Identifying and Assessing Energy Datasets to Improve the UK and DA GHG Inventories

Final Report, May 2012

AEA

Aether

Report Title	Identifying and assessing energy datasets to improve the UK and DA GHG inventories
Customer	Department of Energy and Climate Change (DECC)
Recipient	Nicolas Toufexis, DECC
Report Reference	V2
Report Status	FINAL
Revisions	V2.3

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Date	23/05/2011

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Glossary

CAR	Cambridge Architectural Research Ltd	DEC	Display energy certificates
DECC	Department of Energy and Climate Change	NI	Northern Ireland
CCAs	Climate Change Agreements	FReM	Financial reporting manual
CCL	Climate change Levy	DUKES	Digest of United Kingdom Energy Statistics
RDCO	Registered Dealers of Controlled Oil	CRC	Carbon Reduction Commitment
DA	Devolved Administration	WG	Welsh Government
LA	Local Authority	SG	Scottish Government
GHG	Greenhouse gas	HMRC	HM Revenues and Customs
GHGI	Greenhouse gas inventory		

1 Project Overview

For the UK to continue to drive down GHG emissions and achieve ever-more demanding mitigation targets, an improved evidence-base for energy use in small-scale combustion sectors is needed. Imminent new targets for the UK under the EU's Effort Sharing Decision will increase the policy focus on GHG emissions in the non-traded sector. In addition existing sector-specific targets are included in:

- The UK Government Carbon Budgets, with Departmental targets for specific sources;
- The Scottish Climate Change Act (and supporting policy programme such as the Energy Efficiency Action Plan);
- The Wales Climate Change Strategy.

DECC and the Devolved Governments have a key role to play in designing and implementing policy levers that act in the residential, public and business sectors to achieve GHG reductions and meet these devolved and UK targets. This is an important challenge, given that on an end user basis, the residential, public and business sectors account for around 40% of UK emissions. However, to derive DA emission trends for these sectors is problematic due to the lack of energy balance data across any fuels and very limited information available at the sub-national level for the early part of the time series back to 1990. The available data on energy use in these sectors is fragmented and discontinuous, heavily reliant on UK data from the Digest of UK Energy Statistics and the DECC sub-national energy statistics published in Energy Trends. Sector and geographical consumption data for solid and liquid fuels are particularly uncertain, undermining confidence in baseline emissions data for off-gas-grid areas, which includes a large proportion of Northern Ireland.

The current level of data uncertainty within the DA inventories for these small-scale combustion sectors does not allow trends to be analysed with confidence. It also limits the quality of analysis of cost-effectiveness of future policies, limits the sensitivity of the DA inventories to local policy actions and inhibits accurate progress tracking against DA targets.

The **objective** of this small research project was therefore to identify, review and assess available datasets that could be used to improve the quality of the UK and Devolved Administrations (DA) Greenhouse Gas (GHG) inventories by improving the allocation of energy emissions to countries and sectors. The main focus was on data concerning the consumption of solid and liquid fuels because uncertainty is currently highest for these fuels.

Our aims are listed here, together with references to where findings are provided in this report:

- **Identify** new and existing energy consumption datasets that could be used to improve the UK and DA GHG emissions. Section 2 of this report provides a summary list of datasets; Annex 1 provides the full detail of communications.
- **Review** the potential new datasets to assess their usefulness against the following criteria:
  - ✓ the data will improve the model currently used to distribute oil and coal use data to countries;
  - ✓ the data will allocate energy use (electricity, gas, coal and oil) more reliably to the residential, public and business sectors within each country;

- ✓ the data provide a better understanding of energy use within each DA and its links with existing implemented energy efficiency actions;
- ✓ the data may be integrated into DECC sub-national energy statistics methodologies to improve energy statistics and GHG time series data for DAs.

Section 2 provides a summary of the findings of this data review. Annex 2 for the detailed data evaluation sheet of each relevant dataset.)

- **Map out** how existing data flows through the DA inventories and where the new datasets might fit into the inventory methodology. Section 3 provides a summary and Annex 3 contains more detailed data flow diagrams.
- **Outline methods** that could be used to integrate data that is fit for purpose into an improved UK and DA GHG inventory and summarise the key strengths and weaknesses of each dataset assessed. This needs to be in the context of implementing improvements to current national datasets and inventory methods to improve DA GHGI accuracy. Section 4 provides a summary of the findings and Annex 4 contains detailed reports of each relevant dataset.

2 Datasets Reviewed

During the project, 23 potential data sources have been investigated through e-mail and telephone contacts with over twenty organisations including independent utility regulators, research organisations, public sector organisations including central government departments and representatives from the Devolved Administration Governments.

Full details regarding the organisations, points of contact and summary findings can be found in Annex 1. Table 1 on the following page gives a summary of this information. The datasets shown with coloured highlight have been further investigated due to their potential usefulness in the inventory. These further investigations are summarised in the data evaluation sheets that can be found in Annex 3.

Following these further investigations, four datasets were requested (shown in **bold**) and three received by the team (data from Cambridge Housing Model are not available until later in 2012). Data analyses were carried out and findings have been summarised in Section 4 and detailed in Annex 4.

The remaining investigations identified limitations in datasets in the context of use within the inventory. These limitations meant that direct use of these data to improve the inventory is not currently possible. The reasons are stated in Table 1. Reasons include:

- the spatial coverage of the data is incomplete;
- there is incomplete disaggregation of the data by fuel, sector or location;
- the dataset is in an early stage of development;
- there is incomplete or inconsistent time series coverage.

However there are a number of data sources that can be highlighted as examples of good practice or should be potentially useful in the future. These are indicated in Table 1.

Table 1: Summary of the data sources investigated

The table below contains hyperlinks to accompanying data evaluation sheets (see data sources highlighted in a darker colour). Four datasets have been obtained and analysed by the team (see data sources in bold). Those datasets without evaluation sheets are described briefly in Annex 4.

Data source	Organisation	Outcome
Public sector datasets		
NHS data	NHS	This is an example of good practice and covers all DAs. However it covers only a part of the public sector. The data can only be used to improve the accuracy of the current energy mapping approach for the public sector as a whole, by reducing uncertainties in the fuel use within the health sector.
Display Energy Certificates (DEC)	CLG	These data are currently being used to improve the mapping methodology for public sector in England and Wales. Equivalent data are not yet available for Scotland and NI.
Financial Reporting manual (FReM) / Greening Government / State of the Estate	Cabinet Office, DECC	This is an example of good practice, but it currently covers only a small sample of the civil service estate.
Scottish Public sector sustainability reporting (the SG version of FREM)	Scottish Government	Guidance that could result in consistency across the public bodies in Scotland that collate energy and carbon emissions voluntarily. Forum for Scottish public bodies energy managers could be useful for collating / disseminating information.
Public sector data - former National Indicator 185	DECC	This dataset is currently not useful because of inconsistencies in methods and scope across the LAs.
Carbon Trust data management, for public sector and SME	Carbon Trust	This dataset is currently not useful because CT is unable to resolve sectors and low quality assurance related to data collation method.
Industrial / Commercial datasets		
Climate Change Agreements (CCAs)	**DECC**	**Data usefulness varies according to the detail of data reported by each CCA (sector). Most CCAs provide useful reference materials for inventory work, and some fuel use data for UK-level sector allocations. Technical and resource challenges arise due to large numbers of sites involved (9,000 in total) and some duplication in reporting with EUETS.**
Registered Dealers in Controlled Oil (RDCO) Scheme	**HMRC**	**Data could be directly useful for inclusion in DA inventories but ideally requires integration into the DUKES dataset to ensure consistency. Full allocation to DAs not currently available.**
Climate Change Levy	HM Treasury	This dataset is currently not useful because the reporting system does not record time periods against each request for energy consumption data.
Carbon Reduction Commitment (CRC) Energy Efficiency Scheme	DECC, EA	This dataset is currently not useful because there is no geographic referencing to allow split by DA and there is lack of clarity in the sector split.
Oil distributors, Xoserve, utility regulators, trade associations etc.	Various	No new data has been found in this research. Direct contact with distributors was considered too resource intensive and the RDCO data was much more likely to be useful – see above.

Data source	Organisation	Outcome
Domestic sector datasets		
Cambridge Housing Model – Domestic Energy Fact file	**CAR**	**Data will be directly useful for inclusion in DA inventories but this is not available until later in 2012. Additional data could be developed by CAR to over-write current assumptions in mapping methodology but there is a significant cost to generate this data.**
Scottish Housing Condition Survey (SHCS) team: Residential emission estimates	**Scottish Government**	**Data are directly useful for inclusion in DA inventories for the beginning of the time series.**
Scottish LA housing surveys	Perth & Kinross, Fife	**Examples of good practice** but methods used in these local surveys are very variable across the UK.
Scottish EPC database	Scottish Government	The database has been discussed but no data are available yet.
Home Energy Efficiency Scheme (HEES) and replacement Nest Scheme in Wales; Gas Connections and Indicators Projects	Welsh Government	These sources provide data on measures rather than fuel consumption and are therefore not directly useful to the inventory. Housing survey data should be integrated into CAR Cambridge Housing Model to improve Wales estimates.
Northern Ireland Energy Model (NIEMo)	ESRI	New data can be used for quality checks and for energy modelling, e.g. for the residential sector; the electricity data may be useful for the end user analysis.
Analysis for Green Deal and RHI fuel switching	DECC	This data source is still **under development**. We anticipate evaluation will be largely modelled using EPC methods therefore probably not directly useful in future.
Fuel poverty statistics	DECC	This dataset is currently not useful because it uses modelled energy consumption not measured fuel consumption.
National Energy Efficiency Database (NEED)	DECC	This dataset is currently not useful because it has limited coverage across the fuels - only gas and electricity. Possible future usefulness depending on further development of NEED in the commercial sector.
Energy Performance Certificates	CLG	EPCs may in the future provide new data to over-write current assumptions in mapping methodology.
London Heat Mapping	GLA	Reviewed data but not useful because does not have the coverage required.
Valuation Office Agency	VOA	Reviewed data but not useful for this project.

3 DA Inventory Data Flows

The flow diagrams found in Annex 3 summarise current methodology used in the DA GHG Inventory looking at the process in which data are either directly input to the inventory or used indirectly to calculate emission estimates. There is a flow diagram for the domestic sector and separate diagram for the 'industry and commercial' sector.

The methodology for compiling the sub-national NAEI estimates, of which the DA inventory is a key part, can be summarised into three stages:

- **High level inputs** incorporate the initial data that are required to produce the current emission estimates. These consist of (i) sector and fuel specific datasets such as the DECC sub-national gas and electricity data; (ii) other proxy activity statistics such as population, employment data and so on; (iii) site specific data for industrial and commercial and (iv) other geographic datasets that are used to adjust modelling assumptions.
- **Processing stages** are required to combine the various datasets to produce detailed mapped distributions and DA and Local Authority energy and emission estimates. GIS modelling is used to generate high resolution mapped distributions of energy use, and for many inventory sectors these are then used to derive DA level 'drivers' to split national energy estimates to DA level. In the case of industrial sectors the maps are combined with estimates at the larger 'point' sources to generate these DA level 'drivers'. The DA inventory timeseries is produced through a combination of available datasets for different years, and where data gaps occur expert judgement is used to estimate a consistent timeseries.
- **Outputs** of this process cover not only the DA inventory but also other emission outputs such as mapping and LA CO_2 estimates. In most cases results of the data processing are then combined or scaled to national emissions or fuel data in the GHG Inventory or DUKES.

4 Data Analysis and Study Recommendations

Four datasets were determined by the team as potentially useable in the GHG Inventory:

- Registered Dealers in Controlled Oils (RDCO),
- Climate Change Agreements (CCAs),
- Cambridge Housing Model DA outputs, and
- Scottish Housing Condition Survey: residential GHG emission estimates.

Each of these (except the Cambridge Housing Model for which DA level data are not yet available) were subsequently analysed in greater depth and the reports can be found in Annex 4. A summary of the findings is given below.

4.1. Industrial and commercial sectors

Two datasets with potential were relevant for the industrial/commercial sectors: RDCO & CCA.

RDCO

This dataset offers the potential for a considerable improvement in the DA inventory industrial/commercial sectors by providing a consistent dataset of oil sales by DA. However, some further work is needed in collaboration with the DUKES team to integrate it with DUKES before it can become part of the inventory compilation.

The RDCO Scheme requires that Registered Dealers record their gas oil and kerosene sales data. This applies to dealers across the UK. The data on sales that has been supplied by HMRC is relatively comparable to data reported in DUKES, with the RDCO Scheme total oil sales being 2% higher than the total gas oil and kerosene consumption reported in DUKES. However there are larger

discrepancies between the datasets when this is considered at the sector level: RDCO is higher for domestic and lower for both industry and public sectors.

The RDCO records have been allocated as far as possible to the relevant DA, but over 20% of the sales data cannot be allocated because of details missing from data submissions. These gaps must be resolved before the data can be integrated into the DA GHG inventory.

As part of our research we have made the DECC DUKES team aware of the RDCO dataset and we recommend that they consider taking part in discussions with HMRC regarding this dataset to further understand its methodology with a view to incorporating it in regular DUKES updates. A full assessment is needed of the potential for the data to influence oil consumption estimates in DUKES and to assess whether improvements in the RDCO database can be achieved in order to reduce the size of the unallocated oil fraction at DA level.

Further information should also be sought on current quality checks that are in place, the comprehensive state of the time series and any possible sources of double-counting in respect of re-sellers of oil.

A consistent dataset of oil sales by DA would provide a significant improvement to the DA estimates for this fuel, because the current method is based on: (i) the assumption that DUKES national sector allocations for oil use are accurate (noting that RDCO data are not consistent with DUKES at sector level) and (ii) energy demand modelling that uses available information on sector employment by DA and energy intensity of industry sectors based on periodic surveys. If a more complete DA split of the oil sales data can be derived from the RDCO data, this could provide a very significant improvement in the overall DA inventories, especially for Northern Ireland where the reliance on oil consumption is very high due to the limited gas supply network.

Ideally, any new data from the RDCO should initially be incorporated into an improved method for the derivation of the DECC sub-national oil dataset, which then underpins the sub-UK GHG emission estimates.

Recommendation

The RDCO data are useful for improving estimates of oil consumption across the industrial, commercial and domestic sectors. The dataset is available (and regarded by HMRC as "complete") from 2007 onwards, and around 80% of the data are geographically-referenced.

Some further research is needed to improve the data detail for 20% of the sales data that cannot be allocated to a location, before the data can be fully used to inform the DA inventories. It is recommended that the RDCO dataset be considered by DECC in the DUKES compilation, either as a quality check of existing oil sales data, or as a new dataset to inform new sector estimates.

This recommendation has already been raised by the inventory agency through stakeholder consultation with the DUKES team, noting that the RDCO data should first be assessed for their integration into available energy statistics. To integrate the RDCO data into DUKES, sub-national energy statistics and the UK and DA GHG inventories will require additional resources across a number of teams to review the data and augment existing data compilation systems to take account of the new dataset and resolve any inconsistencies with other data sources (e.g. to resolve any inconsistencies when comparing the RDCO annual totals by sector against the oil sales data reported to DECC DUKES via the DORS reporting system used by refiners and import data from HMRC).

Outline Method:

- DECC to consider RDCO data in DUKES compilation;
- UK GHGI estimates to be based on DUKES, with improved sector resolution due to RDCO;
- Further research to allocate remaining 20% of RDCO data to locations;
- DECC to consider the complete geographically-referenced RDCO data in the compilation of DECC sub-national energy statistics;
- DA GHG Inventories to be based on the sub-national energy statistics and hence to be more accurate (at the overall and sector level) and policy sensitive due to the use of RDCO data.

Climate Change Agreements (CCAs)

Climate Change Agreements are negotiated at sector level for many parts of the UK industrial economy, with reductions in emissions achieved by CCA companies rewarded by financial mechanisms. There is some degree of overlap in data reporting between EUETS and CCAs, although this varies according to the industry sector. The CCA data provide information on energy and emissions from industry for smaller firms that are outside of EUETS; these data are potentially very useful to DA government policy-makers as the sites reporting to CCAs will include the largest non-ETS industry sites in each DA, which may be influenced by DA government policy levers to achieve GHG emission reductions.

In particular, the CCA data provides information on an estimated 11 Mt CO_2 in the non-traded sector of DA inventories in total. In terms of the UK GHG inventory, this only equates to around 2% of current UK net GHG emissions, but in the context of DA policy levers in the non-traded sector, the CCA data is much more significant. It provides a new data source on fuel use in economic sectors such as chemicals, food and drink, iron and steel. These are all high-emitting non-ETS sectors across the DAs.

CCA data goes back to 2002 and there are data for 2010, 2008, 2006, 2004 and 2002. The level of detail in reported CCA data is less in the earlier years of the scheme. The detail provided within the reported submissions also varies between CCAs. In some cases there is a detailed breakdown of emissions based on actual annual fuel use, whereas other sectors use assumptions and merely report “total emissions” with no breakdown of emissions by site or by fuel. Common calorific values and carbon emission factors are used for emission estimates across all CCAs for fuel-specific estimates. Unlike EUETS, the CCA data does not include emission estimates calculated based on installation-specific fuel compositional data and carbon dioxide emission factors.

CCA sites (“target units”) report annual use of all fuels (direct fuels and electricity) and use emission factors to estimate annual CO_2 emissions. Only aggregated data (by CCA, i.e. across all sites in the sector negotiated agreement) are published. In some CCAs only aggregated sector data are provided to DECC, whereas in other CCAs a breakdown of energy use and emissions is reported by each target unit to DECC, for subsequent analysis and aggregation prior to publication.

The usefulness of the CCA data varies between sectors due to the variable level of detail in the CCA reporting. For comprehensive use of the CCA dataset, a very extensive research project would be needed to process all of the CCA data into a format to be useful for future energy and emissions mapping for the UK, DA and Local Authority NAEI outputs. For those sectors where the CCA data are not reported by site, any analysis for use in DA and Local Authority level reporting would require a

series of assumptions to disaggregate the data, and these data would therefore not be accurate or sensitive to policy impacts.

Furthermore, the cross-over in reporting against EUETS requires detailed analysis for all sectors. Site-specific energy and emissions data under CCA and under EUETS are needed to enable complete analysis of the duplication in reporting, to ensure that the use of EUETS and CCA data delivers accurate, representative data for sites and sectors. This is likely to be a very resource intensive data processing task, unless the design of the CCA reporting system can be augmented to include reporting by sites on the CCA-EUETS cross-over, by fuel, by year.

Recommendations

In the short term, where site-specific data are reported, the CCA data provides a useful reference resource to help inform decision-making within the compilation of the **UK point source database**, which underpins the geographically-referenced outputs from the NAEI. For some sectors (such as steel, food and drink, chemicals) the NAEI experts can access the CCA where required to seek information on "problem" sites where the understanding of fuel uses is currently limited and has a significant impact on GHG estimates.

The inventory agency could use the CCA data from 2008 to quality check and calibrate the DA emission estimates for sectors such as iron and steel in future DA GHGI compilation. This will require some additional analysis to ensure that there is no double-counting of emissions, e.g. from electricity use in the sector and against data already available from EUETS and the Pollution Inventory. This approach would need to be implemented through the DA improvement programme and would be limited to a handful of sectors where suitable data are available from the CCAs. Note also that the time series improvements are expected to be limited to 2008 onwards.

The inventory agency should ensure that consideration of the use of CCA data by the DECC DUKES team is raised within stakeholder consultation through the NAEI work programme. The data processing and use of the CCA data in DUKES compilation and within the derivation of sub-national energy statistics by DECC is the ideal way forward for inventory outputs, as it will help to resolve UK and regional sector fuel use allocations. This step would require investment in several data processing mechanisms and within the DECC DUKES team, in order that CCA data can be considered alongside the other data reporting channels used to compile the UK energy balance.

Looking ahead to the next phase of CCA reporting which starts in 2013, it is recommended that DECC considers the reporting needs of energy statisticians in the DUKES team and emission inventory practitioners through the NAEI, as the new CCA data reporting system is designed and implemented. We understand that future data reporting is planned to be on a two-year basis, rather than gathering and reporting annual energy and emissions data. This will greatly limit the usefulness of the CCA data in future energy and emissions analysis for the UK non-traded sector, as both the energy statistics and emission inventory mechanisms address calendar year reporting obligations. It may be too late to amend this aspect of the CCA mandatory reporting system, but perhaps it may be possible to achieve some degree of voluntary annual data reporting for some sectors.

(For more details, see Annex 2.5 and Annex 4.2.)

4.2. Domestic Sector

This study has reviewed a number of different datasets related to the domestic sector. These cover various different types of data:

- housing surveys or other data (EPCs) which consider physical building properties as well as improvements,
- availability of fuel types and the location of the gas network,
- outputs of models to estimate fuel consumption based on surveys and assumptions.

There are very few data on actual energy consumption of fuels other than for gas and electricity and therefore the assumptions made within the sophisticated models of DA and national energy consumption in this sector and are particularly important but these are often inconsistent between models (and between DAs).

The current methods for the domestic sector are problematic because of significant inconsistencies across the DAs and the incomplete timeseries of data available. Data provided by various studies through the years give snapshots but there are significant gaps across the time-series that need to be filled via estimates. Whilst this is inevitable to some extent it makes calculating the overall fuel balance more complex because the various datasets are sometimes contradictory and expert judgement is required to make a best estimate.

The study has not identified any single continuous, complete dataset that can be used to improve the DA GHG emission estimates for this sector which is such a high priority for DA climate change, energy efficiency and fuel poverty policy levers. The overall recommendation therefore is that much more investment in the development of sub-national energy and emissions datasets for this sector is needed. The CAR model (outlined below) appears to provide potentially the most comprehensive basis from which to start this process of data improvement and integration, building in other key findings and datasets from other sources reviewed.

Cambridge Housing Model

This project has identified that the Cambridge Housing Model should provide enough data to produce a revision of the recent time series in the DA inventory (post 2007) for the domestic sector for all fuels. The current CAR model is based on detailed housing data for England and Scotland, but with no consideration for detailed housing information in Wales and Northern Ireland. This current gap is partly due to the different formats available in housing surveys for Wales and Northern Ireland, but primarily due to limited resources for the CAR project. Wales is currently modelled using 'representative' households from the EHCS, and NI energy use is calculated by difference compared with the UK level data. Therefore significant further work would be needed to integrate the available information from Wales and Northern Ireland in order that the model outputs were more accurately representative of the housing in those countries. This is especially important for Northern Ireland given the much higher reliance on oil as a fuel in the residential sector there.

It may also be possible to use other data from the Cambridge Housing Model to improve the detailed domestic mapping. Estimates of household energy consumption and heating fuel type split by region and by house type could replace data obtained from BRE which are now considerably out

of date. It is planned that the domestic maps are updated when the detailed Census 2011 data become available. A charge would be made by CAR for this additional data.

Recommendations

The completeness of the Cambridge Housing Model should be improved to include detailed modelling for Wales and Northern Ireland.

A subsequent more detailed review of the data used to calculate the earlier time series in the DA inventory would then be required.

The prioritisation and funding of these steps would need to be considered by DECC and the DAs via the DA GHG inventory improvement programme.

Data consistent with the Cambridge Housing Model should be used when updating the NAEI domestic maps once the 2011 Census data are available. Under the current plans for the NAEI emission map improvements, it is expected that these revisions to domestic maps would be implemented for the 2012 emission maps, i.e. to be delivered in 2014.

Scottish Housing Condition Survey

The Scottish Housing Condition Survey data has been used by the team at Scottish Government to derive residential sector emission estimates from across the time series back to 1990; the findings of this analysis are very different to those derived in the current DA inventory method. These differences are due to the application of different constraining factors adopted by the two approaches. The Scottish Housing Model uses a purely bottom-up analysis. The NAEI approach: (i) at the UK level is constrained to DUKES fuel use totals for the residential sector, and (ii) uses the sub-national energy statistics for gas and electricity estimates (based on meter readings) to constrain the Scottish allocations for these fuels.

Recommendations

Comparing the data on an end user basis (i.e. including consideration of emissions due to electricity use, and hence taking an overall sector energy demand approach) it is evident that the SHCS data derives a very different trend in electricity use and emissions. The Scottish domestic electricity allocation used in the current DA end user inventory is regarded as highly uncertain for 1990, due to the very limited electricity data available from the early part of the time series.

The more consistent reporting of housing survey data across the time series indicates that the reported trend in electricity use in the SHCS dataset is therefore likely to be more accurate than that reported trend in the current DA GHGI dataset; therefore the study team recommends that the SHCS electricity use data trend be used to revise the current DA GHGI electricity allocation for Scotland in 1990, to bring the reported sector trends by the two methods considerably closer together.

This recommendation will be implemented by the inventory agency during the compilation of the 2010 GHG DA inventory.

Furthermore, it is recommended that within any wider programme of domestic sector energy and emission modelling for the DA inventory, that the full detail of the parameters used to derive SHCS estimates by fuel are considered, such as housing survey data, SAP ratings and any Scotland-specific

climatic assumptions. The current CAR model does already utilise Scotland-specific datasets, and therefore a check on the full range of parameters used within the CAR and SHCS energy modelling approaches is needed.

RDCO for the domestic sector

If the **RDCO data** (see above) can be improved to reduce the amount of unallocated oil sales at DA level, this will also provide a very important improvement to the total oil use in the domestic sector, and domestic models could then be re-calibrated to revised sector oil totals.

4.3. Other Recommendations

Public sector

This study has found good examples of site- and organisation-specific energy reporting and emissions data, e.g. from the NHS and through the State of the Estate reporting.

The data quality across the public sector is incomplete and inconsistent, and therefore it is recommended that these examples of best practice be used to disseminate information across other parts of the public sector, in order to develop a more complete and accurate dataset. Ultimately, better energy data is needed to feed into the DUKES compilation system.

Possible approach:

- Disseminate best practice from NHS and State of Estate reporting to other key sub-sectors of the public sector such as local authorities and educational establishments; this could perhaps be leveraged through an existing reporting system, such as CRC or an extension of the use of a system such as ERIC. Training of environmental managers will be needed;
- Gather site-specific data, and/or aggregate at a local level such as by Local Authority, for subsequent aggregation to sector estimates by fuel, for use in DUKES compilation;
- Incorporate data from all public sector sources into estimates of fuel use within DUKES and the DECC sub-national energy statistics, which would then be used to inform LA, DA and UK emission estimates.

Note that without site-specific and fuel-specific data, the accuracy and policy-sensitivity of the public sector data will remain poor, and tracking policy effectiveness or reductions against sector targets will not be possible.

Cross-cutting communications

DECC and the DA Governments are facing a common challenge to improve the underlying evidence base to improve emission estimates for the domestic, commercial and industrial sectors. Addressing these challenges is fundamental to the design, implementation and tracking of the effectiveness of energy efficiency and climate change policies in the UK, as part of the overall UK progress to GHG reduction targets.

The study team therefore recommends that a more joined-up approach to addressing data requirements for these sectors is needed, perhaps with some form of “Four Nations working Group” to bring together the DECC sub-national energy statistics team with the DA energy efficiency and

climate change analysts, in order that common problems be addressed in an efficient and cost-effective manner. There are many examples of best practice that could be shared and reporting systems duplicated within the DECC and DA portfolios, but a consistent, complete approach is needed for the development of the evidence base to reap dividends at UK and sub-UK level in these key target sectors.

Feedback into inventory review and improvements

The Aether-AEA study team that have delivered this project includes key members of the UK and DA GHG and AQ inventory agency; the team will ensure that the recommendations from this project are included within the UK and DA inventory improvement programmes, and that the recommendations are considered via existing NAEI work programme mechanisms such as stakeholder consultations between inventory agency and the DECC energy statisticians.

5 Acknowledgements

The project team would particularly like to thank:

- Steve Clarke at HMRC for his help throughout the project;
- Both the CCA teams in DECC and AEA for making data available to us; and
- Jason Palmer of Cambridge Architectural Research.

Annex 1 Communications details

This table categorises the datasets that have been investigated and provides a summary of the findings and points of contact for each.

Colour coding for summary findings column:

	Available data is of a standard that can be directly used in inventory compilation (but this does not apply to any of the datasets reviewed in this study)
	Available data is of a standard that will require further investigation before use in inventory compilation
	Data cannot be used in inventory compilation due to issues with scope, quality etc.
	No data available for review

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Public	Financial Reporting manual (FReM)	X				X	X		X		HM Treasury	The HMT lead is **Larry Pinkney** who leads FRAB (Larry.Pinkney@hmtreasury.gsi.gov.uk) OR hema.bhatt@hmtreasury.gsi.gov.uk	See data evaluation sheet described below that is merged with Greening Government / State of the Estate
Public	Greening Government / State of the Estate	X	X	X		X	X	?	?	?	Cabinet Office, DECC	**Susan Donaldson** in Sustainable Energy Analysis, DECC for Greening Government E-PIMs **Julie Prendergast** ROGCJPrendergast@flex-r.gsi.gov.uk.	**See data evaluation sheet** FReM is a guidance document for annual and sustainability report for Government Estate. E-PIMs is the government property database, it includes carbon and energy reporting, later available on request for building that have been benchmarked (~1400). Clarification sought from DECC on Greening Government reporting and continuity with previous systems. Would need combining and comparing with other public sector datasets, as we understand that this dataset only covers civil estate.
Public	Scottish Public sector sustainability reporting (the SG version of FREM)			X		X	X	X	X	X	Scottish Government	**Barry Greig** at Scottish Government barry.greig@scotland.gsi.gov.uk	Produced guidance for Scottish public bodies published in Jan '12. No data at the moment. Examples of best practice; could promote a consistent approach. Many bodies have been reporting energy and carbon emissions but not using a consistent approach. This guidance will help to bring consistency across the whole sector, but note that current reporting practice is voluntary, not mandatory. There is a forum for Scottish energy data managers to meet, which could be a useful mechanism for SG to consider in promoting greater consistency in sustainability reporting of this kind. Could also be replicated in other DAs.

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Public	Public sector data - LA own estate and transport fleets (former NI 185)	X				X	X	X	X	X	DECC	DECC policy team **(Katharine Chislett** and **Peter Barton-Wood**) Katharine.Chislett@decc.gsi.gov.uk, 0300 068 5234 Peter.Barton-Wood@decc.gsi.gov.uk,	**See data evaluation sheet** Differences in reporting scope mean that data cannot be used for benchmarking.
Public	NHS data	X	X	X	X	X	X	X	X	X	NHS	**Graham Hyde** graham.hyde@ic.nhs.uk Tel: 0113 254 7267 **Ann Konsbruck** Information Officer Phone – 029 20315512 email – ann.konsbruck@wales.nhs.uk **Kathryn Dapré** Energy & Climate Change Manager, Health Facilities Scotland	**See data evaluation sheet** Data is available either publically or on request from England, Wales and Scotland. No response on details site level data for Northern Ireland but aggregates might be available through PSEC.
Public	Carbon Trust data for public sector and SMEs	X	X	X	?	X	X	X	X	X	Carbon Trust	**Warren McIntyre** (01355 581841) Warren.McIntyre@CarbonTrust.co.uk **Brendan Reid** (01355 581814) Brendan.Reid@CarbonTrust.co.uk	Data cannot be used because there is no sector split and does not have full coverage.
Public	Display Energy Certificates (DEC)	X	X	?	?	X	X	X	X	X	CLG	England and Wales: **Phil Beschizza** Home Buying, Selling & Energy Performance Zone 5/H9, Eland House T: 0303 444 1836 F: 0303 444 3313 E: phil.beschizza@communities.gsi.gov.uk Scotland: **Ann-Marie Meikle** Ann-Marie.Meikle@scotland.gsi.gov.uk Northern Ireland: **Gerald M Coulter** MRICS MBEng Department of Finance and Personnel (NI) Tel: 028 9051 2715 Fax: 028 9082 3282 email: gerald.coulter@dfpni.gov.uk	**See data evaluation sheet** Data from England and Wales has been used to improve the mapping estimates this year, possibility to extend for Northern Ireland and Scotland in future years if data could be made available for NI and Scotland. In Scotland there is a EPC database being constructed.

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
I&C	Climate Change Agreement	X	X	X	X	X	X	X	X	X	DECC	AEA contact **Richard Hodges**; DECC policy lead on CCAs: **Jane Dennett-Thorpe**, jane.dennett-thorpe@decc.gsi.gov.uk	**See data evaluation sheet** Directly useful, but in a limited number of sectors. Much more data analysis resource needed to enable a more comprehensive use of the time series of CCA data. **See summary analysis**
I&C	Climate Change Levy	X	X	X	X	X	X	X	X	X	HM Treasury	HMRC – **Andy Jameson** and Cathy Smith in the Environmental Taxes team cathy.smith2@hmrc.gsi.gov.uk andy.jameson@hmrc.gsi.gov.uk HM Treasury – **Michael Stansfield** Michael.Stansfield@hmtreasury.gsi.gov.uk	**See data evaluation sheet** This dataset is currently not useful because the reporting system does not record time periods against each request for energy consumption data.
I&C	CRC	X	X	X	X	X	X	X	X	X	DECC, EA	Environment Agency **(Paul Allen)** Paul Allen CRC Operations Advisor paul.allen1@environment-agency.gov.uk DECC policy team **(Mark Bainbridge** and **Paul Wilson)** paul.wilson@decc.gsi.gov.uk mark.bainbridge@occ.gsi.gov.uk	**See data evaluation sheet** We can make a request for the fuel consumption data by fuel type by participant and by CRC sector (described above and in separate file) but it would not be useful for the detailed sector below CRC participant level or the DA level inventory because there are no site locations specified.
Fuel suppliers	DUKES - any contact with fuel suppliers?	X	X	X	X					X	DECC	**Julian Prime** julian.prime@decc.gsi.gov.uk **Warren Evans** warren.evans@decc.gsi.gov.uk	DECC team are planning to survey oil suppliers but this has been delayed. They are collating information from refiners on who they sell to but this is taking time because of sentivities and is confidential. Once they have a more comprehensive list then they will run a survey.
Fuel suppliers	Office of Fair Trading market review of off gas energy supply	X	X	X	X			X	X	X	OFT	The contact at OFT who led the off-grid market study is **Min Lim** (HsiuMin.Lim@oft.gsi.gov.uk) **Gary Mills** (Gary.Mills@oft.gsi.gov.uk)	Provided contacts within Ofgem, Xoserve and FPS leading to information on the RDCO
Fuel suppliers	Consumer Focus Scotland, off-gas-grid housing report (linked to OFT study above)			X				X	X	X	Consumer Focus	**Andrew Faulk** Energy Manager, CFS. 0141 227 1842	Contains references to housing surveys but no other new sources of information

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Fuel suppliers	Utility regulator research (GB)	X	X	X		X	X				Ofgem	**James Veaney**james.veaney@ofgem.gov.uk**Steve McBurney** – Head of Energy EfficiencyTel: 020 7901 7063 steve.mcburney@ofgem.gov.uk**Adam Crockett** - EconomistAdam.Crockett@ofgem.gov.uk	Ofgem provided information referencing data that is already taken into account with the current methodology: DUKES, Regional Trends so no further data here.
Fuel suppliers	Xoserve	X	X	X	X		X				Xoserve	**Fiona Cottam** Performance Manager Customer Operations Xoserve Ltd Tel: 0121 623 2695 (internal 7592 2695) Email: fiona.cottam@xoserve.com	Xoserve were not able to provide relevant data because of confidentiality but DECC have already used gas consumption data so nothing new to be gained from this.
Fuel suppliers	Trade Association information / individual solid fuel and oil merchants (GB)	X	X	X	X			X	?	X	Federation of Petroleum Suppliers	**Tony Brown** Technical Manager Federation of Petroleum Suppliers tb@fpsonline.co.uk Mobile number 07979070803	Recommended that the RDCO should be investigated.
Fuel suppliers	Oil Distributor	X	X	X	X				X	X	DCC Energy	**Donal Murphy** DCC Energy Limited Managing Director Email: energy@dcc.ie	DCC Energy is the leading oil and liquefied petroleum gas (LPG) sales, marketing and distribution business in Britain and Ireland. Data from distributors is monitored through the RDCO. Direct contact with distributors has been considered as more resource intensive and less likely to provide data.
Fuel suppliers	RDCO - Registered Dealers in Controlled Oils	X	X	X	X					X	HMRC	**Steve Clarke** steve.clarke2@hmrc.gsi.gov.uk	**See data evaluation sheet** Detailed data on oil sales. Data received from HMRC. **See summary analysis**

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Fuel suppliers	Utility regulator research (NI)				X	X	X	X	X	X	DETI NI Annual coal inquiry NI Oil Federation DoE Analytical Services Unit (DETI) OFTEC (Northern Ireland) Oil Firing Technical Association,	**David Blevings** Northern Ireland Oil Federation Office: 0845 6002105 Fax: 028 9182 0625 Mobile: 07714705120 T: 0845 6002105 dblevings@oftec.org enquiries@oftec.org **Sam Connolly** Samuel.Connolly@detini.gov.uk **Steven Roberts** Economic and Labour Market Statistics Tel: 028 9052 9897 (ext: 29897) Textphone: 028 9052 9304 Steven.Roberts@dfpni.gov.uk **Mark McFetridge** phone 028 9052 9385 fax 028 9052 9459 mark.mcfetridge@detini.gov.uk **Michael Bennett** of DoE **Nicola Currid** DETI Analytical Services Unit Tel: (028) 9052 9668 E-mail: nicola.currid@detini.gov.uk	Sam Connolly (DETI) has been working with UREGNI and has provided projections data on gas connections, which we have checked against our other gas use data sources - this UREGNI information is a useful QC but does not bring anything new for the historic inventories, but is very useful for projections work for NI. Steven Roberts, Mark McFetridge provided contact information and reports with data that is already being used in the inventory. Michael Bennett knows of an energy model that has been developed by an RoI institute, for another NI dept, the NIEMo model. **See data evaluation sheet:** Although not useful for the 'at source' emissions estimates, the NIE electricity dataset will be directly useful for the end user analysis, at least as a quality check and perhaps as new source data. May be useful if some of the underlying assumptions for specific sectors help inform better energy modelling, e.g. for the residential sector
Fuel suppliers	Utility regulator research (NI)				X	X	X				UREGNI	**Sarah Brady** Head of Social and Environmental T: +44 (0) 28 9031 6642 **Adele Boyle** Corporate Affairs Executive Direct Tel: +44 (0) 28 9031 6343 Mobile: 07794 965922 info@uregni.gov.uk	Provided information referencing data that is already taken into account with the current methodology: Firmus and Phoenix gas sales data split by domestic/non-domestic use
Fuel suppliers	Northern Ireland Petroleum fuels Inland Deliveries dataset				X				X	X	DECC	Suggest we talk to **Warren Evans** of the DECC DUKES team (see above)	No new data. DECC have a list of supply companies, but feel that it's incopmplete and any data they do acquire will be CIC.

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Domestic	Domestic housing models	X	X	X	X	X	X	X	X	X	CAR	**Jason Palmer** (jason@carltd.com)	**See data evaluation sheet** CAR have provided methodology report and GB model showing calculations of energy from housing condition surveys.
Domestic	Scottish Housing Condition Survey team: Residential emission estimates			X		X	X	X	X	X	Scottish Government	**Liz Hawkins and Susan Walker** liz.hawkins@scotland.gsi.gov.uk	**See data evaluation sheet** Residential emission estimates for 1991 are higher than current DA estimates. More recent time series estimations are much closer. Further analysis has been carried out. **See summary analysis**
Domestic	Scottish LA housing surveys			X		X	X	X	X	X	Perth & Kinross, Fife	**Hilary Thomson**, P&K. Beverly Green, Fife.	Have provided housing survey data. Housing surveys will have been undertaken by various but not all LAs across UK but likely not a consistent method.
Domestic	Scottish EPC database			X		X	X	X	X	X	Scottish Government	**Ann-Marie Meikle** ann-marie.meikle@scotland.gsi.gov.uk	This is a relatively recent development of EPC data to collate all sorts of data including about the Green Deal. Aiming to be Scottish equivalent of NEED for analysing impacts of measures.
Domestic	Home Energy Efficiency Scheme (HEES) and replacement Nest Scheme in Wales Gas Connections Project Welsh Indicators Project		X				X				Welsh Government	**Dilys Burrell** (ESH - CCWD) Dilys.Burrell@wales.gsi.gov.uk **Margaret Salt**, 02920 825207 margaret.salt@wales.gsi.gov.uk (Weds - Fri only) **Kimberley Campbell**, 02920 821146 kimberley.campbell@wales.gsi.gov.uk. **Ross Hunter** Ross.Hunter@wales.gsi.gov.uk	These sources provide data on measures rather than fuel consumption. May have data available for improving domestic modelling (AEA or CAR).

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Domestic	Analysis for Green Deal and RHI fuel switching	X	X	X	X	X	X	X	X	X	DECC	**Emma Fraser** emma.fraser@decc.gsi.gov.uk (general Green Deal) **Steven Daniels** steven.daniels@decc.gsi.gov.uk **Kate Barbier** kate.barbier@decc.gsi.gov.uk (contacts for aligning Green Deal with the EPC) **Nick Morgan** nick_morgan@decc.gsi.gov.uk stephen.penlington@decc.gsi.gov.uk (lead on evaluation of the Green Deal)	**See data evaluation sheet** Unlikely to be useful as anticipate evaluation will be largely modelled. This is currently under development.
Domestic	Fuel poverty statistics	X									DECC	**Mary Gregory**	Not useful for this project because fuel poverty modelling uses modelled energy consumption not measured fuel consumption data.
Domestic	National Energy Efficiency Database (NEED)	X	X	X	X	X	X				DECC	**Mary Gregory**	NEED analysis compares measures by individual household (held in HEED) with gas and electricity consumption data gathered by DECC from energy suppliers. No data for other fuels. Currently only domestic. Planning work on commercial properties likely within the next 12 months but this is more complex because of huge variations in types of buildings and currently no data on measures but Green Deal data could be added to it.
Domestic	Energy Performance Certificates	X	X	X	X						CLG	England and Wales: **Phil Beschizza** Home Buying, Selling & Energy Performance Zone 5/H9, Eland House E: phil.beschizza@communities.gsi.gov.uk Scotland: **Ann-Marie Meikle** Ann-Marie.Meikle@scotland.gsi.gov.uk Northern Ireland: **Gerald M Coulter** MRICS MBEng Department of Finance and Personnel (NI) email: gerald.coulter@dfpni.gov.uk	EPC less detailed than DEC and based on modelled asumptions about energy consumption rather than actual data.

Sector	Data source	DA				Fuel Type					Organisation	Contact information	Summary Findings
		England	Wales	Scotland	NI	Electricity	Gas	Solid	LPG	Oil			
Other	London Heat Mapping	X				X	X	X	X	X	GLA	**Roberto Gagliardi la Gala** (Roberto.GagliardilaGala@london.gov.uk)	London LA building database does not have the coverage required for this project
Other	Valuation Office Agency										VOA	**Alan D Colston** (alan.d.colston@voa.gsi.gov.uk)	Not useful for this project so not investigated further.

Annex 2 Data evaluation sheets

The following sections explain in detail the research, discussions with stakeholders and evaluations made of the various datasets included within this study. In each case an overall summary is given at the end of the section and a Red/Amber/Green rating relating to how useful the dataset is for the ULK and DA inventories: Red is not useful, Amber is potentially some use and green is definitely useful.

2.1 Civil Estate Reporting Systems

Including FReM, Sustainable Operations on the Government Estate (SOGE), e-PIMS and Greening Government targets

IPCC coverage	1A4a Public
Fuel coverage	Electricity/ Gas/ LPG
DA coverage	FReM - England ; SOGE – England/Wales
Source organisation(s)	FReM – HM Treasury; SOGE/e-PIMs – OGC/ Cabinet Office; Greening Government - DECC
Frequency of reporting	Quarterly - e-PIMs and Greening Government Commitments
Time series	SOGE– 2008; 2009; 2010, e-PIMs continueing at present Greening Government Commitments – 2011 onwards
Data format and detail (file name if available)	Scope: Civil estate is workspace, offices and other property (land and buildings) used to deliver departments' activities that is owned, leased, or occupied by a Government body including non-ministerial departments, agencies, executive non-departmental public bodies and Special Health Authorities in Great Britain. It does not include NHS estate, Prisons, Foreign Office overseas estate; DEFRA rural estate, privatised rail entities, public corporations or the Defence estate. In 2010, this covered 6700 holdings covering 10,239,000 m^2. FREM – HM Treasury guidance (contact below) This is guidance on reporting for annual reports and accounts, including sustainability reporting. Scotland has its own version below. http://www.hm-treasury.gov.uk/frem_index.htm Does FReM involve any data collection or is it just a manual? If there is data collection, what is collected? The FReM is a financial reporting manual that departments and other entities use to prepare their Annual Reports and Accounts. The data collection is at entity level and will be reported to the Cabinet Office (probably via DEFRA) and within the sustainability report included within the entity's Annual Report and Accounts. The data provided would include non-financial and financial information related to greenhouse gas emissions, waste and finite resource consumption (water) If there has been collation of collected data, has there been any analysis of the historic FREM data which would provide estimates of fuel consumption for particular fuel types in the Public Sector? Non-financial information has previously been collected by OGC (Cabinet Office) for Sustainable Operations on the Government Estate, now superseded by the Greening Government reporting

	requirements. Policy for this now appears to have passed to DEFRA, although reporting will filter to the Cabinet Office, probably on a quarterly basis; Following any possible amendments (as in http://www.hm-treasury.gov.uk/d/09_07_frem_exposure_draft_sustainability_reporting.pdf) what might become available in the future, e.g. under 'use of finite resources' will you be collecting energy consumption data by fuel type, e.g. electricity, gas, coal, fuel oil, gas oil etc? Electricity, gas and LPG fall within the greenhouse gas emissions, Finite resources include only water. Guidance to the Scottish public sector on sustainability reporting (Scottish FReM equivalent) http://www.scotland.gov.uk/Topics/Environment/climatechange/howyoucanhelp/publicbodies The Climate Change (Scotland) Act 2009 requires Scottish Ministers to lay before the Scottish Parliament a report containing an assessment of the progress made in the year towards improving the efficiency and the contribution to sustainability of buildings that are part of the civil estate in Scotland. The first Annual Report can be seen here. Sustainable Operations on the Government Estate (SOGE) The SOGE framework for England was launched in 2006 and ran until the end of March 2011 when it was replaced by new commitments for greening Government's operations and procurement. The framework included a range of targets on sustainable operations (e.g. carbon, water, waste, recycling etc), mandated mechanisms (e.g. that all new builds should achieve certain sustainability standards) and sustainable procurement. State of the Estate in 2010 http://www.cabinetoffice.gov.uk/resource-library/state-estate-2010 State of the Estate in 2009 http://www.parliament.uk/deposits/depositedpapers/2010/DEP2010-0738.pdf State of the Estate in 2008 http://webarchive.nationalarchives.gov.uk/20100503135839/http://www.ogc.gov.uk/high_performing_property_the_state_of_the_estate.asp Electronic Property Information Mapping Service (e-PIMS) (contact below) was the data collection vehicle for the SOGE targets and was due to be the data collection vehicle for Greening Government Commitments*. It captures information about property held on the civil estate and is the central database of government's Civil Estate properties and land. It is mandatory for all government departments (including non-ministerial departments) and their executive agencies, arm's length bodies and NDPBs to capture and maintain their property information in e-PIMSTM, which also covers property related activities for the devolved administrations and for some parts of the public sector outside central government, as well as the collection of sustainability data for the Sustainable Development Commission. The data was weather corrected before assessing progress against the SOGE targets, but non weather corrected energy consumption is stored. *Note: reporting for Greening Government Commitments was separately conducted using a spreadsheet this year and Susan (DECC) is not clear how and in what form e-PIMS will continue. E-PIMs currently continues and is the responsibility of the Government Property Unit (GPU) in the Cabinet Office. See http://data.gov.uk/dataset/epims for publically available data.

	How does EPIMs differ from the data collected under the Greening Government commitments? Julie: E-PIMS is a route to collecting data within departments for GGC. It is not however the mandated route for GGC reporting. An excel spreadsheet, based on the format of the e-PIMS fields was prepared, but I'm not sure whether this is being collected centrally anymore. Performance data for GGC is being collated by Georgiana Glaysher. She and/ or Maya De Souza (cc'ed to this mail) may know what is planned for future collection. Are you expecting e-PIMS to be replaced by Greening Government commitments? Julie: Because e-PIMS is being used to collect energy consumption data for other purposes, it is expected to continue in this way. It is worth noting that there are subtle but important differences in scope between Property Benchmarking and GGC. In the e-PIMs data why are there so many more properties than buildings (e-PIMs contains 7,579 buildings but 13,912 properties)? Is this a full dataset or is some data restricted. Julie: The property table released contains both Land and Building holdings. Land is not managed in the same way as buildings (it doesn't tend to consume energy!), so those 'land only' records are excluded from the Building dataset. I am currently investigating on behalf of DECC, given that if they were to request the data it would be a Government request not a public one, what other information is available? Are you collecting information on energy consumption at the building level? Julie: Chris will need to answer on the question of how easy it would be to extract the data on fuel consumption at building level. I'm not convinced that you actually need to know which buildings consumed how many tonnes (or kWh) of solid fuel or oil, at that level of detail for your purposes. Data for Property Benchmarking is collected at Building Level, all Central Government offices over 500 m^2 record energy consumption by kWh by fuel type. This is then converted to tCO_2 by the ePIMs system. It is used by the devolved administrations but I am not clear how much of the non mandated core fields they use. It strikes me that there may be three other sources that might be able to provide you with the higher level detail that your research would seem to need. The first is the contract that Kathy mentioned, run by Susan Donaldson in DECC, with BRE. BRE (through Fiona Mackenzie) have been involved in the validation of energy consumption data for the central government estate for a long time, and have a breakdown of consumption by department and all fuel types, including a geographical spread which will include some Scotland and Wales data. This is based on the SOGE reporting scope. (Investigated) The second source would be the spend data collected by ERG colleagues through the annual spend survey, PSPES (another use of the ePIMS system!). I don't know if this is broken down into the categories you need, but it might be worth asking. Chris may have a contact for this work (or may know the answer?) Chris – Initial contact would be Martin Richmond in the ERG e-mail: martin.richmond@cabinet-office.gsi.gov.uk (Not Investigated) The final source is the central energy management undertaken by the commercial team in Government Procurement Service (Formerly Buying Solutions) http://www.buyingsolutions.gov.uk/categories/Utilities/WhoWeAre/AboutBuyingSolutionsEnergy/ . They may know the quantity of fuels purchased by Central Government. (Not investigated) Chris: We can produce for this buildings which have been through the IPD benchmarking process but this is only a sub-set of the records held on e-PIMS. We use an external supplier, IPD Occupiers,

	to benchmark around 1400 office buildings. They compare the efficiency and effectiveness of office buildings over 500 sqm in size on the Civil Estate, produce reports for Departments for the building and then Property centre / Departmental summary. This energy consumption is not publically available, a request would have to be made. Publically available ePIMS contains: Property data with the location, full address, department and floor area of the civil estate provided in a spreadsheet at building level. (also whether it is freehold or leasehold and building or land) and property area. Building data with details on the floor type, number of floors, whether it is a listed building; floor area for the building; construction date; building function e.g. office, mixed use etc; The building data also contains sustainability criteria such as the efficiency of the use of space, e.g. number of workstations and m^2 per office based fulltime equivalent (FTE); waste in tonnes; Non-Recycled Waste per FTE; water consumption and tonnes CO_2e and CO_2 per FTE tonne; it also contains the less disclosive A-G DEC and EPC ratings, less useful. Additionally there are spreadsheets on occupation and vacant space - not relevant. Greening Government: (contact below) http://sd.defra.gov.uk/gov/green-government/commitments/ The Government announced in February 2011 new commitments for Greening Government's Operations and Procurement in England. GGC Targets have been set to: 1. Reduce greenhouse gas emissions from a 2009/10 baseline from the whole estate and business-related transport • Cut carbon emissions from central government offices by 10% in 2010/11 and all ministerial HQs to publish online real-time energy use information. • Cut domestic business travel flights by 20% by 2015 from a 2009/10 baseline. 2. Reduce the amount of waste we generate by 25% from a 2009/10 baseline • Cut our paper use by 10% in 2011/12. • Government will go to market with a requirement for 'closed loop' recycled paper in 2011, subject to approval from the Government's Procurement Executive Board. • Ensure that redundant ICT equipment is reused (within government, the public sector or wider society) or responsibly recycled. This includes a stretching commitment on reducing greenhouse gas emissions from the central government estate and business-related transport by 2015 from a 2009 baseline. The Prime Minister announced on 6 July a new five year commitment to reduce central Government greenhouse gas emissions by 25% for 2014/15 on a 2009/10 baseline. The proposed new greenhouse gas commitment will cover the widest scope of the central government estate in England, all greenhouse gases (not just carbon dioxide), and business related transport emissions (including owned vehicles and business travel - but excluding staff commuting). Phone conversation with Susan Donaldson (DECC) How does Greening Government commitment data collection differ from EPIMs? There is a difference in scope GGC covers all greenhouse gases not just CO_2, it also covers a wider

	scope of buildings, business travel and the data is not weather corrected. Are you expecting Greening Government commitments to replace ePIMS? DECC are not sure if and in what form ePIMs will continue. It might be replaced by GGC in future. Is there a sub-sectoral/department split? Do you have a list of the scope that you could provide? The scope is just civil estate and they are not using SIC codes. How do the Greening Government Commitments relate to the real time online displays that the PM announced would be on central government departments? Is the Greening Government commitment data from this real time source? Real-time data link: http://www.carbonculture.net/orgs/decc/whitehall-place/ No, there is currently no validation against the real time data. GGC is collected through quarterly returns and it is a trust basis that the information is accurate. Phone conversation with Fiona Mackenzie (BRE) Are you expecting Greening Government Commitments (GGC) to replace ePIMS? Fiona mentioned that she thought there was a move to improve e-PIMs so that it can be used in future for the Greening Government Commitments, but she does not know which year this will go back to when it happens if time series data is important. What data is being collected under the GGC, please could you specify in detail e.g. does it cover floor area, energy consumption (split by electricity, gas, other fuels? CO_2e emissions, etc. GGC covers all of these mentioned categories. It is should cover all fuels as it is supposed to be total energy consumption. Is address level information available like in GGC? Address level data is not available in the data for GGC. It might be in e-PIMs. Fiona explained that the process is that e-PIMs was used to report against the former SOGE targets. These have been replaced by Greening Government Commitments. An extract of e-PIMs was sent to BRE for data cleaning and analysis to calculate the carbon from offices. This included regions so they could weather correct the data but not full address information. How many buildings does GGC cover? Unsure, but it should include more buildings than e-PIMs as MoD do not use e-PIMs but are reporting under GGC. Also it includes non-departmental bodies like the Met Office that weren't included under SOGE. Is it just England or other DAs? For the last seven years it has mainly just been England with the exception of where departments might have offices in Scotland or Wales such as DECC's office in Scotland. It does not cover Northern Ireland. The DAs might have there own reporting systems, Northern Ireland provided data in the past to BRE, so they are known to be collecting it. Other notes: There are two types of data in e-PIMs carbon from offices and total estate data. There were some issues in the past with the accuracy of the total estate data. BRE corrected data where there were mistakes but Fiona is not sure whether this corrected data was put back into e-PIMs following their analysis. It would be a point to check if we were to get access to the data.

	ECUK: Fiona mentioned that the data feeds into the ECUK datasets. Table 5.10 is a summary of the total estate SOGE data BRE received as an extract of ePIMS from Cabinet Office. However, where changes/corrections were made to the data as a result of the BRE checking process they do not know whether departments were then required to go back to ePIMS and update/correct it. This is data for SOGE only – SOGE ran to 10/11 and GGC is reporting from 11/12. I do not know what plans are in place for future reporting of GGC scope at this stage.
Review of the reporting system?	The Greening Government Commitments are fairly new, they were reported last year for the first time using a spreadsheet but it is likely there will be further developments on reporting.
Summary	Data should be available for the 6,700 holdings in Government Civil Estate according to former state of the estate. E-PIMs contains 7,579 buildings and 13,912 properties including land only sites. Data publically available from the link above contains some information on CO_2e emissions (tonnes) as well as per FTE. We can obtain energy consumption data for a subset from Cabinet Office which have been benchmarked by a contractor, approx 1400 buildings over 500m^2. It is stored as unweather corrected data although in the past weather correction was applied for the SOGE targets. Greening Government Commitments have a wider scope than E-PIMs covering all GHGs. It is also not weather corrected in the output unlike the data that was used in the former SOGE reports. The data covers more buildings than e-PIMs including MoD.
If the data are useable now - at how would it be used in the DA energy and emissions compilation process?	The e-PIMs data could be used now. It should be noted that this is a small sample of the whole civil service estate.
If not useable now – what is needed to make this dataset useable in the DA inventory	As realtime data are available from Government departments and the current Greening Government Commitments data are reported on a trust basis. It would be useful if there was validation of the figures against this data in future years.
Usefulness in target tracking: policy and overall	This data is already used for tracking specific targets under the Greening Government Commitments. There were also targets set for civil estate in the former SOGE.
Summary category for use of the data (choose 1 if applic.)	useful in DA inventory compilation directly useful to improve mapping estimates needs development by third parties / agencies to improve the data gathering example of best practice to share across DAs
Outcome (RAG)	(A) EPIMs is available on request from Cabinet Office for 1400 buildings. Coded Amber due to scale of emissions that would be covered. Greening Government Commitment reporting is also likely to be available on request. It might become one and the same in future.
References and	FREM - Larry Pinkney (HM Treasury)

contact details	Deputy Head, Financial Reporting Policy and FRAB Secretary Financial Management and Reporting Group HM Treasury, 1/W1, 1 Horse Guards Road, SW1A 2HQ Tel: 020 7270 4585 Email: Larry.Pinkney@hmtreasury.gsi.gov.uk State of the Estate reports- Veena Dholiwar (Cabinet Office) Service Desk Executive Marketing and Communications Rosebery Court Efficiency & Reform Group, Cabinet Office St Andrews Business Park Norwich NR7 0HS Direct Dial: 01603 704613 Fax: 01603 704904 For all Service Desk Enquiries: Tel: 0845 000 4999 / GTN: 3040 4999 Email: servicedesk@cabinet-office.gsi.gov.uk Website: www.cabinetoffice.gov.uk/unit/efficiency-and-reform-group EPIMS - Government Property Unit (GPU) Cabinet Office Julie Prendergast, email: ROGCJPrendergast@flex-r.gsi.gov.uk or Julie Prendergast I Government Property Unit I 1 Horse Guards Road I London I SW1A 2HQ I Tel: 01827 717984 I Mob: 07711 039538 I Email: julie.prendergast@cabinet-office.gsi.gov.uk Chris Statham owns the e-PIMS system: Chris.Statham@cabinet-office.gsi.gov.uk Greening Government Commitments Susan Donaldson in DECC Sustainable Energy Analysis manages the contractor collecting data, susan.donaldson@decc.gsi.gov.uk Fiona Mackenzie at BRE, telephone: 01923 664 439, email: MacKenzieF@bre.co.uk; BRE are under contract with Susan in DECC for GGC.

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2.2 Public Sector Data

GHG emissions from Local Authority own estate and operations (former National Indicator 185)

IPCC coverage	1A4a Public Baseline covers CO_2, (NOx, PM_{10} are included in the baseline year)
Fuel coverage	Baseline spreadsheet covered consumption of Electricity (grid) / Electricity (CHP) / Electricity (onsite renewables) / Natural gas / Gas oil / Burning Oil/ LPG/ Wood / Coal (not published)
DA coverage	England
Source organisation(s)	DECC, Local Authorities in England
Frequency of reporting	Annual
Time series	Baseline 2008/09 FY Coming soon – 2009/10 and 2010/11
Data format and detail (file name if available)	Baseline data published for electricity generated from onsite renewables (kWh) Energy consumption from biomass combustion (wood) (kWh) Buildings and street lighting – emissions from electricity Buildings and street lighting – Emissions from fossil fuels Transport – emissions from fleet, business travel and other http://www.decc.gov.uk/en/content/cms/statistics/local_auth/ni185/ni185.aspx 2009/10 and 2010/11 data is likely to be published as total emissions in CO_2e for scope 1, scope 2 and scope 3 with a description of scope.
Review of the reporting system?	Accountability at the local level is now being emphasised: DECC recognises the pivotal role local authorities have in reducing emissions at the local level. DECC's request on sharing information on greenhouse gas emissions from local authority own estate and operations forms the first milestone in the Annex of the Memorandum of Understanding (MOU). Data Reporting for 2009/10 onwards should now follow the company reporting guidelines: http://www.defra.gov.uk/environment/economy/business-efficiency/reporting/
Summary	The published information is total emissions not fuel consumption. There are several issues with the differences in scope as each Local Authority will have different data gaps. Information between local authorities is not likely to be comparable. Each Local Authority will be comparable to its own performance in future year, no benchmarking.
If the data are useable now - at how would it be used in the DA energy and emissions compilation process?	Not suitable
If not useable now – what is needed to make this dataset	Unlikely to become suitable due to issues described above.

useable in the DA inventory	
Usefulness in target tracking: policy and overall	Useful for local authorities themselves to monitor the effects of their own actions and estate management on the LA carbon footprint.
Summary category for use of the data (choose 1 if applic.)	
Outcome (RAG)	(R) Differences in reporting scope mean that data cannot be used for benchmarking.
References and contact details	DECC policy team (Katharine Chislett and Peter Barton-wood) Katharine.Chislett@decc.gsi.gov.uk, 0300 068 5234 Peter.Barton-Wood@decc.gsi.gov.uk, Trevor Hutchings (G5) Trevor.hutchings@decc.gsi.gov.uk

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2.3 NHS Estate Energy Reporting

Dataset name	NHS Estate energy reporting
IPCC coverage	*1A4a Public*
Fuel coverage	*Electricity / Gas / Oil / Coal* *CHP information also collected in England and Wales*
DA coverage	England and Wales and Scotland and NI separately; NHS Estates Return Information Collection (ERIC) – England; NHS Wales Shared Services Partnership – Facilities Services; National Services Scotland - Annual National Environment Report; Northern Ireland PSEC data
Source organisation(s)	NHS Trusts and PCTs
Frequency of reporting	Annual
Time series	NHS Estates Return Information Collection (ERIC)– 1999/2000 onwards National Services Scotland - Annual National Environment Report – 10 years, 2002 onwards
Data format and detail (file name if available)	NHS Estates Return Information Collection (ERIC) - England Data is available at Site level. Each Organisation and Site has a unique ID. For each site information is available covering: Gross internal site floor area & occupied floor area CHP – number of units operated onsite; total full load rating of the electrical generator plant (kW); fossil fuel energy input to CHP systems (kWh); thermal energy output; total exported electricity for the site (kWh); total exported thermal energy for the site (kWh) Electricity consumption (GJ) (split by utility , local, and renewables) Non-fossil fuel consumed – renewable (GJ) Gas consumption (GJ) (utility) Oil consumption (GJ) (utility) Coal consumption (GJ) (utility) Steam consumption (local) Hot water consumed (local) Total energy costs Publically available online. Data on locations of unique IDs is separately available as either Northings and Eastings or Latitude and Longitude from NHS ERIC on request. We could create a database to include this data. In 2009/10 Total electricity consumption = 12,245,877 GJ = 1.77 million tonnes CO_2 NHS Wales Shared Services Partnership – Facilities Services Data is available for each trust and its sites as for England, identical report categories. This information would have to be requested for the project as well as any location information if they have it. In 2009/10 Total electricity consumption = 107, 286 GJ = 15.5 kilo tonnes CO_2 National Service Scotland - Annual National Environment Report The climatically adjusted energy consumption figure for 2009 - 10 was 5.99 million gigajoules (GJ) =

	867 kilo tonnes CO_2. Similar data is available to the England list with the exception of CHP information which is not collated in Scotland and Coal consumption which does not occur at Scottish NHS sites. Location information is available as an address not a grid reference so would have to match postcodes. National Services Scotland treated our requests for information as EIR and we have received data for Scotland's NHS. Conversion factors used: 1 GJ to 277.78 kWh 1 kWh to 0. 52114 Kg CO_2 1 kg to 0.001 tonne Northern Ireland Public Sector Energy Campaign data includes aggregated data for the NI Department of Health, Social Services and Public Safety (DHSSPS), with annual estimates of carbon dioxide emissions presented for the years 2000, 2004 onwards, broken down by fuel: electricity, gas oil, fuel oil, natural gas, LPG, coal, biomass and renewables. Note that these estimates will include energy use and emissions from a wider scope of sources than just the NHS in Northern Ireland.
Review of the reporting system?	N/A
Summary	Information on site based energy consumption is available publically for England and on request for Wales and Scotland. The data for the NHS in Northern Ireland is included within the PSEC dataset from DFPNI, as part of the emissions data reported for the DHSS&PSNI.
If the data are useable now - at how would it be used in the DA energy and emissions compilation process?	As it currently stands the data are of limited use in the GHGI as the NHS data is only a sub-set of the public sector data, but the system of energy and emissions data reporting that is evident across the health sector is regarded as an example of "best practice" to which other parts of the public sector could usefully aspire. Where site-specific data are available, these can be used to improve the point source estimates used as part of the energy and emissions mapping process. Furthermore, in the current process of public sector energy and emissions mapping, having much better data for the NHS component helps to over-write some of the assumptions used for that component of the public sector, thereby reducing uncertainties in the estimation modelling method for the sector.
If not useable now – what is needed to make this dataset useable in the DA inventory	A more complete geographically-referenced dataset is needed for the data to be of use in the DA inventories. Further work is needed to obtain data specific to the NHS in Northern Ireland, extracting the data from the wider data from the DHSS&PS. It is also recommended that the available energy data from NHS reporting system be considered within the compilation of DUKES. The publically available outputs from England have a caveat that the information is not verified it is just as reported by the various trusts. We would probably need to develop QA/QC procedures for including it and there will be overlaps with DECs. However of all the potential uses of CRC data, the coverage of emission estimates from NHS Trusts is reasonably high, so maybe CRC could be of use to plug some data gaps.
Usefulness in target tracking: policy and overall	Information is currently used to track progress on efficiency targets.
Summary category for	*useful to improve mapping estimates*

use of the data (choose 1 if applic.)	*needs more work via the Improvement Programme* *example of best practice to share across DAs – could be shared with NI if they are using a different approach, S, W and E are well aligned.*
Outcome (RAG)	(A) Good quality data available for England and Wales and Scotland Data from Northern Ireland are available, but the scope of data reporting for the DHSS&PS is wider than just the NHS, so more work is needed to obtain more detailed NHS-specific data. Data covers a sub-set of the public sector and it can be used to improve the energy and emissions modelling approach for the sector as a whole and to inform de-minimis sector fuel allocations, but more data are needed for all of the other sub-sectors of the public sector.
References and contact details	NHS Estates Return Information Collection (ERIC) – England http://www.hefs.ic.nhs.uk/ Graham Hyde Senior Information Analyst : Population, Geography and International Statistics NHS Information Centre for Health and Social Care Email: graham.hyde@ic.nhs.uk Tel: 0113 254 7267 Ian Crewe Contact Centre Team The NHS Information Centre 1 Trevelyan Square Boar Lane Leeds LS1 6AE Tel: 0845 300 6016 NHS Wales Shared Services Partnership – Facilities Services Estate Condition and Performance Reports http://www.wales.nhs.uk/sites3/page.cfm?orgid=254&pid=41311 Ann Konsbruck, Information Officer Phone – 029 20315512 email – ann.konsbruck@wales.nhs.uk National Services Scotland - Annual National Environment Report http://www.scotland.gov.uk/About/scotPerforms/partnerstories/NHSScotlandperformance/ReduceEnergyConsump Kathryn Dapré Energy & Climate Change Manager, Health Facilities Scotland NHS National Services Scotland 3rd Floor, Meridian Court 5 Cadogan Street Glasgow G2 6QE Email: k.dapre@nhs.net Telephone: 0141 207 1870 Mobile: 07825 060693 Reception: 0141 207 1600 www.hfs.scot.nhs.uk

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2.4 Display Energy Certificates

IPCC coverage	1A4a Public; Required in all public sector buildings/offices larger than 1000m^2 and frequently visited by the public.
Fuel coverage	Main heating fuel is listed for each DEC including Natural Gas; District Heating; Oil; Biomass; Grid supplied electricity; Grid displaced electricity; Anthracite; Coal; LPG; Biogas and Others.
DA coverage	England and Wales / Northern Ireland / Scotland (separately)
Source organisation(s)	E and W – CLG
Frequency of reporting	Annually
Time series	Since 2008
Data format and detail (file name if available)	Display Energy Certificates (DEC) were introduced in 2008 and are required in all public sector buildings/offices larger than 1000m^2, frequently visited by the public. DECs rate the operational energy efficiency and performance of a building with a rating from A to G. The Operational Rating received is relative to the average energy performance for a category of buildings of the same type, which is set at 100. The benchmark of 100 is based upon a Charted Institute of Building Services Engineers (CIBSE) report which includes 29 categories of building. These benchmarks are an initial starting point and will be reviewed by CIBSE and CLG. The useful information that is available from DECs includes: • Organisation names and addresses line 1-4, town, postcodes and X and Y coordinates. • Property type e.g. clinic, university campus etc. • Main benchmark similar to property type. • Annual energy use for fuel for thermal use is provided in kWh/m^2/year • Annual energy use from electricity is provided in kWh/m^2/year • Floor area is provided in m^2 • (Information on renewable consumption electrical and thermal) • Benchmarking categories, property type and the organisation names can help to allocate SIC codes to the buildings though these are not directly available. DECs are valid for 1 year and a replacement is required at the end of the validity period. The accompanying Advisory Report is valid for 7 years. Certificates for England and Wales are publically available from https://www.ndepcregister.com/home.html but you have to know the unique RRN number to access each certificate one by one. Compiled data is available on request from CLG. The EPB Regulations 2007 are more restrictive in what can be provided as far as Energy Performance Certificates (EPCs) are concerned. CLG are not permitted to provide data that will identify an individual building from any document or data disclosed, e.g. address, postcode, etc;
Review of the reporting system?	It is currently being improved so that the Green Deal can be included on the certificates. It could be improved in future by benchmarking against the ONS SIC codes and the IDBR database (ONS). The current CLG benchmarks are inconsistent, e.g. schools with sports halls benchmarked under dry sports and leisure not school. DECC might want to recommend this to CLG.
Summary	Data is available for England and Wales on request from CLG; data is not widely available for Northern Ireland and Scotland, though we have not attempted to acquire it during this project as it was Low priority.

If the data are useable now - how would it be used in the DA energy and emissions compilation process?	Used for the mapping improvements this year – England and Wales only
If not useable now – what is needed to make this dataset useable in the DA inventory	It can be used now but it would be easier to use if It could be improved in future by benchmarking against the ONS SIC codes. The current CLG benchmarks are inconsistent, e.g. schools with sports halls benchmarked under dry sports and leisure not school. DECC might want to recommend this to CLG. Currently the data processing involved and manual checks mean it would not be suitable for direct use in the inventory as a 'point source'.
Usefulness in target tracking: policy and overall	Yes, EU Performance of Buildings Directive requirement.
Summary category for use of the data (choose 1 if applic.)	useful to improve mapping estimates; needs more work via the Improvement Programme; needs development by third parties / agencies to improve the data gathering and availability of data from Northern Ireland.
Outcome (RAG)	(A) Data from England and Wales has been used to improve the mapping estimates this year, possibility to extend for Northern Ireland and Scotland in future years if data could be made available for NI and Scotland.
References and contact details	England and Wales: Phil Beschizza Home Buying, Selling & Energy Performance Zone 5/H9, Eland House T: 0303 444 1836 F: 0303 444 3313 E: phil.beschizza@communities.gsi.gov.uk Scotland: Ann-Marie.Meikle@scotland.gsi.gov.uk Northern Ireland: Gerald M Coulter MRICS MBEng Department of Finance and Personnel (NI) Building Standards Branch Causeway Exchange (Level 5) 1-7 Bedford Street Belfast BT2 7EG Tel: 028 9051 2715 Fax: 028 9082 3282 email: gerald.coulter@dfpni.gov.uk www.buildingregulationsni.gov.uk www.epb.dfpni.gov.uk

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2.5 Climate Change Agreements

See also Climate Change Levies (HM Treasury/HMRC) separate data evaluation sheet

(Note that our analysis presented here is based on a limited review of the CCA data; almost 9,000 sites report to CCAs and a full analysis of data is outside the scope of this project.)

Dataset name	Climate Change Agreement Data
IPCC coverage	1A2 Industry
Fuel coverage	Electricity, Solid fuel, Gas, Oils, other
DA coverage	(all)
Source organisation(s)	DECC
Frequency of reporting	The current CCA scheme delivers bi-annual data returns by sector. The design of the future CCA scheme (2013 onwards) will require bi-annual reporting of 24 months' worth of data, i.e. CCA data will cover a 2-year period. E.g. in April 2015, CCAs will report data for energy and emissions during January 2013 to December 2014, and there will be no year-specific data provided.
Time series	CCA data goes back to 2002 and there is data for 2010, 2008, 2006, 2004 and 2002. However, the level of detail in CCA data is less in the earlier years. The analysis of data in this project looked at CCA data from 2008. For a given sector, it is unlikely that the same level of detail (e.g. fuel and geographical resolution) will be available in 2002 is evident in the dataset for 2008. (A complete analysis of this time series variability would be very resource intensive and has not been attempted in this study.)
Data format and detail (file name if available)	The detail provided within the reported submissions varies between CCAs. In some cases there is a detailed breakdown of emissions based on actual annual fuel use, whereas others use assumptions and just report "total emissions".
Review of the reporting system?	Industry sectors have negotiated agreements to obtain tax breaks on fuel use and emissions, but there is a high degree of overlap in data reporting with the EUETS. For most CCAs, data has been provided by the sectors to indicate the level of overlap in the CCA scope emissions with the EUETS in Phase III. CCA sites ("target units") report annual use of all fuels (direct fuels and electricity) and use emission factors to estimate annual CO_2 emissions. Only aggregated data (by CCA, i.e. across all sites in the sector negotiated agreement) are published. In some cases only aggregated data are provided to DECC by the CCAs, whereas in other CCAs a breakdown of energy use and emissions is reported by each target unit to DECC, for subsequent analysis and aggregation prior to publication. Common calorific values and carbon emission factors are used for emission estimates across all CCAs for fuel-specific estimates.
Summary	The CCA data includes emissions due to the use of direct fossil fuels as well as from electricity use. Lists of participants in each CCA are available from DECC ("Reduced Rate Certificate lists"), and in most cases a high degree of geographical resolution is available. The CCA data cover more sites than EUETS; the CCA data provides an insight into some of the most high-emitting industrial sites that are in the non-ETS sector, and covers several economic sectors that are of specific policy interest in Scotland, Wales and Northern Ireland, including food & drink (all), steel (Wales), chemicals (Wales,

	Scotland). The detail of sector reporting is not uniform between CCAs; for example, the emissions reported in some of the CCA data submissions are aggregated across the whole sector, with just one total emissions number provided, i.e. with no site resolution. In some CCAs, sector data are reported as total emissions only, with estimates of fuel-specific data provided based on a one-off analysis of the sector fuel mix, which is then applied across all years. In other sectors, detailed year-specific fuel breakdowns are provided within the CCA submissions. Therefore, the transparency and usefulness of CCA data varies according to sector and across the time series. ***CCA Scheme Reporting from 2013 onwards*** The design of CCA reporting is to be amended from 2013, in a new phase of the CCAs. A greater degree of reporting detail will be required by DECC from each target unit. However, annual data will not be reported; data will be reported by target units every two years, covering 24 months of energy use and emissions data. Therefore, whilst there will be an improvement in understanding of geographical resolution of emissions and sector fuel use over a 2-year period, the lack of annual reporting will undermine the usefulness of the CCA dataset; the use of the future CCA scheme data is therefore expected to be limited to a quality checking function for fuel sector allocations at the UK and DA level.
If the data are useable now, how would it be used in the DA energy and emissions compilation process?	The usefulness of the CCA data is sector-specific. For example, the level of detail provided in the steel CCA dataset can be used as a quality check against the data available from other data reporting systems that inform the UK and DA estimates, such as the PI/SPRI/ISR data and the ISSB national and regional energy statistics for the sector. However, data from the paper CCA are only useful to QC the sector fuel allocations at UK level, as there is no geographical resolution of data. The current CCA data for some sectors can be used to provide a new level of detail on energy and emissions in sectors where fully detailed data (by site, by fuel) are available, across a large number of sites; more sites are covered than in EUETS, so a greater % of overall sector fuel use and emissions is covered by the CCAs. Additional data on energy use and emissions in a number of sectors that are not well covered by EUETS and are major economic sectors in the DAs (e.g. food and drink) could be directly useful to help provide further detail to the current industry sector emission estimates. However, there are CCA data from a number of sectors that make up the “food and drink” sector and many thousands of sites that report to the CCAs in this sector. For comprehensive use of the CCA dataset, a very extensive research project would be needed to process all of the CCA data into a format to be useful for future energy and emissions mapping for the UK, DA and Local Authority NAEI outputs. Furthermore, the cross-over in reporting against EUETS requires detailed analysis for all sectors. The analysis presented here has used operator estimates of cross-over in reporting between CCA data and the Phase III scope of EUETS. Site-specific energy and emissions data under CCA and under EUETS are needed to enable complete analysis of the duplication in reporting, to ensure that the use of EUETS and CCA data delivers accurate,

	representative data for sites and sectors. This is likely to be a very resource intensive data processing task, unless the design of the CCA reporting system can be augmented to include reporting by sites on the CCA-EUETS cross-over in data reporting, by fuel, by year. In the short-term, however, the CCA data may provide a useful reference resource to help inform decision-making within the compilation of the UK point source database, which is a key part of the NAEI data processing system for the geographically-referenced outputs. NAEI experts can access the CCA where required to seek information on "problem" sites where the understanding of fuel uses is currently limited and has a significant impact on GHG estimates.
If not useable now – what is needed to make this dataset useable in the DA inventory	As mentioned above, for a comprehensive use of the CCA dataset, very significant additional resources would be needed to process data from across the time series for the ~9,000 target units that report to the CCAs. Furthermore, detailed analysis of the site-specific overlap in emissions with EUETS would also be needed, in order to ensure that the use of CCA data did not introduce double-counts to the NAEI analysis. Note that the current design of the future CCA reporting system for 2013 onwards includes aggregated data over a 2 year period being reported by target units. This will greatly limit the usefulness of the CCA data in energy and emissions statistical analysis for inventories (UK, DA, LA). Annual data reporting will be needed for the CCA data to be useful in future work.
Usefulness in target tracking: policy and overall	Potentially the CCA data provides a very useful dataset that enables detailed analysis of policy opportunities, e.g. detailed geographically-referenced data of energy demand that may be useful for low carbon policy development and implementation. At the DA level, some of the current CCA data is useful as an additional dataset to quality check and improve sector emission estimates. In particular, the CCA data provides information on an estimated 11 Mt CO_2 in the non-traded sector of DA inventories in total. In terms of the UK GHG inventory, this only equates to around 2% of current UK net GHG emissions, but in the context of DA policy levers in the non-traded sector, the CCA data is much more significant. It provides a wealth of new data on fuel use in economic sectors such as chemicals, food and drink, iron and steel. These are all high-emitting non-ETS sectors across the DAs.
Summary category for use of the data	Directly useful, but in a limited number of sectors. Much more data analysis resource needed to enable a more comprehensive use of the time series of CCA data.
Outcome (RAG)	
References and contact details	Jane Dennett-Thorpe (DECC Heat & Industry) jane.dennett-thorpe@decc.gsi.gov.uk Jessica Ellis (DECC Heat & Industry) jessica.ellis@decc.gsi.gov.uk Richard Hodges (CCA Manager at AEA Group) Richard.Hodges@aeat.co.uk

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2.6 Climate Change Levies

See also Climate Change Agreements (DECC) separate data evaluation sheet.

IPCC coverage	1A4a Public / 1A4a Commercial / 1A2f Other Industry
Fuel coverage	Taxable commodities are Electricity / Gas/ LPG / Solid fuels (coal, coke and lignite); not oil; some businesses are subject to relief – see below.
DA coverage	England / Scotland / Wales / NI
Source organisation(s)	HM Treasury/ HMRC
Frequency of reporting	Quarterly
Time series	Since April 2001
Data format and detail (file name if available)	It is a single stage tax charged once in the supply chain by the energy supplier when it is supplied to the user. Energy suppliers include the electricity and gas utilities and coal merchants. It is charged by adding it to their invoices although it does not have to be itemised separately. The CCL is charged in fixed monetary amounts (a specific tax) rather than as a percentage of the selling price (like VAT). Electricity and gas are intangible products supplied on a continuous basis rather than in discrete units. To that extent electricity and gas utilities are required to periodically issue a Climate Change Levy Accounting Document. In normal circumstances this will be their invoice (a gas or electricity bill), as with other energy suppliers. Where the fuels used by auto generators to generate electricity are taxable commodities, e.g. coal, they must pay the CCL on the input fuel. Therefore the "self-supply" of electricity is exempt, to avoid double taxation. When the CCL was formulated the rates of CCL were based on the energy content of the taxable commodities. The rate of CCL for electricity is particularly high because an appreciable amount of energy is lost in the generation and transmission of electricity and the CCL attempts to capture the energy content of the fuels used to generate it. **Declarations:** Business consumers who are entitled to benefit from one or more of the reliefs (explained below) must declare their entitlement to their energy supplier and calculate the amount of relief they are entitled to (it is unlikely their entire energy usage would be entitled to relief). Such declarations are not required for the domestic / charitable exclusion if the quantity supplied is small, nor are declarations required where the supply of electricity supplied is exempt under a renewable-source or CHP-source contract, or where an auto generator consumes electricity it has, itself, produced. **Combined Heat and Power (CHP) Stations** A combined heat and power station is a form of electricity generation whereby the surplus heat from electricity generation is put to some other use or the surplus heat from another activity is also used to generate electricity. For instance a CHP station could be in a leisure centre that generates its own electricity and uses the excess heat to warm its swimming pool. Because this is an energy efficient technology, and therefore environmentally friendly, certain exemptions may be available to CHP stations under the climate change levy. Whether CHP stations benefit from exemption depends on whether they sign up to the CHP Quality Assurance (CHPQA) programme administered by DECC. If DECC certify all the CHP's station's

	electricity as "good quality" they are entitled to full exemption on both inputs and outputs. Such CHP stations have no need to register for the CCL. Where DECC only certify a proportion of the electricity as good quality they are only entitled to the exemption in proportion to the amount of electricity signed off as good quality. Such CHP stations will need to register. Q1: what information do HM Treasury collect for the purposes of the Climate Change Levy? HMRC forms of interest: CCL 100 – Climate Change Levy return - Quarterly declaration of the tax due http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_Forms&propertyType=document&id=HMCE_PROD1_023985 Anyone required to charge the CCL (usually an energy supplier) must account for the tax by submitting a CCL Return (form CCL 100) to HMRC on a quarterly basis. Anyone required to account for the CCL must register for the tax with HMRC. There are around 220 registered energy suppliers in the CCL and this figure has remained fairly constant since the introduction of the levy. Note: It may be useful to review the list of registered energy suppliers. The CCL100 requests information from energy suppliers regarding the total amount of levy due for each of the fuel types - electricity, gas, LCP and solid fuels (box 1-4 on the form). It importantly also asks energy suppliers to calculate the value of the fuel supplied without the levy and without the exemptions for the same fuels (box 6-8). Note: In order to calculate the levy under the boxes 1-4, the energy supplier must remove the exempt fuel consumption from the total consumption. Energy suppliers get informed what % of energy consumption is under relief (exempt) through the customer PP11 forms. PP10 – Supporting Analysis - relief document for persons claiming various reliefs http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_Forms&propertyType=document&id=HMCE_PROD_010031 The PP10 is the "supporting analysis" document which must be submitted to HMRC by persons claiming certain of the various reliefs from CCL. Each year they must review the correctness of this claim (the annual review). Where the percentage is found to be correct they need take no further action. Where it is found to be incorrect they must make a declaration to HMRC and pay the additional tax or claim a tax credit. If the percentage is correct they can continue not to submit a new PP10 for upto five years with annual reviews to ascertain there has been no change. Note: This form is very useful. It is a separate form per business (including business information such as premise address and VAT number (not sure if this is available to us in the IDBR?). It is also a separate form per fuel type, so there will be one for each of the four fuel types. The form will link the business to the Climate Change Agreements at a business/site level through the unique CCA facility number if this is the reason for relief. (It will also link the premise to the CHPQA if this is the reason for relief). We could possibly use the data to gap fill missing sites in the CCAs? The key parameter reported on this form is ' Total quantity of taxable commodity supplied to you (box 1)' it is exactly what we are looking for covering total amount of energy supplied to the qualifying business at the premise listed. It should include all the supplies in a given period usually 12 months. Note: the total amount of energy supplied does not include supplies of electricity from renewable sources or "good quality" CHP. Limitations: although there is a 'date from which relief should be applied' there does not appear to

be a section on the report for stating the period over which the total energy amount supplied was received from the energy supplier, e.g. which twelve month period does box 1 refer to? HMRC have confirmed there is no associated date or exact time coverage, therefore, the data cannot be used.

Relief	Relief	CCL payable
domestic accommodation and charitable non-business activities	Excluded	None
Northern Ireland (business use of natural gas only)	Lower rate	A specific rate equal to 35% of the main rate
certain forms of transport	Exempt	None
participants in the climate change agreements (CCA) Scheme	Reduced Rate	35% of the main rate
energy products used in the production of other energy products, including electricity, except auto generators	Exempt	None
non fuel use / dual use	Exempt	None
export or wholesale supply	Exempt	None
visiting forces	Exempt	None
electricity from renewable sources (wind etc)	Exempt	None
Electricity from a CHP station in the CHPQA programme.	Exempt	None
Self-supplies of electricity by auto generators	Exempt	None

PP11 – Supplier certificate (does not appear to be collected by HMRC)

The PP11 which is sent by the person seeking relief to the energy supplier also contains useful information such as meter numbers and the energy supplier's identity. It tells the energy supplier to apply relief to a certain percentage of supplies. Energy suppliers administer the relief after excluding it from the CCL they declare to HMRC in the CL100.

Note: so the energy supplier only gets information on the % of relief to apply and the HMRC gets information on reasons and calculations' leading to the % relief but no link to the energy supplier or meter number it refers to?

Q2: Would you have more information than is collected under the CCAs? E.g. are there organisations that pay the climate change levy but do not have a CCA?

From the point of view of the CCL, businesses in the Climate Change Agreements (CCA) are entitled to receive one of the reliefs available – a reduced rate of CCL. Data about the extent to which an individual CCA participant is eligible to pay the reduced rate is collected on the PP10, together with information about any of the other CCL reliefs that participant is entitled to receive at the same site. Participation in the CCA scheme is only available to energy intensive businesses; therefore there are many more organisations that have to pay the full rate of CCL that are participants in the CCA

	scheme. Although HMRC are responsible for the administration of the CCA relief, the detailed operation of the scheme and CCA policy is a matter for the Department for Energy and Climate Change (DECC), for instance they are responsible for the definition of an energy intensive business. HMRC does not routinely receive information about business energy consumers that do not claim any of the CCL end-use reliefs or that purchase CCL-exempt supplies of renewable-source of CHP-source electricity. Q3: How do you regulate the Climate Change Levy, e.g. there are such a range of exclusions such as transport fuel or domestic fuel, charities, or small firms. How is the CCL added to the energy bills of only those organisations that fall within the right sectors? Do you get information directly from energy suppliers? Do you tax the suppliers instead of the organisations? In short the CCL applies to all business activity in the UK, including the public sector, except for those activities which are specifically relieved. The CCL is charged to business end users by the energy supplier (e.g. an electricity utility) and the CCL is added to the invoice (e.g. electricity bill). Energy suppliers must declare the amount of CCL due on their CCL returns. Where a business user is entitled to an end-use relief they must declare this to their energy supplier on form PP11 (the suppliers certificate). A relief recipient must also submit a form PP10 to HMRC so HMRC can monitor the reliefs being claimed. Where relief is claimed, the energy supplier will make an appropriate reduction in CCL charged on the invoice. Q4: Do CCLs cover complete sectors, e.g. Food and Drink etc? All business sectors are liable to be charged the CCL including the example you cite – the food and drink sector – although certain activities within sectors may be eligible for one or more of the CCL reliefs. Q5: How do the excluded fuels such as renewables and energy from waste, remain untaxed? It is only the four kinds of taxable commodities (electricity, gas, LPG and solid fuels) that are liable to CCL. Renewable sources of energy per se (e.g. the wind) are not taxable commodities for the purposes of the levy, so are not taxed by it. However, electricity from renewable sources is relieved from the CCL. Where this electricity is put into the national grid and supplied to end users by utilities a document called a “Levy Exemption Certificate” (LEC) must accompany the transfer of the electricity from the generator to the utility to enable the utility to evidence that its levy-exempt supply was matched by an acquisition of electricity from a qualifying source. The LEC is issued to the original generator by Ofgem. (The LEC system is complicated and this is only a very brief summary, but may be a sufficient outline for your purposes.) Electricity from waste is treated as a renewable source.
Review of the reporting system?	Not currently planning to review the system
Summary	The HMRC do collect information on total amount of energy supplied as part of the PP10 form sent to the HMRC from those businesses seeking relief from the CCL. This form includes detailed address data for the premise, as well as information on the type of relief being sort. It would cover all the relief claimed under the CCA agreements by premise/site with the unique CCA facility number and the total amount of energy supplied for businesses eligible for other non-CCA relief. Site/business data is protected by tax payer confidentiality so it could only be made available at national or DA level. Limitation: The PP10 form only includes a start date from which relief applies for energy suppliers’ purposes. It does not have a date associated with the ‘total amount of energy supplied’ figure that the business

	is providing. They recommend the figures should cover 12 months but with no supply dates specified HMRC would never be able to verify that the amount of relief claimed by the energy supplier matches that claimed by the business. For us, it means we would have a detailed site energy consumption figure with no year to put it against. There is no fixed CCL relief period. Each year they must review the correctness of this claim (the annual review). Where the percentage is found to be correct they need take no further action. They are not required to submit a new PP10 for five years if the relief percentage stays the same. Otherwise reporting should be annual if there is annual change in the relief percentage. The HMRC receive the detailed calculation without knowing which energy supplier the business is under. The energy suppliers received the total % relief to apply without receiving any of the detail that explains the calculation and type of relief.
If the data are useable now - how would it be used in the DA energy and emissions compilation process?	
If not useable now – what is needed to make this dataset useable in the DA inventory	The limitation above means the data cannot be used at this time unless there are changes to the reporting system to include time periods against requests for energy consumption data.
Usefulness in target tracking: policy and overall	
Summary category for use of the data (choose 1 if applic.)	Needs development by HMRC to improve the data gathering to meet inventory requirements, currently unlikely.
Outcome (RAG)	(R) Data are not useful at this time.
References and contact details	HMRC – Andy Jameson, Ajay Dhillon Cathy Smith in the Environmental Taxes team andy.jameson@hmrc.gsi.gov.uk ; telephone 020 7147 2379 ajay.dhillon@hmrc.gsi.gov.uk; telephone: 020 7147 0302 (analyst) cathy.smith2@hmrc.gsi.gov.uk HM Treasury – Michael Stansfield Michael.Stansfield@hmtreasury.gsi.gov.uk

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2.7 CRC Energy Efficiency Scheme

IPCC coverage	1A4a Public / 1A4a Commercial / 1A2f Other Industry; fuel supply data converted into CO2 emissions in the Registry
Fuel coverage	Electricity / Gas / Oil / Aviation Spirit/Aviation Turbine Fuel/Basic Oxygen Steel (BOS) gas/Blast furnace gas/Burning Oil/Kerosene/Paraffin/Cement industry coal Coke Oven Gas/Commercial/Public Sector Coal/Coking Coal/Colliery Methane Diesel/Fuel Oil/Gas Oil/Industrial Coal/Lignite/Liquid Petroleum Gas (LPG) Peat/Naphtha/Natural Gas/Other Petroleum Gas/Petrol/Petroleum coke/Scrap tyres/Solid smokeless fuel/Sour gas/Waste/Waste oils/Waste solvents Footprint Report covers all fuels, except transport and domestic exclusions, for the period 1 April 2010 to 31 March 2011 (phase 1) 1 April 2013 to 31 March 2014 (phase 2) Annual Report (is reported each year) but only covers CRC emissions. 90% of the relevant emissions (e.g. not transport or domestic) must be covered by CRC, CCAs or EU ETS. If 90% is not covered by core gas and electricity then additional residual fuels ('other fuels') will be added in to meet the threshold.
DA coverage	England / Scotland / Wales / NI
Source organisation(s)	Environment Agency, SEPA, NIEA, DECC
Frequency of reporting	Footprint report – start of each phase Note: residual fuel list due to be shortened in Phase 2. Therefore might be a one off at this level of detail on residuals. Annual report – annually
Time series	FY 2010/11 onwards Phase 1: four years – 1 April 2010 – 31st March 2014 Phase 2: six years – 1 April 2013 – 31st March 2019
Data format and detail (file name if available)	Publically available is the CO_2 emissions per participant (2762 participants) More useful is the fuel consumption reported in the Footprint and Annual Reports in the Registry. The total emissions reported in the FY 2010/11 Annual report were 61 million tonnes. This includes the emissions associated with electricity generating credits which are removed from the performance league table. Of this only 6% of emissions were from residual fuels (~3.6 million tCO_2e) (e.g. other fuel or electricity from a domestic profile meter or a gas meter with consumption less than 73,200 kWh). The footprint report data will have more residuals reported because in the Annual report the only 'other fuels' reported are those required in the Residual Measurement List, e.g. additions to make sure 90% of total emissions are covered by CRC, CCAs or EU ETS. Sector split: Private sector participants were asked to provide a SIC code (2003) allocation at registration in 2008. There is a SIC code for all private sector participants but this is a high level SIC code and does

	not capture all the underlying SIC codes that might be associated with the units of the participant; e.g. a third of participants are assigned to the grouping for Real Estate Renting & Business sector because they are holding companies. Also, because of the size of some of these organisations (investment companies) they may be active in a number of sectors and the SIC codes will not show this. For the public sector there were approximately 20 groups, not by SIC code, but by category such as 'Local Authority', 'Hospital' etc. There are six to seven additional groups for things like charities. Received a file showing the SIC and sector codes breakdowns: Sector_Info&SIC.xls Note: Because there are a small number of public sector and other groupings we could probably assigned these to SIC codes after receiving the data. Kiko Moraiz (DECC economist) has done some work on impact assessments comparing SGU SIC codes and participant SIC codes. Kiko would be a good person to speak to with regards to this if it is decided to take CRC further. Geographic split: (more investigation needed) The only address information in the Registry is the address for the primary member organisation and the head office if this is different. There is no requirement for a participant to have to register all its site addresses. For some participants like Tesco this would be a very long list. There is a list of MPANs for electricity meters. EA have not done any work to match MPANs to locations. DECC might have done this, EA recommended talking to Mark Bainbridge who was leading on a project with a company called Elexon to identify MPAN locations. There was also a list of orphan meters that was received from energy suppliers to try to identify non compliance organisation that had not registered for the CRC. Note: Alison Conboy (DECC) from Energy Markets and Networks is also looking at similar information.
Review of the reporting system?	A simplification is being considered for Phase 2 including reducing the number of fuels on the CRC fuel list.
Summary	It will be possible for the Environment Agency to provide detailed fuel consumption figures per participant with a sector SIC code or grouping. This may benefit our UK knowledge. Geographic issues cannot be easily overcome. Even if we get access to MPAN electricity meter IDs at a given locations matched to CRC participant ID. We still have no idea about consumption at that meter or consumption of other fuels. Sector information is also only high level and is unlikely to capture the diversity under the primary CRC participant.
If the data are useable now - how would it be used in the DA energy and emissions compilation process?	Fuel consumption by fuel type by sector by participant ID is available now. Could be used to compare to the typical fuel type intensity figures currently used in the mapping methodology.
If not useable now –	Site level addresses to allocate the energy consumption to a location would require significant

what is needed to make this dataset useable in the DA inventory	changes in the CRC order and increases in the reporting burden.
Usefulness in target tracking: policy and overall	Data already used for policy purposes
Summary category for use of the data (choose 1 if applic.)	
Outcome (RAG)	(R) We can make a request for the fuel consumption data by fuel type by participant and by CRC sector (described above and in separate file) but it would not be useful for the detailed sector below CRC participant level or the DA level inventory because there are not site locations.
References and contact details	Environment Agency (Paul Allen) Paul Allen CRC Operations Advisor CRC Energy Efficiency Scheme Lutra House, Dodd Way, Walton Summit, Bamber Bridge, Preston, PR5 8BX e-mail: paul.allen1@environment-agency.gov.uk tel: 01772714173 ext: 721 4173 DECC policy team (Mark Bainbridge and Paul Wilson) paul.wilson@decc.gsi.gov.uk mark.bainbridge@occ.gsi.gov.uk

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2.8 RDCO Scheme

See Annex 4 for the summary analysis of the RDCO Scheme data received from HMRC

IPCC coverage	1A4b Domestic / 1A4a Public / 1A4a Commercial / 1A2f Other Industry
Fuel coverage	Oil (gas oil and kerosene)
DA coverage	England / Scotland / Wales / NI
Source organisation(s)	HMRC
Frequency of reporting	Monthly; smaller suppliers (<10,000 litres pa) can apply to submit annually
Time series	Since April 2003 – comprehensive since 2007
Data format and detail (file name if available)	Data is compiled from a form filled in by Dealers and data analysts at HMRC should be able to compile a spreadsheet to give the following breakdowns: Fuel type: Gas oil and Kerosene Categories: Domestic: Question 1 (total quantity) and Question 4 (sum of code 7 and 8) Commercial: Question 4 (sum of code 1 and 2) Public: Question 4 (code 5) Area: Question 4 – deliveries address (aggregated to England, Wales, Scotland, NI); For domestic supplies below de minimis, assume that the location of the domestic properties are in the same Devolved Administration as the distributor Time period: Monthly returns aggregated to annual data The data is submitted to the HMRC in the following format: http://customs.hmrc.gov.uk/channelsPortalWebApp/downloadFile?contentID=HMCE_CL_000322
Review of the reporting system?	No supporting information is submitted by the suppliers with the sales figures, but information given indicates checks are made – clarification required.
Summary	The RDCO scheme requires that with the exception of those businesses receiving and selling controlled oil in closed pre-packaged containers not exceeding 20 litres, and certain sales made by end-users, anyone dealing in controlled oil must be approved and registered to do so by Customs and Excise. These rules apply equally to secondary distributors, which may include those whose main business activity is not necessarily that of oil distribution, such as plant-hirers. The RDCO scheme came into operation on 1 April 2003. Approval and registration for the scheme does not apply to end-users of controlled oil. The RDCO covers controlled oils i.e. those oils subject to a rebated rate of duty under section 11 of the Hydrocarbon Oil Duties Act 1979, namely: marked rebated gas oil (red diesel) including ultra-low sulphur gas oil marked rebated kerosene (paraffin, burning oil, etc.), and aviation turbine fuel (Avtur). This scheme is for anyone who sells or deals in controlled oils. It includes: places of production – refiner's warehouses, and import warehouses who mark oil on import. It also includes the following main and secondary distributors: dry brokers who do not take physical possession of the oil; owners of oil in warehouse; distributors who supply commercial and domestic end-users; operators of Duty Paid Oils Terminals which are Registered Remote Marking Premises

	marking their own oil; waste oil dealers who obtain rebated oil (either because it is surplus to requirements or because it is waste) and: clean it themselves for onward supply as rebated oil, or deliver to another company for cleaning and onward supply, or supply surplus oil for use as rebated oil; intermediaries who deliver fuel to the tanks of commercial ships and other marine vessels excluding private pleasure craft. 3.1 Who are excluded from the scheme? The scheme does not apply to distributors who receive and sell controlled oil only in pre-packaged containers not exceeding 20 litres. Care will be needed to avoid double counts for resellers of waste oils.
If the data are useable now - at how would it be used in the DA energy and emissions compilation process?	Can be used to improve oil consumption estimates for all DAs specifically for the domestic sector, but may also be used for other sectors depending on categorisations used for the Scheme.
If not useable now – what is needed to make this dataset useable in the DA inventory	It may not be possible to resolve the inventory sectors from the categories used within the RDCO Scheme – further investigation is required.
Usefulness in target tracking: policy and overall	Provides a detailed breakdown of oil sales by broad sector and by region
Summary category for use of the data (choose 1 if applic.)	useful in DA inventory compilation directly but needs more work via the Improvement Programme in order to fully evaluate and analyse the available data and its quality.
Outcome (RAG)	(A) Detailed data on oil sales; initial data analysis can be found in Annex 4. Detailed analysis is required to fully assess the usefulness and quality of the data.
References and contact details	Steve Clarke Excise, Customs, Stamps & Money 3 West, Ralli Quays Manchester M60 9LA Tel: 0161 827 0358 steve.clarke2@hmrc.gsi.gov.uk

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2.9 Scottish Housing Condition Survey

IPCC coverage	1A4b Domestic
Fuel coverage	Electricity, Solid fuel, Gas, Oils
DA coverage	Scotland
Source organisation(s)	Scottish Government
Frequency of reporting	Annual surveys and updates to data on housing stock. (Periodic calculations to derive bottom-up energy and emission estimates by the SHCS team.)
Time series	Surveys started in 1991. Periodic (1996, 2003), but now annual.
Data format and detail (file name if available)	The SHCS team have provided a spreadsheet that shows the summary emissions from each fuel type, based on the analysis using the BREDEM model. The estimates are derived from the bottom-up housing stock information, assumptions regarding energy use and are not constrained to any of the DECC datasets (e.g. sub-national gas and electricity statistics). Data are presented for 1991, 2003 to 2010. Estimates are provided for CO_2 from gas, elec, oil, other.
Review of the reporting system?	Annual surveys are conducted of Scottish housing stock, so the dataset on housing is improving annually. The emission estimates that are derived from the survey data are based on the BREDEM model and assumptions on energy use in the sector (e.g. insulation levels, hours of operation of heating sources etc).
Summary	The SHCS team at SG have provided a detailed method statement to explain the energy and emissions modelling approach. The info on Scottish Housing stock from the annual surveys are used in conjunction with the BREDEM model and information on SAP ratings from across the time series, to derive fuel-specific estimates of consumption in Scotland for 1991, 2003 onwards.
If the data are useable now, how would it be used in the DA energy and emissions compilation process?	It seems very likely that the SHCS data on electricity estimates provide a more reliable TREND in electricity use in the sector than the NAEI data, for which the 1990 estimate is highly uncertain. We propose therefore that the SHCS trend in electricity use be used to derive a new estimate for the NAEI for electricity use in 1990. There will remain a systematic difference in the overall level of electricity and direct fuel use estimates, but this change seems a logical first step.
If not useable now – what is needed to make this dataset useable in the DA inventory	We may need more detail on the underlying assumptions that are used within the BREDEM modelling to derive the SHCS energy and emissions estimates. We will also need to review the use of emission factors in the SHCS estimates, as these will also be a (probably minor) source of difference from NAEI estimates.
Usefulness in target tracking: policy and overall	Will probably still be low, as the new data doesn't provide a move away from the modelling approach to the domestic sector estimates, or the need (for the DA GHGI overall method) to be aligned with UK / DUKES totals.
Summary category for use of the data (choose 1 if applic.)	✓ useful in DA inventory compilation directly (trends, if not actual data) ✓ useful to improve disaggregated DA estimates for the sector However this analysis, as part of the broader domestic sector , needs more work via the

	Improvement Programme to allow more detailed review of underlying factors /assumptions, to compare against current NAEI approach and other work (e.g. CAR model)
Outcome (RAG)	We propose that the SHCS trend in electricity use be used to derive a new estimate for the NAEI for electricity use in 1990. There will remain a systematic difference in the overall level of electricity and direct fuel use estimates, but this change seems a logical first step.
References and contact details	Liz Hawkins Liz.Hawkins@scotland.gsi.gov.uk Susan Walker Susan.Walker@scotland.gsi.gov.uk

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2.10 Welsh Government Indicators

Including Home Efficiency Scheme (HEES) and Nest Scheme in Wales

IPCC coverage	Public sector / Business / Residential/ Waste/ Transport / LULUCF & Agriculture
Fuel coverage	N/A
DA coverage	Wales
Source organisation(s)	Various
Frequency of reporting	Annual from 2010
Time series	Baseline information collected for indicators for 2006-2009
Review of the reporting system?	N/A
Data format and detail (file name if available)	Welsh Government have prepared a set of indicators to support the 3% reduction target set out in the 2010 'climate change strategy for Wales'. Indicators have been prepared for each of the sectors: transport; public sector; business; residential; waste ; transport and LULUCF & Agriculture. There are 70 indicators. Only the most relevant are discussed here. The aim of the indicator programme is to link policy action (tier 3 indicators) to the GHG sector emissions reported in the UK/DA GHG inventory (tier 1 indicators) by means of activity data generally relevant to the GHG inventory compilation progress (tier 2 indicators). Each indicator is given a status in terms of whether it is improving, stable, declining or a baseline/ insufficient data. Transport – The indicators don't provide any new data that are directly useful to improve the Welsh GHG inventory data given current methods, but they do provide some useful contextual data that may be of use for related inter-modal transport studies, and possible improvement options if additional data can be sourced. The indicator data fall into a number of categories: Data already used in the Wales GHGI estimation method: vehicle movement data, vehicle fleet statistics; Data useful for context / inter-model studies and GHGI checking: transport passenger numbers by mode, overall km travelled by mode (including walking, cycling), freight and HGV loading data; Data that could be useful if further data can be obtained: Timetabled rail kilometre data is obtained, which is useful as a check, and could be useful in a new rail method, if more information can be provided on the diesel / electrified line split and the types of engines used and fuel efficiencies of those engines. These data could feed into a future rail improvement task; Other data not of use to the GHGI: numbers of travel centres, passenger satisfaction surveys and other mechanisms to effect behavioural change that don't directly inform emission estimates. Business – Indicators provide no new data for WG GHGI improvements. Data are all used already in the GHGI method, except for CRC data (see separate evaluation sheet for CRC summary). Residential – The two most useful indicators are 'energy efficiency improvements - number of households' and 'energy efficiency improvements – number of measures'. The indicators summarise data from various programmes implemented in Wales, including CERT, other supplier obligations, the Home Energy Efficiency Scheme (HEES) and the new NEST scheme funded by WG. The limitations are that currently the number of households is being estimated for CERT as 75% of the measures value. Similar to the HEED and NEED databases, the data do not include any energy

	consumption information. Monitoring energy saving measures, whilst useful, does not provide a direct link to understanding the actual response in energy consumption. However, these new data that help to improve the understanding of the energy performance of the Welsh housing stock could be useful input data as part of the domestic sector modelling approach, e.g. using the CAR model. Data are also available for energy efficiency of new build in Wales and other DAs through SAP ratings and the Code for Sustainable Buildings programme, these are also non-energy consumption related measures. Public sector – The indicators provide no new data for the improvement programme, as all data are either already used within the GHGi compilation method or are based on data from CRC (see separate evaluation sheet) or NHS. The NHS data are an excellent case study of best practice in energy and emissions reporting, but are only a sub-set of the public sector emissions. Waste – The indicators report on a number of activity data some of which are used already within the DA GHGI method (“volume of MSW to landfill” taken from the Statwales – WasteDataFlow) but also additional data that will be useful in a future improved DA waste sector method, which is a high priority for the improvement programme. These new data include “volume of biogradable MSW to landfill” from the Landfill Allowances Scheme (LAS) in Wales and “volume of total waste to landfill” from Environment Agency landfill site returns. Depending on other data availability, these will become useful new source data for improved Wales waste sector estimates, or at least a very useful quality checking function for the new method. LULUCF & Agriculture – The indicators provide no new data for the Wales GHGI estimates; all indicator data are taken from the existing GHG inventory. There is some scope that agriculture policy monitoring may in time develop to provide more detailed information on farm practices, to support improvements to the agricultural inventory method, but these are not evident as yet.
Summary	Residential – The data might be worth investigating alongside any future CAR modelling for Wales. Transport – some data might be useful for GHGI checking such as transport passenger numbers by mode and overall km travelled by mode (including walking and cycling), freight and HGV loading data. There is a potential to improve the inventory if better rail data can be obtained such as timetabled kilometre data; information regarding the diesel/electrified line split; and types of engines used and their fuel efficiencies. These data could feed into future rail improvement tasks. Public sector – The NHS data are an excellent case study but have limited use as the emissions covered are only a subset of the public sector emissions. Waste – the data including ‘volume of biogradable MSW to landfill’ from the Landfill Allowance Scheme and ‘volume of waste to landfill’ from environment agency landfill site returns may become useful new sources for improving the Wales waste sector estimates, or at least useful for quality checking the new methodology.
If the data are useable now - how would it be used in the DA energy and emissions compilation process?	Residential – some potential use as an input dataset for CAR modelling in the future for Wales.
If not useable now – what is needed to make this dataset useable in the DA inventory	Transport – improved rail network data see summary above.

Usefulness in target tracking: policy and overall	
Summary category for use of the data (choose 1 if applic.)	example of best practice to share across DAs
Outcome (RAG)	(A) At present there is no data that can be used to improve the GHG inventory directly. Some of the energy efficiency programmes might be worth investigating through CAR.
References and contact details	Ross Hunter and Simon Baldwin - Overarching Ross.Hunter@wales.gsi.gov.uk; Tel: 0292082 3473 Simon.Baldwin@Wales.gsi.gov.uk; Tel: 02920 82 3789 Dilys Burrell (ESH - CCWD) - Residential Dilys.Burrell@wales.gsi.gov.uk Margaret Salt, 02920 825207 margaret.salt@wales.gsi.gov.uk (Weds - Fri only) Kimberley Campbell, 02920 821146 kimberley.campbell@wales.gsi.gov.uk.

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2.11 Green Deal

IPCC coverage	1A4a Commercial / 1A2f Other Industry
Fuel coverage	Energy Efficiency policy only
DA coverage	England / Scotland / Wales / NI
Source organisation(s)	DECC
Frequency of reporting	Programme starts from Autumn 2012. Uncertain how frequent impact assessment will be.
Time series	N/A
Data format and detail (file name if available)	The government is establishing a framework, which will enable private firms to offer energy efficiency improvement to homes, community spaces and businesses at no upfront cost, with the payments recouped through instalments on the properties energy bills. Under the Green Deal, bill payers will be able to get energy efficiency improvements without upfront costs. Instead businesses will provide the capital, getting their money back through the energy bill. An innovative financing arrangement means that if they move out and cease to be the bill-payer at that property, the financial obligation does not move with them, but is passed on to the next bill payer. To qualify for the Green Deal, the golden rule is that 'the expected savings in typical properties consuming a normal amount of energy must be equal to or greater than the cost of the measure'. Obviously, the government cannot guarantee there will be actual cash savings because only the individuals in the property can determine their own energy use. However, supporting advice on behaviour change will be provided to maximise the benefits. The aim is to also make the Green Deal available for businesses – enabling them to access funding for energy efficiency improvements. Is there going to be any alignment between the Green Deal and the Energy Performance Certificate database that CLG hold, e.g. will the latter in future include further information on any green deal measures installed where a property is required to have either a EPC or a DEC? Emma Fraser: The EPC will be updated with Green Deal measures and display the charge taken out. Steven (Daniels) or Kate should be able to provide more info. Stephen Daniels: The EPC will be updated post installation to include details of the Green Deal. This is something we have been working on with DCLG (who have the lead for the EPC). Many of the changes will actually be coming in as part of the new EPC that is released from April. Essentially both EPC and the additional occupancy assessment will form the Green Deal assessment so the two processes are closely intertwined and it means whenever a property is sold or rented the information will be disclosed. Will you collect information on the energy savings from the measures installed under the Green Deal overtime through customer surveys for example or will assumptions be made to evaluate the policy impact using higher metrics such as number of measures installed or number of treated households (much like CERT)? Emma: We are still considering evaluation issues around energy performance after a Green Deal has been taken out. Nick Morgan and Stephen Penlington lead on this. It is probably question 2 with regards to capturing the changes in energy consumption as a result of the Green Deal that might be useful data for the future. How many properties do you expect to give finance to under the Green Deal, is there a limit? Joel:

	How many properties will get GDF? GD will be market managed so it is difficult to say. However, we calculate demand to be at 3.6m in our November 2011 impact assessment (http://www.decc.gov.uk/assets/decc/11/consultation/green-deal/3603-green-deal-eco-ia.pdf - updated modelling will be published in the summer) Is there a limit on number of people who will receive GDF? Not as imposed by regulation – Again, it will be determined by the market. It would be useful to find out what the evaluation method might be, for our purposes we would require information with sector and fuel type splits by DA or perhaps LA level. Are you considering this level of detail? Joel: Evaluation methods Methods are in the early stages of production at the moment. We hope to have a finished strategy by the Summer but it is unclear if this will be published yet. Some of our early thinking, relevant to your questions are: Number of GDs At household level will be available from EPC (not sure on which breakdowns will be analysed yet but certainly the ones you mention below are key). Energy savings in the Short term (All fuel types) – EPC In the short term, energy savings will be estimated from the EPC. Assumptions will then need to be made about the amount of in use corrections to use (i.e. comfort, underperformance and wall inaccessibility). This will only be a proxy. It will not show the exact level energy savings. This will be more accurate results will come from NEED in the long run (Yearly with a 2 years lag) Energy savings in the Long term (Gas and Electricity heated properties) – NEED Energy savings will come from real meter readings so will be inclusive of any in use factors (i.e. there will be no need to make assumptions about comfort, underperformance, wall inaccessibility). The difference between the change in consumption in a control group and a change in consumption in a group that have received GDs (i.e. difference in difference analysis - DID) will be taken. Please see the NEED report to get an idea of the methodology that will be used (http://www.decc.gov.uk/assets/decc/11/stats/energy/energy-efficiency/2078-need-data-framework-report.pdf). Energy savings in the Long term (Off Grid Properties) – EPC applying assumptions learnt from NEED Theoretical savings will be taken from EPC and reduced by factors observed in on grid properties in NEED. Note that the newly planned regional disaggregation in RdSAP will enable this to take into account varying outdoor temperatures in off grid properties. Have you talked to Will Rose who does the DECC sub-national electricity and gas consumption statistics. It would be really interesting to see if the Green Deal shows up in the detailed data he gets from energy suppliers in the future. Does the Green Deal include installation of SMART metering or is the focus solely energy efficiency measures? Emma: the two programmes are not linked but fully anticipate some green deal providers will want to do both at the same time.

Review of the reporting system?	N/A
Summary	Programme starts from Autumn 2012; focus is energy efficiency measures and financing. Still in the development stages.
If the data are useable now - at how would it be used in the DA energy and emissions compilation process?	Not useable It might become visible in Display Energy Certificates and Energy Performance Certificates, see separate evaluation sheets.
If not useable now – what is needed to make this dataset useable in the DA inventory	In a perfect world, joining up the Green Deal with SMART metering by marketing the Green Deal to customers receiving SMART meters would allow evaluation of meters with and without Green Deal.
Usefulness in target tracking: policy and overall	DECC are currently developing methodology to evaluate the policy in future.
Summary category for use of the data (choose 1 if applic.)	needs development by third parties / agencies to improve the data gathering
Outcome (RAG)	(R) Unlikely to be useful as anticipate evaluation will be largely modelled. This is currently under development.
References and contact details	DECC policy team emma.fraser@decc.gsi.gov.uk (general Green Deal) steven.daniels@decc.gsi.gov.uk kate.barbier@decc.gsi.gov.uk (contacts for aligning Green Deal with the EPC) nick_morgan@decc.gsi.gov.uk stephen.penlington@decc.gsi.gov.uk joel.davis@decc.gsi.gov.uk (lead on evaluation of the Green Deal)

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2.12 Cambridge Housing Model

IPCC coverage	*1A4b Domestic*
Fuel coverage	*Electricity / gas / oil / coal*
DA coverage	England / Scotland / Wales / NI
Source organisation(s)	Cambridge Architectural Research www.carltd.com
Frequency of reporting	Annual
Time series	1970-2009 but timeseries updated only from 2008 by CAR, earlier uses BRE modelling.
Data format and detail (file name if available)	Data are published in Energy Consumption UK (July) and Domestic Energy Factfile (September)
Review of the reporting system?	Data are modelled based on English and Scottish House Conditions Surveys using the Cambridge Housing Model
Summary	CAR have recently taken over the domestic energy modelling contract from BRE and have developed new modelling approaches for calculating domestic energy consumption. The English and Scottish Housing Conditions Surveys are used to calculate energy consumption of the individual dwellings in the surveys. This is done using a revised SAP2009 method. Further details are available in The Cambridge Housing Model Guide v 2.7 171111.pdf The EHCS contains data on 16,150 representative English dwellings (cases). Each of these cases represents a quantity of dwellings in England - that is a weighting, such that their sum is equal to the total number of dwellings in England (22.3 million in 2009). These weighting factors were calculated when the survey was designed but CAR do not have details of how these weighting factors were determined. The total energy for each fraction of the housing stock is therefore calculated by factoring up the energy for the dwelling using the weighting factor. The methodology for the Scottish domestic energy consumption is the same using the Scottish House Condition Survey (~9000 dwellings) but the survey for Wales is in a different format and the modelling has not yet been done separately for Wales. Therefore cases have been chosen to be representative of housing in Wales and aggregated up in a consistent way to described above. Additional budget would be required for CAR to undertake full modelling for Wales. There is an equivalent survey in Northern Ireland, the NIHCS, and we believe that again the format is slightly different. We currently use DUKES data to factor up from GB to UK, but it would be better to use the NIHCS. Once again, additional budget would be required. Data are published at the UK and GB level in the Energy Consumption UK publication and Great Britain's housing energy fact file 2011. Data will be available at DA level 2012 datasets (ECUK published in July, factfile in September). It is likely that this will be presented as fuel consumption by fuel type – to be confirmed by CAR in discussion with DECC. The modelled fuel is corrected to national fuel consumption data in DUKES because there is a 'modelling gap' resulting from generalised assumptions made in the SAP2009 method and in the aggregation up to total UK dwellings. This gap is small for energy used in appliances, lighting and cooking but larger for space heating (10% overall but variable by fuel). Further data on energy consumption for specific dwelling types by region could also be made available for the NAEI mapping but this would also have a cost attached to cover additional

	modelling.
If the data are useable now - how would it be used in the DA energy and emissions compilation process?	Not available in time for this year. Definitely need to consider the data for next year.
If not useable now – what is needed to make this dataset useable in the DA inventory	DA specific fuel estimates for domestic to be published in July can be compared with DA inventory current estimates. Further discussions to be had between NAEI modellers and CAR modellers to inform improvements to 1km resolution mapping methods
Usefulness in target tracking: policy and overall	The CAR modelling takes account of energy efficiency improvements because the English Housing Survey includes data for nearly all of the main inputs to the SAP building physics module – insulation, glazing, heating system efficiency, etc. This is updated every year in England and Scotland (but not Wales, and the last survey there was 2008).
Summary category for use of the data	*useful in DA inventory compilation directly* *useful to improve mapping estimates*
Outcome (RAG)	DA level Data will be useful later in the year. Still need to get further information on estimates of energy for different dwelling types for NAEI mapping (and cost of this data)
References and contact details	Dr Jason Palmer Cambridge Architectural Research 23-25 Gwydir St., CAMBRIDGE, CB1 2LG tel: +1223 460475, jason@carltd.com

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2.13 Northern Ireland Energy Model (NIEMo)

IPCC coverage	1A
Fuel coverage	Electricity, Solid fuel, Gas, Oils
DA coverage	Northern Ireland
Source organisation(s)	Northern Ireland Strategic Investment Board
Frequency of reporting	(One-off study)
Time series	The model seeks to develop projections scenarios, but uses available baseline data from across recent years.
Data format and detail (file name if available)	PDF report released March 2012. (No supporting files available yet.)
Review of the reporting system?	The model is built using a wide variety of energy statistics and activity data, using assumptions on fuel use, inferring trends from RoI data in many sources but supplementing those with the DECC sub-national statistics, NI energy supplier information and other NI-specific info (e.g. vehicle fleet data). "The project was split into three conceptual phases. In phase 1, data were collected to calibrate the model. In phase 2, a bespoke model, NIEMo, was developed for energy demand by fuel and by sector for everything but electricity; for electricity a pre-existing model, IDEM, was used. Because there is a single electricity model on the island of Ireland, IDEM covers power generation and electricity demand north and south of the border. The model also includes a module to compute greenhouse gas emissions. In phase 3, the model was used to develop a baseline scenario and to analyse various policy scenarios." The model is built so that energy use can be projected into the future on a sectoral level. Activity drivers are drawn from historic information on Gross Value Added by sector and other more specific models. The historic data on energy use defines a base from which to build projections of future use.
Summary	Information used: NOT CURRENTLY USED IN THE INVENTORY - Car stock model (combined NI and RoI data on fleet make-up) - Household model (Oxford Economics housing stock projections) - Electricity demand model (IDEM – simulates the All Island electricity model) - NIE electricity data, 1990-2010 split into domestic, agricultural and non-domestic. - Transport and commuting patterns - Electricity use by sector based on RoI consumption data - Gas use by sector based on RoI consumption data - NIASS oil import data (suspect this is an under-report) - Coal use by sector based on RoI consumption data - Coal use by power stations based on Annual Coal Inquiry (the inventory uses EUETS data which is more accurate than this approach) - GHG emissions by sector based on RoI split (??) - Future electricity generation based on All Island Grid study and SONI - Public building quality (PSEC – but the GHGI gets actual energy data anyway, so this isn't needed) - Private and public sector buildings data were gathered. These may be useful for energy

	modelling purposes. ALREADY USED IN INVENTORY DECC sub-national statistics Electricity generation data (DECC) Employment, population, household numbers Housing Condition Survey data Car stock and registrations data, vehicle km data GAPS IDENTIFIED Limited energy data leads to use of Irish and UK behavioural parameters. OTHER POINTS OF NOTE It is unclear why the study did not use the by source GHG Inventory data for Northern Ireland, and merely cited the end user datasets of 1990, 2003 to 2007. The study has noted the inconsistency evident for oils data in the public sector (section 3.6.2), which has also been picked up via the inventory. Whilst the study doesn't provide much new source data on energy use, the alternative approach and use of data from RoI to inform estimated sector estimates of fuel use provides a useful Quality Check against the energy modelling approach that currently underpins NI GHGI estimates. However the statements on page 25 outlining that "the NAEI estimate is some 5% higher than the ESRI estimate; this may be due, in part, to inaccuracies in the NAEI data", is unwarranted and unsubstantiated. At the start of the section, ESRI state "data are hard to get for Northern Ireland…we have therefore constructed energy accounts which are consistent with available data, but which impute data where necessary", but later on state that "we have clear data on the fossil fuel use driving these emissions". The detailed insight into ESRI's source data indicates that their estimates are based on data that are less detailed than those used for the NAEI estimates in several key sources. For example, ESRI use Annual Coal Inquiry data to estimate coal use in power generation, whereas the NAEI uses EUETS data reported by power station operators. This one data selection by ESRI introduces significant uncertainty into the estimates presented. Furthermore, the ESRI analysis excludes sub-national electricity and gas use data published by DECC and gas supplier data from all supplier companies, unlike the NAEI estimate.
If the data are useable now, how would it be used in the DA energy and emissions compilation process?	The model is heavily focused on improving understanding of future scenarios (fuel and carbon prices, policy appraisal etc.), rather than on current / historic data, so it is of very limited use as it stands. The report highlights the lack of energy data specific to Northern Ireland and the need to use proxy information in the current version, and the resultant lack of validation of the model outputs.
If not useable now – what is needed to make this dataset useable in the DA inventory	The ESRI estimates are based on a constructed energy balance from available data, as are the NAEI estimates. A more comprehensive energy balance for Northern Ireland, especially for oil use, tracking imports and cross-border fuel transfers is essential.
Usefulness in target tracking: policy and overall	No usefulness. The NIEMo model provides a projections scenario model that is useful for policy scenario testing, but the baseline data needs to be re-evaluated to use more accurate data inputs for key sources.

Summary category for use of the data (choose 1 if applic.)	Although not useful for the 'by source' emissions estimates, the NIE electricity dataset will be directly useful for the end user analysis, at least as a quality check and perhaps as new source data. May be useful if some of the underlying assumptions for specific sectors help inform better energy modelling, e.g. for the residential sector Most of the data used in the model are not as relevant to Northern Ireland as the current DA GHGI dataset. For example, the analysis does not use the available gas and electricity sub-national data. The model focuses on emission projections, for which it will be far more use that for improving the underlying baseline HISTORIC data of energy use by sector. There is some useful analysis, but it focuses on projections in order to provide a scenario analysis tool.
Outcome (RAG)	Although not useful for the 'at source' emissions estimates, the NIE electricity dataset will be directly useful for the end user analysis, at least as a quality check and perhaps as new source data. May be useful if some of the underlying assumptions for specific sectors help inform better energy modelling, e.g. for the residential sector
References and contact details	

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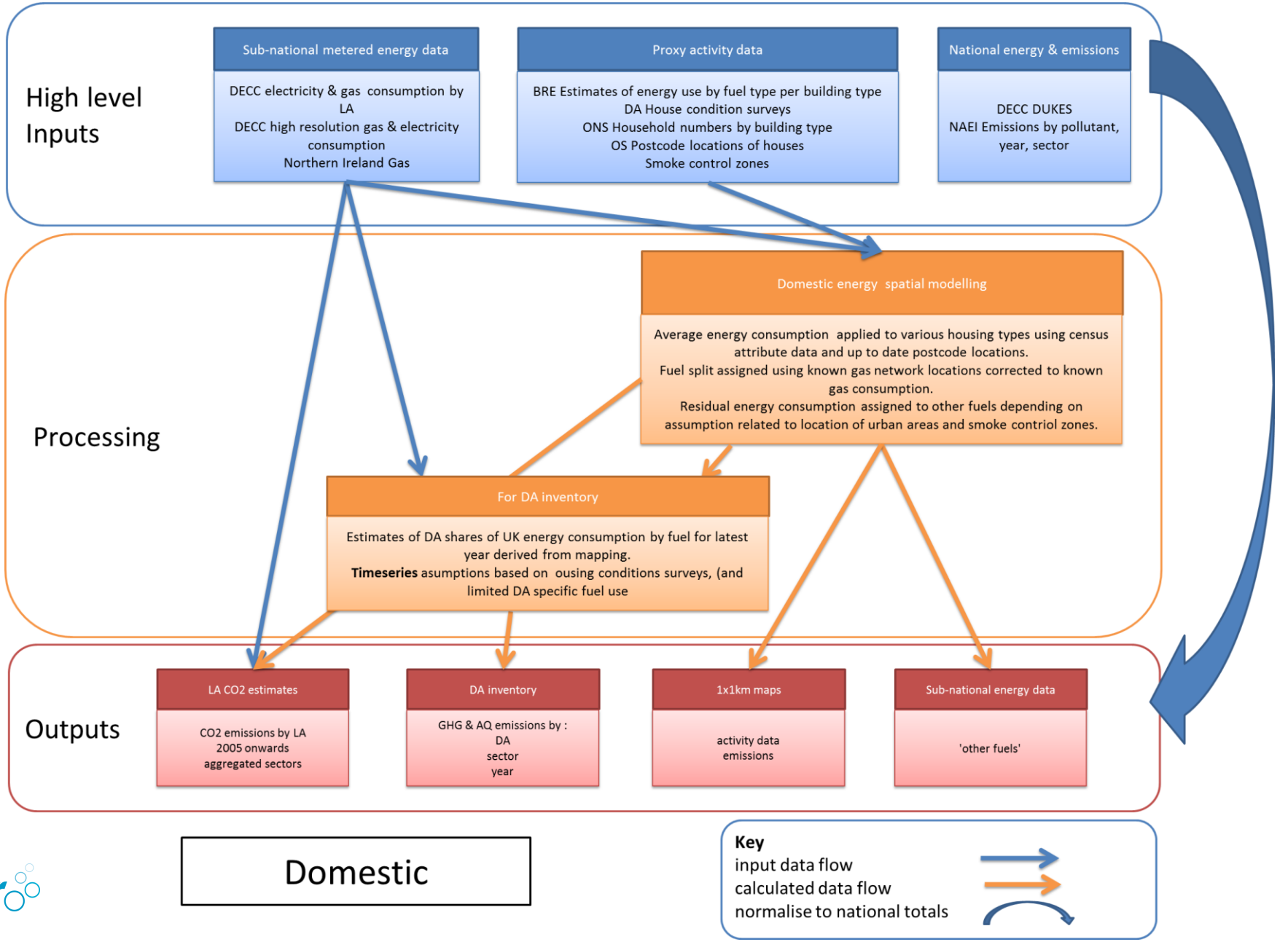
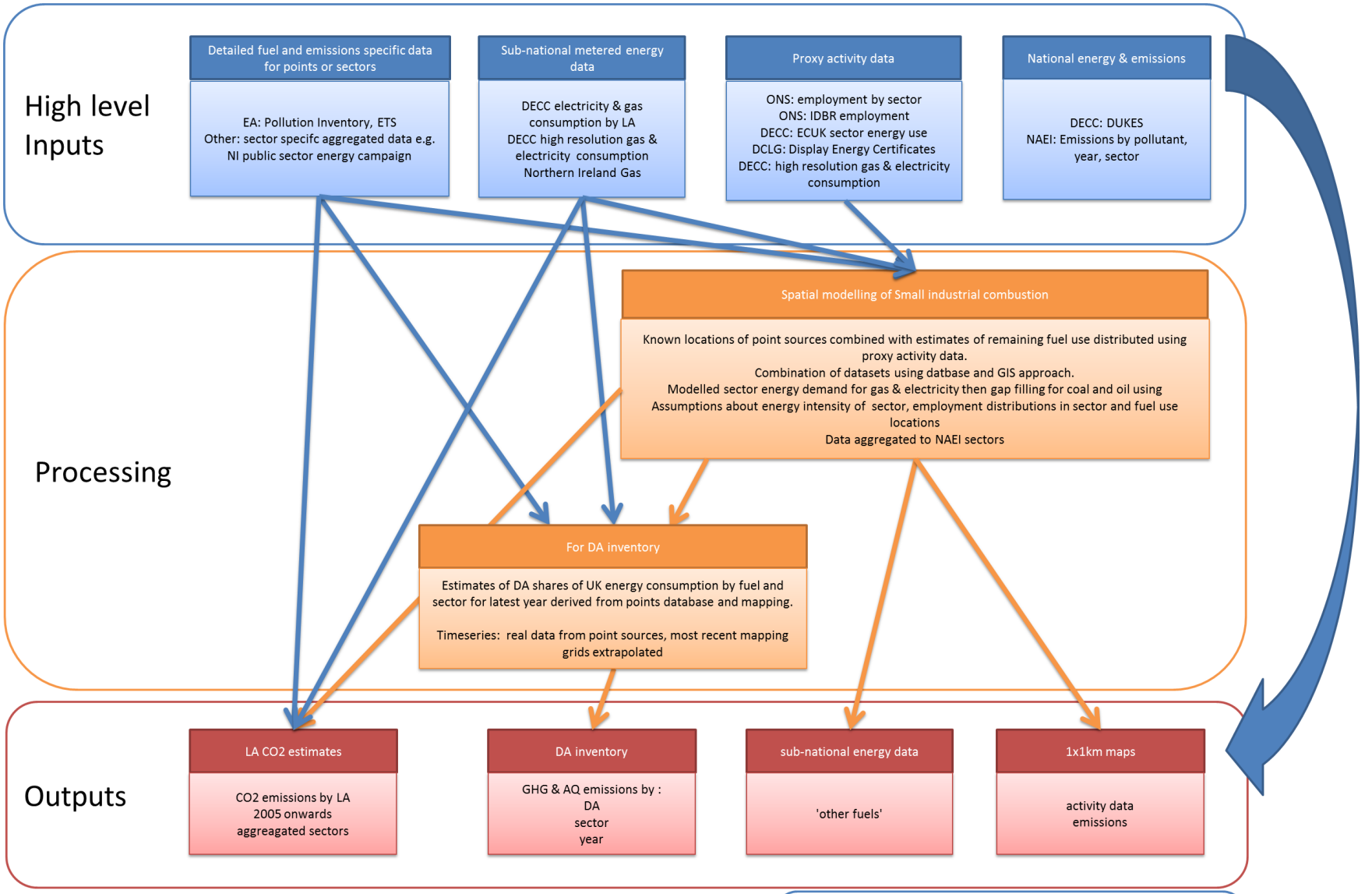
Annex 3 DA Inventory data flow charts




High level Inputs
Detailed fuel and emissions specific data for points or sectors
EA: Pollution Inventory, ETS
Other: sector specifc aggregated data e.g. NI public sector energy campaign
Sub-national metered energy data
DECC electricity & gas consumption by LA
DECC high resolution gas & electricity consumption
Northern Ireland Gas
Proxy activity data
ONS: employment by sector
ONS: IDBR employment
DECC: ECUK sector energy use
DCLG: Display Energy Certificates
DECC: high resolution gas & electricity consumption
National energy & emissions
DECC: DUKES
NAEI: Emissions by pollutant, year, sector
Processing
Spatial modelling of Small industrial combustion
Known locations of point sources combined with estimates of remaining fuel use distributed using proxy activity data.
Combination of datasets using datbase and GIS approach.
Modelled sector energy demand for gas & electricity then gap filling for coal and oil using
Assumptions about energy intensity of sector, employment distributions in sector and fuel use locations
Data aggregated to NAEI sectors
For DA inventory
Estimates of DA shares of UK energy consumption by fuel and sector for latest year derived from points database and mapping.
Timeseries: real data from point sources, most recent mapping grids extrapolated
Outputs
LA CO2 estimates
CO2 emissions by LA
2005 onwards
aggreagated sectors
DA inventory
GHG & AQ emissions by :
DA
sector
year
sub-national energy data
'other fuels'
1x1km maps
activity data
emissions
Industry and Commercial
Key
input data flow
calculated data flow
normalise to national totals

Annex 4 Data analysis

4.1 RDCO Scheme

This section looks at the initial analysis performed on the RDCO data provided by HMRC. For further details regarding the Scheme please refer to the data evaluation sheet (Annex 2).

Categorisation of oil sales reported by RDCO dataset

The RDCO Returns Form (see Annex 5) requires Dealers to identify each customer's main use for oil using one of eleven categories. The domestic sector can be easily segregated from these categories. The industrial and public sectors, corresponding to the inventory categorisation, are not as easily segregated; this is mainly due to the overlap of stationary and mobile combustion within the RDCO categories.

Discussions with a representative at HMRC [1] identified that the number of Dealers reporting to the scheme stabilised from 2007 onwards. Prior to this date, there was not complete coverage of Dealers in controlled oils from the scheme. From the information provided by the Dealers, the oil consumed can be allocated to each DA using post code, VAT number and trading name. However analysis of the data shows that many Dealers have not been allocated because of a lack of this information. The reasons for the data gaps are not known to us.

Quality assurance and quality control

From the current knowledge of the RDCO Scheme, the data submitted by Dealers are not verified by HMRC. Any verification procedures that may be in place need to be identified. Further discussions with HMRC are required regarding any current quality checks that are in place, the comprehensive state of the time series and possible sources of double-counting.

DUKES Comparison

This analysis compares the RDCO data to the DUKES commodity balance table of final petroleum consumption.

[1] Steve Clarke; ECSM; Oils Policy; 3 West, Ralli Quays, Manchester, M60 9LA; Tel: 0161 827 0358; steve.clarke2@hmrc.gsi.gov.uk

Figure A1: Comparison between RDCO and DUKES for 2010 (million tonnes of oil)

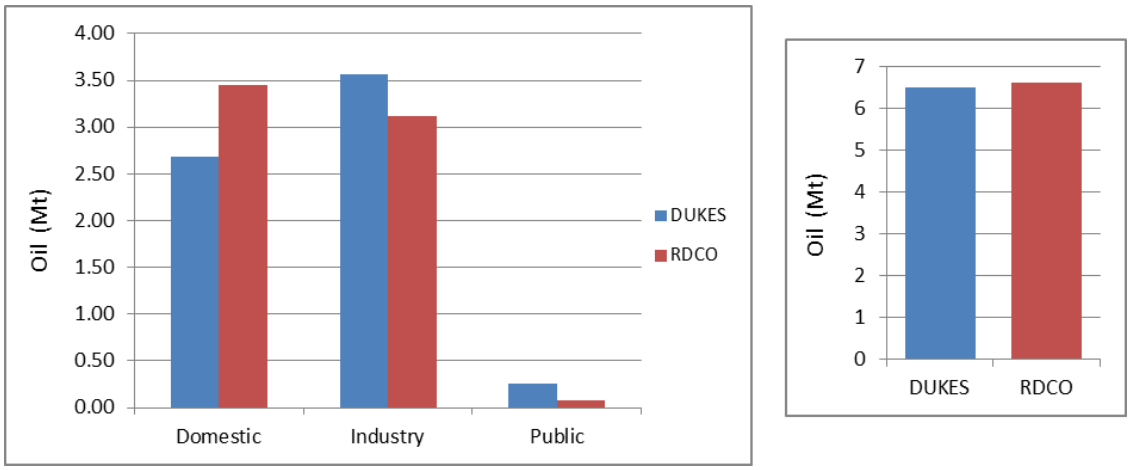


Table A1: Comparison between RDCO and DUKES for 2010 (million tonnes of oil)

	Mtonnes oil (gas oil and kerosene)	
Sector	**DUKES**	**RDCO**
Domestic	2.689	3.449
Industry	3.561	3.112
Public	0.255	0.076
Total	6.504	6.637

It is encouraging to see that the two datasets are *generally* comparable, when looking at the magnitude of the reported/estimated fuel consumption/sales data.

However before these data can be used within the emissions inventory we need to have more understanding of the differences between these two datasets: why is the final consumption of RDCO greater than DUKES; why is there such a difference in the sector breakdown between the two datasets; how do the methodologies and assumptions differ? We suggest that the data are analysed by the DECC energy statistics team combined with further discussions with HMRC. It may be that the RDCO data could be used to update or verify DUKES data.

DA and RDCO Methodology Assessment

The tables A2 and A3 below show the **domestic** consumption data currently estimated for the compilation of the DA inventory and below that the RDCO data.

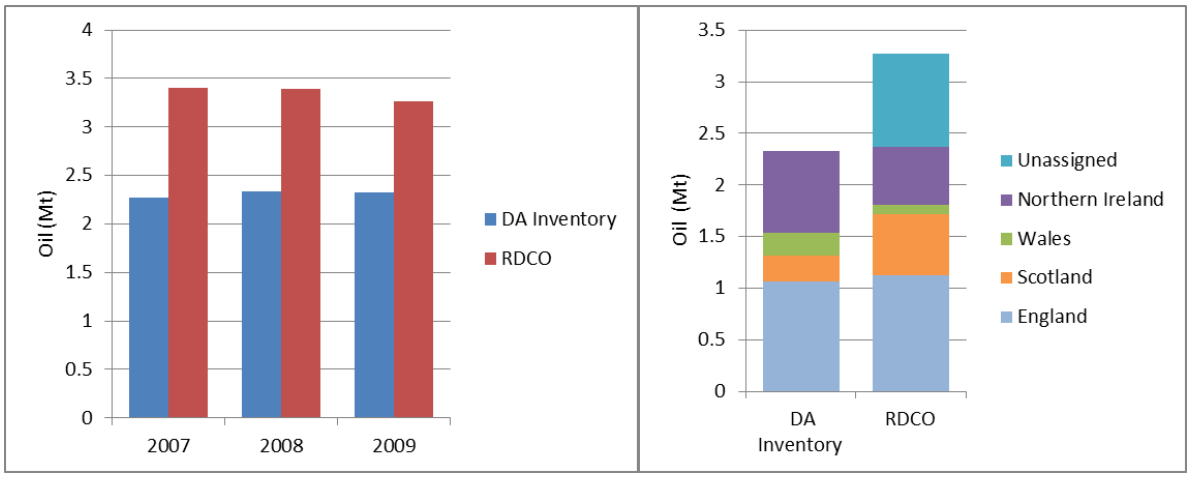
Table A2: DA Inventory – Domestic consumption of gas and burning oil (Mtonnes)

Emission Year	England	Scotland	Wales	Northern Ireland	Unallocated	Grand Total
2007	1.0406	0.2459	0.2136	0.7682	0	2.2683
2008	1.0692	0.2526	0.2195	0.7894	0	2.3307
2009	1.0671	0.2521	0.2191	0.7878	0	2.3261

Table A3: RDCO – Domestic consumption of gas oil and kerosene (Mtonnes)

Emission Year	England	Scotland	Wales	Northern Ireland	No Trader	Grand Total
2007	1.3134	0.3985	0.1146	0.5943	0.9807	3.4016
2008	1.2414	0.5359	0.0938	0.5567	0.9678	3.3957
2009	1.1228	0.5934	0.0960	0.5541	0.9011	3.2673

Figure A2: Total domestic consumption of oil (Mtonnes) with DA split of 2009 data



This initial analysis indicates that the RDCO estimates the UK domestic consumption of oil to be around 45% higher than the DA estimates, and a small decrease in overall domestic consumption in the RDCO compared to a small increase in the DA inventory estimates. The reasons for the big overall difference are not yet known, possibly a difference in definition, or potentially double counting within the RDCO dataset. The exclusion of data on oil resellers should have minimised double-counting but this is still a possibility.

The data above also show the very significant “unassigned” oils in the RDCO dataset (categorised as “No Trader” in the raw data) , i.e. where no geographical data are available to allocate the sales to specific DAs.

The initial DA comparison shows that the current DA methodology is estimating significantly lower Scotland’s domestic consumption of oil. However, before a true comparison between these two datasets can be carried out the unassigned data needs to be assigned to DAs.

HMRC analysts used the postcode and VAT number to assign appropriate DAs to the different customers buying the controlled oil. Further discussions with HMRC are required to understand how best to distribute the unassigned sales and how these data (around a quarter of sales) will be handled in the future. It could be that the Trader name can be used alongside the Inter-Departmental Business Register (IDBR) to enhance the allocation process or to enhance data screening of submissions during the coming years to improve the quality of the dataset in future.

Table A4 below shows the percentage of reported oil sales that are categorised as unassigned. The table shows this by reporting year and by sector. The “unassigned” category is more heavily found in the domestic sector, but that there has been in increasing number of sales in the public sector allocated to this category over the time series.

Table A4: Percentage of total oil sales in the UK allocated to "unassigned" per sector and reporting year

	Sector			Total
Year	**Commercial**	**Domestic**	**Public**	
2007	21.8%	28.8%	14.6%	25.1%
2008	21.4%	28.5%	15.6%	24.8%
2009	19.4%	27.6%	23.8%	23.8%
2010	16.4%	26.3%	26.0%	21.6%
2011	17.6%	27.2%	38.7%	22.5%

Conclusions

We recommend that DECC consider:

- Further discussions with HMRC regarding this dataset;
- Its potential to influence oil consumption estimates in DUKES;
- Whether improvements in the RDCO database can be made to allow a more complete picture in order to reduce the size of the unallocated oil fraction.

Further information should also be sought on current quality checks that are in place, the comprehensive state of the time series and possible sources of double-counting.

We need to have a greater understanding of the differences between these two datasets before a full investigation can be carried out: why is the final consumption of DUKES different than RDCO; why is there such a difference in the sector breakdown between the two datasets; how do the methodologies and assumptions differ?

4.2 CCAs

The study team has been provided with CCA data that summarises emissions reported for 2008 by all sectors. Initial analysis of the overall sector data was used to identify a small number of high priority CCAs for more detailed analysis. DECC has subsequently provided the more detailed CCA reporting forms ("CCA 10" forms) for a small number of CCAs that have been used for more detailed review of the data reporting format and detail, in order that the study team can assess the likely usefulness of the CCA data currently available.

Site lists and addresses for each CCA are available to download from:

http://www.decc.gov.uk/en/content/cms/emissions/ccas/umbrella_ccas/reduced_rate/reduced_rate.aspx

The study team has reviewed data from across the CCA reporting system, but due to commercial confidentiality no detailed data can be presented in this report.

Six CCAs were reviewed in detail, as they represented some of the sectors with the highest aggregate emissions in the CCAs, a high percentage of the non-ETS estimated emissions from across all CCAs, and were hence are regarded as potentially the most useful for deriving additional information of use to the improvement if UK and DA energy and emissions estimates.

The **steel** industry of just **44** sites accounts for almost a third of total CCA emissions, but has a high reporting cross-over with EUETS; despite this, the sector is estimated to account for around **15%** of the non-ETS emissions from direct fuel use.

The **food and drink** association CCA (see notes below on "food and drink" sector data, as there are 13 CCAs that are linked to the sector) includes **847** sites. The total CCA emissions are low compared to steel, but the CCA is estimated to be over **15%** and more significant than the steel sector in the non-ETS sector due to a much lower reporting cross-over with EUETS. The non-ETS sector is of greatest policy interest to the devolved Governments of Scotland, Wales and Northern Ireland, and hence the overall usefulness of the CCA data for food and drink is comparable to that of steel, for the DA GHGI. [As outlined below, once the total of 13 CCAs in the "food and drink" sector are aggregated, the sector share of the non-ETS emissions from across all of the CCAs emissions is estimated to be around **30%**.]

The **chemicals** sector CCA has a very high share of total CCA emissions, but in the non-ETS sector the **245** sites are only estimated to account for under **5%** of the total non-ETS CCA emissions.

The number of sites per CCA provides an indication of the level of resources that would be needed to process the data to geographically-referenced data for use in energy and emissions mapping; the food and drink and chemicals CCAs have a very high number of sites, whereas "quick wins" may be achievable for the other four specific CCAs highlighted, as all have fewer than 70 sites reporting under the CCA.

"Food and drink" sector emissions in the CCAs

There are 13 CCAs that include emissions for the food and drink sector. One large umbrella CCA for the sector covers 847 sites and around 8% of total CCA emissions in 2008. However, once the other 12 (sub-sector-specific) CCAs are added to this, the data for the overall food and drink sector increases to 5,831 sites, and 14% of total CCA emissions in 2008.

The CCAs that would fall within the DUKES and GHGI definition of food and drink are:

- ✓ Food and drink association
- ✓ Dairy industry
- ✓ Spirits
- ✓ Meat Federation
- ✓ Poultry meat processing /feed
- ✓ Malting
- ✓ Poultry meat rearing
- ✓ Brewing
- ✓ Craft Baking
- ✓ NFU – Poultry Meat
- ✓ NFU – Eggs
- ✓ NFU – Pigs
- ✓ Egg processing

Therefore, to fully analyse data for the sites in CCAs that are within the DUKES and GHG inventory definition of "food and drink" would require analysis of data for nearly 6,000 sites. Across the 13 CCAs, the detail of data reporting varies; not all CCA data are provided on a site-specific, fuel-specific basis and with a transparent overlap against EUETS data. This illustrates the complexity of the challenge to use the current CCA data and utilise the data in a detailed way. It may be feasible to aggregate the data for use in UK energy statistics and the UK GHGI, but it would be extremely resource-intensive to use the data for detailed energy and emissions mapping purposes or for the DA GHG inventories. Nevertheless, the detailed data from these CCAs would be useful to policy teams in the DAs, as in many cases the CCA data provides information to help clarify the local energy demand and fuel types currently used, in order to help identify opportunities for lower-carbon solutions. Note that the use of the CCA data in such applications is likely to be limited due to issues of commercial confidentiality, however.

Steel CCA Data Review

Across 44 sites, there are 20 individual lines of data reported in the CCA 10 form, with data aggregated for several companies. This reduces the usefulness of the data significantly, especially as the England-Wales split of data is not derivable from the CCA 10 as a result.

Fuel-specific data is also not reported, with total primary energy input reported in PJ, and carbon dioxide emissions reported in tonnes as carbon.

Paper CCA Data Review

Data from the 58 sites are reported within only two lines on the CCA 10 report, with a list of sites aggregated provided. The production of net saleable product (NSP) is used together with factors for energy use per NSP to present overall energy use in the sector in kWh, and carbon dioxide emissions reported in tonnes as carbon.

The lack of data transparency inhibits any use of the data within the compilation of energy statistics for the sector by fuel, or by geographical location.

Aluminium CCA Data Review

In the current (2011) list of CCA target units there are 46 sites listed, but in the CCA 10 for 2008 data there are only 16 lines of data presented, but no indication of multiple site reporting within the spreadsheet. Therefore, perhaps the scope of the CCA has expanded in the intervening years.

From the 2008 CCA, the data are presented on a site-specific basis, with either a mass-based or volume-based series of factors used to derive site-specific aggregate energy use in MJ. Fuel-specific data are presented, including data by site of gas, electricity and LPG.

These data are therefore directly useful for sector estimates at UK and DA level, but a review of data in 2011 is needed, to check whether the full site-specific and fuel-specific detail is still available.

Chemicals CCA Data Review

A large number of the 500+ sites are reported individually within the CCA 10, although there is some degree of data aggregation across several chemical companies. Therefore, there is good (but incomplete) data transparency at geographical level. Reporting throughput units are mainly in energy terms, with a small number in mass terms. There is a high level of detail in fuel-specific reporting, with several hundred lines of data and data reported for electricity, gas, fuel oil, coal, gas oil, other fuels (by-products), other fuel (Steam imported from a 3rd party) and other fuel (electricity imported from a 3rd party).

These data are potentially very useful for several aspects of the UK and DA GHGI, including:

- Use of by-products as fuel. Currently the inventory estimates (UK, DA, LA) are based on DUKES estimates of energy use of feedstocks and limited data from IPPC permits. These CCA data could significantly improve the current estimates.
- UK-level fuel use by the sector, as a QC against DUKES allocations for major fuels, and some improvements to DA-level fuel use by fuel.

Given the large number of sites and relatively low overall share of the non-ETS emissions (around 5% of the CCA non-ETS total), a complete data processing task would be a resource intensive task with limited benefit, but if the data can be used as a new reference source in future GHGI work, then some improvements may be achievable.

Spirits CCA Data Review

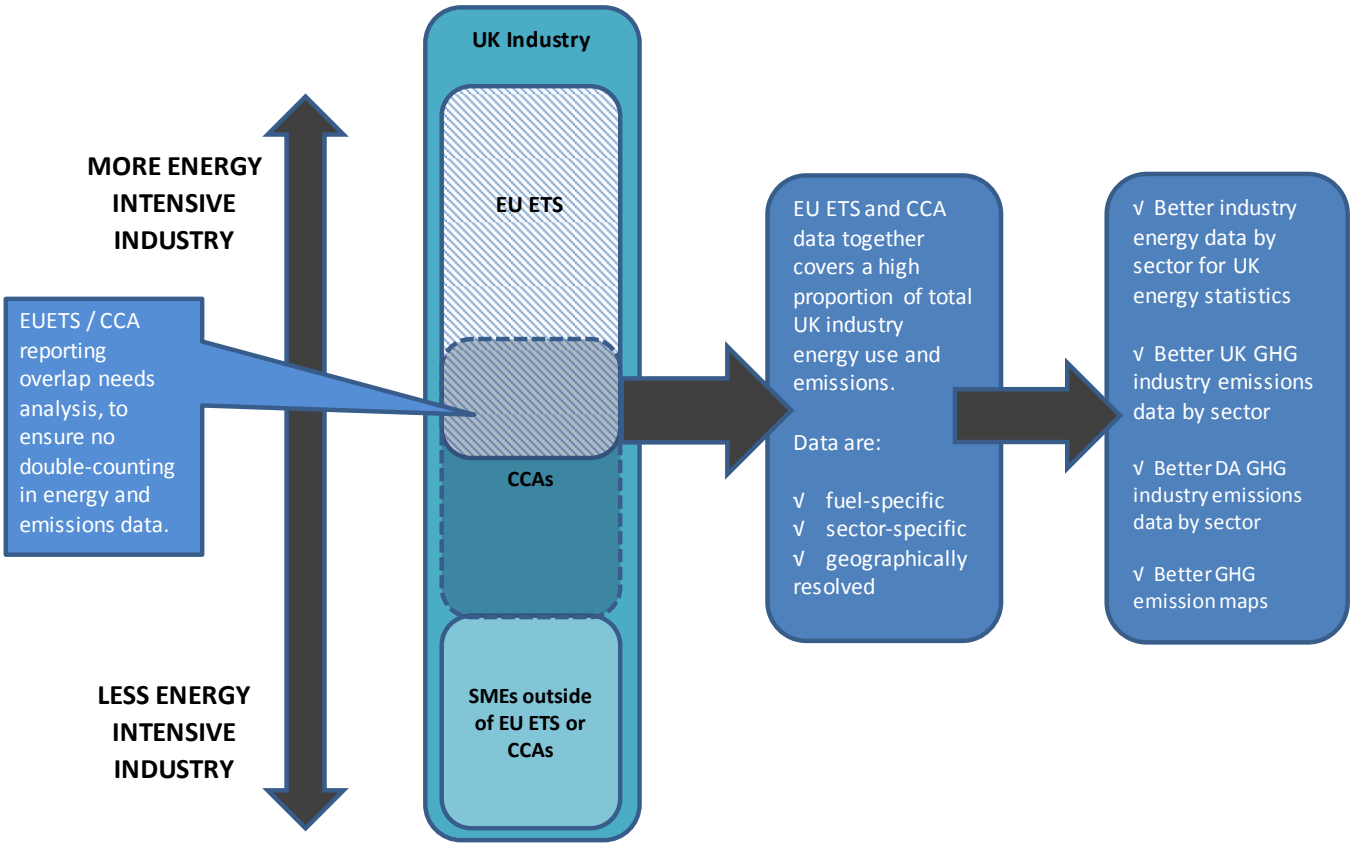
Data from the 68 sites are reported in the CCA 10, with a high degree of data aggregation evident across sites for many of the largest companies in the sector. Therefore, the geographical transparency of the data is poor.

A fuel-specific breakdown is provided for all lines in the CCA 10, covering data on electricity, gas, fuel oil, coke, kerosene, gas oil, other fuels.

These data are therefore of use in deriving UK GHGI source estimates, noting that this is a sub-set of the IPCC sector for food, drink and tobacco.

Given the high significance of this sector in DAs, and Scotland in particular, further work to request greater detail from the major operators would be needed to obtain a more complete geographical split of fuel use.

Schematic to illustrate potential usefulness of CCA Data



4.3 Scottish Housing Model

The data on Scottish Housing stock from the annual surveys are used in conjunction with the BREDEM model and information on SAP ratings from across the time series, to derive fuel-specific estimates of consumption in Scotland for 1991, 2003 onwards.

The SHCS estimates include consideration of electricity, so must be compared against the end user GHG data. Therefore, the reported trends from the SHCS analysis will differ from the text in the DA GHGI report for the sector, which are based on the by source GHGI data.

Using the 1990-2009 DA GHGI data (including end user stats) the SHCS data have been compared against the GHGI data. Since 2004, the NAEI estimates are between 5-12% lower than the SHCS data, but for 1990/91 the data are much further apart, at around 20% lower.

Comparison of Emission Estimates from the GHGI End Users and the Scottish Housing Condition Survey Estimates for the Scotland Domestic Sector ($MtCO_2$)

	1990/91	2004	2005	2006	2007	2008	2009
GHGI	15.7	14.5	14.7	14.7	14.2	14.5	13.3
SHCS	19.6	15.5	16.1	15.4	15.6	15.3	15.2
% difference	*-20%*	*-6%*	*-8%*	*-5%*	*-9%*	*-6%*	*-12%*

There appear to be systematic differences in the electricity data estimates; NAEI data use sub-national energy stats for the years that they are available (i.e. 2003 onwards), whereas SHCS data are not constrained to those data. Given that both SHCS and NAEI modelling approaches use electricity demand, it is no surprise that then there is a difference in the levels of direct fuels estimated via the two approaches. In recent years, NAEI electricity estimates are routinely much higher (25-40%) than the SHCS estimates, whereas the NAEI direct fuel estimates are routinely lower (20-30%) than the SHCS estimates.

Larger differences are evident in 1990/1991 analysis, where the NAEI electricity allocation is known to be highly uncertain as it is based on very limited data from regional electricity providers.

Differences are to be expected due to very different constraining factors. The SHCS data is a purely bottom-up analysis. The NAEI approach is (i) at the UK level constrained to DUKES fuel use totals for the residential sector, and (ii) uses the sub-national energy statistics for gas and electricity to constrain the Scottish allocations for these fuels.

It seems very likely that the SHCS data on electricity estimates provide a more reliable trend in electricity use in the sector than the NAEI data, for which the 1990 estimate is highly uncertain. We propose therefore that the SHCS trend in electricity use be used to derive a new estimate for the NAEI for electricity use in 1990. There will remain a systematic difference in the overall level of electricity and direct fuel use estimates, but this change seems a logical first step.

The input data and assumptions (e.g. housing info, SAP ratings etc.) used in the SHCS analysis will need to be compared against those used in the NAEI method (and presumably also in the CAR model for DECC), in order that the “best” data can be determined for the future DA GHGI work on domestic sector.

Annex 5 RDCO Returns Form (HO 5)

RDCO Returns Form (HO 5) – Page 1/4

HM Revenue & Customs

Return by registered dealers in controlled oils

Please read the notes below and *Notice 192* before filling in the table and Declaration on the other side of this form.

Notes

It is a condition of your approval that this return must be completed and returned to:

HMRC
Mineral Oil Reliefs Centre
BP 4002 Chillingham House
Benton Park View
Longbenton
Newcastle upon Tyne
NE98 1ZZ

within 21 days from the end of the accounting period it relates to.

Because this is a replacement form, please ensure that you complete the RDCO approval number and return period details on the pages overleaf.

If you have any general queries about how the scheme works you should contact the Excise Helpline on **0845 010 9000**.

1. You should show any supplies made to other approved registered dealers in controlled oils and all other bulk supplies at questions 3 and 4 of the return. If you use extra sheets please ensure that the boxes at the top left are completed for each sheet.
2. This return can be submitted electronically. See **www.hmrc.gov.uk** or contact the Mineral Oil Reliefs Centre for details. If you are submitting manual returns, you must sign and fill in the Declaration on the second page of this return.
3. Questions 1 and 4 differ in quantities. Fill in question 1 for **domestic supplies only**, not exceeding 3,500 litres individually or 10,000 litres in total in a year. Question 4 should be completed for domestic supplies above these amounts.
4. If calculating domestic supplies over a year for the purposes of question 1, you should use a rolling 12 month period. At the end of every month you would calculate your supplies by looking back over the previous 12 months (or less if recently approved). For example, at the end of January you would take into account your supplies from 1 February of the previous year.
5. **Question 4 - information**
   - C/D/M in column four refers to the oil delivered or collected by the customer. Enter C for collected or D for delivery as appropriate. If both apply enter M for multiple.
   - Quantity of oil in column five refers to the quantity of oil delivered in the period (litres) and declared use (insert relevant code number or numbers as appropriate).
   - Codes for oil usage are listed to the right hand side of the table.
6. The quantities shown in the following pages should be in litres rounded down to the nearest litre.

Data Protection Act 1998

How we use your information

HM Revenue & Customs (HMRC) is a Data Controller under the Data Protection Act 1998. We hold information for the purposes specified in our notification to the Information Commissioner, including the assessment and collection of tax and duties, the payment of benefits and the prevention and detection of crime, and may use this information for any of them.

We may get information about you from others, or we may give information to them. If we do, it will only be as the law permits to:

- check the accuracy of information
- prevent or detect crime
- protect public funds.

We may check information we receive about you with what is already in our records. This can include information provided by you, as well as by others, such as other government departments or agencies and overseas tax and customs authorities. We will not give information to anyone outside HMRC unless the law permits us to do so. For more information go to **www.hmrc.gov.uk** and look for *Data Protection Act* within the *Search* facility.

Your rights and obligations

Your Charter explains what you can expect from us and what we expect from you. For more information go to **www.hmrc.gov.uk/charter**

We have a range of services for people with disabilities, including guidance in Braille, audio and large print. Most of our forms are also available in large print. Please contact us on any of our phone Helplines if you need these services.

RDCO Returns Form (HO 5) – Page 2/4

RDCO approval number

For official use only

Period from Date *DD MM YY* to Date *DD MM YY*

Sheet number of

1 **Domestic supplies below de minimis (please refer to item 3 in the notes for explanation)**

	Total quantity supplied in the period (litres)	Number of customers supplied
Gas oil		
Kerosene/paraffin		

2 **Supplies made via pump or similar dispenser (includes forecourts, marinas, fuel card supplies etc)**

	Total quantity supplied in the period (litres)	Number of individual supplies made
Gas oil		
Kerosene/paraffin		

Have you made supplies to other approved RDCOs? Yes No
If Yes, please complete question 3 (HO5a)

Have you made any other supplies (bulk, domestic above de minimis)? Yes No
If Yes, please complete question 4 (HO5b)

Declaration

I

declare that the information given above and in the annexed sheets is true and complete and that the total number of sheets figure is correct.

Total number of sheets

Signed

Date *DD MM YYYY*

*Proprietor/partner/director/company secretary/duly authorised person **delete as appropriate*

Warning: there are heavy penalties for making false declarations

HO5 Page 2

RDCO Returns Form (HO 5) – Page 3/4

RDCO approval number

For official use only

Period from Date *DD MM YY* to Date *DD MM YY*

Sheet number of

3 Supplies made to other approved RDCOs

RDCO number	Total quantity supplied in the period (litres)	
	Gas oil	Kerosene/paraffin

Please ensure that you sign the Declaration even if you have no need to complete questions 1 and 2.

RDCO Returns Form (HO 5) – Page 4/

RDCO approval number

For official use only

Period from Date *DD MM YY* to Date *DD MM YY*

Sheet number of

4 All other supplies (bulk, domestic, above de minimis)

VAT number	Customer's trading name	Postcode of delivery addresses	C/D/M See *note 5*	Quantity of oil			
				Gas oil	Use	Kerosene/paraffin	Use

Use codes for oils

1 – Heating (non-domestic) including ovens
2 – Other commercial use - e.g. fork lift trucks
3 – Agricultural use (i.e. tractors etc) including forestry
4 – Transport (railways, maritime including naval establishments, docks, ports and ferry terminals, inland waterways)
5 – Local authority including council depots
6 – Auxiliary engines (refrigerated transport, cleansing lorries, fairground showmen's generators etc)
7 – Domestic - exceeding 3,500 litres per supply
8 – Domestic - exceeding 10,000 litres in a 12 month rolling period

Please ensure that you sign the Declaration even if you have no need to complete questions 1 and 2.

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