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**Technical Memorandum on Analysis of the EU ETS
Using the Community Independent Transaction Log**

by

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Abstract

This memorandum provides an overview of three deficiencies within the current presentation of the Community Independent Transaction Log (CITL) data that have implications for researchers' ability to accurately analyze the impacts of the EU ETS. It evaluates the impact of these deficiencies on analyses of the UK, Spain, and France, three Member States with readily available installation-level data that can be compared against the CITL.

Introduction*

The Community Independent Transaction Log (CITL) is the central repository for compliance data in the EU ETS, and thus the primary data source for researchers attempting to analyze the impacts of the program. This technical memorandum identifies three deficiencies in the current presentation of the CITL data that have implications for analysis, the first two of which are likely to lead to significant biases in results. The impact of these deficiencies is evaluated for the United Kingdom, Spain, and where possible, France, three Member States with readily available installation data from national regulatory bodies, over the years 2005 and 2006. The first deficiency is the inability to isolate the power sector from other combustion installations, despite the significance of power sector behavior for supply and demand of allowances. The second is the appearance of disparities between installation allocations in the CITL and national registry totals due to the fact that downloadable CITL allocations do not reflect new entrant reserve allowances or other allocation adjustments. The third deficiency pertains to the occasional classification of installations in industrial sectors covered by the EU ETS as combustion installations. While this is a result of permitting decisions, and not a deficiency of the CITL per se, the absence of detailed sector information in the CITL makes it difficult to identify these cases. Analysis of such installations in the United Kingdom, Spain, and France finds that such installations are generally less than 1% of national emissions, though the impact is significantly greater in certain sectors.

* This memo benefited from helpful comments by Istvan Bart, Peter Zapfel, and Denny Ellerman. Remaining errors are our own.

1. Isolating Power Sector Installations

The power sector is responsible for the largest share of emissions within the EU ETS. Given the potential for inexpensive abatement opportunities within the sector, as well as its insulation from international competition relative to other EU ETS sectors, Member States have generally made it the recipient of any allowance shortage in their individual caps. Thus, we expect the power sector to be the primary source of demand for allowances.

Despite the significance of the power sector within the EU ETS, however, the activity categories used to classify installations within the CITL are insufficient to isolate this sector from other combustion installations. Applicability of the EU ETS applies to the following activity categories, which are specified in Annex I in the EU Emissions Trading Directive.¹ These categories provide the only level of activity description within the CITL:

- Combustion installations with a rated thermal input exceeding 20 MW (excluding hazardous or municipal waste installations)
- Mineral oil refineries
- Coke ovens
- Metal ore roasting or sintering installations
- Installations for the production of pig iron or steel including continuous casting
- Installations for the production of cement clinker in rotary kilns or lime in rotary kilns or in other furnaces
- Installations for the manufacture of glass and glass fibre
- Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain
- Industrial plants for the production of (a) pulp from timber or other fibrous materials (b) paper and board

The activity category of an installation is determined from its GHG Emissions Permit, based on what is identified as its main activity.² Power sector installations are included in the ‘combustion’ category along with qualifying combustion generally from installations not otherwise engaged in an Annex I activity.³ In some Member States, activity classifications may be self-reported and not subject to verification, and Member States may vary in their treatment of installations that could fall into two categories, or provide insufficient guidance on this matter.

Given the likelihood that any perceived emission shortage within a Member State’s cap has been allocated to the power sector, rather than industry, reliance on the ‘combustion’ sector in the CITL as a proxy for the power sector will underestimate the

¹ Available online: http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_275/l_27520031025en00320046.pdf.

² The GHG Emissions Permit is the permit required by the Directive for participation in the EU-ETS.

³ In addition, as discussed in part 3 of this memorandum, some installations engaged in other Annex I activities may be classified as combustion.

extent to which the power sector was short in allowances. Several researchers have attempted to isolate power sector emissions in analysis of the impacts of the EU ETS (Kettner et al. 2006; Ellerman and Buchner 2006);⁴ however, those data are not generally available to researchers nor is the basis upon which the further classification was made.

In the absence of additional installation-level sector detail, distinguishing between power sector combustion installations and non-power sector combustion installations requires significant conjecture, particularly when the name of the installation is not in the researchers' native language. In addition, the presence of installations providing combined heat and power or district heating adds to the complexity of defining boundaries around the sector.

An analysis of combustion installations in the UK, Spain, and France illustrates the differences between the allowance positions in the power sector and non-power sector combustion. Additional installation-level activity data that distinguishes individual sectors within Annex I activity categories is readily available for these three Member States. The Phase I National Allocation Plan for the UK provides an installation-level table of allocations that includes additional detail on sector that was used in determining those allocations.⁵ Additional sector detail for Spanish installations is available in the annual compliance report produced by the Spanish Ministry of Environment, which reflects the allocation and verified emissions data in Spain's national registry.⁶ For France, the Verified Emissions Report for 2005 provides additional sector detail on combustion installations.⁷

Data from these three Member States demonstrate differences in their definition of the boundaries of the power sector. While installations labeled 'Power Station' in the UK data include some CHP units, many CHP and all district heating facilities appear to be classified under other industries or 'Services.' The Spanish data, which classifies power stations as 'Generation,' does not appear to include any CHP facilities, which are categorized either within Annex I industries or as 'Other Combustion.' Likewise, in France, the sector classifications provide a clear split between large electricity production plants and other heating or mixed-combustion installations, with the latter being

⁴ Kettner, C., A. Koepl, S. Schleicher, and G. Thenius. *EU Emissions Trading Scheme: The 2005 Evidence*. Austrian Institute for Economic Research (WIFO), Vienna. July 2006; and Ellerman, D. and B. Buchner. "Over-Allocation or Abatement? A Preliminary Analysis of the EU ETS based on the 2005 Emissions Data." MIT CEEPR Working Paper 06-016. Cambridge, MA. November, 2006.

⁵ Available online: <http://www.defra.gov.uk/environment/climatechange/trading/eu/nap/install.htm>. Installations that were not included in the NAP because they were either new or late entrants could be assigned to sectors used in the NAP with an internet search on the installation, if it was not clear from the installation's name.

⁶ Available online: http://www.mma.es/secciones/cambio_climatico. The report is titled "Instalaciones Afectadas por la Ley 1/2005: Informe de Aplicación." It is available for both the 2005 and 2006 compliance years and contains allocation, emissions, and compliance information for that compliance year, as well as explanatory notes for some installations.

⁷ Available online : http://www.ecologie.gouv.fr/IMG/pdf/liste_declaration-verifiees_validees_MEDD29052006.pdf. As with the UK, for this analysis, installations not included in the NAP were assigned to sector categories using internet searches when necessary.

distributed among the categories ‘Energy Combustion,’ ‘Industry Combustion,’ and ‘Externalized Combustion.’

Table 1 presents an overview of power sector and non-power sector combustion installations listed in the CITL for the UK, Spain, and France, and their allocations and emissions over 2005 and 2006. In all three member states, the power sector’s share of combustion emissions exceeds its share of combustion allowances. In the UK, power stations represent less than 20 percent of combustion installations, 82 percent of allowances to combustion installations and 86 percent of emissions from combustion installations. In Spain, these amounts are 27 percent, 80 percent, and 87 percent, respectively. In France, power stations represent 6 percent of combustion installations, 50 percent of allocation and 53 percent of emissions from combustion installations. The lower share of power sector emissions in France results from the large-scale use of nuclear power for electricity production.⁸

Table 1. Total Allocations and Emissions of Electricity Production and Other Combustion

	Activity	Number of Installations	Allocation 2005 and 2006	Verified Emissions 2005 and 2006	Share of Allocation	Share of Emissions
UK	Electricity Production	131	259.5	348	0.82	0.86
	Other Combustion	585	58.3	55.4	0.18	0.14
	Total Combustion	716	317.8	403.4	1	1
Spain	Electricity Production	60	140.1	196.2	0.80	0.87
	Other Combustion	160	34	29.9	0.20	0.13
	Total Combustion	220	174.0	226.1	1	1
France	Electricity Production	45	72.6	59.1	0.50	0.53
	Other Combustion	718	73.6	52.9	0.50	0.47
	Total Combustion	763	146.3	112.0	1	1

Source: CITL, UK Phase I NAP, Spanish compliance report, and French emissions report; own calculations.

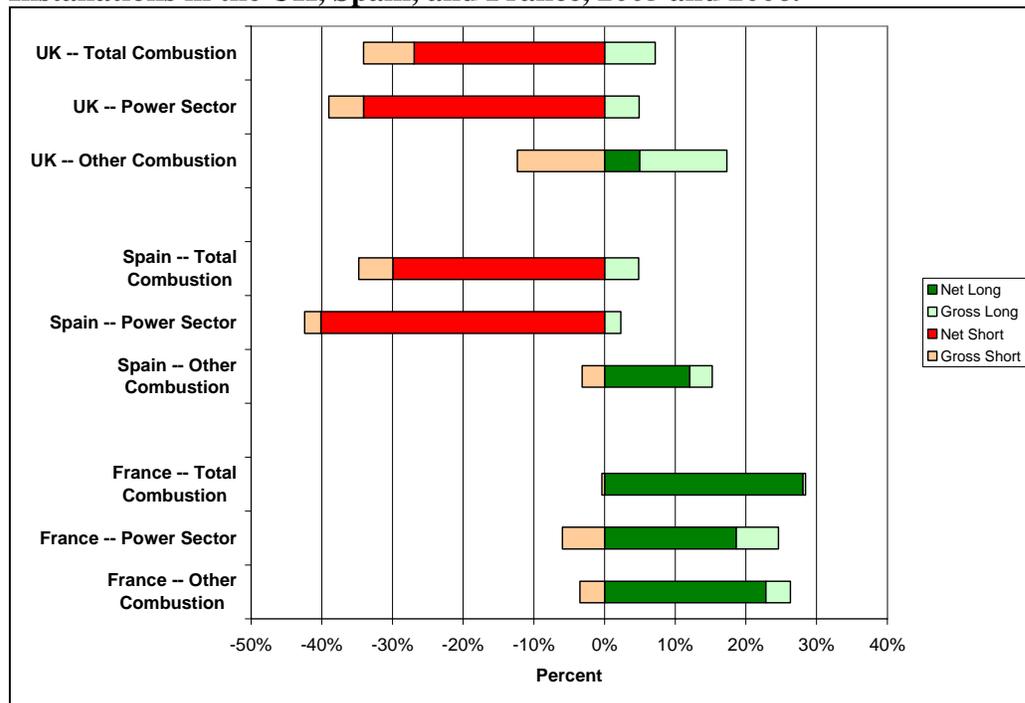
Figure 1 presents a comparison of the allowance position of power sector installations relative to other combustion sources, expressed as percent of allocation. ‘Gross Long’ and ‘Gross Short’ represent the sum of the differences between allowances and emissions over all installations in a given sector that have long or short positions, respectively. The difference between the ‘Gross Long’ and ‘Gross Short’ totals for the sector is the ‘Net Long’ or ‘Net Short,’ depending on whether this difference is positive or negative. As can be seen in Figure 1, while combustion installations in both the UK and Spain have a significant net short position in aggregate, this result is driven by the net short position of the power sector, and in fact offset to some degree by the net long positions of the other sectors that comprise combustion installations. Gross demand for allowances in the UK power sector over 2005 and 2006 is equal to almost 40 percent of the total allocation to

⁸ This fact increases the magnitude of error for France relative to the other two countries when using all of the combustion sector to approximate power sector emissions.

those installations, while gross demand from non-power station combustion installations is equal to about 12 percent of allowance allocations to that category. A similar result is observed in Spain, where the gross allowance demand from the power sector exceeds 40 percent of its allocation, and gross allowance demand from non-power station combustion installations equals about 3 percent of allowance allocation. In addition, a greater contrast is observed in Spain in the net allowance positions between the two sectors, with power stations contributing a much smaller share to allowance supply, and non-power station combustion contributing very little to allowance demand relative to the UK.

In France, the power sector retains a net long position. However, as is the case with Spain and the UK, the sector is less long than non-power sector combustion installations. The French power sector is responsible for almost 90% of the gross allowance demand from all combustion installations.

Figure 1. Short and Long Positions of Power Sector and Other Combustion Installations in the UK, Spain, and France, 2005 and 2006.



Source: CITL, UK Phase I NAP, Spanish compliance report, French emissions report; own calculations.

2. Absence of NER and other post-NAP Allocations in Downloadable CITL Data

Understanding the distribution of new entrant reserve (NER) allowances and other allowance reserves not distributed in the initial allocation is necessary for an accurate portrayal of allowance supply and demand within the EU ETS. While the CITL is updated daily to correspond to Member State registries, NER allowances are not incorporated into the visible installation-level allocations, which generally reflect the

final NAP distribution. Rather, pursuant to the Registries Regulation, the allocation of NER allowances is considered a ‘transfer’ between the Member State’s account and individual installation, and it is thus not currently possible to view the distribution of NER allowances in the downloadable CITL data.⁹ As a result, reliance on only the allocation data available from the CITL will tend to overestimate the extent to which individual sectors are short. However, this data limitation is a temporary one, as forthcoming improvements to the CITL will permit the identification of NER allocations. Under the August, 2007 amendment of the Registries Regulation, the CITL will become a live database with showing all installations and transfers from new entrant reserves.¹⁰

In addition to NER allowances, installation-level allocations might change due to installation closure, late entry into the program, issuance of early action allowances, or other revisions approved within the NAP process. Exclusion of late-entry allowances will make allowance positions of member states or sectors appear shorter than they actually were, while inclusion of allowances from closed installations, which must be surrendered under most Member States’ rules, will make member states or sectors appear longer.

While installation-level data from registries of individual Member States is not open to the public, and thus does not allow a direct comparison against the CITL, both the UK and Spain have released registry information that sheds light on the degree to which NER or late entry allowances impact the overall position of specific sectors.¹¹ For the UK, the current distribution of the NER is available in the UK’s most recent “New entrant report.”¹² The report lists individual installations and the number of allowances that have been placed in their UK registry accounts from the NER for the entire first phase.¹³

A side-by-side comparison of the UK’s installation-level allocations in the CITL and when supplemented by the NER illustrates the importance of NER allowances in specific sectors.¹⁴ To account for NER allowances in this analysis, 2/3 of an installation’s NER allocation (because the NER allocation covers 2005-2007) is added to its two-year allocation total. For installations that appear to be starting operation in 2006, 1/2 of its NER allocation is added to its total allocation over those two years. Of the 797 UK installations in the CITL, 96 have received an allocation from the NER, 27 of which did not receive any allocation in the NAP. All of the installations listed as receiving

⁹ The ‘Registries Regulation’ refers to Commission Regulation (EC) No 2216/2004, December 21, 2004.

¹⁰ See Commission Regulation No. 916/2007 of 31 July 2007. Available online: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_2007_1_20020070801en00050039.pdf.

¹¹ France has not yet publicly released similar information, and thus is excluded from this section.

¹² Available online: http://www.environment-agency.gov.uk/commondata/acrobat/ner_status_report_1297088.pdf.

¹³ The NER is available to installations that began operation after December 31, 2003, as well as existing installations that have received an allocation through the NAP but have undergone a qualifying capacity expansion or resumption of activity. To date approximately 79% of the total available allowances have been allocated.

¹⁴ For the vast majority of installations, allocations in the NAP were identical to those in the CITL. However, there appears to have been a downward revision of allocations to combustion installations from the chemical industry since the publication of the Phase I NAP.

allowances from the NER have existing accounts in the CITL.¹⁵ A comparison of allocation totals for combustion installations with and without the addition of NER allowances is presented in Table 2. The NER as allocated for these two years adds about 24 million tons of allowances, or 6 percent, to the UK's CITL allocation. In percentage terms, the NER has the greatest impact on glass, cement and lime, coke ovens, and other combustion.

Table 2. Total allocations to UK Installations by Sector in 2005 and 2006, with and without the New Entrant Reserve (Mt CO2)

Sector	CITL Allocation	CITL Allocation + NER	Percent Change
Power Sector Combustion	259.5	265.5	2%
Other Combustion	58.3	66.7	15%
Refineries	39.2	39.7	1%
Coke ovens	26.6	31.8	20%
Iron and Steel	13.2	13.4	2%
Cement and Lime	13.1	15.9	22%
Glass	0.8	1.1	36%
Pulp and Paper	0.5	0.5	0%
Ceramics, Bricks, and Tiles	0.3	0.4	9%
Total	411.5	435.1	6%

Source: CITL, UK Phase I NAP, UK New entrant report; own calculations.

With respect to Spain, two sources from the Spanish Ministry of Environment provide information on allocations in the Spanish national registry. First, two memos published by the Ministry, in March 2006 and 2007, respectively, present final NER allocations by installation and compliance year. Combined, the two memos contain NER allocations for 81 installations, though only 67 of these appear to have existing compliance accounts in the CITL. Second, the annual compliance report released by the Ministry contains installation-level allocations within the Spanish registry at the end of the compliance year. Of particular importance in Spain is the expansion of the program's applicability in 2006, which added about 200 new installations to the program. Allocations to these entrants are reflected in the compliance report but not in the CITL allocations as made available online.

Table 3 compares allowance allocations displayed in the CITL for Spain with the compliance report allocations reflecting the national registry. Updates to allocations in the Spanish national registry result in a 3 percent increase in total allocations, equal to about 10 million tons. The largest percent increases are observed in the power sector and pulp and paper sector. The decrease observed in metal ore allocations is due to one installation that has reported allocations and emissions in the CITL but does not appear in

¹⁵ In 3 cases, the installations were listed in the NER under a different Permit ID. In these three cases, we accepted the ID from the NER and matched the data accordingly, as there was no reason to believe that the installations were distinct.

Spain's compliance report. While Spain's compliance report indicates if an installation has ceased activity and its GHG permit has been revoked, it continues to list allowances for these installations and does not indicate that they have been surrendered. Thus, adjustments for installation closure cannot be made in this comparison.

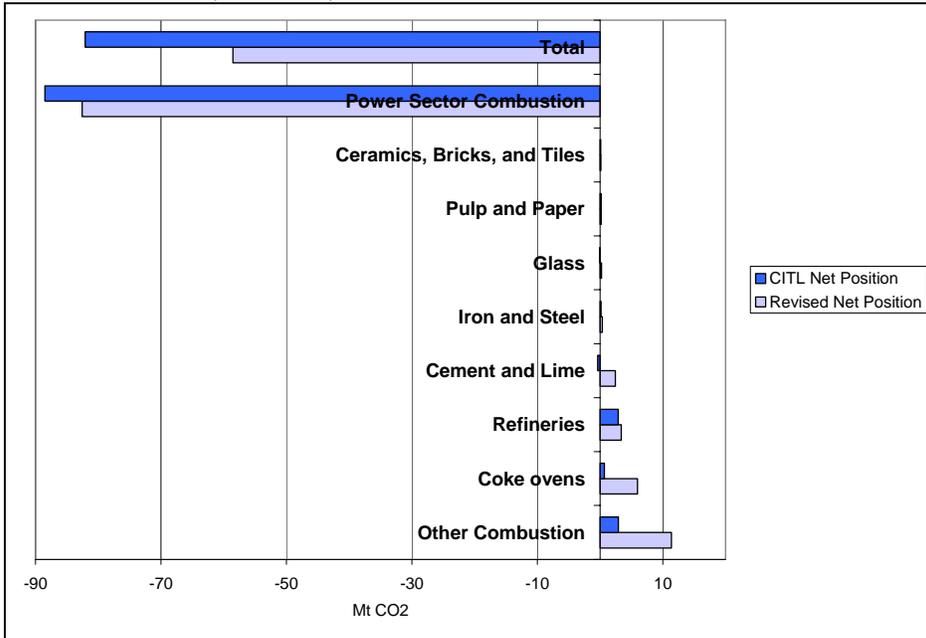
Table 3. Total allocations to Spain Installations by Sector in 2005 and 2006: CITL and Compliance Report (Mt CO₂)

Sector	CITL Allocation	Compliance Report Allocation	Percent Change
Power Generation Combustion	160.3	167.6	5%
Cement and Lime	59.6	60.7	2%
Other Combustion	38.4	39.3	2%
Refineries	30.1	30.1	0%
Iron and Steel	22.4	22.9	2%
Ceramics, Bricks, and Tiles	11.5	11.7	2%
Pulp and Paper	9.4	9.7	4%
Glass	5.9	5.9	0%
Metal Ore	0.4	0.4	-2%
Coke ovens	0.1	0.1	0%
Total	337.9	348.3	3%

Source: CITL, Spanish compliance report; own calculations.

Incorporating new entrant allowances in allocation totals would be expected to increase the length of overall allowance positions. This result is reflected in Figures 2 and 3. Figure 2 displays the net position of the UK based on allocations available from the CITL and when supplemented to reflect the NER. Incorporating NER allowances reduces the overall net demand for allowances for the UK by about 22 million tons. Within the power sector, net demand is reduced by about 6 million tons. In addition, incorporation of NER allowances actually changes the allowance positions of the glass and cement and lime sectors from net short to net long.

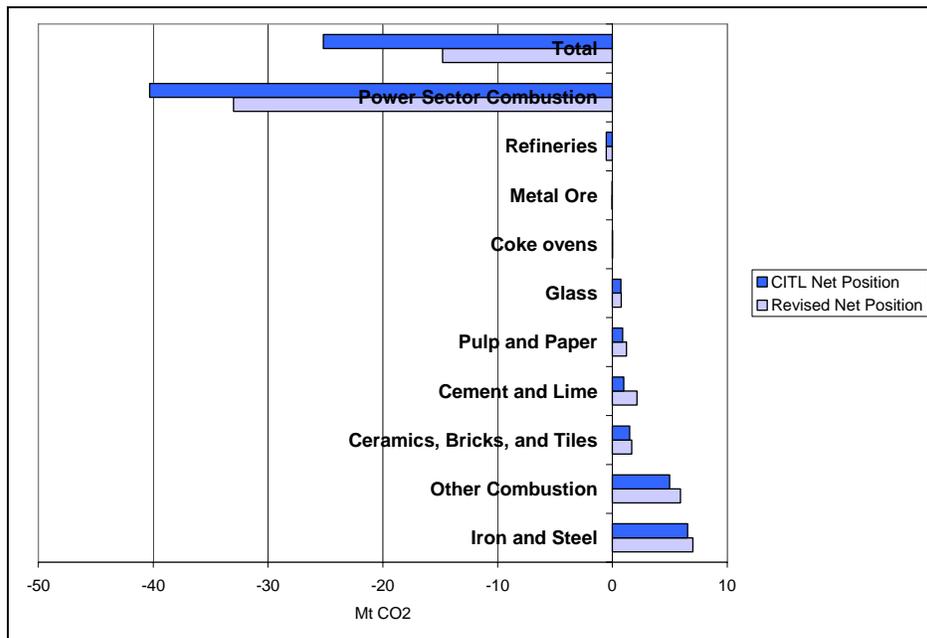
Figure 2. Net Allowance Position in UK Sectors with CITL and Revised Allocations, 2005 and 2006 (Mt CO2)



Source: CITL, UK Phase I NAP, UK New entrant report; own calculations.

Figure 3 displays the net allowance position of Spanish sectors based on allocations in the CITL and allocations as provided in the annual compliance report. While the allowance positions of all sectors remain the same directionally, all sectors except metal ore experience increased length. The nationwide net demand for allowances is reduced by about 10 million tons, and the net demand of the power sector is reduced by about 7 million tons.

Figure 3. Net Allowance Position in Spanish Sectors with CITL and Revised Allocations, 2005 and 2006 (Mt CO₂)



Source: CITL, Spanish compliance report; own calculations.

Beyond the aggregate sector level analysis discussed above, accurate accounting of allocations is important for analysis of behavioral changes at the installation level. Accurate assessment of installation behavior in response to a CO₂ price requires establishing a set of installations that retain consistent and active operating status over both 2005 and 2006. Doing so requires the ability to identify new, closed, planned, or expanded installations within the CITL data, as is described below in the context of the UK.

Within the CITL, an installation's compliance code and account status provide a source of information regarding installation operating status. An installation that has closed its account or not yet begun activity will have an "N/A" compliance code. However, because the "N/A" compliance code is also used to represent whether an installation submitted its verified emissions by the compliance deadline, verified emissions and allocations must be evaluated for a complete understanding of the installation's status.¹⁶ Between 2005 and 2006, 14 installations in the UK appear to close, as they have both an "N/A" compliance code and do not report verified emissions. Further, 18 installations in the UK, all combustion, have no allocation information and an "N/A" compliance code in 2005 only, suggesting that these installations began operating in 2006. There are 9 installations in the UK that have no allocation information and an "N/A" code for both 2005 and 2006, suggesting that these installations have not yet begun operation. Further, an additional 37 installations did not receive an allocation

¹⁶ In order to provide greater clarity, the use of compliance code in the CITL was modified in the August, 2007 amendments. From 2008 on, the compliance code will reflect the compliance status of the installation as of April 30 of the year following the compliance year.

in the NAP, but have active compliance accounts and report emissions in 2005 and 2006. These installations may have begun operation after the 2003 deadline but before the start of the program, thus also qualifying as new. Of these, 22 installations receive an allocation from the NER. In addition, 69 installations that received allocations in the NAP received additional allocations from the NER, presumably for capacity expansion. Beyond the compliance code, allocations, and verified emissions, an installation's "account status," which is visible online but not downloadable, indicates if an installation's account is open or closed, but appears to reflect current status and not necessarily the compliance year that is being viewed.

Based on the above information, a set of 'continuing' installations (installations that receive allocations and report emissions activity for both years and do not potentially undergo a capacity expansion) for the UK is summarized in Table 4.

Table 4. Determination of a Set of Continuing Installations for the UK

Installation Category	Number of Installations
UK installations in CITL	797
Opt-out and landfill gas installations (In compliance, but without emissions or allocation)	68
<i>Installations actively reporting in CITL</i>	<i>729</i>
Apparent new installations (based on absence from NAP and positive compliance code)	64
<i>Installations in CITL receiving allowances in the Phase I NAP</i>	<i>665</i>
Apparent closures	14
Installations with NAP allocation receiving NER supplements (possible capacity increase between 2005 and 2006)	69
<i>Continuing, same capacity NAP installations</i>	<i>582</i>
New Installations Receiving NER Allocation and Reporting Emissions Both Years	22
<i>Total same capacity, continuing installations</i>	<i>604</i>

Source: CITL, UK Phase I NAP, UK new entrant report, own calculations.

3. Discrepancies in Installation Main Activity Classification

As discussed in part 1, the CITL data reports only an installation's main activity as defined in the installation's GHG Emissions Permit. While a permit application will reflect all activities relevant to the EU ETS, it is under the actual 'main activity' classification that emissions from an installation are reported in the CITL. In some cases, installations may be classified as 'combustion installations,' even if they are they are conducting other industrial activities classified under Annex I. In the context of the UK Spain, and France, such installations can be identified based on the more detailed sector classifications that are available.

While the criteria used by Member State regulatory authorities for permitting installations as 'combustion' are not readily apparent, they appear to have varied between

individual Member States during Phase 1.¹⁷ There is not sufficient information in the data to identify the extent to which the UK, Spain, and France varied in their approach to classifying combustion installations. Nor is it clear to what extent classification reflects operator reporting, which may reflect ownership configurations, versus the decisions of regulatory bodies. In Spain and the UK, a small number of CHP plants associated with the pulp and paper sector or oil refineries are permitted as combustion, though other CHP plants associated with these activities are permitted within an Annex I industrial activity. In addition, a limited number of iron and steel installations are permitted as combustion. Spain permitted 15 installations in the sector category ‘Industry: tiles and floor tiles’ as combustion, all of which appear to be new or late entrants to the program. One tiler is permitted as combustion in the UK, though it is unclear why this plant was distinguished from others in the UK data.¹⁸ In France, only four installations conducting an Annex I activity are classified as combustion, two of which are associated with the ceramics industry.

The overall impact of such classification decisions appears to be small. The 10 Annex I industry installations classified as combustion in the UK represent about 1 percent of total verified emissions. In Spain, the 18 such installations represent about 0.5 percent of verified emissions. In France, the impact is much smaller, with the 4 installations representing less than one thousandth of verified emissions. However, while classification of Annex I industrial installations as combustion matters little in the aggregate, the potential impact on analysis of individual Annex I sectors of retaining or not retaining these installations in the combustion categories varies. Tables 5, 6, and 7 display the percent changes in allocations and emissions by sector if one were to reassign combustion installations that pertain to Annex I industrial activities to these industrial sectors. By far the greatest potential impact relates to the 3 pulp and paper installations classified as combustion in the UK. Reassigning these installations to the pulp and paper sector would increase the emissions for the sector by about 250 percent. This large difference suggests that CHP plants at these installations may be their dominant source of CO₂ emissions. The desirability of reassignment is likely to depend on the nature of analysis that an individual researcher is undertaking. Regardless, individuals should be aware of these discrepancies in classification, and the desirability of additional installation-level descriptive information as a supplement to the CITL.

¹⁷ This point is discussed briefly in the UK’s “EU Emission Trading Scheme Guidance Note 1: Guidance on Inclusion.” Available online: <http://www.defra.gov.uk/environment/climatechange/trading/eu/pdf/eu-ets-guidance01.pdf>.

¹⁸ Beyond the issue of classification within combustion, 2 installation main activity classifications in the CITL data for the UK appear to be erroneous, including a large power station and a sugar factory in the UK that are classified in the CITL as cement and lime. Errors such as these are likely a result of data entry or processing errors. No such errors were apparent in the CITL data for Spanish installations.

Table 5. Impact of Installations with Annex I Industrial Activities Permitted as Combustion in the UK, 2005 and 2006

Industrial Sector	Number of Installations Permitted as Combustion	Number of Installations Permitted within Industrial Sector	Combustion Installations Allocation	Combustion Installations Verified Emissions	Percent Impact on Industrial Sector Allocation	Percent Impact on Industrial Sector Emissions
Iron and Steel	4	7	0.2	0.1	1.5%	0.8%
Refineries	1	13	4.8	4.1	12.1%	11.3%
Glass	1	11	0.01	0.008	0.2%	0.2%
Pulp and Paper	3	6	1.4	1	280.0%	250.0%
Ceramics, Bricks, and Tile	1	20	0.02	0.005	4.4%	0.2%

Table 6. Impact of Installations with Annex I Industrial Activities Permitted as Combustion in Spain, 2005 and 2006

Industrial Sector	Number of Installations Permitted as Combustion	Number of Installations Permitted within Industrial Sector	Combustion Installations Allocation	Combustion Installations Verified Emissions	Percent Impact on Industrial Sector Allocation	Percent Impact on Industrial Sector Emissions
Iron and Steel	1	28	0.1	0.6	0.4%	3.8%
Refineries	1	12	0.4	0.4	1.3%	1.3%
Pulp and Paper	2	112	1.2	0.9	12.4%	10.6%
Ceramics, Bricks, and Tile	14	306	0.5	0.5	4.3%	5.0%

Table 7. Impact of Installations with Annex I Industrial Activities Permitted as Combustion in France, 2005 and 2006

Industrial Sector	Number of Installations Permitted as Combustion	Number of Installations Permitted within Industrial Sector	Combustion Installations Allocation	Combustion Installations Verified Emissions	Percent Impact on Industrial Sector Allocation	Percent Impact on Industrial Sector Emissions
Cement and Lime	1	50	0.09	0	0.3%	0%
Pulp and Paper	1	121	0.05	0.04	0.5%	0.5%
Ceramics, Bricks, and Tile	2	50	0.14	0.06	5.5%	3.2%