



Llywodraeth Cymru
Welsh Government

RESEARCH, DOCUMENT

Decarbonisation of industry and business (summary)

This research report contributes to setting foundations for future developments in decarbonisation of Industry and Business in Wales.

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Introduction

In 2021, Welsh Government published 'Net Zero Wales' which outlined a series of plans and policies to meet its second carbon budget.^[footnote 1] Carbon Budget 2 (2021-2025) raised ambitions for Wales and introduced a net zero 2050 target based on advice from the UK Climate Change Committee. They state that, to meet this 2050 target, Welsh Government must lay the foundation for change by developing effective policies to drive behavioural, technological, societal, and industrial change throughout the 2020s. The 2020s must be a decade for action.^[footnote 2]

As per Carbon Budget 2, Welsh Governments work on decarbonisation is split into eight sectors. Among these sectors, Industry and Business is responsible for 38.1 per cent of total Welsh emissions in 2019. To develop an effective strategy to decarbonise the Industry and Business sector and to meet its net zero 2050 obligations, Welsh Government must develop an evidential baseline from which to measure the efficacy of future policy propositions. Under the Environment Wales Act (2016) statutory progress towards net zero is measured by reference to the Green House Gas Inventory (GHGI) and in relation to established baseline years of 1990 and 1995 depending on the gas.

In December 2021, Welsh Government commissioned Miller Research to undertake research into the decarbonisation of Industry and Business. The research attempted to addresses the following research questions:

- What is the greenhouse gas (GHG) emissions baseline consensus for industry and business in Wales including:
 - What additional existing data sources could be used to improve the analysis already undertaken by Welsh Government using the National Atmospheric Emissions Inventory (NAEI)^[footnote 3]?
 - How can these additional existing sources be incorporated without additional complexity?

- How might the NAEI be expanded (for example, levels of granularity, categories included, etc.) to improve understanding of GHG emissions in relation to industry and business in Wales?

Method

The research drew on a series of scoping interviews with Welsh Government Economic Policy, Welsh Government Decarbonisation and Welsh Government Emissions Trading Scheme (ETS) staff; a desk-based exploration of the NAEI and other available data sets; interviews with key stakeholders involved in the compilation and use of the NAEI; and a workshop with Welsh Government.

Background

The UK Greenhouse Gas Inventory (UK-GHGI) is compiled annually according to the Intergovernmental Panel on Climate Change (IPCC) Guidelines and Good Practice Guidance.^[footnote 4] The Inventory Agency regularly assesses the methodology used to compile the inventory and the estimates and assumptions that underpin it to account for new data sources, updated IPCC guidance, and research sponsored by UK government departments and Devolved Administrations (DAs). Improvements to the methodology are backdated to 1990 to ensure a consistent data times series.

The UK Government is responsible for the compilation of the GHGI and the process through which the inventory is disaggregated to provide DA GHGIs. Data used in the compilation of the inventory is drawn from a wide range of sources. In Wales, a high concentration of large, emission intense industry results in a high proportion of emissions covered under the UK Emissions Trading Scheme, formerly the European Union Emissions Trading System. In

general, these emissions are well understood and have a high level of certainty. Data for other emissions come from a range of other energy statistics, most notably the Digest of UK Energy Statistics which are disaggregated to the DA level. [\[footnote 5\]](#)

Baseline for industry and business

Emissions from 'Industry and Business' in Wales includes all emissions identified in the DA-GHGI under National Communication Formats, 'Business', 'Industrial Processes' along with emissions from 'Energy Supply' that are not from public electricity and heat generation, the exact composition of emissions included in Industry and Business can be found in Appendix Four of 'Net Zero Wales'. [\[footnote 6\]](#) The total emissions for Industry and Business in Wales in 2019 was 14,832 KtCO₂e. 93 per cent of these emissions were resulting from CO₂. 37 per cent of total Industry and Business emissions resulted from IPCC code 1A2a_Iron_and_steel with a small number of other key IPCC categories responsible for large proportion of total Industry and Business emissions.

Challenges

There were a number of challenges associated with current analysis of GHG emissions and the use and potential expansion of the GHGI. These included challenges with estimating emissions at the DA level, limited granularity within the GHGI, challenges around F-gases, categorisation of emissions, emissions from on-site energy production fed back to the grid, commercial sensitivity, and emissions data presented in the GHGI compared to environmental accounts.

Recommendations

A series of key recommendations for potential expansion of the NAEI and additional data sets that can be used to aid the analysis already being undertaken by Welsh Government are included below.

Data electronification

Electronification and digitisation of granular data, particularly the UK Emissions Trading Scheme permitting documentation, to enhance its accessibility for the Welsh Government and the NAEI.

Increasing data collection

Investigate the expansion of UK Emissions Trading Scheme coverage or consider the incorporation of other data sources such as Streamlined Energy and Carbon Reporting. This will become increasingly important as large emitters decarbonise leading to a decrease in the share of traded emissions.

Survey reviews

Undertake comprehensive reviews of existing energy consumption surveys with the aim of obtaining refined and usable data on energy consumption, including auto generation. Expand use of existing communication channels between commercial and industrial sites and Welsh Government.

Increase point source data

Prioritise the use of point source data to minimise reliance on assumptions and estimations. Advocate for the installation of meters on key energetic inputs in non-ETS sites and buildings to improve emission calculation accuracy and provide bottom-up data.

Leverage additional data sources

There are a range of additional data sources which can be used to inform a comprehensive understanding of GHG emissions. Potential data sources to consider include the Building Energy Efficiency Survey, Non-Domestic National Energy Efficiency Data, Streamlined Energy and Carbon Reporting, Inventory Agency estimations for fuel use for Devolved Administrations, UK Emissions Trading Schemes permitting and reporting documentation, and UK Local Authority and regional CO₂ emissions data.

Expand the NAEI

Data within the DA-GHGI could be enriched through the introduction of a traded vs non-traded breakdown for IPCC categories and fuel estimations conducted by the Inventory Agency. Fuel use estimations are made available to Welsh Government and should be used with awareness of potential issues related to commercial sensitivities.

Investigate high-uncertainty categories

There are a number of IPCC categories with substantial uncertainty, such as '1Agviii_Other_manufacturing_industries_and_construction'. These categories

cover a wide range of emissions with relative uncertainty. Mapping of emissions within IPCC categories to SIC codes can help to clarify uncertainty. Further research can help provide better insight into the activities and emission sources with high relative uncertainty or reliance on assumptions.

Footnotes

[1] Welsh Government (2021) [Net Zero Wales](#)

[2] Welsh Government (2021) [Net Zero Wales Carbon Budget 2 \(2021 to 2025\)](#)

[3] Ricardo Energy & Environment (No Date) [National Atmospheric Emissions Inventory](#)

[4] Intergovernmental Panel on Climate Change (IPCC) (2006) [IPCC Guidelines for National Greenhouse Gas Inventories](#)

[5] Department for Business, Energy & Industrial Strategy (BEIS) (2022) [Electricity Statistics Methodology Note](#)

[6] Welsh Government (2021) [Net Zero Wales Carbon Budget 2 \(2021 to 2025\)](#)

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Views expressed in this report are those of the researchers and not necessarily those of the Welsh Government.

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