Report

Logika Local Authority Carbon Budget Tool

Methodology and User Guidance

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1 Introduction

The Logika Local Authority Carbon Budget Tool allows users to view **recommended carbon emission budgets** at the **local authority level**, up **until 2050** when net zero emissions should be achieved, in line with the Climate Change Act 2008 (2050 Target Amendment) Order 2019[1].

The Logika Carbon Budget Tool is primarily intended for users conducting **Greenhouse Gas (GHG) assessments** as part of the **Environmental Impact Assessment (EIA)** process, wishing to contextualise emissions by comparing the contribution of emissions of a proposed development or project to a net-zero aligned carbon budget for the Local Authority where the proposed development or project is located.

Until August 2025, recommended local authority carbon budgets were available from the University of Manchester Tyndall Centre for Climate Change Research[2]. The Logika Carbon Budget Tool aims to serve as a substitute for the discontinued Tyndall Centre data. However, the data provided by the Logika Carbon Budget Tool is *not* a replicate of the Tyndall Centre data. The Tyndall Centre data was produced with the primary aim of allowing Local Authorities to set carbon budgets and targets. Its use as a contextual instrument for GHG assessments in EIA was not originally considered by the Tyndall Centre, although became a widely used application as the resource is referenced in the Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA) guide to assessing GHG emissions and evaluating their significance[3].

Logika embarked on this exercise with the intention of duplicating the Tyndall Centre methodology as closely as possible. However, as the Logika Carbon Budget Tool was developed, some differing methodological decisions were taken, given the specific use case of GHG assessments in EIA. These methodological differences are detailed in Section 4 of this report.

Like the Tyndall Centre research, the carbon budgets provided by the Logika Carbon Budget Tool do not have any legislated status. However, because they are derived from the UK's legislated carbon budgets[4] and the Climate Change Committee's (CCC) Balanced Pathway, they are intended to be representative of Local Authority emissions as a sub-division of the legislated national budgets.

This report accompanies the Logika Carbon Budget Tool, and sets out:

- guidance on using the Logika Carbon Budget Tool;
- details of the methodology used to develop the recommended carbon budgets;
- a comparison with the Tyndall Centre methodology and recommended budgets; and
- ideas for future development.

[1] https://www.legislation.gov.uk/ukdsi/2019/9780111187654
[2] https://carbonbudget.manchester.ac.uk/
[3] https://www.iema.net/media/xmgpoopk/2022_iema_greenhouse_gas_guidance_eia.pdf
[4] The analysis assumes the 7th Carbon Budget as recommended by the CCC in 2025 will be adopted into legislation as expected by June 2026.

2 Using the Logika Carbon Budget Tool

The Logika Carbon Budget Tool is intended to be used in the contextualising of the GHG emissions from a proposed development or project, as part of a GHG assessment completed as part of the planning application process (for example as required by EIA Regulations[5]). The Institute of Sustainability & Environmental Professionals (ISEP, formerly IEMA) guide, Assessing Greenhouse Gas Emissions and Evaluating their Significance[3], states: "*The starting point for context is… the percentage contribution to the national or devolved administration carbon budget as advised by the CCC*."

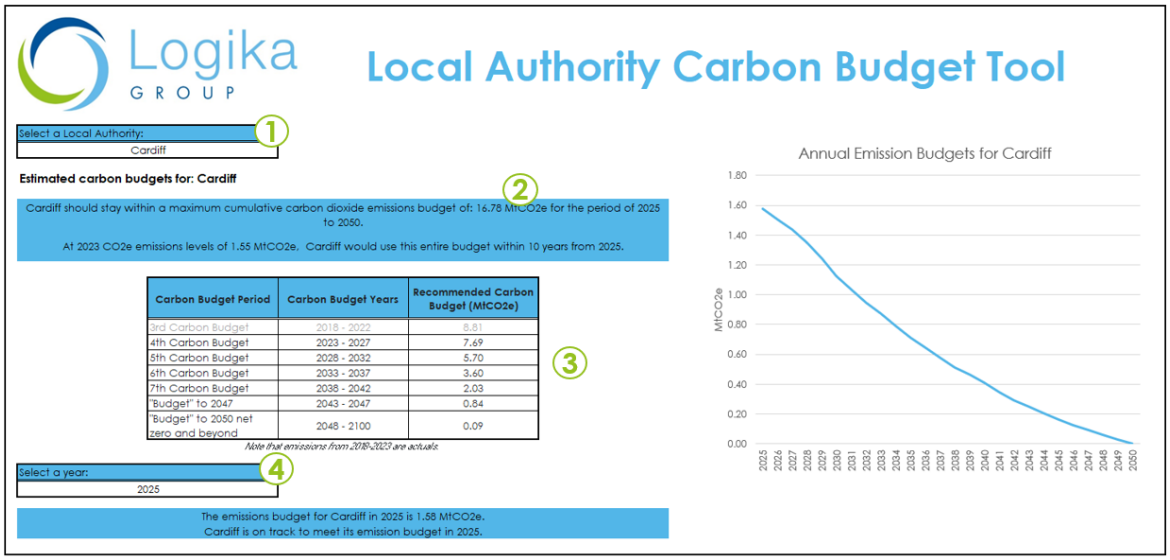
Users can select the Local Authority where the proposed development or project is located from the "Select a Local Authority" dropdown menu ("1" in Figure 1 below).

This provides the user with:

- The total recommended carbon budget for the Local Authority from 2025 to 2050 ("2"); and
- The recommended carbon budgets for the Local Authority for each of the UK's carbon budget periods ("3").

The recommended carbon budget for an individual year can also be obtained by selecting that year from the "Select a year" dropdown menu ("4").

Figure 1: Logika Carbon Budget Tool dashboard



2.1 Notes on use

This Logika Carbon Budget Tool is primarily intended to provide indicative carbon budgets for Local Authority areas for the purposes of contextualising and assessment GHG emissions as part of EIA.

Local Authorities wanting to use the Logika Carbon Budget Tool as a guide for target setting are welcome to do so. However, the Logika Carbon Budget Tool uses a five-year rolling baseline based on the DESNZ "UK local authority and regional greenhouse gas emissions statistics[6]" data set,

[5] https://www.legislation.gov.uk/uksi/2017/571/contents
[6] https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-statistics-2005-to-2023

whereas Local Authorities are likely to set single-year baselines, with emission sources and boundaries that do not fully overlap with those in the DESNZ dataset. These users are encouraged to get in touch for advice and guidance on the use of the Logika Carbon Budget Tool to their use case.

If you'd like to subscribe to get notified when the Logika Carbon Budget Tool gets updated, or if you have ideas for future additions/changes to the Logika Carbon Budget Tool, get in touch.

3 Methodology

The Logika Carbon Budget Tool is designed to:

- Assign each Local Authority a portion of the **UK's remaining carbon budget**, based on the **historic emissions profile of the Local Authority;**
- Apportion the total carbon budget for a given Local Authority on an annual basis following **the CCC's Balanced Pathway;** and
- Include **all emission sources**, and **all greenhouse gases**, that occur **geographically within the Local Authority.**

The methodology for each of the points in bold is detailed below.

3.1 UK's remaining carbon budget

The CCC 7th carbon budget report[7] sets out the UK's proposed 7th carbon budget (for the period 2038-2042) and recaps legislated carbon budgets for previous periods.

These are:

Carbon Budget	Years covered	Allowed emissions
1st Carbon Budget	2008-2012	3,018 $MtCO_2e$
2nd Carbon Budget	2013-2017	2,782 $MtCO_2e$
3rd Carbon Budget	2018-2022	2,544 $MtCO_2e$
4th Carbon Budget	2023-2027	1,950 $MtCO_2e$
5th Carbon Budget	2028-2032	1,725 $MtCO_2e$
6th Carbon Budget	2033-2037	965 $MtCO_2e$
7th Carbon Budget	2038-2042	535 $MtCO_2e$

The CCC 7th carbon budget report also sets out a "Balanced Pathway", which annualises the emissions budget for future years, up until 2050. The shape of the pathway is determined by projected decarbonisation over time, and sums to a total emissions budget for the UK from 2025 – 2050 of 4.404 $GtCO_2e$.

The Logika Carbon Budget Tool uses this value (4.404 $GtCO_2e$) as the total emissions budget for the UK.

3.2 Local Authority historic emission profiles

The Department of Energy Security and Net Zero (DESNZ) publishes the dataset "UK local authority and regional greenhouse gas emissions statistics"[6]. This dataset covers "*All emissions included in the national inventory…, except those from aviation, shipping and military transport*". The "*Territorial emissions (ktCO$_2$e)*" data from this dataset is used to determine historic emissions for each Local Authority.

The Logika Carbon Budget Tool uses the emissions from the most recent five-year period (i.e. 2019-2023) to determine the portion of the UK's remaining carbon budget that should be assigned to a given Local Authority.

It allows for the Logika Carbon Budget Tool to be updated on an annual basis as DESNZ releases new data. This means that carbon budgets for each local authority will adjust as projected future emissions are updated with actual achieved emissions over time. The implications of this are discussed in Section 3.5 below.

Total historic emissions for the UK are not the sum of the emissions in every Local Authority, due to the exclusion of aviation, shipping and military transport (which are not Local Authority specific) from this data. Historic UK emissions are taken from the CCC's 7th Carbon Budget report. The use of the same data source for both historic and future emissions assures a like-for-like approach: historic Local Authority emissions in the DESNZ data are evaluated against CCC's historic emissions data for the UK, and future carbon emissions then assigned to each local authority based on the UK's carbon budgets.

The UK's historic emissions as per the CCC's 7th budget report in 2019-2023 were 2.222 GtCO$_2$e.

Example: Cardiff

From 2019-2023, Cardiff's carbon emissions totalled 8.5 MtCO$_2$e, which represents 0.38% of the UK's emissions for this period. Cardiff's recommended carbon budgets are therefore set to 0.38% of the UK's total carbon budget, or 16.78 MtCO$_2$e for the period 2025-2050.

3.3 Balanced Pathway set by the CCC

The total carbon budget for a given Local Authority is broken down on an annual basis to match the Balanced Pathway set by the CCC. For example, the Balanced Pathway set by the CCC shows a 10% reduction in emissions from 2029-2030. Each Local Authority's own carbon budget will therefore also show a reduction of 10% from 2029-2030.

An overview of how the CCC derived the Balanced Pathway is available in Section 2.2 of the 7th carbon budget report[7].

3.4 Emission Sources and Greenhouse Gases

The CCC historical data, recommended carbon budgets and Balanced Pathway include all greenhouse gases, and all emission sources captured in the UK national GHG inventories.

The DESNZ local authority emission data includes the greenhouse gases CO$_2$, CH$_4$ and N$_2$O, and all the emissions from the UK national GHG inventories that can be assigned to Local Authorities (i.e. excluding international aviation and shipping, and military transport).

The Logika Carbon Budget Tool includes the same emission sources and greenhouse gases as those captured in the DESNZ local authority emissions data.

3.5 Implications and Justification

Any methodology will have advantages, disadvantages and implications relative to alternative methodological choices.

The Logika Carbon Budget Tool is aligned with the Climate Change Committee's 7th budget report historical data and projected carbon budgets, in order to align with ISEP guidance: "*The starting point for context is therefore the percentage contribution to the national or devolved administration carbon budget* ***as advised by the CCC***."

Other methodological assumptions adopted in the development of the Logika Carbon Budget Tool include:

- Using historic emissions data as the baseline to determine Local Authority carbon budgets;
- Using a five-year rolling average of historic emissions for the baseline; and
- Aligning the annualised trajectory on the CCC's Balanced Pathway.

Each of these assumptions and their implications are discussed below.

3.5.1 Using historic emissions to determine carbon budgets

Practically, an advantage of using historic emissions to determine carbon budgets is that a Local Authority is able to 'pick up where it left off', i.e. if the Local Authority contributed 0.5% to recent emissions in the UK, then it will also be expected to contribute 0.5% to future emissions. As the CCC's Balanced Pathway starts at the point of current actual UK emissions, there is no step change in emissions from one year to the next, and so Local Authorities can aim to decarbonise at the same rate across the whole of the UK.

However, this approach has the following limitations from the perspective of 'fairness':

- If a Local Authority has already invested heavily in decarbonisation, it doesn't get any credit for being an early leader, and still needs to continue to decarbonise at the same rate as all other Local Authorities. These Local Authorities may have already invested in the 'easy wins' making it more challenging to decarbonise in line with the Balanced Pathway.
- Conversely, a Local Authority that has not invested in decarbonisation may have a larger starting point, and therefore larger carbon budgets, which may be easier to achieve through 'easy wins' already implemented by other authorities.
- A 'fairer' approach could be to base the carbon budgets on, for example, the population or economic output of the Local Authority, so that each individual, or each unit of economic activity, is given an equal share of the UK's remaining carbon budget. However, these approaches ignore the current emissions profile of a Local Authority and would require authorities with high per capita or per pound sterling emissions to immediately decarbonise at a rate that may not be feasible within the timeframes required. It also has limitations in accounting for population and economic growth which will not be linear across all UK Local Authorities.
- Historic emissions were chosen because they are simple to understand and capture the realities of the current emission levels of a Local Authority, however, future development of the Logika Carbon Budget Tool could involve a sensitivity analysis against a population and/or economic (or other) approach (see Section 5).

3.5.2 Five-year rolling average of historic emissions

The most recent five-year period where historic data is available (2019-2023) was chosen to serve as the basis for determining the contribution of the Local Authority to future carbon budgets. Taking a five-year average smooths any one-off events or changes that may occur in a single year and that aren't representative of the general emissions profile of the Local Authority. This means that Local Authorities that have rapidly decarbonised over the five-year period may have a five-year average contribution to the UK's total emissions that is lower than their current contribution (i.e. this rewards Local Authorities taking early action and puts them on track or ahead of the curve in terms of meeting near term budgets).

For example, Recar and Cleveland contributed 0.3% to UK emissions between 2019 and 2023, but only 0.21% in 2023. The five-year average of 0.3% is used to set the contribution to the Balanced Pathway, but since Redcar and Cleveland have already decarbonised to only contribute 0.21%, they are already on track to meet their budgets until 2030.

The intention is to update the five-year average with the latest data on an annual basis as it is released by DESNZ. Practically, this means that carbon budgets for a Local Authority will change slightly, depending on when the Logika Carbon Budget Tool is accessed. In this case, the carbon budgets set via the 2019-2023 baseline will remain accessible within the tool, but can be updated with the 2020-2024 baseline. This balances keeping the data and budgets up-to-date, whilst retaining access to previous data to create a times series for reference.

3.5.3 Aligning annualised trajectory with the CCC's Balanced Pathway

Aligning the annualised trajectory of emissions for all Local Authorities is a one-size-fits-all approach, and gives no consideration for future plans or projections in the Local Authority, including potential changes such as population and economic growth or degrowth that is above or below the national average.

The advantages of a single approach for all Local Authorities are around simplicity and clarity, while incorporating individual differences, especially when those differences are around future projections that may or may not be realised, will introduce complexity, while not necessarily improving accuracy or certainty. Potential future development of the Logika Carbon Budget Tool could allow for some scenarios to inform carbon budgets, such as projected changes in population, industry or economic activity.

4 Comparison with Tyndall Centre Budgets

Due to differences in methodology and data sources, the carbon budgets presented in the Logika Carbon Budget Tool differ to those calculated by the Tyndall Centre[2].

These methodological differences exist primarily due to the different use cases guiding the two approaches. The aim of the Tyndall Centre research was to allow Local Authorities to set emission targets and budgets. Over time, a large use case was established for contextualising GHG emissions as part of EIA assessments. The discontinuation of the Tyndall Centre carbon budgets is an opportunity for a tool developed with the specific EIA use case in mind.

The methodology differences are:

	Logika Carbon Budget Tool	**Tyndall Centre research**
Total UK emission budget	Aligns with the Climate Change Committee's (CCC) recommended and UK Government legislated carbon budgets[7]	Internally derived based on IPCC AR5 guidance and stricter interpretation of likelihood of 2° of warming than CCC assumptions
Shape of emissions pathway	Aligns with the CCC's 7th carbon budget Balanced Pathway for the UK.	Fixed annual percentage reduction.
Included GHGs	CO_2, CH_4, N_2O	CO_2
Included emission sources	All emissions geographically occurring within the Local Authority.	Excludes emissions from LULUCF[8], and process emissions from cement.
Local Authority share of UK emission budgets	Determined based on historical emissions	Determined based on numerical average of: - historical emissions - population - economic activity
Emissions baseline period	2019-2023 (to be updated annually on a rolling five-year basis)	2010-2015
Zero emissions achieved	2050	2100 (residual emissions remain after 2050, which can't be offset by LULUCF as excluded from budgets)

[7] https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf
[8] Land Use, Land Use Change and Forestry

The alignment of the Logika Carbon Budget Tool with the CCC carbon budgets and Balanced Pathway mean that the carbon budgets for a given Local Authority in the Logika Carbon Budget Tool will generally be larger than those provided by the Tyndall Centre.

The Tyndall Centre's approach to developing Local Authority carbon budgets is set out in their methodology report[9] and is based on more rapid decarbonisation that required by the UK's adopted carbon budgets and CCC's Balanced Pathway (see in particular Box 2). The Tyndall Centre states that their approach "*offers a much better probability of the UK delivering on its fair contribution to the Paris 2°C commitment (i.e. a smaller carbon budget) than that posited by the CCC and adopted by Government (i.e. a larger carbon budget)*". The Tyndall Centre's research was conducted before the publication of the CCC's sixth budget report. The CCC notes[10]: "*The steep reduction between the Fifth and Sixth Carbon Budgets is due to the fact that the Sixth Carbon Budget is the first set in line with Net Zero. The Fourth and Fifth Carbon Budgets were set on a trajectory to the previous 80% target. These carbon budgets will therefore need to be overperformed in order to be on a sensible path to Net Zero.*" Note that despite the large reduction from the sixth carbon budget by the CCC, the total carbon budgets for the UK remain higher than those determined by the Tyndall Centre research.

Example: Camden

Carbon Budget Period	Tyndall Centre Carbon Budget (Mt CO_2)	Logika Carbon Budget Tool (Mt CO_2e)
2018 - 2022	4.3	5.6
2023 - 2027	2.4	4.8
2028 - 2032	1.3	3.6
2033 - 2037	0.7	2.3
2038 - 2042	0.4	1.3
2043 - 2047	0.2	0.5
2048 – 2100	0.2	0.1

Camden contributed an average of 0.28% to the UK's emissions in 2010-215 (Tyndall Centre historic period), which reduced to 0.24% in 2019-2023. Nonetheless, Camden's carbon budgets in the Logika Carbon Budget Tool are larger than in the Tyndall Centre's results, primarily due to the different total carbon budget for the UK in the two approaches. Note that in the final budget period (2048-2100) the Logika Carbon Budget Tool has a lower budget, as net zero is hit in 2050, and LULUCF can be used to offset residual emissions.

[9] https://pure.manchester.ac.uk/ws/portalfiles/portal/83000155/Tyndall_Quantifying_Paris_for_Manchester_Report_FINAL_PUBLISHED_rev1.pdf
[10] Page 34 of the 7th budget report: https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf

If methane (CH_4) and nitrous oxide (N_2O) are excluded from the Logika Carbon Budget Tool results to aid comparability, the Logika Carbon Budget Tool budgets would reduce by around 2.4%. Removing LULUCF would reduce them by a further 2.5%. The DESNZ Local Authority GHG emissions dataset does not identify concrete as a separate emissions source, so it is not possible to easily remove this from Camden's historical emissions. Nonetheless, the dominant determinant of the differences of the two approaches remains size of the remaining carbon budget for the UK (i.e. the Logika Carbon Budget Tool aligned with UK carbon budgets and CCC's Balanced Pathway vs Tyndall Centre budgets aligned to an independently determined budget and pathway for the UK).

5 Future Development

This methodology and user guidance report has identified areas for future development of the Logika Carbon Budget Tool, to improve its use as a contextualisation tool within GHG assessment in EIA, as well as to expand its use to other use cases. These potential development areas include:

- Using historic population, economics or other factors to help inform a Local Authority's share of future carbon budgets;
- Using changes in population, industry, economics or other factors to inform a Local Authority's share of future carbon budgets; and
- Enabling Local Authorities to use the Logika Carbon Budget Tool to set targets and budgets (involving the ability to set a fixed year baseline).

Other potential development ideas include:

- Providing carbon budgets at aggregated level, for example by County, Region or Country.

If you have other use cases, or ideas for developing or improving this Logika Carbon Budget Tool within the context of improving useability/applicability for EIAs, please get in touch. Your feedback will help inform the direction of future investment in this tool.

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