

Appendix B

METHODOLOGY FOR CALCULATING SECTOR TOTALS

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Introduction

- 1 The Government has proposed that the allocation of allowances to the sectors¹ covered by the EU ETS will be determined as follows:
 - The total number of allowances allocated to all the installations and sectors would be 736.3 million tonnes of CO₂²
 - All sectors other than the power station sector covered by the scheme will be allocated allowances equivalent to their projected emissions; and,
 - The power stations sector will be allocated the difference between the total allocated allowances for EU ETS sectors apart from the power sector, and 736.3 million tonnes of CO₂.
- 2 The Government has also decided to create a New Entrant Reserve (NER) of allowances for new entrant installations, that join the scheme during Phase I. Allowances for existing installations and new entrants are consistent with projected emissions in each sector, apart from the power

¹ The term 'sector' has different meanings in relation to the updated energy projections (UEP), the Climate Change Agreements (CCAs) and the NAP. To minimise confusion, references in this Appendix to 'sector' means the relevant NAP sector(s). Where UEP or CCA sectors are meant, that will be expressly specified.

² The UK has proposed an amendment to the NAP to allocate 756.1 million allowances. However the Commission has to date only approved the UK to allocate 736.3 million allowances. The allocation of the additional 19.8 million allowances is the subject of a legal challenge. Without prejudice to this challenge an initial allocation of 736.3 million allowances will be made.

stations as detailed above. The NER figures in the tables include a ring-fenced element for new CHP plant, plus a set aside for installations that come into the Scheme after the cut-off date to enter the final installation level allocation. See Appendix C for more details on how allocations to new entrants have been calculated.

- 3 The Government has also decided to allocate allowances in three equal annual instalments for the first phase of the EU ETS. Hence, for each sector the average annual sector level allocation is estimated.
- 4 Projected emissions in the EU ETS covered sectors, are based on DTI's Updated Energy Projections (UEP) as described in paragraph 1.7 to 1.9 of the NAP and paragraphs 40 to 42 below, supplemented by further work as covered by the amendments to the NAP sought from the Commission in November 2004. The projected emissions for each EU ETS sector are calculated after incorporating the effects of current Climate Change Programme policies and measures on that sector.

Mapping NAP sectors

- 5 The UEP covers all CO₂ emissions in the UK (other than for Land Use Change which are estimated separately). However, the Directive covers installations with a capacity above a certain threshold (set out in Annex I of the Directive). Since not all installations in each UEP sector are at a capacity above the Directive's threshold, only three UEP sectors are fully covered by the EU ETS. For those UEP sectors that are fully included in the scheme, the projected emissions are taken directly from UEP. These sectors are:
 - a. Power Stations;
 - a. Refineries; and
 - b. Offshore platforms and terminals.
- 6 In order to ensure consistency between NAP sectors' projections and those in UEP, it has been assumed that the growth rates for the installations covered by the EU ETS will follow the growth trends for each corresponding UEP sector. The UEP sectors for which at least a proportion of emissions are covered by the scheme are:
 - c. Iron and Steel;
 - d. Glass
 - e. Ceramics/bricks
 - f. Cement
 - g. Lime³
 - h. Non Ferrous Metals;
 - i. Paper;
 - j. Food, Drink and Tobacco
 - k. Engineering and Vehicles

³ Sectors e) to h) come under the 'minerals' sector in UEP. However, this has been disaggregated for the purposes of the EU ETS. Please see Table B1 for more details.

- I. Chemicals;
- m. Onshore Gas Distribution; and
- n. Services

- 7 As mentioned in paragraphs 40 to 42 below, projected output growth rates in the industrial sectors were largely based on research by Oxford Economics Forecasting (OEF). This research also examined growth rates at a more disaggregated level than those in UEP. Final growth rates used for the industrial sectors of ETS are consistent with those in UEP and with overall HMT manufacturing growth rate assumptions.
- 8 Sectors (d) to (m) are also covered in part or in full by sector-specific UK Climate Change Agreements (CCAs). These are voluntary agreements with Government at a CCA sector level whereby each sector takes on a target for reductions in energy use⁴ (including both direct and indirect energy use). The sectors that meet their targets get 80% discount on the Climate Change Levy⁵. The CCA sectors are often at a more disaggregated level than the UEP sectors.
- 9 Most Climate Change Agreement targets are expressed in terms of **relative** energy use per unit of output. However, some CCAs require **absolute** reductions in energy use to be made.
- 10 Table B1 maps the EU ETS activities listed in Annex I of the Directive. Column (ii) shows the UEP sector in which these installations are modelled. Column (iii) lists the relevant CCA sectors that apply to the installations modelled in that sector and used to calculate the allocation to installations that hold a CCA.

Sector allocations for NAP Sectors that match the UEP totals

Power stations

- 11 Installations modelled as electricity generators in UEP covered by the EU ETS have been assigned to the NAP power station sector (sector 1 in Table B1). This includes all installations that generate electricity for export to the transmission and distribution networks, plus some CHP plants that export a large proportion of their electricity output.
- 12 The Government has decided that the power generations sector will be responsible for delivering the additional 'emissions trading savings' which it expects the EU ETS to deliver beyond the 'with CCP' projections. The allocation to the power stations sector has been calculated by subtracting the allocations from this to derive the total number of allowances to be allocated to the relevant installations. Table B2 shows this calculation.

⁴ These targets are generally denoted in terms of energy – bar a few which are actual carbon emission targets.

⁵ For more details on CCL and CCA see: <http://www.defra.gov.uk/environment/ccl/index.htm>

Refineries

- 13 The installations included in the refineries sector in the NAP are the same as those modelled as the refineries sector in UEP. A subset of these installations are also covered by a relative CCA. In order to take into account the revised CCA targets⁶, the proportion of emissions corresponding to these CCA sites has been subtracted from the UEP refineries projection and the revised CCA target⁷ has been applied to their emissions.
- 14 A contribution towards the NER for expected new entrants to this sector during the first phase has then been taken off the UEP emissions projection for this sector, to derive the number of allowances to allocate to the existing refineries' installations. The calculations are shown in Table B3.

Offshore

- 15 Offshore platforms and terminals are modelled separately in UEP and hence the projection has been used as a basis for the allocation calculation, and the sector contribution for the NER subtracted. This gives the total number of allowances allocated to existing installations in this sector. The calculations are shown in Table B4.

Sectoral allocations for NAP sectors not matching UEP sectors and covered by Climate Change Agreements

- 16 For those sectors that do not match the UEP sector definitions, a different methodology has been applied in calculating their allocation. This group of sectors has been split depending on whether they are covered by a CCA agreement or not.
- 17 Emission projections and therefore sector allocations for those sectors which are covered by relative CCA targets are derived differently than for those covered by absolute CCA targets (see paragraphs 31 to 35 below). The calculations are explained below.

NAP sectors covered by relative CCA targets

- 18 In general, CCAs cover both direct emissions and indirect emissions. The EU ETS usually only covers a proportion of the direct emissions covered by CCAs. The EU ETS also covers process emissions that in most cases are not covered by the CCAs. Hence, calculated projections for direct emissions incorporate CCA targets but the calculations for projections of process emissions do not.
- 19 Therefore, for these sectors,

⁶ CCA targets are bi-annual targets. The relevant target for the first phase of the scheme is therefore the target for 2006.

⁷ See section for X for an explanation of how the adjustment for relative CCAs has been made.

$$\begin{array}{l} \text{Average annual} \\ \text{emissions} \\ \text{covered by EU} \\ \text{ETS} \end{array} = \begin{array}{l} \text{Estimated} \\ \text{average annual} \\ \text{direct combustion} \\ \text{emissions} \end{array} + \begin{array}{l} \text{Estimated average} \\ \text{annual process} \\ \text{emissions} \end{array}$$

Average annual direct combustion emissions

20 The CCA targets that apply to the direct emissions from these sectors (shaded in yellow in Table B1) are relative targets typically denominated in energy use per unit output (Specific Energy Consumption, or SEC). The direct combustion/fuel emissions projections for these sectors are calculated by applying the relevant CCA target and the projected output growth rate to the sectors' emissions in 2002.

For each EU ETS sector where a relative CCA target is being used						
Average annual direct emissions during Phase 1	=	2002 Direct emissions	X	Projected output growth rate between 2002 and the first phase	X	Change in energy per unit output required by relevant CCA target between 2002 and the first phase

- 21 The 2002 direct emissions are verified data provided by the operators of the relevant EU ETS installations.
- 22 The output growth rates are taken from UEP, which incorporates either actual gross value added (GVA) or physical output data up to 2002, depending on the sector.
- 23 CCA targets are bi-annual targets. The relevant target for the first phase of the scheme is therefore the target for 2006. The CCAs also do not currently distinguish between targets for indirect and direct emissions. It has been assumed that that CCA targets will be achieved proportionately on both direct and indirect emissions.
- 24 The calculations for the direct emissions projections are shown in Table B5.

Average annual process emissions

25 As explained in paragraph 18 above, the EU ETS covers process emissions for some sectors including the minerals sectors, iron and steel, and pulp and paper.

For each EU ETS sector that has process emissions				
Average annual process emissions during Phase 1	=	2002 process emissions	X	Projected process emissions growth rate between 2002 and the first phase

- 26 The 2002 process emissions are verified emissions provided by the operators of the relevant EU ETS installations.
- 27 The projected process emissions growth rates are taken from UEP.

28 The calculations of process emissions are shown in Table B6.

Average annual allocation

29 The total projected emissions from each sector are the sum of the sector's projected direct and process emissions. A contribution to cover allowances required by new entrants (please refer to Annex 2 for the calculation of New Entrant Reserve) in each sector during the first phase of the scheme is then taken off before allocating to the existing installations in that sector.

$$\text{Average annual sector allocation to incumbents} = \frac{(\text{Total Phase I emissions} - \text{Phase I NER contribution})}{3}$$

30 Therefore, the allocations of allowances to existing installations in these sectors are calculated by taking the projections from Table B5 and above and deducting the appropriate NER contribution. The specific calculations are shown in Table B7.

NAP Sectors covered by absolute CCA Targets

31 There are four sectors in the EU ETS that are covered by absolute CCA targets. Like relative targets, absolute CCA targets are bi-annual and cover both direct and indirect emissions. The principle on which the projections of emissions from these sectors are based is similar to those with relative CCA targets. The change in energy use required by the CCA target for the first phase relative to 2002, is applied directly to the historic 2002 emissions data provided by operators covered by the EU ETS.

For each EU ETS sector			
that has an absolute CCA target			
Average annual emissions during Phase 1	=	2002 emissions	X Change in energy use between 2002 and the first phase required by relevant CCA target

32 The 2002 emissions are verified emissions provided by the operators covered by the EU ETS.

33 Again, since climate change targets are bi-annual targets, the relevant target for the first phase of the scheme is the target for 2006.

34 As explained above, these CCA targets are not split between direct and indirect emitting energy sources. It is therefore assumed that the targets apply proportionately to energy from both direct and indirect emitting fuels. In general, the incidence of CCAs is assumed to fall on covered and non-covered sources in proportion to overall emissions. An exception is made for the Steel sector, where evidence suggested that a different proportion was more appropriate.

35 Where an absolute CCA target already reflects expected new entrant growth, the relevant share of allowances has been deducted from the overall sector allocation and assigned to the NER. Where an absolute

CCA makes no provision for new entrant growth, the NER is assumed to be in addition to the calculated sector total. The calculation of the total number of allowances to be allocated to these sectors is given in Table B8.

Sectoral allocations for NAP sectors not directly modelled in UEP and not covered by any CCAs

36 In addition to the NAP sectors covered by CCAs, there are also some additional sectors that are not covered by CCAs. For these sectors, UEP sector emissions growth rates, adjusted using relevant output growth rates, have been applied to the installations' historic emissions to calculate these sectors' projections. Because these NAP sectors are not covered by CCAs, emissions trends for the corresponding sector do not include the effect of CCAs.

For each EU ETS sector not covered by CCAs and not directly modelled as a UEP sector			
Average annual emissions during Phase 1	=	2002 emissions	X Projected emissions growth rate adjusted by relevant output growth rate between 2002 and the first phase

37 The 2002 emissions are verified emissions provided by the operators of the relevant EU ETS installations.

38 These sectors include:

- Onshore gas distribution (including compressors on the National Transmission System, gas storage facilities, liquefied natural gas facilities and interconnectors)⁸;
- Services;
- Installations that are in sectors where some installations are covered by a CCA, but which are not themselves covered by a CCA as detailed in Table B1.

39 Once the total emissions projections to these sectors are calculated, a contribution to cover allowances required by new entrants in each sector during the first phase of the scheme is then taken off before allocating to the existing installations in that sector. The inputs to this calculation are shown in Table B8.

Updated Energy Projections

40 The final UK CO₂ projections to inform the National Allocation Plan were published in November 2004⁹ and an addendum showing projections

⁸ Growth for this sector is based on UEP gas demand growth projections, plus an element to allow for more energy intensive sources of gas supply.

⁹ Included here at Appendix E

beyond 2010 has also been published¹⁰. These projections update those published in May 2004, which formed the basis of the NAP notified to the Commission on 30 April 2004.

- 41 Since the May 2004 provisional projections, various elements of the DTI Energy Model have been reviewed and updated and some of the sectoral output growth and international energy price assumptions have been revised. The projections and underlying assumptions have been subject to review and public consultation and independent research has largely verified the key assumptions relating to industrial output. The most significant changes to the projections since May 2004 include: emission factor revisions; updated assessment of sectoral growth rates, now informed by OEF work undertaken for the DTI; Climate Change Agreement (CCA) targets which have been finalised; and an updated assessment of projected electricity demand.
- 42 As a result of the further work carried out, the final sectoral energy and emission projections have been revised in a number of areas. Emissions from power stations have been revised upwards by around 40MtCO₂. Underlying electricity demand estimates have been increased, but offset by the impact of enhanced CCP measures. In net terms, the main reasons for the increase in projected emissions are revisions to natural gas and coal emission factors (+15.8MtCO₂), reduced expectations for plant efficiency (+11.0MtCO₂) and lower expected nuclear output (+7.0MtCO₂). Other factors, including adjustments to expected renewables generation, electricity trade flows, the impact of changes to energy price assumptions and other influences, account for the residual increase of 6.3MtCO₂.

¹⁰ See http://www.dti.gov.uk/energy/sepn/uep_addendum.pdf

Tables for Revised Appendix B

Table B1: Mapping of EU ETS activities into sectors included in the NAP in the UK

(i)	(ii)	(iii)	(iv)	
EU ETS activities	Relevant UEP sectors ¹	Relevant CCA sectors	EU ETS sectors	
Combustion activities	Power stations		1. Power stations	
	Offshore		2. Offshore	
	Other Oil & Gas		3. Other Oil & Gas	
	Aluminium	Aluminium Federation (ALFED)	4. Aluminium -- AFED	
	Food, Drink and Tobacco (FDT)	Food & Drink Federation (FDF)	Food & Drink Federation (FDF)	5. Food & Drink -- FDF
			Dairy Industry Association Ltd (DIAL)	6. Dairies -- DIAL
			Maltsters Association	7. Malting -- MAGB
			Spirits Energy Efficiency Company (SEEC)	8. Spirits -- SEEC
			British Beer & Pub Association (BBPA)	9. Brewing -- BBPA
			UK renderers association (UKRA)	10. Rendering -- UKRA
			Chemical Industries Association (CIA)	11. FDT -- CIA
			British Poultry and Meat Federation (BPMF2)	12. Poultry -- BPMF2
				13. FDT -- non-CCA
	Chemicals	Chemical Industries Association (CIA)		14. Chemicals -- CIA
				15. Chemicals -- non-CCA
	Engineering and Vehicles (E&V)	Society of Motor Manufacturers & Traders (SMMT)		16. Vehicle Manufacture -- SMMT
			British Rubber Manufacturers (BRMA)	17. Rubber -- BRMA-T
			Society of British Aerospace Companies (SBAC)	18. Aerospace -- SBAC
			Semi-conductor	19. Semiconductors -- SC
		Cathode Ray Tubes	20. Cathode Ray Tubes -- CRT	
		21. Engineering & Vehicles -- non-CCA		

(i)	(ii)	(iii)	(iv)
EU ETS activities	Relevant UEP sectors ¹	Relevant CCA sectors	EU ETS sectors
	Services		22. Services
	Textiles	British Apparel & Textile Confederation (BATC)	23. Textiles -- BATC
	Other industries	Non-ferrous metals	24. Non-Ferrous -- NFA
			25. Coal Mining -- non-CCA
		Chemical Industries Association (CIA)	26. Nuclear Fuel -- CIA
			27. Nuclear fuels -- non-CCA
			28. Wood & Wood Products -- non-CCA
Refineries	Refineries		29. Refineries
		Chemical Industries Association (CIA)	30. Refineries -- CIA
Iron and Steel	Iron and Steel	United Kingdom Steel Association (UKSA)	31. Iron & Steel
		Target 2010 (Foundries)	32. Foundries -- T2010
			33. Iron & Steel -- non-CCA
Cement	Mineral	British Cement Association (BCA)	34. Cement -- BCA
			35. Cement -- non-CCA
Lime	Mineral	British Lime Association (BLA)	36. Lime -- BLA
		United Kingdom Steel Association (UKSA)	37. Lime -- UKSA
Glass	Mineral	British Glass Manufacturer's Confederation (BGMC)	38. Glass -- BGMC
		British Ceramic Confederation - Materials (BCC-M)	39. Glass -- BCC-M
		Mineral Wool (EUR)	40. Mineral Wool -- EUR
			41. Glass -- non-CCA
Ceramics	Mineral	British Ceramic Confederation – Non fletton (BCC-N)	42. Ceramics -- BCC-N
		British Ceramic Confederation - Fletton (BCC-F)	43. Ceramics -- BCC-F

(i)	(ii)	(iii)	(iv)
EU ETS activities	Relevant UEP sectors ¹	Relevant CCA sectors	EU ETS sectors
		British Ceramic Confederation - Refractories and Industrial (BCC-R)	44. Ceramics -- BCC-R
		British Ceramic Confederation - Whitewares (BCC-W)	45. Ceramics -- BCC-W
		British Ceramic Confederation - Materials (BCC-M)	46. Ceramics -- BCC-M
			47. Ceramics -- non-CCA
Paper	Paper	The Paper Federation (TPF)	48. Pulp & Paper -- TPF
		Wood Panel (WPIF)	49. Wood Board -- WPIF
			50. Pulp & Paper -- non-CCA
Non-metallic minerals	Mineral		51. Other Non-metallic -- non-CCA





	 Sectors directly modelled in the UK energy model	 Sectors with absolute Climate Change Agreements	
	 Sectors with relative Climate Change Agreements	 Sectors with no Climate Change Agreements	
	Sectors marked in <i>italics</i> : this highlights sectors in which there are no existing installations covered in the scheme but there are planned/new entrants. The calculation of NER of these sectors can be found in the NER quantification section.		
	1. Please note that for the purposes of calculation of allocations, further disaggregated growth rates have often been used. These can be found in the relevant tables of Annex I in this document		

Table B2: Power station allocation calculation

NAP sector	UEP emissions projection		Calculation input		Sector allocation	
			Total Phase I allocation	NER contribution	Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
	2005	2010			=(i)-(ii)	=(iii)/3
			(i)	(ii)	=(iii)	=(iv)
Units	MtCO2	MtCO2	MtCO2	MtCO2	Allowances	Allowances
1. Power Stations	164.2	137.0	410.7	19.0	391.7	130.6

Table B3: Refinery sector allocation calculation

NAP sector	2002 total emissions	UEP emissions projection			CCA target		Calculation input			Sector allocation	
					2002 Actual achievement	2006 target	Total Phase I emissions	Average annual Phase I emissions	NER contribution	Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
		2005	2006	2007			$=[(ii)+(iii)+(iv)] * [(b)/(a)]$	$=(v)/3$		$=(v)-(vii)$	$=(viii)/3$
(i)	(ii)	(iii)	(iv)	(a)	(b)	$=(v)$	(vi)	$=(vii)$	$=(viii)$	$=(ix)$	
Units	MtCO2	MtCO2	MtCO2	MtCO2	EER	EER	MtCO2	MtCO2	MtCO2	Allowances	Allowances
Refineries	18.1	19.7	19.8	19.9							
29. Refineries	18.0	19.6	19.7	19.8	-	-	59.1	19.7	1.2	57.9	19.3
30. Refineries - - CIA	0.1	0.1	0.1	0.1	0.9	0.8	0.2	0.1	0.002	0.2	0.1

Note: Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B4: Offshore sector allocation calculation

NAP sector	UEP emissions projection			Calculation input			Sector allocation	
				Total phase 1 emissions	Average annual phase 1 emissions	NER contribution	Total phase 1 allocation to existing installations	Average annual phase 1 allocation to existing installations
	2005	2006	2007	=(i)+(iii)+(iv)	=(v)/3		=(v)-(vii)	=(viii)/3
	(i)	(iii)	(iv)	=(v)	=(vi)	(vii)	=(viii)	=(ix)
Units	MtCO2	MtCO2	MtCO2	MtCO2	MtCO2	MtCO2	Allowances	Allowances
2. Offshore	19.1	19.1	19.1	57.2	19.1	4.6	52.5	17.5

Note: Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B5: Input to calculations of combustion emissions projections for NAP sectors covered by relative CCA targets

NAP sector		Actual 2002 combustion emissions ²	CCA targets				Relevant UEP GVA/Output growth index			Average annual Phase I combustion emissions
			2002 target	2002 Actual achievement	2006 target	Units of target	2002-2005	2002-2006	2002-2007	=I*[IV/III]*[VI+VII+VIII]/3
			(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Units	MtCO2	See (V)				2002=1			MtCO2	
4. Aluminium Federation (ALFED)	Aluminium – AFED ¹	2.67				tonne(C)/unit of production	1.08	1.10	1.11	3.00
5. Food & Drink Federation (FDF)	Food & Drink -- FDF	1.54	959	946	904	kWhp/t	1.03	1.04	1.05	1.53
6. Dairy Industry Association Ltd (DIAL)	Dairies -- DIAL	0.30	478	487	480	kWhp/t	1.02	1.03	1.05	0.30
7. Maltsters Association	Malting -- MAGB	0.06	1291	1236	1248	kWhp/t	1.10	1.13	1.17	0.07
8. Spirits Energy Efficiency Company (SEEC)	Spirits -- SEEC	0.26	7.70	7.53	7.43	kWhp/lpa	1.02	1.03	1.04	0.26
9. British Beer & Pub Association (BBPA)	Brewing -- BBPA	0.30	62.2	59.5	58.2	kWhp/hl	1.01	1.01	1.03	0.30
10. UK renderers association (UKRA)	Rendering -- UKRA	0.01	877.00	862	830	kWhp/t	1.03	1.04	1.05	0.01
11. Chemical Industries Association (CIA)	FDT -- CIA	0.08	0.91	0.86	0.83	EER	1.03	1.04	1.05	0.08

NAP sector		Actual 2002 combustion emissions ²	CCA targets				Relevant UEP GVA/Output growth index			Average annual Phase I combustion emissions
			2002 target	2002 Actual achievement	2006 target	Units of target	2002-2005	2002-2006	2002-2007	=I*[IV/III]*[VI+VII+VIII]/3
			(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Units	MtCO2	See (V)				2002=1			MtCO2	
12. British Poultry and Meat Federation (BPMF2)	Poultry -- BPMF2	0.01	650	625	607	kWhp/t	1.03	1.04	1.05	0.01
14. Chemical Industries Association (CIA)	Chemicals -- CIA	6.78	0.91	0.86	0.83	EER	1.08	1.10	1.13	7.30
16. Society of Motor Manufacturers & Traders (SMMT)	Vehicle Manufacture -- SMMT	0.42	3147	3197	3373	kWhp/veh	1.09	1.09	1.07	0.48
17. British Rubber Manufacturers (BRMA)	Rubber -- BRMA-T	0.10	6887	6072	5865	kWhp/t	1.03	1.06	1.09	0.10
19. Semi-conductor Tubes	Semiconductors - SC	0.01	0.47	0.98	0.64	EER	1.11	1.17	1.22	0.01
20. Cathode Ray Tubes	Cathode Ray Tubes -- CRT	0.02	0.71	0.78	0.82	EER	1.11	1.17	1.22	0.02
23. British Apparel & Textile Confederation (BATC)	Textiles -- BATC	0.02	3693676535	2895275077	3177614373	kWhp	0.92	0.90	0.88	0.02
26. Chemical Industries Association (CIA)	Nuclear Fuel -- CIA	0.08	0.91	0.86	0.83	EER	1.00	1.00	1.00	0.07

NAP sector		Actual 2002 combustion emissions ²	CCA targets				Relevant UEP GVA/Output growth index			Average annual Phase I combustion emissions
			2002 target	2002 Actual achievement	2006 target	Units of target	2002-2005	2002-2006	2002-2007	=I*[IV/III]*[VI+VII+VIII]/3
			(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Units		MtCO2	See (V)				2002=1			MtCO2
32. Target 2010 (Foundries)	Foundries -- T2010	0.00	6507	6554	6229	kWhp/t	1.37	1.43	1.43	0.00
34. British Cement Association (BCA)	Cement -- BCA	4.12	1.46	1.41	1.30	kWhp/kg	1.10	1.11	1.13	4.23
36. British Lime Association (BLA)	Lime -- BLA	0.61	976	987	982	kWhp/t	1.23	1.26	1.28	0.76
38. British Glass Manufacturer's Confederation (BGMC)	Glass -- BGMC	1.40	3.67	3.30	3.39	MWhp/t	1.08	1.11	1.14	1.59
39. British Ceramic Confederation - Materials (BCC-M)	Glass -- BCC-M	0.00	961.00	1112.00	1016.00	kWhp/t	1.08	1.11	1.14	0.00
40. Mineral Wool (EUR)	Mineral Wool -- EUR	0.08	4954	4861	4682	kWhp/t	1.26	1.60	1.65	0.12
42. British Ceramic Confederation -- Non fletton (BCC-N)	Ceramics -- BCC-N	0.95	1003	983	965	kWhp/t	1.05	1.07	1.10	1.00
43. British Ceramic Confederation - Fletton (BCC-F)	Ceramics -- BCC-F	0.04	768	864	828	kWhp/1000	1.05	1.07	1.10	0.05

NAP sector	Actual 2002 combustion emissions ²	CCA targets				Relevant UEP GVA/Output growth index			Average annual Phase I combustion emissions	
		2002 target	2002 Actual achievement	2006 target	Units of target	2002-2005	2002-2006	2002-2007	=I*[IV/III]*[VI+VII+VIII]/3	
		(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
Units	MtCO2	See (V)				2002=1			MtCO2	
44. British Ceramic Confederation - Refractories and Industrial (BCC-R)	Ceramics -- BCC-R	0.05	3640	4025	3777	kWhp/t	0.93	0.91	0.91	0.04
45. British Ceramic Confederation - Whitewares (BCC-W)	Ceramics -- BCC-W	0.04	10352	9495	9081	kWhp/t	1.05	1.07	1.10	0.04
46. British Ceramic Confederation - Materials (BCC-M)	Ceramics -- BCC-M	0.04	961	1112	1016	kWhp/t	1.00	1.00	1.00	0.04
48. The Paper Federation (TPF)	Pulp & Paper -- TPF	4.27	4637	4514	4264	kWhp/t	1.07	1.08	1.10	4.37
49. Wood Panel (WPIF)	Wood Board -- WPIF	0.21	959	1060	972	kWhp/m3	1.11	1.13	1.15	0.22

Note:

1. Due to confidentiality reasons, the CCA target used for this sector has not been published.

2. These include emissions from installations above the directive threshold that closed after 2002.

Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B6: Calculations of process emissions projections for NAP Sectors with relative CCAs

NAP sector		Units	Actual process emissions ¹	Relevant UEP/OEF process emissions growth index			Average annual Phase I process emissions
			2002	2002-2005	2002-2006	2002-2007	=(i)*[(ii)+(iii)+(iv)]/3
			(i)	(ii)	(iii)	(iv)	(v)
		MtCO ₂	2002=1			MtCO ₂	
4.	Aluminium Federation (ALFED)	Aluminium -- AFED	n/a	-	-	-	n/a
5.	Food & Drink Federation (FDF)	Food & Drink -- FDF	n/a	-	-	-	n/a
6.	Dairy Industry Association Ltd (DIAL)	Dairies -- DIAL	n/a	-	-	-	n/a
7.	Maltsters Association	Malting -- MAGB	n/a	-	-	-	n/a
8.	Spirits Energy Efficiency Company (SEEC)	Spirits -- SEEC	n/a	-	-	-	n/a
9.	British Beer & Pub Association (BBPA)	Brewing -- BBPA	n/a	-	-	-	n/a
10.	UK renderers association (UKRA)	Rendering -- UKRA	n/a	-	-	-	n/a
11.	Chemical Industries Association (CIA)	FDT -- CIA	n/a	-	-	-	n/a
12.	British Poultry and Meat Federation (BPMF2)	Poultry -- BPMF2	n/a	-	-	-	n/a

NAP sector			Actual process emissions ¹	Relevant UEP/OEF process emissions growth index			Average annual Phase I process emissions
			2002	2002-2005	2002-2006	2002-2007	=(i)*[(ii)+(iii)+(iv)]/3
			(i)	(ii)	(iii)	(iv)	(v)
Units			MtCO ₂	2002=1			MtCO ₂
14.	Chemical Industries Association (CIA)	Chemicals -- CIA	n/a	-	-	-	n/a
16.	Society of Motor Manufacturers & Traders (SMMT)	Vehicle Manufacture -- SMMT	n/a	-	-	-	n/a
17.	British Rubber Manufacturers (BRMA)	Rubber -- BRMA-T	n/a	-	-	-	n/a
19.	Semi-conductor	Semiconductors -- SC	n/a	-	-	-	n/a
20.	Cathode Ray Tubes	Cathode Ray Tubes -- CRT	n/a	-	-	-	n/a
23.	British Apparel & Textile Confederation (BATC)	Textiles -- BATC	n/a	-	-	-	n/a
26.	Chemical Industries Association (CIA)	Nuclear Fuel -- CIA	n/a	-	-	-	n/a
32.	Target 2010 (Foundries)	Foundries -- T2010	n/a	-	-	-	n/a
34.	British Cement Association (BCA)	Cement -- BCA	5.80	1.10	1.11	1.13	6.45
36.	British Lime Association (BLA)	Lime -- BLA	1.17	1.23	1.26	1.28	1.47

NAP sector			Actual process emissions ¹	Relevant UEP/OEF process emissions growth index			Average annual Phase I process emissions
			2002	2002-2005	2002-2006	2002-2007	=(i)*[(ii)+(iii)+(iv)]/3
			(i)	(ii)	(iii)	(iv)	(v)
Units			MtCO ₂	2002=1			MtCO ₂
38.	British Glass Manufacturer's Confederation (BGMC)	Glass -- BGMC	0.41	1.08	1.11	1.14	0.46
39.	British Ceramic Confederation - Materials (BCC-M)	Glass -- BCC-M	n/a	-	-	-	n/a
40.	Mineral Wool (EUR)	Mineral Wool -- EUR	0.01	1.26	1.60	1.65	0.02
42.	British Ceramic Confederation – Non fletton (BCC-N)	Ceramics -- BCC-N	0.41	1.05	1.07	1.10	0.44
43.	British Ceramic Confederation - Fletton (BCC-F)	Ceramics -- BCC-F	0.20	1.05	1.07	1.10	0.22
44.	British Ceramic Confederation - Refractories and Industrial (BCC-R)	Ceramics -- BCC-R	0.0003	0.93	0.91	0.91	0.0003
45.	British Ceramic Confederation - Whitewares (BCC-W)	Ceramics -- BCC-W	0.01	1.05	1.07	1.10	0.01
46.	British Ceramic	Ceramics -- BCC-M	0.01	1.00	1.00	1.00	0.01

NAP sector		Actual process emissions ¹	Relevant UEP/OEF process emissions growth index			Average annual Phase I process emissions	
		2002	2002-2005	2002-2006	2002-2007	=(i)*[(ii)+(iii)+(iv)]/3	
		(i)	(ii)	(iii)	(iv)	(v)	
Units		MtCO ₂	2002=1			MtCO ₂	
	Confederation - Materials (BCC-M)						
48.	The Paper Federation (TPF)	Pulp & Paper -- TPF	n/a	-	-	-	n/a
49.	Wood Panel (WPIF)	Wood Board -- WPIF	n/a	-	-	-	n/a

Note:

1. These include emissions from installations above the directive threshold that closed after 2002. Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B7: Calculation of total sectoral allocations to NAP sectors with relative CCAs

NAP sector		Projected average annual Phase I combustion emissions	Projected average annual Phase I process emissions	Projected average annual Phase I emissions	NER contribution	Sector allocation		
						Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations	
		Units	MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances
		(i)	(ii)	(i)+(ii) = (iii)	(iv)	=(iii)*3-(iv) =(v)	=(v)/3 =(vi)	
		MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances	
4.	Aluminium Federation (ALFED)	Aluminium -- AFED	3.00	n/a	3.00	0.19	8.82	2.94
5.	Food & Drink Federation (FDF)	Food & Drink -- FDF	1.53	n/a	1.53	0.21	4.38	1.46
6.	Dairy Industry Association Ltd (DIAL)	Dairies -- DIAL	0.30	n/a	0.30	0.01	0.89	0.30
7.	Maltsters Association	Malting -- MAGB	0.07	n/a	0.07	0.01	0.19	0.06
8.	Spirits Energy Efficiency Company (SEEC)	Spirits -- SEEC	0.26	n/a	0.26	0.01	0.78	0.26
9.	British Beer & Pub Association (BBPA)	Brewing -- BBPA	0.30	n/a	0.30	0.01	0.88	0.29
10.	UK renderers association (UKRA)	Rendering -- UKRA	0.01	n/a	0.01	0.00	0.03	0.01

NAP sector	Projected average annual Phase I combustion emissions	Projected average annual Phase I process emissions	Projected average annual Phase I emissions	NER contribution	Sector allocation		
					Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations	
					$=(\text{iii}) \times 3 - (\text{iv})$ $=(\text{v})$	$=(\text{v})/3$ $=(\text{vi})$	
Units	MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances	
11. Chemical Industries Association (CIA)	FDT – CIA	0.08	n/a	0.08	0.004	0.23	0.08
12. British Poultry and Meat Federation (BPMF2)	Poultry -- BPMF2	0.01	n/a	0.01	0.001	0.03	0.01
14. Chemical Industries Association (CIA)	Chemicals -- CIA	7.30	n/a	7.30	2.56	19.34	6.45
16. Society of Motor Manufacturers & Traders (SMMT)	Vehicle Manufacture -- SMMT	0.48	n/a	0.48	0.01	1.44	0.48
17. British Rubber Manufacturers (BRMA)	Rubber -- BRMA-T	0.10	n/a	0.10	0.01	0.29	0.10
19. Semi-conductor	Semiconductors -- SC	0.01	n/a	0.01	0.002	0.03	0.01
20. Cathode Ray Tubes	Cathode Ray Tubes -- CRT	0.02	n/a	0.02	0.004	0.06	0.02
23. British Apparel & Textile Confederation (BATC)	Textiles -- BATC	0.02	n/a	0.02	0.0004	0.06	0.02

NAP sector	Projected average annual Phase I combustion emissions	Projected average annual Phase I process emissions	Projected average annual Phase I emissions	NER contribution	Sector allocation	
					Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
					$=(\text{iii}) * 3 - (\text{iv})$ $=(\text{v})$	$=(\text{v}) / 3$ $=(\text{vi})$
Units	MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances
26. Chemical Industries Association (CIA) Nuclear Fuel -- CIA	0.07	n/a	0.07	0.001	0.22	0.07
32. Target 2010 (Foundries) Foundries -- T2010	0.00	n/a	0.00	0.00	0.00	0.00
34. British Cement Association (BCA) Cement -- BCA	4.23	6.45	10.68	3.18	28.87	9.62
36. British Lime Association (BLA) Lime -- BLA	0.76	1.47	2.22	0.11	6.57	2.19
38. British Glass Manufacturer's Confederation (BGMC) Glass -- BGMC	1.59	0.46	2.04	0.45	5.69	1.90
39. British Ceramic Confederation - Materials (BCC-M) Glass -- BCC-M	0.00	n/a	0.00	0.00	0.00	0.00
40. Mineral Wool (EUR) Mineral Wool -- EUR	0.12	0.02	0.14	0.07	0.34	0.11

NAP sector	Projected average annual Phase I combustion emissions	Projected average annual Phase I process emissions	Projected average annual Phase I emissions	NER contribution	Sector allocation	
					Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
	(i)	(ii)	(i)+(ii) = (iii)	(iv)	=(iii)*3-(iv) =(v)	=(v)/3 =(vi)
Units	MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances
42. British Ceramic Confederation – Non Fletton (BCC-N)	Ceramics -- BCC-N 1.00	0.44	1.44	0.21	4.12	1.37
43. British Ceramic Confederation - Fletton (BCC-F)	Ceramics -- BCC-F 0.05	0.22	0.26	0.02	0.76	0.25
44. British Ceramic Confederation - Refractories and Industrial (BCC-R)	Ceramics -- BCC-R 0.04	0.0003	0.04	0.001	0.12	0.04
45. British Ceramic Confederation - Whitewares (BCC-W)	Ceramics -- BCC-W 0.04	0.01	0.05	0.004	0.14	0.05
46. British Ceramic Confederation - Materials (BCC-M)	Ceramics -- BCC-M 0.04	0.01	0.05	0.001	0.16	0.05

NAP sector		Projected average annual Phase I combustion emissions	Projected average annual Phase I process emissions	Projected average annual Phase I emissions	NER contribution	Sector allocation	
						Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
Units		MtCO ₂	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances
		(i)	(ii)	(i)+(ii) = (iii)	(iv)	=(iii)*3-(iv) =(v)	=(v)/3 =(vi)
48. The Paper Federation (TPF)	Pulp & Paper -- TPF	4.37	n/a	4.37	0.27	12.85	4.28
49. Wood Panel (WPIF)	Wood Board -- WPIF	0.22	n/a	0.22	0.02	0.64	0.21

Note:

Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B8: Calculation of sectoral allocations to NAP sectors with absolute CCAs

NAP sector		2002 total emissions	CCA targets				Average annual Phase I emissions	NER contribution	Sector allocation		
			2002 target	2002 actual achievement	2006 target CCA	Units of target			Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations	
		(i)	(ii)	(iii)	(iv)	(v)	$= (i) * (iv) / (iii)$	(vii)	$= (vi) * 3 - (vii)$	$= (ix) / 3$	
		MtCO2	See (v)				MtCO2	MtCO2	Allowances	Allowances	
18.	Society of British Aerospace Companies (SBAC)	Aerospace -- SBAC	0.14	637.7	1172.3	1212.6	GWhp	0.15	0.07	0.44	0.15
24.	Non-ferrous metals	Non-Ferrous – NFA ¹	0.05					0.05	0.01	0.15	0.05
31.	United Kingdom Steel Association (UKSA)	Iron & Steel	16.78	304.3	281.5	365.9	PJ _p	23.31	9.95	60.0	20.0
37.	United Kingdom Steel Association (UKSA)	Lime – UKSA ²	0.35	304.3	281.5	365.9	PJ _p	0.45	0.01	1.33	0.44

Note:

1. Due to confidentiality reasons, the CCA target used for this sector has not been published.
 2. This sector has an absolute CCA for only its combustion emissions – hence the allocation to this sector is calculated a sum of allocation to its combustion and process emissions. The allocation for the combustion emission is based on the methodology described in this table but the allocation to process emission is based on methodology described in Table B6 above.
- NB: Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

Table B9: Calculation of sectoral allocations to NAP sectors with no CCAs

NAP sector	2002 total combustion emissions	UEP/OEF growth rate			Average annual projected combustion emissions for 2006	2002 total process emissions	UEP/OEF process emissions growth rate (2002=1)			Average annual projected process emissions	Average annual Phase I emissions	NER contribution	Sector Allocation				
		2002-2005	2002-2006	2002-2007			$\frac{(i)^* [(ii)+(ii)+(iv)]}{3}$	2002-2005	2002-2006				2002-2007	$\frac{(a)^* [(b)+(c)+(d)]}{3}$	=(v)+(e)	Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
		(i)	(ii)	(iii)				(iv)	=(v)				(a)				
Units	MtCO ₂	2000=1			MtCO ₂	MtCO ₂	%	%	%	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances			
3. Other Oil & Gas	1.75	1.08	1.07	1.18	1.95	n/a	-	-	-	n/a	1.95	1.07	4.78	1.59			
13. FDT -- non-CCA	1.33	0.99	1.01	1.02	1.34	n/a	-	-	-	n/a	1.34	0.15	3.86	1.29			
15. Chemicals -- non-CCA	2.87	1.05	1.07	1.08	3.05	n/a	-	-	-	n/a	3.05	0.16	8.99	3.00			
21. Engineering & Vehicles -- non-CCA	0.46	0.94	0.93	0.92	0.43	n/a	-	-	-	n/a	0.43	0.01	1.29	0.43			
22. Services	1.99	1.03	1.04	1.04	2.06	n/a	-	-	-	n/a	2.06	0.18	6.00	2.00			
25. Coal Mining -- non-CCA	0.03	1.08	1.08	1.08	0.04	n/a	-	-	-	n/a	0.04	0.00	0.10	0.03			

NAP sector	2002 total combustion emissions	UEP/OEF growth rate			Average annual projected combustion emissions for 2006	2002 total process emissions	UEP/OEF process emissions growth rate (2002=1)			Average annual projected process emissions	Average annual Phase I emissions	NER contribution	Sector Allocation	
		2002-2005	2002-2006	2002-2007	$\frac{(i)^* [(ii)+(iii)+(iv)]}{3}$		2002-2005	2002-2006	2002-2007	$\frac{(a)^* [(b)+(c)+(d)]}{3}$	=(v)+(e)		Total Phase I allocation to existing installations	Average annual Phase I allocation to existing installations
													=(vi)*3-(vii)	=(viii)*3
		(i)	(ii)	(iii)	(iv)		=(v)	(a)	(b)	(c)	(d)		=(e)	=(vi)
Units	MtCO ₂	2000=1			MtCO ₂	MtCO ₂	%	%	%	MtCO ₂	MtCO ₂	MtCO ₂	Allowances	Allowances
27. Nuclear fuels -- non-CCA	0.0005	1.00	1.00	1.00	0.00	n/a	-	-	-	n/a	0.00	0.00	0.0015	0.0005
41. Glass -- non-CCA	0.01	1.07	1.09	1.10	0.01	n/a	-	-	-	n/a	0.01	0.00	0.02	0.01
47. Ceramics -- non-CCA	0.001	0.99	0.98	0.97	0.001	0.0005	1.00	1.00	1.00	0.0005	0.002	0.00	0.006	0.002
50. Pulp & Paper -- non-CCA ¹	-	1.03	1.06	1.08	-	n/a	-	-	-	n/a	0.69	0.07	1.99	0.66
51. Other Non-metallic -- non-CCA	0.09	1.05	1.05	1.04	0.09	n/a	-	-	-	n/a	0.09	0.00	0.27	0.09

Note:

1. This sector only has benchmarked installations and therefore the allocations are the sum of the benchmarks. Please note that the allocation calculations in the table above, when duplicated might not give identical allocation numbers to the last decimal place. This is due to rounding in presenting the numbers.

