consumption and activity data by emissions factors according to the IPCC standard factors and calculation methods, see (REFERENCE 4). The methods for the projections are also described in detail in Denmark's fourth National Communication to the UN.

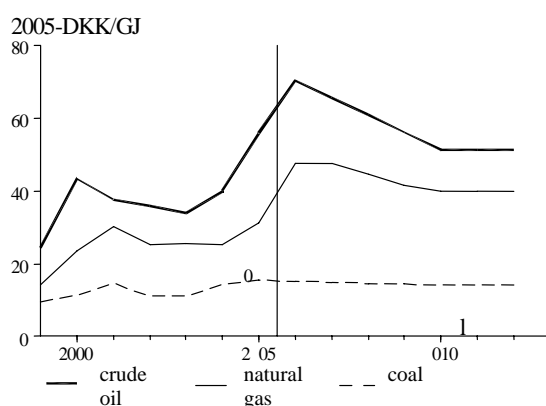
In general, the energy projection is based on the policies applying from May 2006 and unchanged behaviour patterns. The effects of the CO<sub>2</sub> allowance scheme and the Energy Savings Agreement of 10 June 2005 have been included. Other assumptions behind the energy projection are annual economic growth of about 1.8 per cent, strongest up to 2010, an average crude oil price of 53 dollars per barrel, a CO<sub>2</sub> allowance price of DKK 150 per tonne, and technical improvements in energy efficiency of about 0.7 per cent per year at the end-user.

The projection of production in the industrial sector and private consumption is based on the ADAM projection prepared by the Ministry of Finance in 2004 for the period 2004-2010 and extended to 2012.

The projection is also based on expectations in August 2006 for the International Energy Agency's price assumptions for fossil fuels in World Energy Outlook, 2006, which was published in November 2006, and a DKK/dollar conversion rate of 6 – i.e. a Danish kroner-dollar rate of about 0.8. Prices of fuels up to 2010 have been adjusted upwards compared with the IEA estimate due to the current high prices. On average the price for 2008-12 has been estimated at \$ 53 / barrel. A sensitivity analysis has been completed of the significance of the price of oil and the results are not clear-cut. Higher oil prices and therefore gas prices make coal more attractive to the supply sector and may increase CO<sub>2</sub> emissions in the period 2008-12. For non-ETS energy consumption, however, there will no doubt be a drop in consumption as a result of a higher oil price.

With regard to large electricity and gas producers, liberalisation of the gas market will probably reduce the price of gas slightly compared with the IEA estimates. The prices of biomass are expected to remain unchanged in real terms. Prices of district heating are based on average production costs, while the price of electricity, as a result of the calculations, is based on marginal production costs. The changes in prices of fossil fuels are shown in FIGURE 5.

**FIGURE 5: PRICES OF FOSSIL FUELS**



### 5.3 TRENDS IN GREENHOUSE GAS EMISSIONS FROM THE INDIVIDUAL SECTORS

Historical and future changes in the greenhouse gas emissions from the individual sectors are shown in FIGURE 6.

**FIGURE 6: TOTAL PAST AND FUTURE CHANGES IN EMISSIONS OF GREENHOUSE GASES IN THE PERIOD 1990-2030 BROKEN DOWN BY SECTOR, INDEX 1990=100**



In the near future domestic energy consumption is expected to grow, primarily in the transport sector. Energy consumption by industry, construction and service is expected to stagnate, while consumption by households is expected to fall in line with the historical trend. Consumption by the energy sector has been calculated excluding fuel for production of electricity for export. The trend in import/export of electricity is described in section 5.4.

In addition to emissions of greenhouse gases arising from energy consumption by industry, greenhouse gases are also emitted from a number of industrial processes. These are emissions linked to the production of cement, plaster, tiles and bricks, glass etc. as well as emissions of the fluorine-containing industrial gases HFCs, PFCs and SF<sub>6</sub> (F gases) from production and use of products containing these substances such as fridges and freezers and for foam moulding.

There is often an actual proportional relationship between production and emissions for process emissions, if there are no significant changes in the technology used in production or any measures to limit emissions. Throughout, the projections assume unchanged market and production conditions, as in general it has not been possible to obtain information from enterprises on expected future production.

However, there are exceptions to this, notably that from 2004 nitric acid production ceased in Denmark, in the period 2002-2007 a 5-per-cent increase in the production of clinker for cement production has been included, and emissions of process CO<sub>2</sub> from steel production from 2005 have been estimated at the 2001 level as production recommenced in early 2005 after having stopped for the period 2002-2004.

Especially noteworthy for the industrial gases is that they are primarily components in the product itself - e.g. in freezers - and they slowly seep out of the product into the atmosphere over a number of years. The IPCC guidelines have been used to calculate the expected future emissions. The projection also includes the effects of the Danish statutory order on phasing out certain industrial gases. This statutory order includes a ban on using HFC as a refrigerant in retail goods and stationary

A/C plant from 1 January 2007, except for refilling existing plant and as an aerosol to foam PUR foam from 1 January 2006. The Commission Decision of 8.12.2006, K(2006) 5934 allows Denmark to maintain this special provision until 31.12.2012 (REFERENCE 21).

The growth in traffic (and the consequent growth in energy consumption and emissions) is based on the historical trend and is particularly driven by economic growth, but also by the costs of buying, using and maintaining cars. On the basis of the latest trends, the projections assume that the EU agreement with the motor industry to reduce emissions of CO<sub>2</sub> from new passenger cars to a maximum of 140 g/km from 2008 will not be fulfilled. Therefore, the current level of 165 g/km for new cars has been assumed for 2008-2012, slightly decreasing after this. On the other hand, the higher oil prices are expected to curb annual kilometres driven slightly.

Emissions of greenhouse gases from agriculture fell considerably from 1990-2003 and they are expected to fall moderately up to 2008-12. The projection takes into account the EU agricultural reform, the third Action Plan for the Aquatic Environment and implementation of ammonia-reducing measures in livestock stalls and pens. Emissions of methane are expected to fall as a result of the drop in the number of cattle. The reduction in emissions of nitrous oxide is primarily due to a drop in emissions from nitrogen run-off, commercial fertilizer and from animal manure spread on fields. This is due to better exploitation of feed, better use of the nitrogen content in animal manure, and a drop in the area farmed.

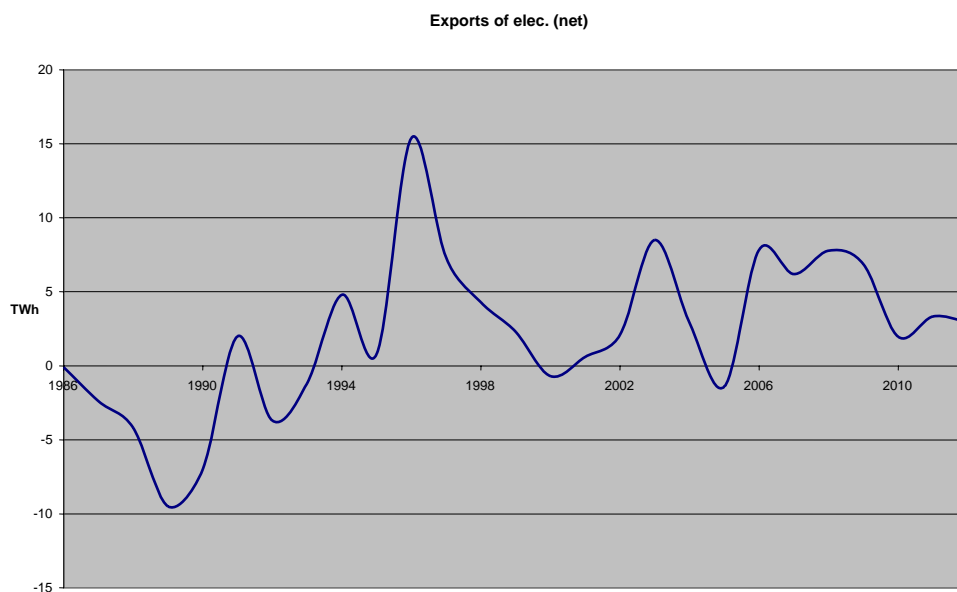
Emissions from the waste sector are expected to fall slightly up to 2008-12 as a result of the ban on landfilling waste suitable for incineration. Emissions of nitrous oxide from the wastewater sector are expected to stabilise, while methane emissions are expected to rise in the long term as a result of increased recycling of wastewater sludge in industrial processes.

#### 5.4 ELECTRICITY IMPORTS AND EXPORTS

Denmark is a part of the Nordic electricity market, and Denmark has relatively strong electricity connections to Norway, Sweden and Germany. Historically, Denmark has had extensive electricity exchange with neighbouring countries. Both the scope and the direction of this electricity exchange is greatly dependant on precipitation in Norway, Sweden and Finland, due to the large hydropower generation of these countries. Therefore, CO<sub>2</sub> emissions from Danish electricity production may vary considerably from year to year.

In 1990, electricity imports were 7 TWh (one- fifth of Denmark's total electricity consumption). CO<sub>2</sub> emissions were therefore about 6 million tonnes lower than with neutral electricity exchange (the reference year problem mentioned in section 3.1.1).

**FIGURE 7: HISTORICAL AND EXPECTED NET EXPORTS OF ELECTRICITY**



The projection includes a calculation of electricity exchange with neighbouring countries from 2006 and onward. This calculation is made using a simulation model for the entire Nordic electricity system and assuming normal years with regard to precipitation. Assumptions have been balanced as best as possible against the assumptions used by other Nordic energy authorities. The result of the projection is electricity exports of about 6-8 TWh annually until 2010, when electricity exports are expected to fall to about 2-3 TWh, partly due to the establishment of a new Finnish nuclear power unit.

## 5.5 CO<sub>2</sub> REMOVALS BY FORESTS AND SOILS

The Danish government in spring 2006 decided to include removals of CO<sub>2</sub> by soils and forests in the calculation of Denmark's climate accounts for 2008-12 pursuant to Article 3.4 of the Kyoto Protocol. Article 3.3 on CO<sub>2</sub> removals by forests established after 1990 must, at all events, be included in calculations under the Kyoto Protocol. Total removals of CO<sub>2</sub> by forests and soils (Articles 3.3 and 3.4) are expected to contribute about 2.3 million tonnes/year to eliminating Denmark's climate deficit in 2008-12.

### 5.5.1 CO<sub>2</sub> removals by soils

Contributions to the Kyoto Protocol under Article 3.4 concern changes to vegetation and soil carbon stocks. Under the Kyoto Protocol, the flows of carbon to and from biomass and soils must be stated according to a net-net principle by which the change in net emissions is calculated as the rate of change for the carbon stock in the statement period (2008-12) less the rate of change for the carbon stock in the reference year (1990). The rate of change can be calculated in different ways, however the method must be the same in the statement period as in the reference year. For agriculture, the following potential sources of CO<sub>2</sub> emissions and CO<sub>2</sub> sequestration have been included:

1. Net change in the content of carbon in mineral soils in connection with changed land use and cultivation.
2. Net change in the soil's carbon stock in connection with drainage and cultivation of organic soils or re-establishment of wetlands.

3. Change in the carbon content of wood biomass in wind breaks and fruit farms.
4. Emissions of CO<sub>2</sub> from application of limestone to farm land.
5. Consumption of organic soil-improvement agents, peat and sphagnum.

The projections of the changes in the carbon stock in mineral soils include a number of assumptions about future land use and future changes in temperatures. As climate regime, the Danish average climate for the period 1961-1990 has been used as reference. Since this normal climate period, the climate in Denmark and large parts of the rest of the world has, however, developed toward a warmer climate. This change amounts to about 0.3 °C per decade.

With a scenario of a continued temperature increase of 0.3 °C per decade, the baseline projection of land use shows a reduction in emissions from land use by agriculture of about 1.9 mill. tonnes CO<sub>2</sub> per year, see the National Environmental Research Institute of Denmark and the Danish Institute of Agricultural Sciences (2006) (REFERENCE 5). A temperature increase of 0.3 °C per decade corresponds to the scenarios for climate change that are central parts of Denmark's efforts concerning adapting to climate change, and which are based on core scenarios defined in the IPCC Third Assessment Report.

Both future weather conditions and changes in agricultural practices and land use occasion considerable uncertainty about the effect of including Article 3.4 for soils. These uncertainties may however go both ways, since an increased area of permanent grassland and catch crops, greater crop yield, and setting aside organic soils, will increase CO<sub>2</sub> sequestration, while reduced grassland area, removal of straw from fields, and burning slurry and solid manure will reduce CO<sub>2</sub> sequestration. An overall effect of CO<sub>2</sub> sequestration by soils of 1.82 million tonnes/year on average in 2008-12 has been included in calculations, which is assessed to be a conservative estimate, however about which there is considerable uncertainty.

### **5.5.2 CO<sub>2</sub> removals by forests**

Denmark has chosen to apply Article 3.4 (forestry), which allows for the inclusion in calculations of the changes in the storage of greenhouse gases in forests that existed before 1990. Denmark has been given a limit of 183,000 tonnes of CO<sub>2</sub> equivalents/year.

Analyses by Forest and Landscape, Denmark in 2004 (REFERENCE 22) concluded that Danish state forests, which make up about 25 per cent of Denmark's total forest area, alone will store about 400,000 tonnes of CO<sub>2</sub>/year in the first commitment period. The analyses also showed that even a large number of windfalls will only briefly influence this CO<sub>2</sub> storage. For the first commitment period, the expected sequestration is so much greater than the 183,000 tonnes of CO<sub>2</sub>/year that storms are not likely to affect the chances of complying with the target for the period.

Average annual afforestation in the period 1990-2003 was 1,900 ha per year. The new projections assume that afforestation will continue at the same pace in the period 2004-2014. This will provide an average annual sequestration of 262,000 tonnes of CO<sub>2</sub> in the period 2008-12 which must be included in calculations pursuant to Article 3.3. of the Kyoto Protocol.

## 5.6 UNCERTAINTIES

Although the projections have been updated with the latest knowledge, they are, as all other forecasts, associated with considerable uncertainty. The uncertainties are linked to the expected effect of the measures implemented and, partially, the other assumptions, including key assumptions on financial developments, the international oil price, allowance price, and the dollar exchange rate, as well as the average electricity price in the Nordic market. Other uncertainties include the risk of cold winters, and thus of greater need for heating, and more extremely dry years could reduce the removals of CO<sub>2</sub> by soils.

Danish emissions of greenhouse gases will be monitored continuously and in 2010 Denmark will take stock of the implementation of its Kyoto obligation, including considering the need to launching further initiatives.

# 6 Allowance allocation 2008-12

## 6.1 INSTALLATIONS COVERED

The scheme covers activities divided into the following categories:

- Power generation at installations with a rated thermal input of at least 20 MW and flaring by the offshore sector. This category includes any type of fuel combustion that leads to CO<sub>2</sub> emissions. This means that, in addition to electricity and heat production, direct fuel combustion in industrial processes is also covered by legislation. For instance, fuels used for melting stone in the production of stone wool. All emissions from energy-generating installations are covered, including emissions from space heating of administration buildings. Any emissions from the installation which do not originate from the energy-generating plant are not covered.
- A number of installations in minerals refining, coke works, processing of ore and paper pulp, as well as installations above a certain minimum size in the metal, glass, cement, and paper industries etc. All emissions directly associated with the production process, i.e. also process emissions, are covered in this category. This means, for instance, that all CO<sub>2</sub> emissions from calcination processes in the production of cement and tiles are covered. Emissions resulting from space heating of administration buildings, however, are not covered in this category.

An installation can have several activities which are covered. If the installation has both the activity "energy generation" and e.g. the activity "cement production", as a general rule, all CO<sub>2</sub> emissions will be covered.

As in 2005-07, Denmark has chosen to use the Commission's interpretation of which installations are covered by the allowance regulation. This means that energy-generating units include any fuel combustion which results in CO<sub>2</sub> emissions. No further sectors or installations with a capacity below 20 MW, or with greenhouse gases other than CO<sub>2</sub> are included. Denmark, thus, will not make use of the opt-in possibility in 2008-12.

In overall terms, 372 existing installations will be included under the allowance system in the period 2008-12. Installations covered are given in section 11.1

## 6.2 SETTLEMENT OF THE TOTAL ALLOWANCE

The total allowance is fixed at 24.5 million allowances annually in the period 2008-12, i.e. a total of 122.5 million allowances in the second period. Of these, a pool of 0.5 million tonnes annually will be set aside for new entrants and new capacity in existing installations, i.e. a total of 2.5 million allowances in the second period. No allowances will be set aside for sale/auction.

In the first period, the average total allowance was 33.5 million allowances per year.

### 6.3 ALLOCATION OF FREE ALLOWANCES TO EXISTING INSTALLATIONS

Denmark's allocation plan means a total allocation of 24.5 million free allowances annually to existing installations. Overall, this allowance allocation corresponds to 81 per cent of the expected emissions by ETS sectors in 2008-12.

A division by sectors of the installations covered formed the basis for calculating the allowance allocation. The following sectors were used: industries, including offshore; heat production; and electricity production.

Industries, including offshore, will receive total free allowances corresponding to about 92 per cent of the allowance basis, which is 89 per cent of the sector's expected need in 2008-12. Allowance allocation to the individual installations in industries, including offshore, is differentiated so that free allowances will be allocated corresponding to about 87 per cent of fuel-related CO<sub>2</sub> emissions, and corresponding to about 98 per cent of process-related emissions in the reference years. The overall allowance allocation to the offshore sector corresponds to about 95 per cent of the allowance basis, whereas other industries will receive allowances corresponding to about 90 per cent of the allowance basis.

The heat-production sector will receive allowances in line with allowance allocation to fuel-related emissions by industries, i.e. corresponding to about 87 per cent of the allowance basis for the sector as a whole. This covers 94 per cent of this sector's expected need in 2008-12.

The electricity sector will receive overall allowances corresponding to about 57 per cent of the allowance basis, or about 72 per cent the sector's expected need in 2008-12. The electricity sector will therefore be allocated relatively fewer free allowances than the other sectors. This is because the electricity sector has a large reduction potential, since CO<sub>2</sub> emissions can be reduced considerably if fuels emitting less CO<sub>2</sub> are used, for example natural gas and biomass. Furthermore, the electricity sector gains substantial windfall profits due to a higher electricity price following from the emissions trading scheme.

The same principles of allocation that were used in 2005-07 will be used when allocating allowances to installations for the period 2008-12. For electricity producers, the allowances will be allocated relative to historical fossil-fuel electricity production. For heat producers and other industries, including the offshore sector, allowances will be allocated relative to their historical CO<sub>2</sub> emissions. However, more free allowances will be allocated to process emissions (98 per cent) than to combustion-related emissions (87 per cent) in industries (including offshore).

For new entrants, benchmarks will be used to make consideration for the fact that new entrants are often more energy-efficient.

The specific allowance allocation to individual installations will be fixed on the basis of the average electricity production or CO<sub>2</sub> emissions in the period 1998-2004, or in 2004, if production or emissions in this year were higher than the average for the period 1998-2004.

When choosing allocation criteria, emphasis has been on making these simple, unambiguous, transparent and easy to administrate.

The principles for allowance allocation to individual installations will be stipulated by law by the Danish Parliament.

The specific allowance allocation to each individual installation is in section 11.1.

### **6.3.1 Reference year**

For 2008-12, 1998 to 2004 will be used as the reference period. However, 2004 will be used as the reference period where emissions from this year are higher than the average of the other reference years (1998-2004).

Choosing a relatively long reference period will allow consideration for reduction initiatives carried out in recent years.

In its explanatory statement to the current Allowances Act, the Danish government has made it clear that enterprises should not be made to suffer because they have made active efforts to reduce CO<sub>2</sub> emissions in the first period. When allocating on the basis of historical emissions, reference years later than 2004 have therefore not been used.

In favour of using more recent years in the reference period is the fact that data forming the basis for the allocation of allowances will then be more up to date and will probably better match the emissions in the second period.

The rule that the final year of the reference period must be used if emissions in this year are higher than the average for the other years, takes into account installations which have commenced operation late in the reference period. Installations which have not been producing for an entire year in the reference period, will be allocated allowances according to special criteria, see below.

Using the entire period 1998-2004 as reference period, however using 2004 as reference when emissions in this year are higher than the average for the other years, combines the advantages of incorporating both early and more recent reference years.

### **6.3.2 Criteria for allowance allocation to electricity producers**

An annual 0.388 allowances per MWh of annual historical fossil-fuel electricity generation in the reference period will be allocated.

In the first period, 0.56 allowances per MWh of annual historical fossil electricity production were allocated to producers supplying the public electricity grid. Thus, this is a considerable reduction in allowances to the electricity sector. It is anticipated the allowances allocated will only cover 72 per cent of the sector's need. The sector must provide the remaining allowances by buying allowances or credits or alternatively by making savings and by converting to a different fuel.

Denmark has chosen to continue allocating allowances to electricity generation based on historical production. This will make consideration for producers that use fuels emitting less CO<sub>2</sub> or that have made production more efficient in some other way.

Although allowance allocation to Danish electricity producers will be reduced considerably, this is not expected to lead to higher electricity prices. There is no relationship between the allocation of allowances in Denmark and the rising electricity prices. Electricity prices are fixed in an international market where the price of electricity increases when the price of allowances increases.

In accordance with the ETS Directive, Denmark's National Allocation Plan fixes a limit for the use of credits in the allowance trading scheme, see section 8.3. This limit has been fixed at a higher level for the electricity sector than for other sectors. This is because the electricity sector receives fewer free allowances and therefore has more need to buy credits to fulfil its obligations.

### **6.3.3 Criteria for allowance allocation to heat producers**

A total of 0.87 allowances per tonne of CO<sub>2</sub> emitted annually in the reference period will be allocated annually in the second period.

In the first period, allocation to the heat sector meant an annual allocation of 1 allowance per tonne of CO<sub>2</sub> emitted from heat production in the reference period.

As in the first period, the distribution of fuels between electricity and heat production will be defined using a heat efficiency of 125 per cent.

The heat sector receives allowances in line with fuel-related emissions by the industries sector. For heat producers, any costs of allowance purchase will lead to increased prices of heating and the costs will thus be incurred by the consumers. Although allowance allocation is reduced by 13 per cent compared to 2005-07, this is not expected to lead to any significant increase in the average price of heating. The reason is that emissions from heat producers today are at a lower level than in the reference period forming the basis for allowance allocation.

The option of allocating allowances to the heat sector based on heat production rather than on CO<sub>2</sub> emissions was examined. Allocating allowances on the basis of historical heat production, however, would lead to a significant redistribution of allowances compared to the first period. As a consequence, some consumers of district heating would experience increased heating prices, while others would experience a fall in the price, and this is not appropriate. Allocating allowances on the basis of historical emissions will mean the smallest redistribution and, thus, the least possible change in heating prices. This latter principle has therefore been chosen as the basis for allowance allocation to the heat sector.

### **6.3.4 Criteria for allowance allocation to installations in industries, including offshore**

Allocation of allowances to industries, including offshore, is differentiated so that fuel-related CO<sub>2</sub> emissions receive 87 per cent of historical emissions in the reference years and 98 per cent of process emissions in the reference years. Process emissions are emissions of CO<sub>2</sub> which are not fuel-related and which result from intentional or unintentional reactions of materials or from their conversion in a process. This differentiation has been chosen on the basis that it is easier to reduce fuel-related CO<sub>2</sub> emissions than process emissions that are the result of chemical reactions in a process. It is anticipated that this allowance allocation will cover an average of 89 per cent of the sector's need.

As in the first period, allocation to industries will be based on CO<sub>2</sub> emissions in the reference period. Whether it would be possible and appropriate to convert to a production-based allocation for industries in the second period has been assessed. However, production-based allocation in industries is made difficult by the fact that ETS installations often produce a wide range of different products. This means that a very wide range of different industrial productions are covered by allowance regulation, and not enough information is available about all of them to allow the use of production-based allocation.

Work is being carried out internationally to develop new benchmarks for use in allowance allocation. The work is however still at an early stage and can therefore not serve as the basis for allowance allocation in 2008-12. Allocation of allowances will therefore also be based on historical emissions in the second period.

#### 6.4 ALLOCATION OF ALLOWANCES TO INSTALLATIONS ESTABLISHED AFTER 1 JANUARY 2004, BUT BEFORE 1 JANUARY 2007

For enterprises established after 1 January 2004, the allocation of allowances cannot be based on emissions/production in the reference period, as the enterprises have not been in production for an entire year in the reference period. Allowance allocation will take this into account.

The relevant installations fall into two groups:

1. Installations established prior to the publication of the national allocation plan for the period 2005-07, on 31 March 2004, invested without knowing of the allowance system. These installations should therefore be allowed a higher level of emissions than installations established after the allowance system. Provided that relevant data exists, all installations will be allocated allowances either on the basis of emissions figures for 2004, converted into emissions for an entire year of operation, or on the basis of capacity-based key figures. Allowance allocation will be according to the principle which gives the highest quantity of allowances. Less than five installations are in this group.
2. Installations established in the period after 31 March 2004 knew about the allowance scheme at the time of their investment. Since this category includes new installations which are assumed to be more efficient than those established before 31 March, they received allowances in the first period based on stricter key figures. For the second period, these key figures have been reduced by the same percentage rate as the allowance allocation for similar production by existing installations. In addition, some of the key figures have been revised, because installations with processes, for example ceramic burning and milk powder have become more energy-efficient.

The key figures are in section 11.3

#### 6.5 ANNUAL ALLOCATION OF FREE ALLOWANCES

Allowances are distributed evenly across the period with 20 per cent of total allowance allocation each year in the five-year period 2008-12. New enterprises receive allowances proportionally according to the same principle.

#### 6.6 NEW ENTRANTS RESERVE

Out of consideration for the localisation of investments and work places, a pool will be set aside for new enterprises and expansion of production capacity at existing enterprises. A total of 2.5 million allowances will be set aside for the period 2008-12, corresponding to an average of 0.5 million allowances annually. This pool will also be used where allowances are to be allocated in 2008-12 to new

enterprises which entered the market in 2007, and to cover any unknown, unexpected demand.

From an environment-economic perspective, giving free allowances to new entrants, in principle, is not cost-efficient, as it may lead to socio-economic investments which are not optimal if the full CO<sub>2</sub> costs are not included in calculations when considering the new investments that are covered by the allowance system. In this way the allowance allocation to new installations will work as an investment grant. If the other European countries were not setting allowances aside for new production, much would therefore be in favour of not setting a pool aside for new enterprises.

In the first period all countries chose to allocate allowances to new enterprises. This was out of consideration for the localisation of future investments and work places. Where some countries give allowances to new investments, there will be significantly more incentive to place investments in the ETS sectors within these countries that give free allowances. If a given investment, as a result of no allowances being allocated in Denmark, is merely placed abroad instead, nothing has been gained in relation to protecting the environment. On the contrary, the environmental impact could be negative if environmental requirements abroad are less strict than in Denmark. In addition, new entrants in the EU might be allocated allowances due to localisation reasons where these new entrants are competing with installations outside the EU.

Finally, it may seem critical, with regard to the consideration for well-functioning competitive markets, if differences in allowance allocation between existing and new installations distort competition and work as a barrier to new entrants in a given market.

### **6.6.1 Principles of allocation to new entrants**

Allocation of allowances from the pool set aside for new enterprises and expansion of new production capacity at existing enterprises is based on capacity-based key figures. The allocation is at a level which is somewhat below the level for existing enterprises within the same sector. Allowances are allocated solely for expansion of the production *capacity* - not for expansion of production at existing installations.

In connection with the preparation of the allocation plan for the period 2005-07, a number of benchmarks for allocation to new installations were developed. These benchmarks were reviewed, and in some cases also revised, in connection with completion of the allocation plan for 2008-12. The period 2008-12 takes its point of departure from the revised benchmarks, but allowance allocation has been reduced by the individual sector's reduction factor, so that the allocation of allowances to new entrants in 2008-12 is in fair proportion to the allocation of allowances to existing installations.

- The electricity sector receives allowances relative to increased capacity installed (calculated in MW).
- The offshore sector receives allowances per MW energy-generation capacity measured as shaft power per year.
- New installations solely producing heat will receive allowances in relation to the increased installed capacity in MW. In order to prevent that allowance allocation provides a disproportionately large and anti-competitive incentive to build over-dimensioned boilers, the key figure has been reduced from 250

allowances for each installed MW in the first period to 100 allowances for each installed MW in the second period..

- Heavy-process industries receive allowances calculated relative to increased production capacity for the final product. For example, allowances are given to new production capacity for white cement according to key figures for production capacity stated as tonnes per hour.
- Emissions by industries from energy used in light processes do not receive allowances. This is because the easing of taxes which was adopted parallel to the Danish Act on CO<sub>2</sub> Allowances will be of the greatest value to light processes. The easing of taxes has not yet entered into force (February 2007), because the European Commission has not yet approved the legislative amendment in accordance with the state-subsidy schemes of the Treaty. Furthermore, light-process emissions make up only a very small proportion of emissions under the allowance scheme, and it would be difficult to determine key figures for the very different products that belong to this category.

New entrants are allocated allowances on the basis of existing capacity of the installation or capacity expansion. Allowance allocation uses key figures based on benchmarks in the different productions. The key figures therefore reflect BAT (Best Available Technology). There are no adjustments for "need" or actual emissions. Allowance allocation is independent of fuel type and expected operation patterns for production. In industries, for example, when allocating allowances to the production of cement, the quantities allocated will depend on the capacity of the new plant measured in tonnes of white cement produced per hour.

The key figures have been revised since the first Allowances Act, and some key figures have been reduced because installations with these production processes have become more energy-efficient. Then the figures have been further reduced by the same percentage as the allocation to existing installations is reduced for 2008-12 compared to 2005-07.

Key figures for allocation to new producers are in section 11.3.

### **6.6.2 The size of the new entrants reserve**

The size of the pool is determined on the basis of an assessment of the expected number of new entrants and expected capacity expansions in the ETS sectors, and partly also on the basis of the number of allowances allocated to the individual enterprise. Calculating the required size of the pool beforehand is very difficult in practice, since it would require predicting the expansion trends of the ETS sectors until 2012.

The pool should not be too large, since the allowances in the pool would tie up part of Denmark's emissions possibilities. Nor should it be too small, since uncertainty as to whether the pool will contain enough allowances when investment is made could weaken the investment incentive.

On the basis of experience from the first period and estimates of future expansion plans, the need for allowances for new entrants in the period 2008-12 is estimated at 0.5 million allowances annually.

In order to minimise the risk of allowances going to waste, the pool must be seen as a general pool of allowances that have not been earmarked for specific sectors in advance. Allocation will, as before, be on a first-come-first-served basis.

If, contrary to expectations, the pool by the end of 2012 has not been used up, the remaining allowances will be sold, including by auctioning.

### **6.6.3 Criteria for allocation to new electricity producers**

New electricity-generating installations, including capacity expansions of at least 10 MW rated thermal input, or increases in rated thermal input (capacity) of at least 20 per cent when establishing combined heat and power production, receive 1185 allowances per MW fossil-fuel electricity-generation capacity installed per year the unit is in operation. An additional 305 allowances will be allocated per MW fossil-fuel heat capacity per year the installation is in operation, providing that the heat is not used entirely or partially in heavy processes. Allowance allocation is on the condition that the new electricity-generating installation is expected to have at least 3,000 full load hours annually.

Expected annual operating time between 2,000 and 2,999 full load hours is allocated 2/3 and expected annual operating time between 1,000 and 1,999 full load hours is allocated 1/3 of the above allowances. Installations with expected annual operating time below 1,000 full load hours will not receive allowances. Electricity production plants whose applications for approval according to the Electricity Supply Act or the Heat Supply Act have been received by the approving authority before 2 March 2007 are in the second period allocated allowances corresponding to a minimum operating time of 1,000 -1,999 operating hours. This is a transitional rule, which is to make sure that operating supervisors, who have already invested in new electricity production plants with faith in the rules in force, are not affected unnecessarily severely by the tightening-up of the rules. Operating supervisors, who have applied for permission to construct an installation before the introduction of this bill are hereby secured as a minimum 1/3 of the allowance allocation for each year in the second period.

Allowance allocation will be based on key figures in the original Allowances Act, reduced by the general reduction factor, which is 30 per cent for electricity and 13 per cent for heat.

It is not anticipated that any new large and central electricity-generating installations will be set in operation in the period 2008-2012.

### **6.6.4 Criteria for allocation to new heat producers**

The operating supervisor for installations solely producing heat, whose primary purpose is to produce heat for the public grid, is allocated 100 allowances for each MW of installed fossil-fuel heating capacity annually in the period, the installation has been operating. This allocation is only given to boilers solely producing heat and is based on the CO<sub>2</sub> emissions from a liquefied natural gas boiler with an annual operating time of 500 hours. In most cases, the installations mentioned have very few operating hours as they normally are established as peak demand installations and reserve installations. Moreover, the reason behind trying to reduce the allowance allocation compared to the allocation in the period 2005-2007, where the allowance allocation was about twice as large, is to avoid a distorting economic incentive to build overdimensioned boilers.

### **6.6.5 Criteria for allocation to new entrants in industries and offshore**

New installations in industries and offshore receive allowances based on key figures. These key figures were reviewed in connection with the preparation of this national allocation plan and some of the key figures were revised on this basis. The

key figures were then reduced by the general reduction factor of approx. 13 per cent for allowances allocated to fuel-related emissions and by approx. 2 per cent of allowances allocated to process-related emissions. See further description in section 11.3

#### 6.7 POOL OF ALLOWANCES FOR CENTRAL-GOVERNMENT AUCTION/SALE

The ETS Directive allows the Member States to sell or auction off up to 10 per cent of the total quantity of allowances. Considering Denmark's large reduction burden, in consideration for the competitiveness of the ETS sectors it was decided not to set aside a pool for auctioning for the period 2008-12. However, any surplus allowances in the pool set aside for new entrants, and surplus allowances from the allowances set aside for enterprises that close down, will be sold/auctioned off in 2008-12.

#### 6.8 CLOSURE OF INSTALLATIONS

In the light of experience gained in the first period, the regulations concerning closure of installations have been adjusted. In the original Danish Act on CO<sub>2</sub> Allowances installations received annual allowances on the condition that the installation had not been taken out of operation permanently at the start of the year for which the allowances were allocated. If an installation was not in use but could be put to use relatively easily and at no great cost, the installation was not considered to be permanently out of operation and would therefore still receive allowances. In the period 2005-2007, some installations that were closed down for production received allowances as their production systems were in working order and the operator was therefore still entitled to allowances. However, such a situation is not appropriate, since it will encourage the operator to maintain the installation without production just to receive allowances. In the period 2008-12, annual allowance allocation will therefore be on the condition that the installation is in production from the onset of the year for which it receives allowances.

Allowance allocation will cease with effect from the year following the year in which the installation unit is no longer in actual production. Allowances allocated to installations which subsequently close down will be transferred to the account of the Danish state account in the allowances registry and may subsequently be sold/auctioned off.

## 7 New initiatives for reduction of greenhouse gas emissions in non-ETS sectors

In connection with this national allocation plan, the Danish government has decided on the implementation of a number of new domestic initiatives in non-ETS sectors. These initiatives are expected to reduce emissions of greenhouse gases by 1.3 million tonnes of CO<sub>2</sub> equivalents annually in the period 2008-12, compared to the base-line projection. The specific national environmental and energy initiatives will be decided in connection with the follow up to Denmark's Energy Strategy 2025. The follow-up strategy will be adopted in early 2007.

### 7.1 INDICATOR

According to the Climate Strategy's goal of a cost-effective fulfilment of Denmark's climate obligation, initiatives with socio-economic costs below the indicator in non-ETS sectors would be useful. The indicator was fixed at DKK 120/tonne in the Climate Strategy, based on current expectations of the allowance price, but was increased to DKK 180/tonne in connection with the preparation of the allocation plan for 2008-12, corresponding to the revised expectations of the allowance-price level in 2008-12, see also section 4.2.

The indicator should be understood as a socio-economic benchmark for domestic initiatives that are not covered by the allowance scheme. It can thus be used to assess whether these initiatives are advantageous from a socio-economic perspective compared to e.g. the price of CO<sub>2</sub> allowances which are an alternative way of achieving Denmark's reduction target for greenhouse gases.

However, there may be other positive effects to be gained from domestic initiatives, e.g. technology development initiatives, and these effects are more difficult to set a price on and, thus, to incorporate into socio-economic analyses. These effects may suggest that carrying out domestic initiatives outside ETS sectors is useful, even though the costs of these initiatives are above the indicator. Or there may be negative effects which suggest avoiding implementing the initiatives.

### 7.2 COST-EFFECTIVE MEASURES IN NON-ETS SECTORS

In connection with the allocation plan, an analysis has been carried out of new cost-effective reduction possibilities in non-ETS sectors, i.e. the transport sector, agriculture, waste and the non-ETS part of the energy and industries sectors. A great number of initiatives have been examined and described in the Danish Environmental Protection Agency's report (REFERENCE 15): "Omkostningseffektive tiltag i de ikke-kvotebelagte sektorer" (cost-effective initiatives in non-ETS sectors). Since considerable efforts have been carried out to reduce greenhouse gas emissions in Denmark since 1990, and since amongst others the transport sector and households are already subject to extensive taxation and charges, there have

not been many new initiatives identified which will cost society less than the indicator.

However from an overall perspective, the report sees a reduction potential outside the ETS sectors of at least 1.3 million tonnes per year in 2008-12. According to the calculations and estimates in the report, this potential is both realistic and cost-effective. The government has committed itself to launching new domestic initiatives which can make for further reductions in Denmark's national emissions of greenhouse gases of at least 1.3 million tonnes per year in 2008-12. The specific package of measures has not been considered yet. At the moment, a national energy strategy is underway as follow-up to Energy Strategy 2025. In addition to the decision on specific initiatives, and in continuation of the energy strategy, the government will look into whether there is a need for certain adjustments to the CO<sub>2</sub> and energy taxes system in order to support the desired development in the energy area. The new domestic initiatives will mean start-up costs of DKK 250-850 million in the period 2007-12. A preliminary DKK 200 million have been transferred from the funds allocated for central-government purchase of credits to the implementation of new domestic initiatives outside ETS sectors, and it has been decided that the remainder will be funded through the coming years' Finance Acts. The amount of funding will depend on the specific initiatives adopted, including the extent to which any changes in taxes will reduce CO<sub>2</sub> emissions.

### 7.3 NATIONAL ENERGY STRATEGY AND DANISH INPUT TO THE EU ENERGY STRATEGY

At the informal energy summit in October 2006, Denmark presented its input to a new energy policy for the EU. Denmark's contribution emphasised quantitative targets for renewable energy and energy savings; strengthening the single market for electricity and gas; and allocating more resources to research development and demonstration of non-nuclear energy technologies in the EU budget. Collaboration in the EU is a natural framework for Danish energy policy and a new national energy agreement will be adopted in early 2007 in continuation of Energy Strategy 2025 and Denmark's input to the EU energy strategy. This national energy agreement is expected to contain more proactive targets for renewable energy and energy savings than the input to the EU. Furthermore, it is expected that a package of specific initiatives to promote renewable energy and energy savings etc. will be adopted, some of which will have an effect on Danish emissions of greenhouse gases as early as in 2008-12.

### 7.4 MONITORING CO<sub>2</sub> REMOVALS BY FORESTS AND SOILS

Denmark has chosen to make use of Article 3.4 of the Kyoto Protocol regarding forest management, cropland management and grassland management in order to meet its Kyoto reduction obligations. The allocation plan includes an expected contribution of 1.82 million tonnes of CO<sub>2</sub>/year from cropland and 0.18 million tonnes of CO<sub>2</sub>/year from forest management in the calculations.

However, successful application of this Article requires the availability of adequate documentation of the CO<sub>2</sub>-reducing changes in forest and cropland practices. The National Environmental Research Institute of Denmark, the Faculty of Agricultural Sciences at Aarhus University, and Forest and Landscape Denmark at the Royal Veterinary and Agricultural University have assessed documentation requirements and costs in accordance with Kyoto Protocol guidelines on land use, land use change, and forestry.

The calculation for forests and forest management must show the change in the overall carbon amount. The calculation for area use, on the other hand, must show the difference between the change in emissions in the reference year and the change in emissions in the commitment period. Thus, what is assessed is the *change* in carbon removal.

For forestry, Article 3.4 covers changes to forest areas that were already established in 1990 (approx. 575,000 hectares of forest), i.e. emission/removal of CO<sub>2</sub> by forest soil and biomass.

The change in emissions from agricultural land use under Article 3.4 covers emissions/removals by mineral soils (sand and clay), organic soils (humus), nurseries, hedgerows, peat for soil improvement and liming. Each of these areas will be stated separately using individual methods for each CO<sub>2</sub> source. For each area, all sources and sinks within the relevant area must be included. There must be validated methods of calculation for the calculation for each area, and an independent verification of the calculation methods chosen must be carried out.

Documentation of calculations and calculation methods must be based on knowledge obtainable from measurements, studies of existing literature, and model calculations. It has been decided in connection with the allocation plan to set aside DKK 72 million over the years 2007-12 for this documentation. The documentation will include e.g. further model building and verification of the Danish carbon model; analysis of satellite images; soil sampling; new mapping of organic soils; preparing Danish emission factors for organic soils and expansion functions for major tree species; as well as annual monitoring and verification costs.

## 8 Government purchase of CO<sub>2</sub> credits and the limit for enterprise use of credits

According to the Commission's guidelines on allocation plans, Member States must explain the extent of planned government purchases of project credits in Eastern Europe and developing countries. Moreover, each Member State must set a limit for enterprises use of credits.

### 8.1 PLANNED GOVERNMENT PURCHASES OF JOINT IMPLEMENTATION AND CLEAN DEVELOPMENT MECHANISM CO<sub>2</sub> CREDITS

Climate projects abroad are an important element of the government's Climate Strategy. According to the Climate Strategy, CO<sub>2</sub> credits should be bought mainly by private enterprises covered by the provisions of the EU ETS Directive. However, through government purchases of climate credits the government intends to contribute to getting the market for these credits up and running sooner than would otherwise be the case. Government purchases of CO<sub>2</sub> credits will be used in efforts to meet Denmark's international climate obligations.

The government set aside DKK 930 million in the period 2003-07 for the purchase of about 3.2 million CO<sub>2</sub> credits annually from Joint Implementation (JI) and Clean Development Mechanism (CDM) projects for use in the period 2008-12. Furthermore, for 2008-9 DKK 200 million have been set aside for the purchase of credits to cover possible losses if, contrary to expectations, Denmark does not get compensation for the reference year, and/or to cover uncertainty in projections, inclusion of sinks etc., which would give an additional approx. 0.3 million tonnes annually in 2008-12. An additional DKK 450 million will be set aside as reserve in the Finance Act to cover the remaining 0.7 million tonnes annually, if Denmark contrary to expectations does not receive compensation for the reference year.

ETS sectors are partially compensated for Denmark's relatively ambitious reduction target in that the Danish state is contributing to getting the market for climate projects up and running, including setting aside funds for facilitation and capacity building in potential climate-credit countries with a view to improving the opportunities for Danish enterprises to launch climate projects which are expected to generate relatively cheap CO<sub>2</sub> credits. The Danish state is also behind its collaboration with enterprises in the Danish Carbon Fund under the World Bank.

### 8.2 STATUS FOR EFFORTS SO FAR

Efforts are by the Ministry of Foreign Affairs and the Ministry of the Environment. The Ministry of Foreign Affairs is responsible for government purchases of CO<sub>2</sub> credits from developing countries, while the Ministry of the Environment buys climate credits from Eastern Europe.

The Ministry of the Environment has entered into contracts for the purchase of 9.4 million tonnes of CO<sub>2</sub> from 18 projects in Rumania, Bulgaria, Poland, Estonia,

Lithuania, the Czech Republic, Armenia, and Russia. The Ministry of Foreign Affairs has entered into contracts for the purchase of 4.6 million tonnes from 15 projects in Egypt, Malaysia, South Africa, Thailand, and Vietnam. The state's total investment in these projects amounts to DKK 590.6 million, including administrative expenses, which comes to an average credit price of DKK 42.2/tonne.

Furthermore, the Danish state has invested a total of DKK 227 million in indirect credits from 3 CO<sub>2</sub>-funds/allowance banks: NEFCO, EcoSecurities/Standard Bank (ESSB) and the World Bank. The contracts with these funds is expected to yield credits, including administrative expenses, at approx. DKK 45/tonne, corresponding to an overall amount of approx. 5 million tonnes.

Overall, efforts so far promise to generate approx. 19 million tonnes in 2008-12. However, taking into account an estimated risk premium of 25 per cent, the expected annual contribution from contracts entered into is approx. 2.8 million tonnes/year in 2008-12. There remains outstanding contracts for 0.4 million tonnes/year before the target of 3.2 million tonnes/year has been reached, and a further 1.0 million tonnes/year if Denmark does not achieve compensation for the reference-year issue.

### 8.3 LIMIT ON ENTERPRISE USE OF JI/CDM CREDITS

The ETS Directive makes it possible for Member States to allow enterprises covered by the ETS to use CO<sub>2</sub> credits from climate projects abroad up to a certain percentage of the allowance allocation. This percentage rate, which is detailed by the individual Member States in their national allocation plans, will have effect from 2008.

Furthermore, according to the ETS Directive, Member States must take into account the relevant provisions of the Kyoto Protocol and the Marrakesh Accord when setting this limit (cap) for use of CO<sub>2</sub> credits from projects. In this way, the requirement that mechanisms must only be a supplement to domestic measures is taken into account.

According to the government's Climate Strategy, compliance with Denmark's Kyoto obligation must be on the basis of cost-effective efforts. The opportunity for enterprises to buy credits should therefore not be limited unnecessarily.

From an overall assessment, the limit on the ETS-enterprise use of CO<sub>2</sub> credits from climate projects abroad can be determined without taking special account of Denmark's complementarity obligation, since Denmark, according to assessments, already meets this requirement (see section 3.3). However, on 29 November 2006, the European Commission published a communication, which describes how Member States can calculate the maximum allowance allocation and the maximum limit for use of JI/CDM credits by installations subject to allowances in a manner approved by the Commission. Denmark has chosen to follow the Commission's calculation method, even though this leads to a lower limit.

This means that the overall limit for use of JI/CDM credits by Danish enterprises is fixed at 19 per cent of the total allowance allocation. The limit has been fixed so that the Danish state can choose to cover the reference year with credit purchases.

The overall JI/CDM limit is differentiated for different types of production and is fixed as an individual limit for each installation unit. The limit for the individual

installation unit may be exceeded in individual years as long as it is not exceeded in the period 2008-12 as a whole.

Electricity production must reduce its emissions the most and therefore gets a higher limit than the other types of production. The limit for electricity production is set at approx. 32.5 per cent, while the limit for other types of production is set at approx. 7 per cent. This means that CHP-producing installations get a weighted limit that is dependant on the distribution between heat and power production's respective percentage of the allowance basis. The differentiated limits are proportionally distributed, so that both the electricity sector and the general category "others", are each able to cover about 89.5 per cent of their expected need to buy allowances with JI/CDM credits (in addition to those they have received for free) in the period 2008-12. This procedure provides those installations with the greatest reduction need (electricity production) with the highest individual limit. In this way, ETS installations can overall cover about 98 per cent of their expected allowance need with free allowances and credits.

The specific limit for the individual installation's use of JI/CDM credits, calculated as the permitted credit amount in tonnes, is in section 11.1.

Installations which receive allowances from the pool for new production capacity or expansion of production capacity at existing installations will have the same limit as existing installations, i.e. approx. 32.5 per cent for electricity-production capacity and approx. 7 per cent for other production capacity. For new CHP capacity the limit is therefore fixed relative to the specific capacity for producing heat and electricity, cf. the principles for allowance allocation described in section 6.6.3

Installations covered by the ETS that do not receive allowances do not receive a limit for the use of JI/CDM credits.

The limit is fixed individually so that each enterprise will know the specific amount of credits it can use. Since the limit is also differentiated between electricity production and other production, the Allowances Registry does not make it possible to fix an overall limit for each sector.

This setting of limits provides enterprises with the possibility to choose, more or less by themselves, how they wish to meet their need for allowances in addition to what they receive free from the state. They can meet their needs by reducing their own emissions of greenhouse gases or by buying CO<sub>2</sub> allowances or JI/CDM credits. If some enterprises end up buying too many credits, they can sell these on the market.

#### 8.4 ENCOURAGING FUTURE PURCHASES OF CO<sub>2</sub> ALLOWANCES/CREDITS BY DANISH ENTERPRISES

With a view to enhancing the involvement of Danish enterprises in CO<sub>2</sub> projects, the Ministry of the Environment, the Ministry of Foreign Affairs, and the Ministry of Finance have identified a number of specific initiatives that will receive funding with the adoption of the allocation plan. An overview of these initiatives is given in text box 1.

As an important innovative feature, a central-government facilitation and consultancy unit will be established to contribute to increased knowledge about the CO<sub>2</sub> market among Danish enterprises. The unit will be contributing with

assessment of the information needs of the enterprises; safeguarding knowledge transfer to enterprises of the state's expertise in the CO<sub>2</sub> area; elaboration and clarification of national and international rules in the credit area; etc.

**TEXT BOX 1: SUMMARY OF INITIATIVES TO ENCOURAGE CO<sub>2</sub> PURCHASES BY ENTERPRISES**

**1) Enhancement of Danish enterprises' knowledge about the CO<sub>2</sub> market**

- Establishing central-government facilitation and consultancy unit, including establishing a single state-run access to information on CO<sub>2</sub> credits
- Establishing an official Danish climate forum
- Better and faster information on legislation and framework conditions
- Offers of e.g. focussed climate training seminars

**2) Enhanced use of existing instruments and resources base**

- Common private and state climate-credit conferences and energy offensives
- Increased focus on Danish strengths in central-government climate projects
- Increased focus on climate-project consultancy in Danish funds etc. and increased cohesion with business assistance instruments.
- Increased focus on capacity development in credit countries and increased exposure to Danish enterprises.

**3) New initiatives to involve Danish enterprises in funds and projects**

- Opportunity for joint deposits in CO<sub>2</sub> credit banks and funds

## 9 Public hearing

Denmark's National Allocation Plan and the related proposal for an amendment of the Danish Act on CO<sub>2</sub> Allowances was sent to hearing with the relevant authorities, organisations, etc. on 17 January 2007. In this connection, operators at installations affected were informed about the hearing. They were moreover informed that the allocation plan had been published on the Danish Environmental Protection Agency's website ([www.mst.dk](http://www.mst.dk)); that the bill had been published on the Energy Authority's website ([www.ens.dk](http://www.ens.dk)) as well as on the [www.horningsportalen.dk](http://www.horningsportalen.dk) (Danish public portal for ministerial hearings).

The time limit for the hearing expired on 7 February 2007. The Danish Environmental Protection Agency received in total 43 responses to hearing request, of which 17 organisations had no comments concerning the allocation plan. To the extent that it was found prudent to support the views within the existing mandate, minor corrections in the draft for allocation plan and bill were made.

Following changes have been made to the allocation plan:

- The demand of at least 3000 annual operating hours for the allocation of allowances for new power plants has been softened, so that a differentiation is made so that new installations with an operating time of 1000 hours and below will not receive allowances, those with an operating time between 1,000 and 1,999 receive 1/3 allowance allocation, and those with an operating time between 2,000 - 2,999 hours receive 2/3 allowance allocation. A special transition rule protects installations which have been decided according to the rules in force.
- District heating parties were critical that allowances for new heat producing installations will not be allocated. Therefore after reconsideration, the bill has been changed, so that allowances are given to heat producing installations for expansion of production capacity by at least 10 MW or 20 per cent.

Furthermore, the work with quality assurance of data in the allocation plan and the bill resulted in a few changes in some decimals in the numerical data.

## 10 References

- REFERENCE 1: DENMARK'S FOURTH NATIONAL COMMUNICATION ON CLIMATE CHANGE  
DANISH ENVIRONMENTAL PROTECTION AGENCY (DANISH EPA)  
LINK: [WWW.MST.DK](http://WWW.MST.DK)
- REFERENCE 2: ENERGIFREMSKRIVNINGSRAPPORT 1: RAMSES – EL OG FJERNVARME  
(ENERGY FORECAST REPORT 1: RAMSES – ELECTRICITY AND DISTRICT  
HEATING)  
THE DANISH ENERGY AUTHORITY (DEA)  
YET TO BE PUBLICISED  
LINK: [WWW.ENS.DK](http://WWW.ENS.DK)
- REFERENCE 3: ENERGIFREMSKRIVNINGSRAPPORT 2: SAMLET ENERGIFREMSKRIVNING  
(ENERGY FORECAST REPORT 2: TOTAL ENERGY PROJECTION)  
DEA  
YET TO BE PUBLICISED  
LINK: [WWW.ENS.DK](http://WWW.ENS.DK)
- REFERENCE 4: PROJECTION OF GREENHOUSE GAS EMISSIONS – 2005 TO 2030  
NATIONAL ENVIRONMENTAL RESEARCH INSTITUTE (NERI)  
LINK: [WWW.DMU.DK](http://WWW.DMU.DK)
- REFERENCE 5: KONSEKVENSER OG MULIGHEDER VED DANMARKS DELTAGELSE I KYOTO-  
PROTOKOLLENS ARTIKEL 3.4 PÅ LANDBRUGSOMRÅDET (CONSEQUENCES  
AND OPPORTUNITIES IN DANISH PARTICIPATION IN ARTICLE 3.4 OF THE  
KYOTO PROTOCOL ON AGRICULTURE)  
NERI AND FACULTY OF AGRICULTURAL SCIENCES, UNIVERSITY OF  
AARHUS  
LINK: [WWW.MST.DK](http://WWW.MST.DK)
- REFERENCE 6: DANISH ACT ON CO<sub>2</sub> ALLOWANCES , AS WELL AS ”BEMÆRKNINGER TIL  
LOVFORSLAG L 216 FREMSAT D. 31. MARTS 2004 , BEKENDTGØRELSE BEK  
NR 950 AF 11/10/2005 OG ÆNDRINGSFORSLAG TIL KVOTELOVEN SENDT I  
HØRING D. 17.1.2007” (BILL AMENDING THE ALLOWANCE ACT AND  
LEGISLATIVE COMMENTS)  
DEA  
LINK: [WWW.ENS.DK](http://WWW.ENS.DK)
- REFERENCE 7: EN OMKOSTNINGSEFFEKTIV KLIMASTRATEGI (A COST-EFFECTIVE CLIMATE  
STRATEGY)  
MINISTRY OF FINANCE  
LINK: [WWW.FM.DK](http://WWW.FM.DK)
- REFERENCE 8: DENMARK'S CLIMATE POLICY OBJECTIVES AND ACHIEVEMENTS  
DANISH EPA  
LINK: [WWW.MST.DK](http://WWW.MST.DK)
- REFERENCE 9: DANMARKS UDLEDNING AF CO<sub>2</sub> - INDSATSEN I PERIODEN 1990-2001  
OG OMKOSTNINGERNE HERVED – HOVEDRAPPORT (DENMARK'S  
EMISSIONS OF CO<sub>2</sub> – MEASURES IN THE PERIOD 1990-2001 AND  
ASSOCIATED COSTS – MAIN REPORT)  
LINK: [WWW.MST.DK](http://WWW.MST.DK)
- REFERENCE 10: EU ETS DIRECTIVE 2003/87/EC  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://EUROPA.EU.INT/COMM/ENVIRONMENT)

- REFERENCE 11: GUIDANCE ON THE PREPARATION OF NATIONAL ALLOCATION PLANS  
COM/2003/0830 FINAL AND COM/2005/0703 FINAL  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)
- REFERENCE 12: EUROPEAN COMMISSION DECISION ON THE NATIONAL ALLOCATION  
PLANS OF 10 MEMBER STATES COM/2006/0725 FINAL  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)
- REFERENCE 13: COMMISSION DECISION ON ASSIGNED AMOUNTS  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)
- REFERENCE 14: DANISH NATIONAL ALLOCATION PLAN FOR 2005-07  
DANISH EPA  
LINK: [WWW.MST.DK](http://www.mst.dk)
- REFERENCE 15: OMKOSTNINGSEFFEKTIVE TILTAG I DE IKKE-KVOTEBELAGTE SEKTORER  
(COST-EFFECTIVE INITIATIVES IN NON-ETS SECTORS)  
TO BE PUBLICISED MARCH 2007  
DANISH EPA  
LINK: [WWW.MST.DK](http://www.mst.dk)
- REFERENCE 16: GREENHOUSE GAS EMISSION TRENDS AND PROJECTIONS IN EUROPE  
2006  
EUROPEAN ENVIRONMENT AGENCY  
LINK: [HTTP://WWW.EEA.EUROPA.EU/](http://www.eea.europa.eu/)
- REFERENCE 17: ANALYSIS OF THE EU ALLOWANCE TRADING SYSTEM  
COWI  
LINK: [WWW.COWI.DK](http://www.cowi.dk)
- REFERENCE 18: EU'S EMISSION TRADING SYSTEM 2008-12 AND THEREAFTER  
ECON ANALYSIS  
LINK: [WWW.ECONDENMARK.DK](http://www.econdenmark.dk)  
[HTTP://WWW.NORDICENERGYPERSPECTIVES.ORG/REPORTS.ASP](http://www.nordicenergyperspectives.org/reports.asp)
- REFERENCE 19: EU ETS MARKET STUDY 2008-12  
COWI  
LINK: [WWW.MST.DK](http://www.mst.dk)
- REFERENCE 20: ENERGY STRATEGY 2025  
DEA  
LINK: [WWW.ENS.DK](http://www.ens.dk)
- REFERENCE 21: COMMISSION DECISION ON CERTAIN INDUSTRIAL  
GREENHOUSE GASES  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)
- REFERENCE 22: EFFEKTEN AF STATSSKOVENES OVERGANG TIL NATURNÆR DRIFT PÅ  
KULSTOFBINDING I SKOVENE (THE EFFECT OF A TRANSITION TO CLOSE-  
TO-NATURE FORESTRY IN DANISH STATE FORESTS)  
ANDREAS BRUNNER ET. AL.  
LINK: [WWW.MST.DK](http://www.mst.dk)
- REFERENCE 23: REPORT ON DEMONSTRABLE PROGRESS UNDER THE KYOTO  
PROTOCOL, (SEC (2005) 1564)  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)
- REFERENCE 24: DIRECTIVE 2004/101/EC ON A SCHEME FOR  
GREENHOUSE GAS EMISSION ALLOWANCE TRADING WITHIN THE

COMMUNITY, IN RESPECT OF THE KYOTO PROTOCOL'S PROJECT  
MECHANISMS  
EUROPEAN COMMISSION, ENVIRONMENT DG  
LINK: [HTTP://EUROPA.EU.INT/COMM/ENVIRONMENT](http://europa.eu.int/comm/environment)

REFERENCE 25: FORELØBIG OPGØRELSE AF DANMARKS UDLEDNING OG OPTAG AF  
DRIVHUSGASER 1990-2005 TIL EU KOMMISSIONEN, 15. JANUAR 2007  
(PRELIMINARY STATEMENT OF DANISH EMISSIONS AND REMOVALS OF  
GREENHOUSE GASES 1990-2005, REPORT TO THE EUROPEAN  
COMMISSIONS 15 JANUARY 2007)  
NERI  
LINK: [WWW.DMU.DK](http://www.dmu.dk)

# 11 List of annexes

## 11.1 LIST OF INSTALLATIONS COVERED AND PRELIMINARY ALLOWANCE ALLOCATION

The following is a list of the Danish installations that are included under the allowance system in 2008-12, including information on the annual allowance allocation to each installation; the limit for use of JI/CDM credits as a percentage of the allowance allocation; and each ETS enterprise's maximum permitted use of JI/CDM credits in the five-year period 2008-12 as a whole.

Plant ID	Plant Name	Category	Allowances per year 2008-12	Of these, allowances for heating per year	JI/CDM limit (%)	Maximum permitted use of JI/CDM credits in the entire period 2008-12 in tonnes
1	Shell Raffinaderiet Fredericia	Industry and services	433096	0	6,99%	151355
2	Assens fjernvarme Amba	Electricity and district heating	0	0		
4	Aulum Fjernvarme A.m.b.a.	Electricity and district heating	290	290	6,99%	101
5	Aulum Fjernvarme A.m.b.a.	Electricity and district heating	8603	2689	24,50%	10539
7	Aalborg Portland A/S	Industry and services	2567178	0	6,99%	897160
10	Albertslund Varmeværk	Electricity and district heating	1637	1637	6,99%	572
17	Ikast El- og Varmeværk	Electricity and district heating	1945	1945	6,99%	680
24	Maribo Varmeværk	Electricity and district heating	0	0		
25	Nykøbing S. Varmeværk	Electricity and district heating	18520	7266	22,47%	20806
26	Oksbøl Varmeværk	Electricity and district heating	13284	4133	24,54%	16298
33	Vejle Fjernvarmeselskab a.m.b.a.	Electricity and district heating	702	702	6,99%	245
38	Østervrå Varmeværk	Electricity and district heating	6526	2380	23,17%	7562
40	Østkraft	Electricity and district heating	54250	23663	21,35%	57918
50	Bramming Fjernvarme A.m.b.a.	Electricity and district heating	30414	9939	24,14%	36709
52	Bjerringbro Varmeværk	Electricity and district heating	1168	1168	6,99%	408
53	Bogense Forsyningsselskab	Electricity and district heating	13115	4537	23,65%	15510
62	Broager Fjernvarmeselskab	Electricity and district heating	10599	3571	23,88%	12656
63	Brovst Fjernvarme	Electricity and district heating	12999	4451	23,74%	15430
73	CTR, Nybrovej Centralen	Electricity and district heating	1435	1435	6,99%	501
74	CTR, Spidslastcentral Phistersvej	Electricity and district heating	1954	1954	6,99%	683
75	Amtssygehuset i Gentofte	Industry and services	2396	0	6,99%	837
76	CTR, KLC 1 Kbh Lufthavn Centralen	Electricity and district heating	946	946	6,99%	331
80	Dagnæs-Bækkelund Varmeværk	Electricity and district heating	143	143	6,99%	50
81	Danisco, Grindsted	Industry and services	49552	0	6,99%	17317
88	Ebeltoft Fjernvarmeværk	Electricity and district heating	0	0		

95	Hedelund Spidslastcentral	Electricity and district heating	451	451	6,99%	158
97	Hjerting Varmeværk	Electricity and district heating	129	129	6,99%	45
98	Gjesing Varmecentral	Electricity and district heating	1388	1388	6,99%	485
99	Sædding Varmeværk	Electricity and district heating	1496	1496	6,99%	523
102	Farum Fjernvarme	Electricity and district heating	2733	2733	6,99%	955
103	Farum Fjernvarme	Electricity and district heating	1595	1595	6,99%	557
104	Fredericia Fjernvarme	Electricity and district heating	206	206	6,99%	72
105	Fredericia Fjernvarme	Electricity and district heating	113	113	6,99%	39
116	Fiskernes Fiskeindustri	Industry and services	50052	0	6,99%	17492
121	Frederiksberg Varmecentral	Electricity and district heating	12922	12922	6,99%	4516
122	Frederikshavn Kommunale Varmeforsyning	Electricity and district heating	2688	2688	6,99%	939
123	Frederikshavn Kommunale Varmeforsyning	Electricity and district heating	2441	2441	6,99%	853
124	Frederikssund Kraftvarmeværk	Electricity and district heating	34398	12893	22,92%	39412
125	Frederiksværk Kommunale Varmeværker	Electricity and district heating	2357	2357	6,99%	824
129	Faaborg Fjernvarme A/S	Electricity and district heating	22596	7612	23,88%	26982
146	Glostrup Kommunale Varmeforsyning	Electricity and district heating	104	104	6,99%	36
152	Grenå Varmeværk	Electricity and district heating	356	356	6,99%	124
154	KVV Grønningen/Central 2	Electricity and district heating	18958	5539	25,02%	23717
156	Gråsten Fjernvarme Amba	Electricity and district heating	13288	4162	24,48%	16268
161	Hinnerup Fjernvarme	Electricity and district heating	634	634	6,99%	222
169	Haderslev Fjernvarme	Electricity and district heating	4212	4212	6,99%	1472
170	Haderslev Fjernvarme	Electricity and district heating	13446	5200	22,61%	15203
172	Hadsten Varmeværk	Electricity and district heating	238	238	6,99%	83
188	Hedensted Fjernvarme	Electricity and district heating	11391	4162	23,16%	13188
190	Helsingør Kommunale Værker	Electricity and district heating	590	590	6,99%	206
191	Helsingør Kommunale Værker	Electricity and district heating	1815	1815	6,99%	634
192	EnergiGruppen Jylland, Holstebrovej	Electricity and district heating	2411	2411	6,99%	843
193	EnergiGruppen Jylland, Nord	Electricity and district heating	1675	1675	6,99%	585
203	Frederiksgade Varmecentral	Electricity and district heating	2019	2019	6,99%	706
204	Ullerød Varmecentral	Electricity and district heating	649	649	6,99%	227
205	Kgs. Vænge Varmecentral	Electricity and district heating	477	477	6,99%	167
206	Elmegaarden Varmecentral	Electricity and district heating	525	525	6,99%	183
207	Hjallerup Fjernvarmeselskab	Electricity and district heating	14751	5096	23,66%	17454
209	Hjørring Varmeforsyning	Electricity and district heating	467	467	6,99%	163
210	Hjørring Varmeforsyning	Electricity and district heating	78958	23109	25,01%	98729
214	Hjørring Varmeforsyning	Electricity and district heating	1051	1051	6,99%	367
215	Hobro Varmeværk	Electricity and district heating	1213	1213	6,99%	424
216	Vestforsyning Varme A/S	Electricity and district heating	1643	1643	6,99%	574
217	Vestforsyning Varme A/S	Electricity and district heating	394	394	6,99%	138
218	Vestforsyning Varme A/S	Electricity and district heating	1275	1275	6,99%	446
219	Vestforsyning Varme A/S	Electricity and district heating	954	954	6,99%	333
220	Vestforsyning Varme A/S	Electricity and district heating	2483	2483	6,99%	868
227	Horsens Varmeværk	Electricity and district heating	2584	2584	6,99%	903

228	Horsens Varmeværk	Electricity and district heating	337	337	6,99%	118
238	Høng Varmeværk	Electricity and district heating	607	607	6,99%	212
245	Billund Varmeværk I	Electricity and district heating	5599	1951	23,59%	6604
246	Billund Varmeværk II	Electricity and district heating	22133	7133	24,25%	26842
247	Brande Fjernvarmecentral	Electricity and district heating	15230	5446	23,35%	17784
249	Brørup Fjernvarme	Electricity and district heating	10830	3718	23,72%	12844
250	Næstved Kraftvarmeværk	Electricity and district heating	24415	10791	21,20%	25885
251	Vattenfall A/S Fynsværket	Electricity and district heating	1331047	555899	21,82%	1452485
254	Helsingør Fjernvarme	Electricity and district heating	17662	6509	23,08%	20379
257	ELSAM KRAFT A/S Grenå Kraftvarmeværk	Electricity and district heating	78750	61764	12,48%	49156
258	Århusværket	Electricity and district heating	750	750	6,99%	262
259	DONG Energy Generation A/S, Studstrupværket	Electricity and district heating	1574673	594888	22,84%	1798277
265	Jetsmark Energiværk A.m.b.a.	Electricity and district heating	15669	5460	23,59%	18479
269	Avedøreværket	Electricity and district heating	1763669	490299	25,38%	2238271
270	DTU Kraftvarmeværk	Electricity and district heating	88577	21082	26,40%	116924
271	Vattenfall A/S Helsingør Kraftvarmeværk	Electricity and district heating	115225	32903	25,19%	145123
272	Vattenfall A/S Hillerød Kraftvarmeværk	Electricity and district heating	201862	55362	25,48%	257145
274	Kyndbyværket	Electricity and district heating	34387	20023	17,63%	30312
276	Haslev Kraftvarmeværk	Electricity and district heating	0	0		
277	Asnæsværket	Electricity and district heating	1765312	115334	30,80%	2718537
278	Stigsnæsværket	Electricity and district heating	389524	3033	32,27%	628409
279	Slagelse Kraftvarmeværk	Electricity and district heating	0	0		
280	Masnedøværket	Electricity and district heating	303	37	29,39%	445
282	DONG Energy Generation A/S, Skærbækværket	Electricity and district heating	653085	126853	27,52%	898507
283	Horsens Kraftvarmeværk A/S	Electricity and district heating	44475	17099	22,67%	50413
285	I/S Vestforbrænding	Electricity and district heating	910	910	6,99%	318
288	DONG Energy Generation A/S, Herningværket	Electricity and district heating	176936	90760	19,40%	171598
289	Måbjergværket A/S	Electricity and district heating	8027	4251	18,97%	7615
290	DONG Energy Generation A/S, Ringkøbing Kraftvarmeværk	Electricity and district heating	16677	7282	21,34%	17794
291	DONG Energy Generation A/S, Skjern Kraftvarmeværk	Electricity and district heating	21195	5721	25,59%	27117
293	Viborg Kraftvarme A/S	Electricity and district heating	674	674	6,99%	236
295	Viborg Kraftvarme A/S	Electricity and district heating	976	976	6,99%	341
296	I/S Vildbjerg Varmeværk	Electricity and district heating	17682	5806	24,10%	21307
298	Ishøj Kommunes Varmeforsyning	Electricity and district heating	228	228	6,99%	80
301	Jyderup Varmeværk	Electricity and district heating	13318	4200	24,43%	16268
304	Kjellerup Fjernvarme	Electricity and district heating	173	173	6,99%	60
308	Kerteminde Kommunale Varmeforsyning	Electricity and district heating	540	540	6,99%	189
313	Kolding Varmeværk Syd	Electricity and district heating	1818	1818	6,99%	635
315	Kolding Varmeværk Dampcentralen	Electricity and district heating	599	599	6,99%	209
317	Kolding Varmeværk Skovparken	Electricity and district heating	126	126	6,99%	44
321	Kolding Varmeværk Strandhuse	Electricity and district heating	1900	1900	6,99%	664
326	Korsør Varme A/S	Electricity and district heating	19707	7715	22,49%	22161
330	Vattenfall A/S Amagerværket	Electricity and district heating	1250991	472673	22,84%	1428546

331	H.C. Ørstedsværket	Electricity and district heating	318974	206965	15,93%	254140
332	Svanemølleværket	Electricity and district heating	332660	146239	21,27%	353704
335	Langeskov Kommunale Fjernvarme	Electricity and district heating	257	257	6,99%	90
338	Lem Varmeværk	Electricity and district heating	14106	6012	21,61%	15239
339	Lemvig Varmeværk	Electricity and district heating	1626	1626	6,99%	568
346	Løgstør Fjernvarmeværk	Electricity and district heating	10387	3268	24,45%	12697
357	Mølholm Varmeværk	Electricity and district heating	72	72	6,99%	25
361	Nakskov Fjernvarme	Electricity and district heating	0	0		
364	Novopan Træindustri A/S	Industry and services	17160	0	6,99%	5997
365	Nyborg Forsyning og Service	Electricity and district heating	432	432	6,99%	151
370	Nykøbing F. Kommunale Varmeforsyning	Electricity and district heating	1331	1331	6,99%	465
371	Nykøbing F. Kommunale Varmeforsyning	Electricity and district heating	5083	5083	6,99%	1776
372	Nykøbing Mors Fjernvarmeværk	Electricity and district heating	17846	7100	22,33%	19924
373	Næstved Varmeværk	Electricity and district heating	206	206	6,99%	72
376	Næstved Varmeværk	Electricity and district heating	1183	1183	6,99%	413
381	Nørre-Aaby Kraftvarmeværk A.M.B.A.	Electricity and district heating	8770	3273	22,96%	10066
385	Nørresundby Fjernvarmeforsyning	Electricity and district heating	243	243	6,99%	85
386	Odder Varmeværk	Electricity and district heating	400	400	6,99%	140
388	Odense Kommune VC Bellinge	Electricity and district heating	715	715	6,99%	250
389	Odense Kommune VC Billedskærervej	Electricity and district heating	2215	2215	6,99%	774
390	Odense Kommune VC Bolbro	Electricity and district heating	1322	1322	6,99%	462
392	Odense Kommune VC Centrum	Electricity and district heating	2004	2004	6,99%	700
393	Odense Kommune VC Dyrup	Electricity and district heating	365	365	6,99%	128
395	Odense Kommune VC Dalum	Electricity and district heating	991	991	6,99%	346
398	Odense Kommune VC Korup	Electricity and district heating	687	687	6,99%	240
400	Odense Kommune VC Næsby	Electricity and district heating	833	833	6,99%	291
402	Odense Kommune VC Pårup	Electricity and district heating	1183	1183	6,99%	413
403	Odense Kommune VC Sanderum	Electricity and district heating	825	825	6,99%	288
405	Odense Kommune VC Sydøst	Electricity and district heating	842	842	6,99%	294
406	Odense Kommune VC Vollsmose	Electricity and district heating	1061	1061	6,99%	371
407	Otterup Kommunale Fjernvarmeforsyning	Electricity and district heating	273	273	6,99%	95
415	Energi Randers Produktion A/S	Electricity and district heating	192096	121140	16,40%	157510
416	Energi Randers Produktion A/S	Electricity and district heating	1152	1152	6,99%	403
419	Ribe Fjernvarmecentral	Electricity and district heating	1510	1510	6,99%	528
420	Ribe Kraftvarmeværk	Electricity and district heating	23903	8232	23,69%	28314
423	Ringe Fjernvarmeselskab	Electricity and district heating	14678	4566	24,54%	18010
425	Rindum Værket	Electricity and district heating	22310	7628	23,75%	26497
426	Ringsted Kraftvarmeværk	Electricity and district heating	30377	9138	24,80%	37668
430	Roskilde Varmeforsyning	Electricity and district heating	2276	2276	6,99%	795
432	Roskilde Varmeforsyning	Electricity and district heating	1362	1362	6,99%	476
443	Rødebro Fjernvarmecentral	Electricity and district heating	714	714	6,99%	250
452	Silkeborg Kommunale Varmeforsyning	Electricity and district heating	1476	1476	6,99%	516
453	Silkeborg Kommunale Varmeforsyning	Electricity and district heating	2902	2902	6,99%	1014

457	Sindal Varmeforsyning	Electricity and district heating	13755	4403	24,31%	16719
459	Skagen Varmeværk	Electricity and district heating	1360	1360	6,99%	475
461	Skanderborg Fjernvarme	Electricity and district heating	372	372	6,99%	130
463	I/S Skive Fjernvarme	Electricity and district heating	36336	14230	22,49%	40855
464	I/S Skive Fjernvarme	Electricity and district heating	593	593	6,99%	207
475	SK-Varme A/S	Electricity and district heating	891	891	6,99%	311
478	SK-Varme A/S	Electricity and district heating	764	764	6,99%	267
499	Støvring Varmeværk	Electricity and district heating	22043	7893	23,34%	25727
500	Danisco Sugar, Nykøbing Sukkerfabrik	Industry and services	83925	0	6,99%	29330
505	Svendborg Fjernvarmecentral	Electricity and district heating	2716	2716	6,99%	949
506	Svendborg Fjernvarmecentral A.m.b.a.	Electricity and district heating	1504	1504	6,99%	526
509	Sæby Varmeværk	Electricity and district heating	33047	10949	24,02%	39696
511	Sønderborg Fjernvarme	Electricity and district heating	122	122	6,99%	43
515	Sønderborg Fjernvarme	Electricity and district heating	958	958	6,99%	335
520	DONG Energy Generation A/S, Enstedværket	Electricity and district heating	1397039	56958	31,43%	2195114
523	Tarm Varmeværk A.m.b.a.	Electricity and district heating	0	0		
525	Thisted Varmeforsyning	Electricity and district heating	1000	1000	6,99%	349
529	Thisted Varmeforsyning	Electricity and district heating	1201	788	15,75%	946
533	Toftlund Fjernvarmecentral	Electricity and district heating	12718	4131	24,19%	15381
536	Tranbjerg Varmeværk	Electricity and district heating	93	93	6,99%	33
543	Taars Varmeværk Amba	Electricity and district heating	8721	3175	23,19%	10112
545	Tønder Fjernvarmeselskab Amba	Electricity and district heating	984	984	6,99%	344
547	Tørring Kraftvarmeværk	Electricity and district heating	11839	3509	24,91%	14747
554	I/S Vamdrup Fjernvarme	Electricity and district heating	9048	3523	22,55%	10200
556	Varmecentral Søndermarken	Electricity and district heating	614	614	6,99%	215
557	Varmecentral Toften	Electricity and district heating	3171	3171	6,99%	1108
565	Videbæk energiforsyning	Electricity and district heating	198	198	6,99%	69
566	Videbæk Energiforsyning	Electricity and district heating	17766	5715	24,27%	21559
567	Vinderup Varmeværk	Electricity and district heating	14258	4570	24,30%	17322
571	Vojens Fjernvarme	Electricity and district heating	25951	12328	20,36%	26422
572	Bødkervænget Varmecentral	Electricity and district heating	935	935	6,99%	327
574	Vrå Varmeværk	Electricity and district heating	7650	4327	18,05%	6906
575	Værløse Varmeværk	Electricity and district heating	712	712	6,99%	249
577	Aabenraa Fjernvarme	Electricity and district heating	1005	1005	6,99%	351
578	Aabenraa Fjernvarme	Electricity and district heating	296	296	6,99%	103
580	Aabenraa Fjernvarme	Electricity and district heating	281	281	6,99%	98
586	Lyngvej Central	Electricity and district heating	1157	1157	6,99%	404
587	Svendborgvej Central	Electricity and district heating	2333	2333	6,99%	815
588	Borgmester Jørgensensvej Central	Electricity and district heating	320	320	6,99%	112
591	Århus Kommunale Værker Risskov Varmecentral	Electricity and district heating	212	212	6,99%	74
597	Århus Kommunale Værker Jens Juuls Vej	Electricity and district heating	2459	2459	6,99%	859
598	Århus Kommunale Værker Viby Varmecentral	Electricity and district heating	168	168	6,99%	59
604	Århus Kommunale Værker Gjellerup	Electricity and district heating	674	674	6,99%	236

635	Frederikshavn Kraftvarmeværk	Electricity and district heating	42889	18070	21,73%	46601
636	Vattenfall A/S Nordjyllandsværket	Electricity and district heating	1103697	228437	27,19%	1500548
637	Hirtshals Kraftvarmeværk	Electricity and district heating	20210	9028	21,08%	21305
646	Høje Gladsaxe Varmecentral	Electricity and district heating	3305	3305	6,99%	1155
673	Hundige Fjernvarmeværk A.m.b.a.	Electricity and district heating	420	420	6,99%	147
734	Carlsberg Danmark A/S	Industry and services	28104	0	6,99%	9822
736	Køge Kraftvarmeværk	Industry and services	3123	0	6,99%	1091
740	Danisco Sugar, Nakskov Sukkerfabrik	Industry and services	107292	0	6,99%	37496
742	Danisco Sugar, Assens Sukkerfabrik	Industry and services	58883	0	6,99%	20578
743	Dalum Papir A/S	Industry and services	52024	0	6,99%	18181
744	Brødrene Hartmann A/S	Industry and services	72834	0	6,99%	25454
751	BASF Health & Nutrition A/S	Industry and services	23029	0	6,99%	8048
753	Maricogen P/S	Industry and services	100716	0	6,99%	35198
754	AarhusKarlsø Denmark A/S	Industry and services	98702	0	6,99%	34494
760	CP Kelco ApS	Industry and services	91081	0	6,99%	31830
782	Dalum Papir Maglemølle	Industry and services	6005	0	6,99%	2099
783	Masnød Gartnerier A/S	Industry and services	27389	0	6,99%	9572
786	Jægerspris Kraftvarme	Electricity and district heating	15427	4960	24,27%	18723
922	Varpelev Tomater A/S	Industry and services	20982	0	6,99%	7333
926	Arla Foods Energy A/S. Afd AKAFA	Industry and services	31982	0	6,99%	11177
928	Knud Jepsen A/S	Industry and services	10601	0	6,99%	3705
929	Fællinggaard Varmeforsyning Aps	Industry and services	16165	0	6,99%	5649
939	Bredstrup Varmeværk	Electricity and district heating	206	206	6,99%	72
945	Brødstrup Totalenergianlæg A/S	Electricity and district heating	18282	5937	24,19%	22114
960	Energi Randers Produktion A/S	Electricity and district heating	341	341	6,99%	119
967	Sakskøbing Fjernvarme	Electricity and district heating	246	246	6,99%	86
970	Solrød Fjernvarmeværk a.m.b.a.	Electricity and district heating	503	503	6,99%	176
974	Højvang Varmecentral	Electricity and district heating	181	181	6,99%	63
987	Bjerringbro Kraftvarmeværk (motor 1-4)	Electricity and district heating	36751	11683	24,37%	44773
988	KVV Tårnvej	Electricity and district heating	34344	11494	23,94%	41106
990	DONG Energy Generation A/S, Esbjergværket	Electricity and district heating	1051486	255530	26,27%	1381290
991	Hvide Sande Fjernvarme	Electricity and district heating	18131	5760	24,37%	22094
992	Lygten Varmeværk	Electricity and district heating	500	500	6,99%	175
994	Østre varmecentral	Electricity and district heating	926	926	6,99%	324
995	Sundholm varmecentral	Electricity and district heating	4860	4860	6,99%	1698
1042	Silkeborg Kraftvarmeværk A/S	Electricity and district heating	226802	52061	26,62%	301832
1057	Gram Fjernvarme	Electricity and district heating	12334	4172	23,85%	14707
1063	Sønderborg Kraftvarme I/S	Electricity and district heating	72625	23623	24,18%	87796
1068	Smørum Kraftvarme	Electricity and district heating	20559	6584	24,31%	24985
1069	Viborg Kraftvarme A/S	Electricity and district heating	145077	40200	25,41%	184285
1070	Brønderslev Kraftvarme	Electricity and district heating	61479	22344	23,21%	71333
1084	Alfred Pedersen og Søn	Industry and services	28443	0	6,99%	9940
1087	Dragsbæk Maltfabrik A/S	Industry and services	33988	0	6,99%	11878
1088	Kronborg Aps.	Industry and services	10712	0	6,99%	3744
1091	Arla Foods Energy A/S. Afd. Danmark Protein A/S	Industry and services	31410	0	6,99%	10977
1101	Arla Foods Energy A/S, Arinco Afdeling	Industry and services	42504	0	6,99%	14854
1102	Arla Foods Energy A/S, Afd. HOCO	Industry and services	38481	0	6,99%	13448
1109	Odense Erhvervspark A/S	Industry and services	18330	0	6,99%	6406
1130	Gartneriet Hjortebjerg Kraftvarme I/S	Industry and services	5135	0	6,99%	1795
1244	EnergiGruppen Jylland, Vest	Electricity and district	29	29	6,99%	10

		heating				
1351	Gladsaxe Spidslastanlæg	Electricity and district heating	1863	1863	6,99%	651
1395	Danfoss	Industry and services	24865	0	6,99%	8690
1396	Cheminoa A/S	Industry and services	78505	0	6,99%	27435
1403	Carlsberg A/S	Industry and services	22769	0	6,99%	7957
1409	Svendborg Kraftvarmeværk	Electricity and district heating	33921	9041	25,67%	43544
1449	Skagen Kraftvarmeværk	Electricity and district heating	23262	7206	24,57%	28580
1490	Energi Randers Produktion A/S	Electricity and district heating	3366	3366	6,99%	1176
1494	Maribo-Sakskøbing Kraftvarmeværk	Electricity and district heating	77	41	18,97%	73
1544	Villemoes Teglværk	Industry and services	4653	0	6,99%	1626
1551	CTR, Uterslev Varmecentral	Electricity and district heating	546	546	6,99%	191
1568	Danish Malting Group	Industry and services	29104	0	6,99%	10171
1632	Fredericia Varmeværk, Erritsø	Electricity and district heating	2170	2170	6,99%	758
1635	Vejle Varmeværk Nørremarkens Kedelcentral	Electricity and district heating	204	204	6,99%	71
1636	Vejle Varmeværk Søndermarkens Kedelcentral	Electricity and district heating	241	241	6,99%	84
1638	Gasværksvej Varmecentral	Electricity and district heating	8692	8692	6,99%	3038
1702	A/S Bachmanns Teglværk	Industry and services	4940	0	6,99%	1726
1704	Akzo Nobel Salt A/S	Industry and services	17182	0	6,99%	6005
1705	Amtssygehuset i Glostrup	Industry and services	15119	0	6,99%	5284
1710	Arla Foods Samden	Industry and services	25753	0	6,99%	9000
1711	Carl Matzens Teglværk A/S	Industry and services	4485	0	6,99%	1567
1713	Colas, Glostrup	Industry and services	1643	0	6,99%	574
1714	Colas, Herfølge	Industry and services	1126	0	6,99%	394
1715	Colas, Horsens	Industry and services	1561	0	6,99%	546
1716	Colas, Vinderup	Industry and services	1233	0	6,99%	431
1717	Daka Proteins Løsning	Industry and services	18025	0	6,99%	6299
1718	Daka Bio-industries Ortved	Industry and services	15094	0	6,99%	5275
1719	Daka Bio-industries Randers	Industry and services	15988	0	6,99%	5587
1720	Damolin Fur A/S	Industry and services	9236	0	6,99%	3228
1721	Damolin Mors A/S	Industry and services	23687	0	6,99%	8278
1722	Dangrønt Ribe	Industry and services	10745	0	6,99%	3755
1723	Dangrønt Ringkøbing	Industry and services	17169	0	6,99%	6000
1725	Danish Crown Ringsted	Industry and services	8582	0	6,99%	2999
1726	Danogips	Industry and services	21036	0	6,99%	7352
1727	DANSK ETERNIT A/S	Industry and services	0	0		
1728	Maxit, Hinge	Industry and services	53827	0	6,99%	18811
1729	DanSteel	Industry and services	70289	0	6,99%	24564
1730	V&S Danmark A/S, V&S Distillers Aalborg	Industry and services	7525	0	6,99%	2630
1731	DTU Kedelcentral	Electricity and district heating	2865	2865	6,99%	1001
1732	EGETÆPPER A/S	Industry and services	5395	0	6,99%	1885
1733	Faxe Kalk, Ovnanlægget Stubberup	Industry and services	99602	0	6,99%	34808
1734	Gråsten Teglværk	Industry and services	4123	0	6,99%	1441
1735	Gyproc A/S	Industry and services	17085	0	6,99%	5971
1736	Haldor Topsøe A/S	Industry and services	23788	0	6,99%	8313
1737	Hanstholms Fiskemølsfabrik A/S	Industry and services	13082	0	6,99%	4572
1738	Harboes Bryggeri A/S	Industry and services	6901	0	6,99%	2412
1739	Helligsø Teglværk A/S	Industry and services	5710	0	6,99%	1995
1741	Højslev Tejl A/S	Industry and services	6232	0	6,99%	2178
1742	Kraftvarmeværk	Industry and services	24106	0	6,99%	8424
1743	Lafarge Roofing A/S - Volstrup Teglværk	Industry and services	4745	0	6,99%	1658
1744	LUNDGÅRD TEGLVÆRK A/S	Industry and services	9740	0	6,99%	3404
1745	NCC Roads A/S, asfalt	Industry and services	4491	0	6,99%	1569
1746	NCC Roads A/S, asfalt	Industry and services	2428	0	6,99%	849
1747	NCC Roads A/S, asfalt	Industry and services	2188	0	6,99%	765
1748	NCC Roads A/S, asfalt	Industry and services	2601	0	6,99%	909
1749	Nordtegl A/S	Industry and services	3539	0	6,99%	1237

1750	Novo Nordisk A/S	Industry and services	4587	0	6,99%	1603
1751	Novozymes A/S	Industry and services	15913	0	6,99%	5561
1752	Nybro Gasbehandlingsanlæg	Industry and services	19896	0	6,99%	6953
1753	Nybro Tørreri	Industry and services	15796	0	6,99%	5520
1754	ODENSE STAALSKIBSVÆRFT A/S	Industry and services	14793	0	6,99%	5170
1755	Odense Universitets Hospital	Industry and services	6063	0	6,99%	2119
1756	Maxit, Ølst	Industry and services	53328	0	6,99%	18637
1759	Palsgaard A/S	Industry and services	5967	0	6,99%	2085
1760	Pedershvile Teglværk	Industry and services	8950	0	6,99%	3128
1761	PETERSEN TEGLVÆRK EGERSUND A/S	Industry and services	9700	0	6,99%	3390
1762	PETERSMINDE TEGLVÆRK A/S	Industry and services	12855	0	6,99%	4492
1763	Pipers Teglværker A/S Gandrup Teglværk	Industry and services	15518	0	6,99%	5423
1764	PIPERS TEGLVÆRKER A/S Hammershøj Teglværk	Industry and services	13855	0	6,99%	4842
1765	Prøvelyst Teglværk	Industry and services	9205	0	6,99%	3217
1766	Rexam Glass Holmegaard A/S	Industry and services	61470	0	6,99%	21482
1767	Rockwool A/S Doense	Industry and services	48867	0	6,99%	17078
1769	Rockwool A/S, Vamdrup	Industry and services	58120	0	6,99%	20311
1770	Saint Gobain Isover A/S	Industry and services	12000	0	6,99%	4194
1772	Skjern Papirfabrik A/S	Industry and services	12151	0	6,99%	4246
1773	Statoil Raffinaderiet	Industry and services	431356	0	6,99%	150747
1775	Sun Chemical A/S	Industry and services	13710	0	6,99%	4791
1777	Munck Asfalt A/S	Industry and services	2216	0	6,99%	774
1778	Munck Asfalt A/S	Industry and services	2808	0	6,99%	981
1779	Munck Asfalt A/S	Industry and services	2580	0	6,99%	902
1780	Ydby Teglværk A/S	Industry and services	6156	0	6,99%	2151
1781	TripleNine Fish Protein Tyborøn	Industry and services	45227	0	6,99%	15806
1782	Triplene Fish Protein, Esbjerg	Industry and services	43570	0	6,99%	15227
1783	Tulip Food Company Vejle	Industry and services	5271	0	6,99%	1842
1784	Tychsen's Teglværk A/S	Industry and services	4103	0	6,99%	1434
1785	Vedstaarup Teglværk A/S	Industry and services	13756	0	6,99%	4807
1786	Vesterled Teglværk A/S	Industry and services	11605	0	6,99%	4056
1788	Vindø Teglværk A/S	Industry and services	7426	0	6,99%	2595
1789	WIENERBERGER A/S	Industry and services	4785	0	6,99%	1672
1793	LMK Vej A/S Randers Asfaltfabrik	Industry and services	884	0	6,99%	309
1794	LMK Vej A/S Ølstykke Asfaltfabrik	Industry and services	1463	0	6,99%	511
1796	Danish Crown Horsens	Industry and services	0	0		
1798	Duferco Danish Steel	Industry and services	10272	0	6,99%	3590
1799	Danisco Gørlev	Industry and services	13814	0	6,99%	4828
1800	Syd Arne feltet omfattende anlæg på Syd Arne platformen	Offshore	208084	0	6,99%	72720
1801	Dan feltet omfattende anlæg på platformene Dan A, -B, -C, -D, -E, -FA, -FB, -FC, -FD, -FE, -FF og -F	Offshore	647750	0	6,99%	226371
1802	Gorm feltet omfattende anlæg på platformene Gorm A, -B, -C, -D, -E og F	Offshore	446894	0	6,99%	156177
1803	Harald feltet omfattende anlæg på platformene Harald A og -B	Offshore	37977	0	6,99%	13272
1804	Tyra feltet omfattende anlæg på platformene Tyra Vest A, -B, -C, -D og -E samt Tyra Øst A, -B, -C, -	Offshore	620821	0	6,99%	216960
1805	Siri feltet omfattende anlæg på Siri platformen	Offshore	226445	0	6,99%	79136
1806	Halfdan feltet omfattende anlæg på platformene Halfdan HDA, -HDB, -HDC og -HBA	Offshore	92482	0	6,99%	32320
1712	Codan Gummi A/S	Industry and services	3534	0	6,99%	1235
1824	Høje Tåstrup	Electricity and district heating	108	108	6,99%	38
1825	Svogerslev Fjernvarmecentral	Electricity and district heating	618	618	6,99%	216
1826	Lystrup Fjernvarme Amba	Electricity and district heating	55	55	6,99%	19
1827	Fjernvarmecentralen Avedøre Holme	Electricity and district heating	3321	3321	6,99%	1161
1828	Hvidovre Midt	Electricity and district heating	622	622	6,99%	217
1829	Hvidovre Hospital	Industry and services	1514	0	6,99%	529
1830	Brøndbyøster Fjernvarmecentral	Electricity and district heating	742	742	6,99%	259

1831	Brøndbyvester Fjernvarmecentral	Electricity and district heating	986	986	6,99%	345
1832	Brøndby Strand Fjernvarmecentral	Electricity and district heating	501	501	6,99%	175
1833	Avedøre Fjernvarme A.m.b.a	Electricity and district heating	396	396	6,99%	138
1841	Holme Lundshøj Fjernvarme amba	Electricity and district heating	10	10	6,99%	3
1847	Middelfart Fjernvarme, Hovedcentral	Electricity and district heating	242	242	6,99%	85
1853	Arkil asfalt	Industry and services	1899	0	6,99%	664
1854	NCC Roads Trige	Industry and services	2656	0	6,99%	928
1855	Rønne Vand og Varmeforsyning Amba, reserve og spidslastcentral	Electricity and district heating	96	96	6,99%	34
1857	Hedegårdens varmecentral (I/S Vestforbrænding)	Electricity and district heating	134	134	6,99%	47
1858	DONG Energy kedler ved SCA Packaging	Electricity and district heating	15033	15033	6,99%	5254
1870	Danscan Steel A/S	Industry and services	0	0		
1877	Colas Sundholmen, Nørresundby	Industry and services	0	0		
1891	25 MW Gasturbine	Electricity and district heating	9875	0	32,46%	16029
1892	Energi Fyn Holding A/S - Kratholmvej	Electricity and district heating	0	0		
1893	Effektmarked DK I/S	Electricity and district heating	0	0		
1906	LMK VEJ A/S - Vandel Asfaltfabrik	Industry and services	0	0		
1917	CTR, KLC2 - Københavns Lufthavn	Electricity and district heating	6000	6000	6,99%	2097

## 11.2 NAP STANDARD TABLES

Tables including key information on allocation plan assumptions as stated in the Commission's guidelines for preparation of allocation plans, cf. COM/2005/703.

### I. NAP Summary Table

I. <u>NAP summary table – target calculation</u> (Grey fields are filled out automatically)			
Row	Data table no.		Emissions (Mt CO <sub>2</sub> eq)
A		Target under Kyoto Protocol or Burden Sharing Agreement (avg. annual GHG emissions 2008-12)	54,77
B	III	Total GHG emissions 2003 (excluding LULUCF emissions and removals)	68,09
C		<b>Difference +/-</b> (row A - row B) (negative means need to reduce)	-13,33
D	III	Av. annual projected total GHG emissions 2008-2012 ('with measures' projection)	67,80
E		<b>Difference +/-</b> (row A - row D) (negative means need to reduce)	-13,03
<b>Reduction measures (where relevant)</b>			
F	V	EU emissions trading scheme [1], [2]	5,2
G	VI	Additional policies and measures (other than emissions trading), including LULUCF	3,60
H	VII	Government purchase of Kyoto mechanisms	4,20
I		<b>Total reduction measures</b> (row F + row G + row H)	13,00

[1] Please insert average annual contribution to reduction (in negative figure)  
 [2] Please insert the figure in Table V, Line L, Column iv minus the annual average emissions in 2008-2012 in the ETS sector under the business as usual scenario

## IIa. NAP Summary Table – basic data

II a		NAP Summary table – Basic data (Grey fields are filled out automatically)																								
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Annual/ average 2008-2012	
A	Real GDP [1] (in billion €2000)	Absolute 136.4	Absolute 137.9	Absolute 138.8	Absolute 138.8	Absolute 146.3	Absolute 150.4	Absolute 154.2	Absolute 158.7	Absolute 162.7	Absolute 166.9	Absolute 171.7	Absolute 174.3	Trend index 2003=100 77.1	Trend index 2003=100 77.97	Trend index 2003=100 78.45	Trend index 2003=100 78.45	Trend index 2003=100 82.74	Trend index 2003=100 85.02	Trend index 2003=100 87.16	Trend index 2003=100 89.74	Trend index 2003=100 91.96	Trend index 2003=100 94.38	Trend index 2003=100 97.06	Trend index 2003=100 98.57	Trend index 2003=100 100
B	Emissions [1] (Mt of CO <sub>2</sub> ) [2]	Absolute 52.7	Absolute 63.4	Absolute 57.6	Absolute 59.8	Absolute 63.2	Absolute 60.5	Absolute 74.0	Absolute 64.5	Absolute 60.4	Absolute 57.5	Absolute 53.1	Absolute 54.7	Trend index 2003=100 88.63	Trend index 2003=100 106.60	Trend index 2003=100 96.88	Trend index 2003=100 100.48	Trend index 2003=100 106.38	Trend index 2003=100 101.67	Trend index 2003=100 124.40	Trend index 2003=100 108.41	Trend index 2003=100 101.59	Trend index 2003=100 96.77	Trend index 2003=100 89.25	Trend index 2003=100 91.99	Trend index 2003=100 100
C	Carbon Intensity [1] (million tonnes CO <sub>2</sub> / billion €)	Absolute 0.39	Absolute 0.46	Absolute 0.42	Absolute 0.43	Absolute 0.43	Absolute 0.40	Absolute 0.48	Absolute 0.41	Absolute 0.37	Absolute 0.34	Absolute 0.31	Absolute 0.31	Trend index 2003=100 0.39	Trend index 2003=100 0.46	Trend index 2003=100 0.42	Trend index 2003=100 0.43	Trend index 2003=100 0.43	Trend index 2003=100 0.40	Trend index 2003=100 0.48	Trend index 2003=100 0.41	Trend index 2003=100 0.37	Trend index 2003=100 0.34	Trend index 2003=100 0.31	Trend index 2003=100 0.31	Trend index 2003=100 0.31
Year		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Annual/ average 2008-2012													
A	Real GDP [1] (in billion €2000)	Absolute 176.1	Absolute 176.9	Absolute 180.8	Absolute 185.3	Absolute 187.9	Absolute 191.7	Absolute 196.3	Absolute 199.1	Absolute 202.9	Absolute 205.9	Absolute 209.2	Absolute 202.48	Trend index 2003=100 99.57	Trend index 2003=100 100	Trend index 2003=100 102.23	Trend index 2003=100 104.75	Trend index 2003=100 106.25	Trend index 2003=100 108.37	Trend index 2003=100 110.39	Trend index 2003=100 112.57	Trend index 2003=100 114.71	Trend index 2003=100 116.40	Trend index 2003=100 118.29	Trend index 2003=100 120.47	Trend index 2003=100 100
B	Emissions [1] (Mt of CO <sub>2</sub> ) [2]	Absolute 54.3	Absolute 59.5	Absolute 54.0	Absolute 50.4	Absolute 58.0	Absolute 57.2	Absolute 57.7	Absolute 56.3	Absolute 54.73	Absolute 53.4	Absolute 53.9	Absolute 54.67	Trend index 2003=100 91.24	Trend index 2003=100 100	Trend index 2003=100 90.79	Trend index 2003=100 84.80	Trend index 2003=100 97.52	Trend index 2003=100 96.11	Trend index 2003=100 97.11	Trend index 2003=100 94.73	Trend index 2003=100 87.43	Trend index 2003=100 89.79	Trend index 2003=100 90.63	Trend index 2003=100 91.94	Trend index 2003=100 100
C	Carbon Intensity [1] (million tonnes CO <sub>2</sub> / billion €)	Absolute 0.31	Absolute 0.34	Absolute 0.30	Absolute 0.27	Absolute 0.31	Absolute 0.30	Absolute 0.30	Absolute 0.28	Absolute 0.26	Absolute 0.26	Absolute 0.26	Absolute 0.27	Trend index 2003=100 0.31	Trend index 2003=100 100	Trend index 2003=100 0.30	Trend index 2003=100 0.27	Trend index 2003=100 0.31	Trend index 2003=100 0.30	Trend index 2003=100 0.30	Trend index 2003=100 0.28	Trend index 2003=100 0.26	Trend index 2003=100 0.26	Trend index 2003=100 0.26	Trend index 2003=100 0.26	Trend index 2003=100 0.27

[1] Indicate data source(s), separately per year where relevant

[2] Please note that contrary to the explanation of Table Ia on page 34 of the English version of the NAP guidance communication, we are requesting here only CO<sub>2</sub> and not total greenhouse gas emissions.

Iib. NAP Summary Table – basic data on electricity sector

II b												
NAP Summary table – Basic data on electricity sector [1] (Grey fields are filled out automatically)												
Year	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average 2008-2012
A	Total domestic electricity production (TWh)	34,44	43,75	38,41	34,45		43,33	42,29	37,69	39,24	39,05	40,32
B	Total Imports (TWh)	0,67	0,00	0,00	1,37	0,00	0,00	0,00	0,00	0,00	0,00	0,00
B/a	Country 1	0,67			1,37							
B/b	Country n											
B/c	Other countries											
C	Total Exports (TWh)	0,00	8,54	2,87	0,00	0,00	7,78	6,86	1,96	3,34	2,96	4,58
C/a	Country 1		8,54	2,87			7,78	6,86	1,96	3,34	2,96	4,58
C/b	Country n											
C/c	Other countries											
D	Electricity trade balance (TWh, total row B - total row C)	0,67	-8,54	-2,87	1,37	0,00	-7,78	-6,86	-1,96	-3,34	-2,96	-4,58
E	Share of gas in total domestic electricity production (%)	24%	21%	25%	24%							
F	Share of oil in total domestic electricity production (%)	12%	5%	4%	4%							
G	Share of coal in total domestic electricity production (%)	46%	55%	46%	43%							
H	Share of nuclear energy in total domestic electricity production (%)	0	0	0	0	0	0	0	0	0	0	0,00
I	Share of renewable energy, including biomass, in total domestic electricity production (%) [2]	16%	18%	24%	28%		32%	33%	35%	35%	36%	0,34

[1] Indicate data source(s), separately per year, where relevant.  
 [2] The cell in row I for the year 2010 should also include (in footnote) the target pursuant to Directive 2001/77/EC.

III. NAP Summary table – Recent and projected greenhouse gas emissions per common reporting format sector (without taking into account additional policies and measures in Table VI)

III NAP Summary table – Recent and projected greenhouse gas emissions per common reporting format sector (without taking into account additional policies and measures in Table VI) (Grey fields are filled out automatically)												
Row ref.	CRF subsector		2003	2004	2005	2008	2009	2010	2011	2012	Average annual projected emissions 2008-2012	
		in Mt CO <sub>2</sub> eq										
A	1.A.1	Energy generation	GHG	31.9	25.9	22.6	29.6	28.2	23.9	25.3	25.8	26.55
B		CO <sub>2</sub> in ETS					27.7	26.3	21.8	23.1	24.0	24.56
C	1.A.3	Transport	GHG	13.1	13.3	13.6	14.1	14.1	14.0	14.1	14.2	14.10
D	1.A.4a + b + c	Commercial and institutional, Residential, and Agricultural energy use	GHG	7.8	7.5	7.5	7.2	7.1	7.0	6.9	6.7	6.96
E		CO <sub>2</sub> in ETS					0.1	0.1	0.1	0.1	0.1	0.07
F	2	Industrial processes	GHG	3.2	3.1	2.5	2.7	2.7	2.7	2.7	2.6	2.68
G		CO <sub>2</sub> in ETS					1.5	1.5	1.5	1.5	1.5	1.46
I	4	Agriculture	GHG	10.1	10.0	9.9	9.6	9.5	9.5	9.4	9.3	9.44
J	5	Land-Use Change and Forestry	GHG	-2.4	-3.1	-1.5						#DIVISION/0!
K	6	Waste	GHG	1.5	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.36
L	1.A.2 + 1.A.4 + 1.A.5 + 1.B + 3 + 7	All other sectors	GHG	6.6	7.0	6.6	6.6	6.6	6.8	6.8	6.8	6.72
M		CO <sub>2</sub> in ETS					3.5	3.6	3.6	3.7	3.7	3.61
N		Total (A+C+D+F+I+J+K+L)	GHG	71.7	65.1	62.5	71.0	69.5	65.1	66.5	66.8	67.80
O		Total in ETS (B + E + G + M)	CO <sub>2</sub> in ETS	0	0	0	32.8	31.4	26.9	28.3	29.2	29.71

IV. NAP Summary table – Recent and projected CO<sub>2</sub> emissions in sectors covered by the EU emissions trading scheme

IV NAP Summary table – Recent and projected CO <sub>2</sub> emissions in sectors covered by the EU emissions trading scheme (Grey fields are filled out automatically)												
Emissions in Mt CO <sub>2</sub> eq	i	ii	iii [3]	iv	v	vi	vii	viii	ix	x	xi	
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Average annual projected emissions 2008 – 2012 [1]	
<b>A</b>	<b>combustion installations total (excluding installations covered under rows B-J)</b>	31,71	25,91	22,08	0,00	0,00	28,68	27,30	22,76	24,13	24,98	25,57
	main activity 1	31,71	25,91	22,08		28,68	27,30	22,76	24,13	24,98		25,57
	main activity 2											
	flaring											
	integrated steelworks											
	crackers											
	fumaces											
	main activity n											
<b>B</b>	mineral oil refineries	1,00	0,98	0,92		1,01	1,01	1,01	1,01	1,01		1,01
<b>C</b>	coke ovens	0,00	0,00	0,00		0,00	0,00	0,00	0,00	0,00		0,00
<b>D</b>	metal ore roasting, sintering, pig iron and steel producing installations	0,00	0,00	0,00		0,00	0,00	0,00	0,00	0,00		0,00
<b>E</b>	cement producing installations	2,52	2,77	2,57		2,56	2,59	2,63	2,64	2,64		2,61
<b>F</b>	lime producing installations	0,10	0,10	0,09		0,09	0,09	0,10	0,10	0,10		0,09
<b>G</b>	glass and glass fibre producing installations	0,07	0,07	0,07		0,07	0,07	0,07	0,07	0,07		0,07
<b>H</b>	ceramics producing installations	0,27	0,31	0,33		0,32	0,33	0,33	0,34	0,34		0,33
<b>I</b>	pulp, paper and board producing installations	0,02	0,02	0,02		0,02	0,02	0,02	0,02	0,02		0,02
<b>J</b>	Total (Rows A and B to I) [2]	35,69	30,17	26,08	0,00	0,00	32,75	31,41	26,92	28,31	29,16	29,71
<b>K</b>	Share of EU ETS CO <sub>2</sub> in total GHG emissions (%) (Row J / Row N in table III)	0,00%	0,00%	0,00%		46,10%	45,18%	41,33%	42,56%	43,67%		43,77%
[1]	Numbers to be used in last two columns of Table V.						32,75	31,41	26,92	28,31	29,16	29,71
[2]	Row J must be equal to Row O in Table III:	0,00	0,00	0,00			32,75	31,41	26,92	28,31	29,16	29,71
[3]	Please insert figures equal to the registry data on the surrendered amount of allowances (note that this is not the allocation data).											

V. NAP Summary table – Proposed allocation in relation to first period allocation (without additional policies and measures) in the sectors covered by the EU emissions trading scheme

V		NAP Summary table – Proposed allocation in relation to first period allocation (without additional policies and measures) in the sectors covered by the EU emissions trading scheme		Register		ENS	
(Grey fields are filled out automatically)		i	ii	iii	iv	v	
		2003 actual CO <sub>2</sub> emissions (Mt CO <sub>2</sub> )	2004 actual CO <sub>2</sub> emissions (Mt CO <sub>2</sub> )	Average annual allocation 2005 - 2007	Proposed average annual allocation in 2008-2012	Proposed ETS allocation as a percentage of first period ETS allocation	
A	combustion installations total (excluding installations covered under rows B-J)	31,71	25,91	26,70	20,08	75,20%	
		main activity 1	31,71	25,91	26,70	20,08	75,20%
		main activity 2	0,00	0,00			#DIVISION/01
		flaring	0,00	0,00			#DIVISION/01
		integrated steelworks	0,00	0,00			#DIVISION/01
		crackers	0,00	0,00			#DIVISION/01
		furnaces	0,00	0,00			#DIVISION/01
		main activity n	0,00	0,00			#DIVISION/01
		mineral oil refineries	1,00	0,98	1,04	0,86	83,08%
		coke ovens	0,00	0,00	0,00	0,00	#DIVISION/01
		metal ore roasting, sintering, pig iron and steel producing installations	0,00	0,00	0,00	0,00	#DIVISION/01
		cement producing installations	2,52	2,77	2,78	2,57	92,40%
		lime producing installations	0,10	0,10	0,11	0,10	90,00%
		glass and glass fibre producing installations	0,07	0,07	0,08	0,07	90,06%
ceramics producing installations	0,27	0,31	0,36	0,31	85,65%		
pulp, paper and board producing installations	0,02	0,02	0,02	0,02	95,09%		
Total	35,69	30,17	30,92	24,00	77,62%		



VII. NAP Summary table – Government’s planned use of Kyoto units (Mt CO<sub>2</sub>eq) and status of implementation

VII						
NAP Summary table – Government’s planned use of Kyoto units (Mt CO <sub>2</sub> eq) and status of implementation						
<i>(Grey fields are filled out automatically)</i>						
A	Planned purchase	ERUs			Total	
		Total 2008-2012	CERs	AAUs and others		
B	Annual average	2,3	1,9	0	4,20	
C	Quantity of units already paid for	3,20	0,30		3,50	
D	Quantity of units contracted, but yet unpaid (delivery pending start of UN ITL) [1]	9	6,5		15,50	
E	Neither bought nor contracted by date of notification (A - C - D)	-0,7	2,7	0	2,00	
F	Full budget appropriated to first commitment period (2008-12)	Currently available for 2006 (M EUR)	2	13	15,00	
G		Committed for the future (M EUR) [2]	44	44	88,00	
H	Implied future price M EUR/Mt CO <sub>2</sub> eq ((F+G)/E)				#DIVISION/01	

[1] Units partially paid for should be proportionally distributed between lines C and D

[2] Row G should not include the sums intended to cover payments for units represented in row D

VIII. NAP Summary table – Details on new entrants, closures and auctioning

VIII

NAP Summary table – Details on new entrants, closures and auctioning

Issues with respect to new entrants	Description of NAP provisions
Does the plan contain a new entrants' reserve?	YES
What is its size in absolute terms and as a percentage of the total quantity of allowances for the period?	2.0%
What use is made of allowances left over in the reserve at the end of the trading period? (cancellation, sold)	Sold/auctioned
How will new entrants be treated in case the reserve runs out of allowances before the end of the trading period? (reserve replenished, further new entrants buy in the market)	Further new entrants buy in the market.
Does the allocation to the new entrant depend on the actual choice of fuel?	NO
Does the allocation to the new entrant depend on the actual choice of technology?	NO, with a few exceptions
Does the allocation to the new entrant depend on the estimated or actual number of operating hours or does the allocation use a standard number of operating hours?	Standard number used.
<b>Auctioning</b>	
Will any allowances be auctioned?	Only surplus from NER
What share of the total quantity of allowances will be auctioned?	0-2%
Who can participate in the auction?	Anyone
What auctioning method will be used?	Undecided
When at what intervals will the auction(s) be held?	Undecided
What quantity of allowances will be auctioned each time?	Undecided
What use will be made of the revenues?	Undecided
Will the auctions be coordinated with any auctions in other Member States?	Undecided
<b>Closures</b>	
Do operators have to report to the competent authority when an installation closes, and on what conditions is an installation considered to be closed?	Yes
Does the operator continue to be issued allowances for a closed installation in the remaining years of the trading period? If the reply depends on whether the operator sets up a new entrant installation replacing the closed installation, please briefly describe the provision.	No
What happens to any allowances that were intended for an installation, which will not receive them after closure? (cancellation, fed into a new entrants' reserve, auctioning)	Sold/auctioned

IX. NAP Summary table – Further details on selected new entrants

IX  
NAP Summary table – Further details on selected new entrants

	Power plant with a rated thermal input exceeding 20 MW	Power plant with a rated thermal input exceeding 20 MW
Maximum capacity of the actual installation	(At least 100 MW)	(At least 100 MW)
Fuel (s) used	Coal	Gas
Forecast number of operating hours/year in the period 2008 to 2012	>3000	>3000
Annual allowance allocation in 2008 to 2012 (allocation per MWe)	1 185	1 185

X. NAP Summary table - Important assumptions on annual averages

X  
NAP Summary table - Important assumptions on annual averages

Year	EU Allo- wance price (in Euro)	Crude oil price (Brent) [1]	Natural gas price [1]	Coal price [1]	Exchange rate [2]	Other
2005		7,50	4,19	2,07	7,45	
2006		9,44	6,37	2,04	7,45	
2007		8,80	6,39	2,00	7,45	
2008	€20	8,17	5,97	1,96	7,45	
2009	€20	7,53	5,56	1,93	7,45	
2010	€20	6,90	5,37	1,90	7,45	
2011	€20	6,90	5,36	1,90	7,45	
2012	€20	6,90	5,35	1,89	7,45	

[1] Use common market standard and specify, including the currency used; indicate in detail sources of data and methodologies

[2] For those Member States outside the Euro-zone

### 11.3 ALLOCATION CRITERIA - KEY FIGURES

List of heavy processes	Allowances per capacity unit (NAP2)	Capacity unit	Process emissions
1) Used to heat greenhouses with a covered area of at least 200 m <sup>2</sup> in market gardens and their grow lights, but excluding greenhouses for retail selling.	0.096	m <sup>2</sup> of heated greenhouse	
2) Used directly in evaporating and drying saline solution.	34 412	tonnes dry salt per hour tonnes undried salt per hour	
3) Used directly in pasteurising, sterilising, evaporating, homogenising, concentrating and drying milk and milk-based products for the production of milk-based products with a dry-matter content of at least 90%. Electricity used directly for warming and drying and for the operation of special installations, including those in which, as a phase in the preparation process, concentration takes place in the form of, for example, ultrafiltering, are also covered. Concentrating in order to produce the milk-based products above is covered, whether this is done by enterprises that produce these products or by other enterprises.	2198	tonnes milk powder per hour	
	3435	tonnes protein powder per hour	
4) Used directly in the production of feedstuff, feedstuff additives, including feedstuff phosphate, and compounded feedstuff, as well as any drying and evaporation of vinasse, dregs, beet pellets and similar goods for use as animal feed. This does not, however, apply to use for drying grain and seeds.	20	tonnes feedstuff per hour	
5) Used directly in the production of meal, powder and pellets of meat or offal, unsuitable as human food, included in position 2301.10 in the EU's combined nomenclature, apart from greaves suitable as human food.	343	tonnes flesh and bone meal per hour	
6) Used directly in the production of green meal, green pellets and other dehydrated greens.	798	tonnes green pellets or green meal per hour	
7) Used directly in the production of pectin substances, pectinates and pectates, as well as	1766	tonnes pectin per hour	
	638	tonnes emulsifier per hour	

plant mucilage and gelatinising agents, also modified, extracted from vegetable matter included from positions 1302.20 - 1302.39 in the EU's combined nomenclature, and modified starch, included in position 3505 in the EU's combined nomenclature, as well as those used directly in the production of emulsifiers for foodstuff preparation or for technical use on the basis of vegetable oils or animal fat and oil substances.			
8) Used directly in the distillation of alcohol and in combination with this in the production of yeast, including the subsequent drying of yeast.	491	m <sup>3</sup> pure alcohol per hour	
9) Used directly in the drying or evaporation of paper and pulp or other substances or products dissolved in or mixed with water and with a dry-matter content of a maximum of 40% before drying and a dry-matter content of at least 90% after drying.	0	same as item 21	
10) Glass	1191	tonnes foundary glass per hour	Yes
11) Used directly in the production of			
a) slag wool, rock wool or similar mineral wool, expanded vermiculite, expanded clay, slag foam or similar expanded mineral substances, compounds and goods of heat-insulating, sound-absorbing or sound-insulating mineral substances, included in position 6806 in the EU's combined nomenclature;	344	m <sup>3</sup> light clinkers per hour	Yes
	2130	tonnes line wool per hour	
b) fibreglass, including glass wool, included in position 7019 in the EU's	1153	tonnes fibring per hour	Yes

combined nomenclature			
12) Used directly to fire ceramics, including the previous drying of goods for this purpose.	704	tonnes fired goods per hour	Yes
13) Used directly for the warming, evaporation, drying or burning of lime, chalk, limestone, marble or other calcium-carbonate products, gypsum, flint, moler, bentonite, and other types of clay, ferrous sulphate, copper sulphate and calcium oxide, as well as fertilising substances with a dry-matter content of at least 90%, of which at least 5% phosphate after drying. Electricity used directly to produce calcium-carbonate products although only in the form of heating and drying, as well as to operate special installations, as a part of the preparation process by which calcium-carbonate products are concentrated, as well as taxable goods, apart from electricity for the heating of plaster-board hardening units, are also covered.	7499	tonnes lump lime per hour	Yes
	6949	tonnes burnt lime per hour	Yes
	304	tonnes dried bentonite per hour	
	4024	'000 m <sup>2</sup> plasterboard per hour	
16) Used directly in the production of fish oil, including fishmeal, included in position 2301.20 in the EU's combined nomenclature, on the basis of fish and crustaceans, molluscs or other invertebrate aquatic animals, including waste therefrom. This, however, does not apply to use of electricity in the production of fishmeal after the fish oil has been separated from solubles in the production process. Neither does it apply to use of electricity for the processing of fish oil after it has been separated from solubles.	343	tonnes raw materials for fish oil and fishmeal production per hour	
17) Used directly in the production of beet- and cane sugar, included in position 17.01 in the EU's combined nomenclature, on the basis of sugar beets and sugar cane.	684	tonnes beet sugar per hour	
18) Used directly in the production of starch, included in position 11.08 in the EU's	76	tonnes potato flour per hour	
	1805	tonnes potato-protein powder	

combined nomenclature, if the dry-matter content is at least 80%.		per hour	
19) Used directly in the drying and roasting of malt.	424	tonnes malt per hour	
21) Used directly in the production of paper and pulp on the basis of recycled and waste paper or its pulp, or cellulose, as well as being used in the pulverising of calcium-carbonate products with a diameter of a maximum of 3 my, when the powder is intended for paper production. This, however, does not apply to taxable goods used in the finishing treatment of pulp or paper, including the subsequent production of pulp or paper or other paper and paper products on the basis of ready-produced paper, apart from coating or glazing. Electricity used in the production of paper and pulp in forms other than rolls or sheets is, however, not covered, when the paper or pulp has forms other than egg cartons. Taxable goods used directly in the production of egg cartons of other materials are also covered.	196	tonnes (recycled paper for) pulp per hour	
	2679	tonnes (pulp for) paper per hour	
22) Used directly in the production of cellulose or pulp from recycled or waste paper and pulp.	196	tonnes (recycled paper for) pulp per hour	
28) Used directly in the refining and distilling of mineral-oil products, including coal tar and other mineral tars, including products extracted therefrom.	724	tonnes refined finished products per hour	
29) Used directly in the production of cement.	5469	tonnes grey cement per hour	Yes
	7764	tonnes white cement per hour	Yes
30) Used directly in the founding metals and glass and the heat-maintenance of found metals and glass, including directly in the production of rolled or continuous cast slabs and billets, including for the further processing of slabs and billets by means of hot-rolling to produce sheets, wire, bolts and similar goods of iron and steel, not processed further (sandblasting, etc.), for metal heat-treatment installations and for the ventilation of premises	196	tonnes pig iron per hour	

<p>where found metal and glass are prepared. The heating of glass to over 300 degrees, as well as the heat-maintenance of glass that has been heated over this temperature in the production process are considered as glass founding as is the heat-maintenance of found glass.</p>			
--	--	--	--