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Guidance on Catholic diocesan carbon accounting



Report prepared by the Guardians of Creation Project
for the Catholic Church in the UK

The Guardians of Creation Project

This document is one of five reports in a suite of guidance and analysis issued by the Guardians of Creation Project for developing transformational responses to the ecological crisis in Catholic dioceses. Each of the five reports deals with a separate element of the diocesan response to the ecological crisis.

The first report, ***Guidance on developing strategy for decarbonising Catholic diocesan building stocks***, gives advice on formulating and implementing a strategy in the diocese for reducing the carbon footprint of the diocese's buildings.

The second report, ***Guidance on Catholic diocesan carbon accounting***, gives advice on measuring, understanding, and reporting the diocese's carbon footprint.

The third report, ***Developing whole-school approaches to sustainability in Catholic education***, gives advice on formulating and implementing school-level and diocese-level strategies for responding to the ecological crisis through Catholic education.

The fourth report, ***Educating and empowering Laudato Si' Champions in Catholic education***, offers a template approach to delivering teaching and learning around Catholic responses to the ecological crisis in secondary schools.

The fifth report, ***Understanding Catholic parishioners' responses to the ecological crisis***, investigates the experiences, beliefs, and behaviours of Catholic parishioners in their own responses to the ecological crisis.

The Guardians of Creation project has been developed collaboratively with the Diocese of Salford as a pilot study for England and Wales. The principal participating institutions are the Diocese of Salford, St Mary's University, and the Laudato Si' Research Institute at Campion Hall, University of Oxford.



Guidance on Catholic diocesan carbon accounting
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Contents

1. Introduction.....	4
1.1 Executive summary	4
1.2 Why measure?.....	5
1.2.1 Management accounting	6
1.2.2 Reporting and communication	6
1.3 A common approach for the Catholic Church in England and Wales.....	7
2. Determine rationale	7
3. Determine boundaries	9
3.1 Boundary approach A: contractual responsibility for personnel	10
3.2 Boundary approach B: majority property ownership.....	10
3.3 Boundary approach C: complete property ownership	11
4. Determine scope	11
5. Determine net zero target.....	15
5.1 Target approach A: Net Zero 2030 target	17
5.2 Target approach B: UK Government aligned target	17
5.3 Target approach C: Local authority aligned science-based target.....	18
5.4 Considerations for target setting.....	18
6. Collect data.....	20
6.1 Energy and fuel use in buildings	20
6.2 Staff travel.....	23
7. Analyse data.....	24
7.1 Setting a baseline	24
7.1.1 What is a baseline?	24
7.1.2 Applying conversion factors	25
7.1.3 Using the data to inform interventions.....	29
7.2 Dealing with missing data	30
7.2.1 Buildings.....	30
Report Authors	31
Recognitions.....	31

1. Introduction

1.1 Executive summary

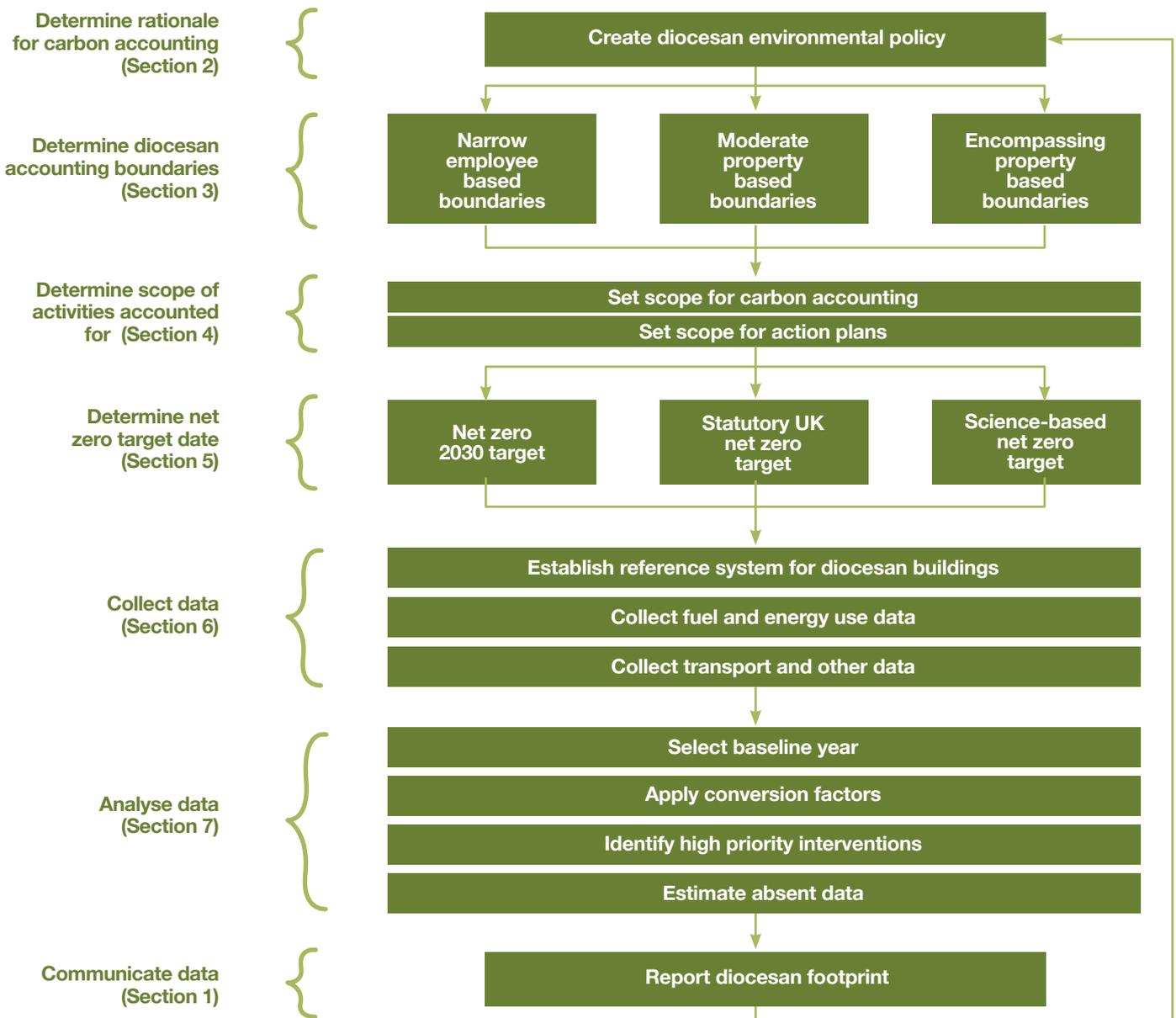
In responding to the ecological crisis, nations, institutions and organisations across the globe are forming plans and taking action to mitigate the carbon emissions for which they are responsible. With the publication of *Laudato Si'* the Catholic Church has already taken a position of symbolic leadership on the ecological crisis. Through Pope Francis' message, and many other commitments that have been made by and within the Church, care for our common home has become of great importance to many Catholics and Catholic organisations.

This guidance provides Catholic dioceses with the necessary understanding to begin accounting for their carbon emissions. It details a comprehensive step-by-step process that can be followed by any diocese. Each element of the process is accompanied by an explanation of how to approach that element in a way that reflects the particular situation of the implementing diocese. The guidance

is principally intended for use by dioceses in the United Kingdom, and some of the substance of the report will only apply in this context. However, dioceses outside the UK will also find the process useful, but should bear in mind that some of the institutional and legal specifics that this report refers to will differ in their national contexts.

Carbon accounting alone is not enough to respond to the climate and ecological crises, and must be framed within a wider programme of action and understanding if it is to succeed in mitigating our contribution to these crises. This guidance follows from, and draws on the first report issued by the Guardians of Creation project, *Guidance on developing strategy for decarbonising Catholic diocesan building stocks*, which deals substantively with the development of plans and the taking of action for diocesan decarbonisation. If the reader has not already engaged with the first report we encourage them to do so before engaging with this one.

This method for diocesan carbon accounting was developed during a pilot project in the Diocese of Salford. Despite being piloted in a particular diocese the process has been designed to be applicable to any diocese, and to allow for some degree of consistency and comparability in the carbon accounts of all adopting dioceses.



When the carbon accounting process proposed in this report was applied to the Diocese of Salford it was estimated that the operational energy use of the diocese's building stock is responsible for approximately 25,000 tonnes of carbon dioxide emissions annually. Although the Diocese of Salford is a relatively large diocese, if one illustratively takes the Diocese of Salford as a typical diocese in terms of its emissions, then this would mean that the total carbon footprint of the 36 Catholic dioceses that are contained partly or entirely within the UK would be nearing 1,000,000 tonnes of carbon dioxide emissions annually. If one were to include indirect emissions in this total number then Catholic diocesan emission in the UK would very likely greatly exceed 1,000,000 tonnes.

This figure might strike the reader as a large contribution to climate change. It is in fact at the scale of the terrestrial carbon emissions of some smaller nation states. For example, in 2019 the country of Eritrea produced 727,000 tonnes of carbon dioxide from all its national energy generation and cement production combined.¹ As such, the total terrestrial contribution of the nation of Eritrea for the year 2019 is likely to be less than the emissions produced from just operating Catholic owned buildings in the UK in the same year.

This guidance now proceeds in seven sections. After a discussion of why a diocese might be motivated to begin carbon accounting in the introduction, each subsequent section deals with one major element in the diocesan carbon accounting process. The figure below represents the entire diocesan carbon accounting process, along with reference to which of the report's sections deals with each element in detail.

1.2 Why measure?

We begin this report with a short investigation of the question 'why would a Catholic diocese want to measure its carbon footprint in the first place?' There are several constructive answers to this question. The first, and most important answer to this question is that the Bishops' Conference of England and Wales passed a resolution in the Autumn Plenary of 2022, asking that all dioceses establish a methodology for carbon accounting, and declare their targets for decarbonisation. The precise wording of the resolution was as follows:

“The Bishops' Conference asks dioceses of the Catholic Church in England and Wales to declare target dates for a stated reduction of carbon emissions or report on how close they are to having the information necessary to set such a target. These may be informed by the current research undertaken by the project Guardians of Creation.”²

The resolution also stated that progress against these targets will be reported on by the bishops in the coming assemblies. Naturally, dioceses have no obligation to engage with the Guardians of Creation Project outputs as part of this process. However, as these documents have been prepared specifically for the benefit of Catholic dioceses undertaking the processes of decarbonisation, dioceses may find that Guardians of Creation Project guidance is a good place to start. We point to additional resources and approaches to decarbonisation in all our outputs, and hope that for many readers, these documents are just the beginning of a decarbonisation strategy developed by, and for, each diocese individually.

Some, but not all Catholic dioceses in the UK are legally obliged to report some of their carbon emissions. The principal mechanism through which organisations are required to disclose mandatory carbon accounting information in the UK is called Streamlined Energy and Carbon Reporting (SECR). SECR is an annual greenhouse gas emissions and energy use disclosure that applies to 'large' organisations, which SECR defines as organisations which satisfy any two of the following three conditions:³ gross income exceeding £36 million, 250 or more employees, and/or balance sheet assets of £18 million or more.⁴ Dioceses which meet the threshold for SECR are obliged to include their carbon accounts in the directors' report element of their annual report. In particular, they are obliged to disclose the diocese's emissions from energy use, gas use, and fleet activity. They are also required to disclose the method for how this data was collected and method for converting the collected data into emissions figures.

All dioceses in the UK, including those in Scotland and Northern Ireland, should check themselves against these three criteria. Dioceses doing so should note that subsidiary income, employees and assets can be excluded when determining whether an organisation satisfies the criteria, provided that any subsidiaries are not so large that they would be obliged to account for themselves independently of their parent organisation according to the same criteria. On the advice of the diocesan financial secretaries, we estimate that approximately one quarter of the dioceses in England and Wales qualify for mandatory disclosure via SECR.⁵ Dioceses that do need to disclose via SECR will find everything that they need to develop a carbon accounting process for complying with SECR in this report.

For dioceses that do not meet the threshold for SECR, there is usually no common law regulatory motivation for them to disclose their emissions in their annual reports or elsewhere. As such, before one of these dioceses sets out on its voluntary carbon accounting journey for the first time we encourage the diocese to reflect on what its motivation for doing so might be, and what the diocese hopes to achieve as a result. Saliently, because general measures for decarbonising the built environment are already well understood, it is entirely possible for a diocese to make significant progress in decarbonisation without ever undertaking a systematic carbon accounting exercise for the whole diocese. In our first report, **Guidance on developing strategy for decarbonising Catholic diocesan building stocks**, we explore how a diocese can plan for decarbonisation, and take practical action on decarbonisation in detail. Motivated dioceses should begin by considering the recommendations of that report before considering any of the recommendations of this report.

1 H. Ritchie and M. Roser (2020), CO₂ and Greenhouse Gas Emissions

2 See <https://www.cbcew.org.uk/environment-plenary-resolutions-autumn-2022/>

3 Priests will normally be engaged by a diocese as ecclesiastical office holders. Unless a priest is also engaged via a contract of employment they should not count toward the employee threshold for SECR.

4 UK Government (2019), Environmental Reporting Guidelines: Including Streamlined Energy and Carbon Reporting Requirements. See also Education and Skills Funding Agency (2021), Guidance: Streamlined Energy and Carbon Reporting.

5 Dioceses of similar or larger size to those required to submit disclosures via SECR may also be required to submit energy information to the Energy Savings Opportunity Scheme (ESOS), see UK Government (2021), Energy Savings Opportunity Scheme. As such, if a diocese has submitted to ESOS in the past, then it is highly likely that it will be obliged to disclose via SECR as well.

Even though significant progress in decarbonisation can be made in a diocese without implementing a carbon accounting process there are a variety of strategic motivations that should lead a diocese to engage in carbon accounting. Below, we discuss the role that carbon accounting can play in informing decision making as part of **management accounting**, and the role that it can play in the **reporting and communication** of the diocese's ethical and ecological position.

1.2.1 Management accounting

We anticipate that many dioceses that choose to begin carbon accounting will do so as a kind of management accounting, i.e., accounting for the purpose of informing the diocese's decision making, and decisions about diocesan decarbonisation in particular. However, the ways in which emissions information can be used to inform decision making ranges from the general to the highly specific. As an illustration, consider the level of information required by a diocese that wants a general understanding of which buildings in its portfolio are the biggest overall users of energy as a broad guide for informing some relatively easy and impactful building fabric or systems interventions like insulation installation or smart heating controls. Such a diocese might only need annual fuel use data for the buildings in its building stock. Compare this level of information that this use case might require, against the level of information required to create a detailed carbon management plan for all aspects of the organisation, which might include fuel and energy use in buildings, transport emissions, emissions from investments, the embodied carbon of materials procured by the diocese, the emissions associated with waste disposal, and so on.⁶ There is also variety in the scale and specificity of data that a diocese can collect.

In this guidance we introduce and recommend a method which we deem to be sufficiently fine grained to facilitate the setting of a net zero target, whilst providing information to the diocese which will help it make decisions about specific buildings and operations that require intervention on the way to its net zero target. Along with the process for determining interventions described in **Guidance on developing strategy for decarbonising Catholic diocesan building stocks**, this carbon accounting method should be sufficient for any diocese in the UK to establish an informed decision process that takes the diocese to net zero by the date chosen by the diocese.

1.2.2 Reporting and communication

The other principal motivation for organisations to engage in carbon accounting is so that the organisation can report its carbon emissions. This might be to wider audiences for the purpose of disclosure or recognition, or self-reporting for the purpose of tracking progress towards climate and sustainability commitments. Example audiences might include parishioners, school communities, trustees, clergy, other dioceses and faith-based organisations, and civil society more broadly. In the case of SECR as described above, this reporting would take the form of a legally required disclosure to the government and the public in the diocese's annual report. However, even when there is no legal obligation to disclose carbon emissions, organisations are often

motivated to participate in discretionary forms of reporting for both intrinsic and instrumental benefits. For example, global reporting institutions like the Carbon Disclosure Project and the Global Reporting Initiative have provided public platforms and repositories for voluntary disclosures for many years. Thousands of companies and public sector organisations disclose via these institutions on the understanding that voluntary disclosure accelerates decarbonisation by helping the disclosing organisation to motivate employees, achieve recognition for its efforts, and hold itself accountable to its stated ambitions.⁷

We have seen that disclosure is becoming an increasingly important motivation for Catholic dioceses engaging in carbon accounting. Between the distribution of the first and second versions of this guidance, some dioceses have begun to disclose their carbon footprint in their annual report. There are already several groups of stakeholders to whom a diocese may be motivated to disclose. The diocesan **trustees** and **parishioners** may be particularly important groups, especially where either group has been exerting pressure on a diocese to improve its ecological performance. The wider Catholic Church is another important audience. Regionally and nationally, dioceses may find that disclosing their carbon footprints to **other dioceses** and to the relevant **Conference of Bishops** helps to further develop the already supportive decarbonisation community emerging in the Catholic Church in the UK. Decarbonisation is also a topic where there is a great degree of convergence between faith groups and civil society; caring for our common home is a matter of the common good. Being part of the conversation at the **local government** level through reporting the diocese's carbon footprint not only means a greater awareness of local support for decarbonisation initiatives, but it also means that faith voices are present in discussions to ensure greater emphasis on the 'just' transition to a more sustainable world.

In the recent 'Laudato Si' Invitations, Commitments and Actions' document from the Diocese of Brentwood,⁸ the example is made that when you realise that 45,000 people go to Mass every week in the diocese, assume perhaps half by car and that a round trip is perhaps 4 miles, potentially 3.5 million miles are driven every year to go to Mass in one diocese. Having this understanding makes it easier to communicate the problem and understand the power of collective action. One person walking, cycling, or taking the bus instead of driving might feel insignificant, but the impact of 45,000 could be vast. Let us assume that all these cars are small family cars, with nationally representative proportions running on electric, diesel, and petrol. We can multiply the estimated 3.5 million miles driven by the standard UK government emissions conversion factors to learn that the parishioners of Brentwood could be responsible for around 896 tonnes of carbon dioxide emissions annually, just by going to Mass. The accounting process can help develop this kind of understanding, articulate progress more clearly, and inspire action as a result. In section 7 we explain how to do calculations like this for your own diocese.

6 For a detailed explanation of the range of possible emissions producing activities that can be accounted for see the Greenhouse Gas Protocol (2011), Corporate Value Chain (Scope 3) Standard

7 Carbon Disclosure Project (2021), Why disclose as a company?

8 Diocese of Brentwood (2021), Laudato Si' Invitations, Commitments and Actions

1.3 A common approach for the Catholic Church in England and Wales

At the time of writing, the authors of this report understand that it is the position of the Catholic Bishops' Conference of England and Wales (CBCEW) that individual dioceses are responsible for developing their own approaches to, and targets for decarbonisation. However, during the research process the authors also observed that many managers within diocesan curia wish to develop an approach that enables a level of consistency, and comparability between dioceses.

This report provides some level of optionality for dioceses engaging in carbon accounting. We think this is important, as there are many variables between dioceses that would make an entirely inflexible carbon accounting method difficult or impossible to adopt across the entire Catholic Church in England and Wales let alone the UK. Instead, we now offer six methodological principles for consistent carbon accounting across the Catholic Church in the UK, which all dioceses can adopt, regardless of situation. However, by adhering to the six principles we introduce below, dioceses will also be able to develop comparable, and aggregable carbon accounts for the Catholic Church as a whole in the UK.

The fundamental principles of this approach, which all dioceses engaged in carbon accounting should take all possible steps to adopt are as follows:

1. Dioceses should formalise an environmental policy prior to, or during the carbon accounting process (see section 2)
2. Dioceses should use property ownership to determine the organisational boundaries of the diocese for carbon accounting, or should be able to provide a justification where not doing so (see section 3)
3. In determining the scope of the carbon accounting process, dioceses must account for operational fuel and energy use in buildings as a minimum (see section 4)
4. Dioceses should be able to articulate mitigation plans for all other major emissions producing activities that are not treated as within scope (see section 4)
5. Dioceses must report both location-based, and market-based emissions,⁹ as per the stipulations of the Greenhouse Gas Protocol,¹⁰ regardless of how the diocesan net zero target is calculated (see section 7)

⁹ The difference between these two approaches to accounting is explained at length in a text box in section 7. The essence of the difference is that location-based accounting infers an organisation's carbon emissions from the energy it uses, whereas market-based accounting infers an organisation's carbon emissions from the energy that it pays for. Consequently, in market-based calculations, economic instruments that are bought by some energy providers, which nominally reduce the carbon intensiveness of their products, can also be incorporated into the organisation's footprint calculation. These instruments are controversial, however, hence the Greenhouse Gas Protocol's requirement that a market-based calculation is supplemented by a calculation based on the energy an organisation actually uses.

¹⁰ Greenhouse Gas Protocol (2015), A Corporate Accounting and Reporting Standard

6. When reporting their carbon accounts, dioceses must clearly communicate their approach to determining boundary, scope and analysis (see sections 4, 5, and 7)

One element of carbon accounting that is not included in the principles above is the setting of a target date for achieving net zero. In section 5 we outline three approaches to setting a net zero target date, all of which might be suitable for different dioceses. As we discuss in section 5, a net zero target date is a function of the comprehensiveness of an organisation's measurement approach as much as it is its ambition. The quality of a target, therefore, does not lie in the net zero date specified, but rather in the relationship between the date specified, what is being counted, and the willingness of an organisation to take the action necessary to hit that target. For this reason, this report does not take a single position on appropriate dates for net zero targets, instead offering a range of options that will suit different dioceses.

Having said this, the UK does have a legally binding target date of 2050 for complete decarbonisation and a legally binding interim target of 78% emissions reductions by 2035. As a minimum, a diocese should align to these targets. Please see the introductory section of *Guidance on developing strategy for decarbonising diocesan building stocks* for an exploration of what alignment to the wider UK decarbonisation process might look like in practice, and section 5 of this report for how to set targets that align to the UK's legally binding carbon budget.

Although we take an agnostic position on net zero target dates themselves, this must not be mistaken for a rejection of the widely accepted understanding that immediate action on reducing carbon emissions to zero is needed to avert catastrophic temperature rises. On the contrary, it is precisely because of the often poorly understood contingency and relativity of net zero targets, and the ease with which climate inaction can be inadvertently or intentionally obfuscated in the 'small print' of these targets, that we place less emphasis on net zero target dates than the process of carbon accounting itself in this methodology.

2. Determine rationale

The first step in our methodology is for the diocese to establish why it intends to begin a carbon accounting exercise. Even within the parameters of our methodology dioceses will have to make several choices about how to conduct their carbon accounting process. These choices will include deciding on **which organisations count as the 'diocese' for the purpose of accounting** (section 3), **what emissions producing activities should be accounted for** (section 4), and **what emissions pathway, or net zero target date to adopt** (section 5). Dioceses will be able to take a much more informed stance on how to approach these questions if they understand what the objectives of their carbon accounting exercises are before beginning.

In the introductory section above we offered some indicative rationales that a diocese may be able to draw on. However, these general motivations will certainly need refinement in the context of any given diocese, with objectives and features particular to that diocese. We therefore advocate that any carbon accounting

exercise undertaken in a diocese be undertaken in the context of an existing **environmental policy**, or during the development of one. Many dioceses in England in Wales have completed, or are in the process of completing an environmental policy or environmental strategy. Environmental policies help to give direction and structure to the ecological activity of a diocese, as well as build consensus in the process of their preparation. For more information on developing environmental policy for the diocese please refer to our first report, **Guidance on developing strategy for decarbonising Catholic diocesan building stocks**.

We advocate that when a diocese begins to determine and refine its environmental policy, and the entailed rationales for engaging in a carbon accounting process, it does so in a way that is inclusive of groups both inside the diocese and beyond. We encourage dialogue with stakeholders such as multi-academy trusts, parishioner groups, charities associated with the diocese, and local authorities. This might involve a workshop, or series of workshops with the interested parties, designed to arrive at a consensus on whether and why the diocese should measure its carbon footprint.

Dioceses are not limited to creating high level environmental policies in their decarbonisation planning. With outside support, dioceses can also develop more comprehensive and prescriptive carbon management plans. Churchmarketplace Ltd. (CMP) were established by CBCEW as the official buying group for the church in England and Wales. Through collective buying CMP are able to negotiate better prices, generate economies of scale, and apply the ethical standards of the Catholic Church to its supply chains. As well as providing access to suppliers that can help with the technical elements of decarbonisation like energy surveys and the installation of renewable technology, CMP also have approved suppliers that can help dioceses refine their environmental strategy. This could include developing carbon management plans with dioceses, or developing detailed technical plans for linking estate development, fundraising and decarbonisation. We encourage dioceses to contact CMP if they wish to procure technical services associated with decarbonisation like energy surveys and renewable technology, however dioceses seeking to develop detailed strategies for decarbonisation may also benefit from engaging with CMP's approved suppliers.

Many local authorities and combined authorities across the UK have set ambitious carbon targets. As dioceses set their own carbon targets and start to develop their own decarbonisation paths and environmental activities, there may be opportunity for faith communities to work in partnership with local and regional actions and programmes. There may be opportunity to support their targets, or where there is little action, to hold local or regional bodies accountable to their ambitious targets. Where there are no targets, or less ambitious targets, there may be the opportunity to influence local authorities to set carbon targets that ensure more urgent action. Furthermore, approaching this with other faiths, as an interfaith response, opens wider opportunity as one voice works across a locality or region in collaboration. Faiths can come together with local and regional bodies to engage their different communities and build on existing initiatives or action. For example, the Diocese of Salford has convened a Greater Manchester Combined Authority and Interfaith Climate Group that aims to support Greater Manchester's 5-year environment plan alongside environment and social action across the faith communities.

Thoughts on rationale from Catholic Social Teaching

Laudato Si' calls on the Church to set an example of ecological virtue (para 88, 211, 217, 224),¹¹ based on the virtue scheme of St Thomas Aquinas as reflected in the Catechism (para 1803-45). The virtue of prudence asks us to act with 'right reason in action,' to act having carefully discerned the path leading to the common good. However, the Catechism specifically states that the virtue of prudence 'is not to be confused with timidity or fear' (para 1806). Prudence may also be defined as 'practical wisdom'. Aquinas also writes that 'if a running horse be blind, the faster it runs the more heavily will it fall, and the more grievously will it be hurt.'¹² This 'precautionary' phrase suggests that as humanity is hurtling toward abrupt climate change, as is clear from changes that we are already seeing, we should do all we can to slow down the speed with which we arrive at this particular fall. The gospels, Aquinas and the Catechism do not support the taking of risks that are already harming 'the least of our brothers and sisters' (Matt 25:40), let alone where this is only for the accumulation of material wealth and comfort to those who are already comfortable. The risks of changing how we operate, in full knowledge of the moral and scientific reasoning for change, are much smaller than the risk of harm to our global brothers and sisters from business as usual.¹³

Every kilogramme of greenhouse gas slightly increases the speed of humanity's approach to our climate fall, so we should strain our communal efforts to put Laudato Si' into practice in the hope of encouraging common humanity in this task. The Catholic church in the UK is responsible for the running of tens of thousands of properties nationwide, all of which require energy to heat and cool, and all of which require materials bought for their everyday use, so our collective footprint is significant. St Theresa's Little Way of doing small things with great love helps each of us at an individual level, but communally we can continue to do and inspire great change. One can see expressions of this in CAFOD's 'Live Simply' or Interdiocesan Fuel Management Ltd.'s (IFM) collective energy buying, alongside myriad other acts of love for our neighbour and care of creation.¹⁴

- 11 See also <https://catholicthought.org.uk/ecological-virtue/>
- 12 Aquinas (1485), Summa Theologica
- 13 Pope Francis (2015), Laudato Si'
- 14 Please see also Laudato Si' Research Institute (2021), Caring for our Common Home in the Church and Beyond: Theological Foundations for a Comprehensive Decarbonisation Strategy in the Catholic Diocese

3. Determine boundaries

Once a diocese is comfortable with its rationale for carbon accounting, ideally through the formalisation of an environmental policy or decarbonisation strategy for its building stock, a diocese must begin the fundamental exercise of defining the boundaries of the organisation. The boundaries should be drawn in a way that reflects the objectives of the rationale and policy, hence should follow from a policy setting process where possible. For the purpose of carbon accounting, determining the boundaries of the diocese means determining which entities count as inside the organisation, and which entities do not, for the purpose of carbon accounting. Carbon emissions associated with entities deemed to be within the boundaries are accounted for, calculated, and reported as being attributable to the diocese. Carbon emissions associated with entities deemed to be outside the boundaries of the organisation are not. Determining which entities should be accounted for is not the same as determining what emissions producing activities should be accounted for, which we deal with in section 4 on determining scope.

For many organisations undertaking a carbon accounting exercise determining organisational boundaries can be a relatively simple exercise, conducted by determining what entities an organisation has substantive financial or operational ‘control’ over.¹⁵ Determining the boundaries of a diocese in the same way, however, can be more challenging. Rather than a single and discrete organisation, dioceses can be understood as multiple organisations which co-operate and co-finance in nuanced relationships that are determined by factors like Canon law, charity governance, common law, Catholic Social Teaching, and so on. As such, the levels of ‘control’ that the central charity of a diocese has over the other entities that are considered material to the functioning of a Catholic diocese can be quite variable. For this reason, we recommend that dioceses take a bespoke approach to bounding the organisation for carbon accounting purposes that follows from the diocese’s carbon accounting rationale. Below, we offer three viable options for delineating organisational boundaries for dioceses to consider.

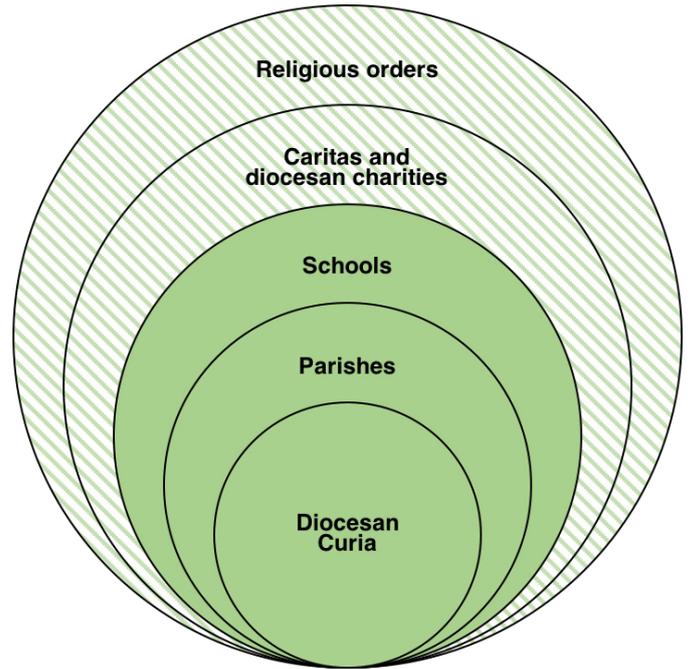


Figure 1. Possible diocesan boundaries

In Figure 1 above we illustrate five different organisational boundaries that a diocese might consider drawing when conducting a carbon accounting exercise. Each concentric ring of the diagram contains a different class of entity that is commonly recognised as participating in the operation of a diocese. Towards the centre of the diagram we illustrate those diocesan entities who are often both more visible to the central diocese, and influenceable by decisions made centrally within a diocese. The further from the centre that the entity is, broadly speaking, the more difficult accessing good quality emissions data about it may become, and the more limited the central diocese’s influence over it may be.

Colouration in the diagram describes diocesan common law building ownership. The solid-coloured area refers to entities in the diocese which typically operate in building stocks that are entirely, or overwhelmingly owned and insured by the diocese – the diocesan curia, parishes, and schools. We note that the determination of Canon law that parish buildings are parish property, and the principle of subsidiarity in Catholic Social Teaching make the notion of building ‘ownership’ in a diocese more complex than the simple illustration suggests. However, for the purposes of this illustration we have focussed on common law. The areas of the diagram with partial colouration describe diocesan entities which operate in a building stock that is partly owned and insured by the diocese, in particular, other diocesan charities and religious orders.

15 Greenhouse Gas Protocol (2015), A Corporate Accounting and Reporting Standard

We now articulate three different approaches to defining the boundaries of a diocese for carbon accounting purposes. Where possible, **we encourage dioceses to adopt either approach B or C in the interest of establishing a common approach across dioceses.** These approaches are progressively more inclusive, each subsuming the elements of the preceding approach and adding additional elements. We note again that we are not yet describing scope – i.e., the kinds of emissions producing activities that an organisation decides to include in its carbon accounting. The boundary strategies that we outline below are for defining the boundary of the organisation only. As such, although the first boundary approach is defined through legal responsibility for personnel, and the second two are defined in relation to property ownership, this absolutely does not mean that a diocese adopting the first approach will not consider the emissions associated with the buildings within those boundaries, nor does it mean that a diocese adopting the second or third approach will not consider the emissions producing activities associated with staff.

3.1 Boundary approach A: contractual responsibility for personnel

The first, and most minimal approach to defining diocesan carbon accounting boundaries is to consider the diocese to be all those organisations in which the diocesan charitable trust has a contractual or legal responsibility for personnel, in the form of employment, contractual volunteering, ecclesiastical office holding, or other direct legal relationships that directly facilitate the work of people for the objectives of the diocese without an intermediating common law legal entity. By 'diocesan charitable trust' we refer only to the unique registered charity that is treated in common law as a unique legal entity. In the example of the Diocese of Salford, this charity is called The Salford Diocesan Trust, and has the registered charity number 250037.

In functional terms, these personnel must be considered legally and practically internal to the diocese in some way. This would not include external contractors, therefore, as they functionally and legally operate outside the boundaries of the diocese. The diocesan charity as such will probably largely have substantive legal employment and ecclesiastical office holding relationships with people inside the first two circles of Figure 1, i.e., the **diocesan curia** and **parishes**. As such, determining the boundaries of the diocese in terms of staff should be relatively straightforward and easy to articulate. This boundary setting method is our interpretation of the **operational control** approach to boundary setting, as laid out in the Greenhouse Gas Protocol, in the context of Catholic dioceses.¹⁶

Although this is a straightforward approach it excludes some entities over which the central diocese has both a high level of influence and responsibility, schools especially. Because dioceses taking this approach will be excluding schools from their carbon accounting exercise as such, they may wish to develop alternative ways of engaging with schools to help facilitate their decarbonisation externally to the diocesan carbon accounting process.

16 Greenhouse Gas Protocol (2015), A Corporate Accounting and Reporting Standard

3.2 Boundary approach B: majority property ownership

In *Guidance on developing strategy for decarbonising Catholic diocesan building stocks* we made the case that buildings must be at the heart of any diocese's decarbonisation strategy.¹⁷ Not only is the built environment responsible for 40% of global emissions,¹⁸ (compared to 24% for transport – the other major diocesan contribution to climate change),¹⁹ but buildings are also associated with very clear definitions of ownership and control. In this guidance, therefore, we propose property ownership to be a particularity suitable boundary condition for dioceses' carbon accounting. In the interests of developing a common approach to boundary setting we encourage dioceses to consider either of the approaches based on property ownership. For dioceses, bounding according to building ownership can be done in one of two ways. The first way is for dioceses to only consider those entities where the diocese has majority **common law ownership of the buildings** to be within its boundary. Practically, for many dioceses this will mean including the curia, parishes, and schools where the diocese owns most of, or all the buildings, but not other diocesan charities and religious orders where the diocese only owns some of the buildings. Dioceses typically have near complete common law ownership over all curial buildings, parish buildings, and school buildings. As well as owning these buildings, in the cases of the curial offices, parishes and schools, the diocese usually has financial responsibility for capital projects that affect these buildings. This strengthens the case for using building ownership as the boundary condition, as not only are these buildings the principal sites of diocesan emissions, but the diocese is also considered to have the ability and responsibility to abate these emissions. In some cases, e.g., parishes, there may be Canon law considerations, policy, or management conventions that entail the diocese only has responsibility for larger capital projects, where smaller capital projects are treated as the responsibility of the parish itself. However even in these cases, where a diocese prefers that parishes take organisational and financial responsibility for smaller capital interventions like cheap insulation projects, or LED installation, the larger and most fundamental decarbonisation interventions, e.g., electrification of a building's heating system, will typically cost more than the threshold for diocesan investment. As such, this boundary setting method is our interpretation of the **financial control** approach to boundary setting, as laid out in the Greenhouse Gas Protocol, in the context of Catholic dioceses.²⁰

The buildings that a diocese owns and manages can be determined by checking the diocese's **building insurance schedule** or schedules. Dioceses may also be able to extract this information from the diocesan accounts, which will be particularly applicable to dioceses which perceive themselves to have a number of uninsured properties in their portfolio.

17 Guardians of Creation (2021), *Guidance on developing strategy for decarbonising Catholic diocesan building stocks*

18 International Energy Agency (2021), *Buildings*

19 International Energy Agency (2020), *Transport*

20 Greenhouse Gas Protocol (2015), *A Corporate Accounting and Reporting Standard*

The inclusion of schools within the boundary of the diocese does not entail that the diocese should attempt to treat the employees of schools and academy trusts as within the boundary of the diocese for the purpose of carbon accounting. The diocese does not have direct legal responsibility for these personnel, they are not generally considered internal to the operations of the diocese as such, the diocese has limited influence over their activity, and limited access to their emissions data. The diocese would still include the staff whom it has direct responsibility for, as set out in the preceding approach, however. This technical point does not preclude dioceses working proactively with schools to develop carbon management plans and other initiatives for staff related emissions producing activities in schools. However, for the purpose of setting carbon accounting boundaries for the diocese itself, remember to concentrate on identifying people and things that are internal to the organisation, and for which the organisation has direct legal responsibility.

3.3 Boundary approach C: complete property ownership

The final, and most inclusive boundary condition that we suggest dioceses consider is to extend the boundaries of the diocese to all property ownership, as such. This would mean that rather than drawing the boundaries of the diocese around entities where dioceses control most or all the buildings, like parishes and schools, the diocese would also count the buildings that it owns that are used by other entities like Caritas, other diocesan charities, and religious orders. A diocese taking this approach should also include those buildings that are owned by the diocese but are tenanted by private individuals or businesses. In this approach, the diocesan boundary would extend into these other entities like Caritas, religious orders, and private organisations, but only regarding the buildings. The diocese would not count other aspects of these organisations as internal to the diocese. For example, as with the school staff in the preceding method, this would not entail the diocese should account for the personnel within these entities, as the diocese does not have sufficient responsibility for, or influence over them. This boundary setting method is our interpretation of the **equity share**, or ‘economic substance’ approach to boundary setting, as laid out in the Greenhouse Gas Protocol, in the context of Catholic dioceses.²¹

CASE: DECIDING ON BOUNDARIES IN THE DIOCESE OF SALFORD

The Diocese that Salford decided that, on the grounds of common law legal ownership, diocesan management conventions, and the formal protocols in place across the diocese, it was appropriate for the diocese to account for all the buildings that it owned, and to adopt an approach to organisational boundaries based on building ownership. Consequently, it collected operational energy use for parish, school, curia, and other diocesan-owned buildings. Buildings owned by religious orders and independent schools were not treated as inside the diocesan boundaries, as the diocese did not perceive itself to have as much direct control over these buildings and organisations. Moreover, any decisions regarding interventions in these buildings or organisations would have been beyond the remit of the diocese, according to the diocese’s interpretations of the existing formal diocesan protocols. However, it was also recognised that the diocese can influence carbon reduction in these buildings and organisations, and so it resolved that the diocese would share learning and opportunities with these organisations as much as possible.

4. Determine scope

For a Diocese to take effective action in response to the climate emergency and be prepared for the coming low carbon transition in the UK it needs to understand its current contribution to climate change through various sources of greenhouse gas emissions. These sources are commonly referred to as ‘scope’. Understanding an organisation’s total contribution to climate change is challenging as it requires data on the energy and materials it uses and the environmental costs of this. It is often the case that an organisation will have better clarity on annually and directly billed services such as electricity, natural gas and transport fuel, and less visibility of material purchases. To take practical steps in responding to climate change, therefore, an organisation needs to start with what it can measure now and where possible improve its understanding of its consumption over time.

Once an organisational boundary has been determined the diocese can begin to consider what it would like to measure from within, and beyond that boundary. For example, the diocese might determine that it wishes to account for emissions throughout its entire ‘value chain’, i.e., measure the emissions implications of all the activities associated with the diocese’s operations, including those beyond the determined boundaries of the organisation. Alternatively, a diocese might determine that it is principally interested in emissions that occur as a result of activity within the boundaries of the diocese, as it has determined them. A diocese might decide that it wants to understand the amount of carbon embodied in the materials that it uses, for example in building materials, office supplies, sacramental consumables, and so on. Alternatively, a diocese may be content to concentrate on the carbon emissions associated with the diocese’s operations. The question of what kinds of carbon emitting activities should count, are what one considers when one considers scope.

21 Greenhouse Gas Protocol (2015), A Corporate Accounting and Reporting Standard

The most commonly followed way in which scope is understood is articulated by the World Resources Institute and partners in the Greenhouse Gas Protocol.²² It is articulated as three encompassing but precisely defined categories, which are referred to as Scope 1, Scope 2 and Scope 3 emissions. **Scope 1** emissions are those emissions that are generated as a direct result of organisational activities. They are sometimes referred to as 'direct' emissions. In the case of dioceses, this is principally the emissions generated from burning gas to produce heat on site. Staff travel for work is also included in this category: priests and other staff travelling while at work would count towards this category, but their commuting to and from work would not. **Scope 2** emissions are emissions generated offsite from the production of energy that is purchased by an organisation. These emissions, therefore, are a kind of 'indirect' emission, but remain very clearly attributable to the organisation and easy to measure. This category includes all electricity purchased for operational use in the diocese's buildings. **Scope 3** emissions are all the remaining indirect emissions associated with an organisation. The Greenhouse Gas Protocol offers 15 categories of Scope 3 emissions,²³ but some of the most impactful or addressable for dioceses will include staff commuting, parishioner travel to and from Mass, pupil travel to and from school, building materials use, and emissions associated with the diocese's financial investments.

The table below offers a breakdown of all the different sources of emissions that a diocese will reasonably wish to consider when conducting any carbon accounting exercise at any level of detail. The 'Priority' column refers to our recommendations for how urgently a diocese should incorporate that emissions source in their carbon accounting process. The table begins with those activities that we consider extremely important to any diocesan carbon accounting exercise, such that if a diocese attempts a carbon accounting exercise at all, these should probably form the backbone of that exercise. These 'very high' priority emissions sources are then followed by 'high', 'moderate' and 'low' priority emissions sources. We have assessed 'priority' as a function of the **practicality** of data collection, perceived diocesan **accountability** for the emissions source and overall impact of the emission. Some Scope 3 emissions producing activities are omitted from this table. We have generally excluded activities that we deem to be less relevant to diocesan operations, or, in the case of embodied carbon, less addressable in the short term.²⁴

We note here that the emissions sources that we have indicated to be 'lower' priority remain very important to the sustainability of a diocese, and any comprehensive diocesan environmental policy will address them. The rank ordering that we have provided focusses on carbon emissions, reflecting major sources of long-lived greenhouse gas that one would expect any organisation to be able to address. The low priority activities represent more challenging areas for footprinting, areas of less direct diocesan influence, or smaller amounts of long-lived greenhouse gases relative to the other sources. However, although they exhibit these features, the 'low priority' areas remain highly ecologically impactful. It is often estimated that 70% or more of an organisation's total emissions are Scope 3 emissions. In the case of parishioner travel to and from Mass, for example, it is highly likely that the carbon footprint of this activity in just one or two dioceses will be as large as the Scope 1 and 2 emissions of the entire Catholic Church in England and Wales. Given the complexity of addressing these lower priority activities, different target setting strategies may be required. Whenever a diocese does not incorporate one of these activities into its carbon accounting process, it should instead devise a less direct proxy measurement for addressing them. This measurement should encourage action towards the desired outcome, even if it is unable to facilitate a precise calculation of the carbon implications of the activity.

The three substantive columns on the right of the table below address the data collection associated with each emissions source. The first of these, 'data needed to measure', explains what data will need to be collected for a diocese to measure the impact of the given emissions source. The second, 'indicative data collection methods', describes the data collection methods that were already in place at the Diocese of Salford during the pilot study, and that could be implemented with relative ease in many dioceses if they are not already present. The last column, 'desirable data collection methods', makes recommendations for a desirable method of data collection, which a diocese may want to work toward. Section 6 of this guidance explores the content of the last two columns in detail.

22 Greenhouse Gas Protocol (2015), A Corporate Accounting and Reporting Standard

23 Greenhouse Gas Protocol (2013), Scope 3 Calculation Guidance

24 Dioceses that are interested in addressing embodied carbon may wish to begin with resources produced by the Green Building Council and the London Energy Transformation Initiative (2020), Climate Emergency Design Guide for design approaches, and Greenhouse Gas Protocol (2021), Life Cycle Databases for extensive information on embodied carbon.

Source of emissions	Scope	Priority	Annual data needed	Indicative data collection methods (data collection from the Diocese of Salford provided as an example)	Data collection method proposed for the Diocese of Salford
Electricity use in buildings	2	Very high	Total annual kWh per building m ² Billing/meter read standardisation and recording	Parishes, presbyteries and other diocesan properties Insurance schedule to confirm diocesan buildings within boundary Data shared by IFM Data not on IFM provided by parishes / property managers from individual sites Schools Data shared by IFM Data shared by CMATs Data shared by Local Authority Data shared by individual schools	All properties to purchase through IFM, centralising all site data Installing SMETS2 Smart meters for more detailed data If schools cannot be encouraged to purchase through IFM, schools to collect and report data directly to the diocese through an annual data collection exercise.
Fuel use in buildings	1	Very high	As above	As above	As above
Aviation travel	3	High	Annual number of vehicle miles, cost, class and haul Class (economy, premium economy, business or first class) Haul to/from UK (domestic, short-haul, long-haul or International)	Professional Support Services Claimed though expenses Diocesan Lourdes pilgrimage Parishes Record of expenses	Digital record of expense claims and/or booking records A method of self-reporting travel (e.g. Travel Tracker) Either a diocesan travel management system or inhouse electronic reporting system
Business surface travel	1	High	Annual number of business miles and cost for car, bus, taxi, motorbike, rail and sea alongside: <ul style="list-style-type: none"> • Cars: small, medium or large car • Motorbike: small, medium or large bike • Taxi: regular taxi or black cab. • Bus: local bus, London bus or coach • Rail: national rail, international rail, light rail and tram, or London underground. • Sea: if a foot passenger or car passenger 	Professional Support Services Hard copy expense claims reimbursed via payroll for car mileage, taxi, bus and train journeys Parishes Expense claims via Parish Administrators/ Secretary	Diocesan travel management system or Electronic copy of business travel where reports can be run off quarterly and annually to support reporting Need to include specifics per mode of travel
Business surface travel Electric Vehicle	2	High	Annual number of vehicle miles, cost, if small, medium or large and if plug-in hybrid or electric	Professional Support Services As above No list of electric vehicles Parishes As above No list of electric vehicles	As above
Business travel: Hotel stays	3	High	Number of nights and location of stay	Hard copy expense claims reimbursed via payroll	As above
Staff commuting travel	3	Moderate	Annual travel survey – mode, duration and distance	Professional Support Services No data Parishes No data	Commuting survey to be issued autumn 2021. Survey to include a question on past travel habits before the pandemic.
Parishioner travel	3	Moderate	Annual travel survey – mode, duration and distance	No data	Survey to be issued autumn 2021. Survey to include a question on past travel habits before the pandemic.

Source of emissions	Scope	Priority	Annual data needed	Indicative data collection methods (data collection from the Diocese of Salford provided as an example)	Data collection method proposed for the Diocese of Salford
Non-energy consumables	3	Low*	Database of goods and services purchased ideally covering specification and origin of product	Professional Support Services No data Parishes No data Schools No data	Spend or weight in materials categories, e.g., paper, office electronics, furniture, sacramental consumables, clerical apparel etc, or Spend in SIC code categories
Waste	3	Low*	Tonnage collected in categories: <ul style="list-style-type: none"> • Books • Glass • Clothing • Waste electrical items • Batteries • Metal: cans • Metal: scrap metal • Plastics • Paper and board 	Professional Support Services No data Parishes No data Schools Inconsistent data provided	Annual waste certificates from commercial waste contracts
Water	3	Low*	m ³	Parishes and presbyteries No data Other diocesan properties No data Schools Inconsistent data provided	Water meter installation/meter reading and digital record Collect annual data Annual data request to parishes and other diocesan properties
Refrigerants	1	Low*	Product datasheet on typical losses – report equipment failure due to leakage and topping up during service/repair	Parishes and presbyteries No data Other diocesan properties No data Schools No data	None currently advised

* Separate target advised.

Opening the black box of ‘value chain’ emissions

It is commonly estimated that at least 70% of most organisations’ emissions do not come from the organisation’s Scope 1 or 2 activities, but from its Scope 3 activities. In the GHG Protocol and elsewhere, these activities are often referred to as ‘value chain’ activities. These activities are broadly associated with the creation of value in an organisation but occur in the ‘chain’ of supplying and supporting activities that happen outside the formal boundaries of the organisation. In the case of Catholic dioceses, one might think of the ‘value chain’ as all the activities that indirectly support the Catholic mission of the diocese, but do not happen within its boundaries of control. Although there are 15 categories of value chain activity in the GHG protocol, we estimate that procurement, parishioner and school travel, staff commuting, and financial investments may be the most consequential. Given that the operating model of Catholic dioceses, crudely put, entails that dioceses maintain a large building stock, requiring regular maintenance, to which hundreds of thousands of people regularly travel, the impacts of Scope 3 emissions may actually end up being greater in some dioceses than in many other organisations. Consequently, dioceses may wish to develop methods for estimating and addressing these kinds of emissions as quickly as possible.

Procurement

In addition to some of the more sophisticated tools and databases that we refer to in **Guidance on developing strategy for decarbonising diocesan carbon building stocks**, there are some widely practised high-level methods for estimating procurement-related emissions. One of these methods requires an organisation to aggregate its procurement data into the total mass of a kind of material used, e.g., total tonnes of concrete used, or total tonnes of paper. Another method requires an organisation to aggregate its procurement data into the total amounts paid to different kinds of suppliers, grouped in Standard Industry Classification (SIC) codes, e.g., total spend on construction suppliers (UK-50), or total spend on suppliers providing legal, consultancy and other business activities (UK-68). In each of these methods, conversion factors are then applied to the aggregated figures to infer the associated carbon emissions of each category of spending. See section 7 for an introduction to conversion factors and how to apply them. Although this exercise is often conducted on behalf of organisations by environmental consulting companies, who sometimes develop their own proprietary conversion factors and use them as a source of competitive advantage, the UK government also provides some conversion factors that can also be applied to both kinds of data. For government conversion factors for materials mass data, please see the standard UK Government conversion factors.²⁵

25 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

For an example of some conversion factors that apply to SIC code spend data, please see SECR Annex E.²⁶

Staff commuting, parishioner travel, and school travel

The UK government provides conversion factors that allow the estimation of emissions caused by surface travel and includes them with its other conversion factors for company reporting of greenhouse gas emissions. To make a calculation using these factors you will need to know the number of miles travelled, the size of the vehicles travelling, and the kind of fuel that they use. Rather than calculation, however, the more challenging aspect of understanding what a dioceses' Scope 3 travel emissions are will be the collection of the data. In practice, dioceses may wish to begin with illustrative educated guesses, as the Diocese of Brentwood did for the example we offered in section 1. Given the relative size of the emissions associated with travel to and from diocesan properties, there is an obvious educational and rhetorical benefit to every diocese doing this. Dioceses may find this exercise sufficient to find the motivation to begin thinking about engaging with parish and school travel behaviour. However, for data that dioceses might like to analyse for more than illustrative purposes, some kind of travel survey will probably be required.

Investments

We do not address the question of diocesan financial investments in this report. However, this topic has been explored extensively by Operation Noah. Please visit their website to read their resources.²⁷

5. Determine net zero target

Early in the carbon accounting process a diocese will want to determine whether it intends to set a target date for achieving net zero carbon emissions. Ideally, this should also be informed by the rationale established in the diocesan environmental policy. The UK is legally bound to net zero emissions by 2050.²⁸ Following the recommendations of the Sixth Climate Budget prepared by the Climate Change Committee,²⁹ a 78% reduction in greenhouse gas emissions by 2035 from 1990 levels is now also enshrined in UK law.³⁰

The principal sources of carbon emissions in Catholic dioceses are operational energy use in buildings, staff travel, and if one is to take a wider view of scope, parishioner travel in passenger cars. Emissions from these sources are perceived to be relatively easy to abate relative to sectors like industry, shipping, or air travel.³¹ As such we observe that not only are net zero targets in dioceses eminently achievable relative to other sectors of society, but we may see further expectations to set net zero targets develop over the coming years in both government and civil society of organisations with operations that are easier to decarbonise, like dioceses.

Understanding 'net zero'

In public discourse, a concern is often expressed that the concept of 'net zero' greenhouse gas emissions is improperly defined and difficult to understand – let alone implement. Here, we aim to reduce some of the complexity and contestation associated with the concept sufficiently for dioceses to implement something that they can confidently refer to as a 'net zero target'.

Firstly, we use the term 'net zero' throughout this report, and not the ostensibly equivalent term 'carbon neutrality.' This is primarily because although apparently equivalent in meaning, in commercial discourse the term 'carbon neutrality' is often primarily associated with the process of neutralising carbon emissions through carbon offsetting, a concept we discuss in more detail in section 5.3. More specifically it is also associated with a particular standard produced by the British Standards Institution (BSI), Publicly Available Specification 2060 (PAS 2060).³² PAS 2060 has specific methodological requirements, and remains closely associated with carbon offsetting in a way that we do not necessarily advocate for the Catholic Church.

It is sometimes claimed that 'net zero' lacks a clear and universal definition. We consider this to be a slight mischaracterisation. The Intergovernmental Panel on Climate Change (IPCC) provide a now widely accepted macro scale definition: 'Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.'³³ Although this definition is easy to understand at the global level it does raise practical questions at the organisational scale.³⁴ As such, what many people actually mean when they say that net zero lacks a definition is that it lacks a universally agreed set of boundary and scope conditions for implementation in organisations, i.e., a lack of agreement on how organisations can determine what sources of emissions count, and what kinds of emissions count towards the net zero calculation.

26 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

27 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

28 UK Government (2019), Climate Change Act 2008 (2050 Target Amendment) Order 2019

29 Climate Change Committee (2020), Sixth Carbon Budget

30 UK Government (2021), Press release: UK enshrines new target in law to slash emissions by 78% by 2035

31 UK Government (2021), Industrial Decarbonisation Strategy

32 British Standards Institution (2010), PAS 2060 carbon neutrality

33 IPCC (2018), Special Report: Global Warming of 1.5°C – Glossary

34 Carbon Trust (2019), Net zero: an ambition in need of a definition

Some organisations, for example the Science Based Targets Initiative³⁵ and the BSI mentioned above have attempted to remedy this by developing industry standards for net zero and carbon neutrality in organisations respectively. Despite the strengths of these standards they both require a level of data about activities occurring beyond the legal boundaries of the organisation that any Catholic diocese in the UK is unlikely to be able to produce in the short run. As mentioned above, we encourage interested readers of this document to also engage with other ways of approaching net zero, and the aforementioned SBTi and BSI PAS 2060 may be good places to develop further knowledge. ISO 14064, which offers formal standards for carbon accounting in organisations and projects, may also be helpful. However, they do not form the basis of our recommendations in this report.

Where organisations are not using a public standard for net zero they are free to develop their own. The Church of England for example, formalised the scope and boundaries of its 2030 net zero commitment at its General Synod.³⁶ Although less inclusive in scope than the standards of accounting associated with SBTi or PAS 2060, the commitment still represents a coherent and transparent target against which the Church of England can be held accountable.

There are a variety of ways in which climate change targets and emissions pathways can be set. One approach is to adopt a headline goal such as 'net zero 2030'. Another is to align to the organisation's decarbonisation to the UK's statutory Net Zero 'no later than 2050' framework, which also has an interim target of a 78% reduction in all greenhouse gases from 1990 levels by 2035. A third alternative is to adopt a science-based target, i.e., measurable and actionable environmental goals aligned with societal sustainability goals and planetary boundaries, and focused on emissions reductions.^{37/38} The figure below shows three emissions pathway scenarios for the pilot Diocese of Salford, based on these three different approaches to setting a net zero target. We then describe each approach in more detail.

The scenario pathways in Figure 2 below apply these three approaches to baseline data for building energy use in the Diocese of Salford, starting with the baseline year of 2019. These scenarios do not include staff travel as the data on staff travel in the Diocese of Salford was insufficiently comprehensive to incorporate into the calculation during the pilot. Similarly, other sources of emissions such as material consumption, parishioner travel, waste and air travel are not yet incorporated into these targets, as they have not yet been measured.

Targeting action in the absence of data

We note here that the absence of good quality data does not make emissions producing activities exempt from action. Action orientated goals can, and should be applied in the absence of routinely measurable data. Examples of such targets might include a target to stop using petrol and diesel vehicles for diocesan business by 2030, zero waste to landfill by 2035, or a reduction in car park usage by 20% relative to parishioner attendance by 2028. A diocese could commit to a given total kWh being produced by renewable sources owned by the diocese by 2030, or to having surveyed a given percentage of the building stock by 2024. A diocese could monitor the number of heat pumps installed, or the number of electric vehicles in use, and so on. All the targets listed here are purely illustrative, and the substance and dates of these targets should be carefully considered by the diocese in light of the diocesan environmental policy before being incorporated into it.

35 Science Based Targets Initiative (2020), Foundations for science-based net-zero target setting in the corporate sector

36 Church of England (2020), General Synod November 2020; in particular see Church of England (2020), GS Misc 1262

37 See <https://sciencebasedtargetsnetwork.org/how-it-works/what-are-sbts/>

38 We note that climate science shows multiple examples of climate effects occurring more quickly than predicted, and abrupt climate change that is not necessarily accounted for in the science-based targets approach cannot be ruled out. In terms of Catholic theology, the blind horse model of precaution that Aquinas discusses suggests that the science behind this notion of 'science-based' targets may be too optimistic, including in relation to its characterisation of human ability to predict climate change.

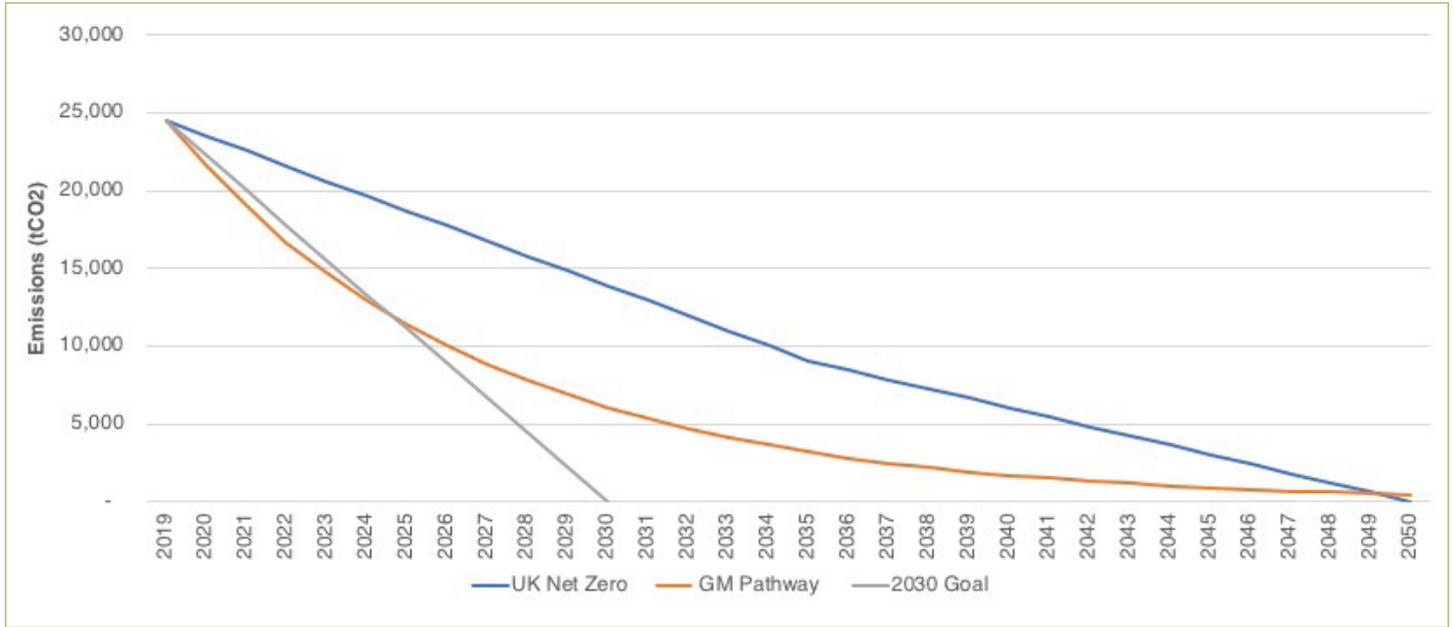


Figure 2. Net zero pathways shown using data from the Diocese of Salford

5.1 Target approach A: Net Zero 2030 target

The net zero 2030 pathway that we describe here assumes a linear reduction in emissions to 2030, indicated by the grey trajectory in Figure 2 above. Although 2030 is often emphasised as a symbolic date for decarbonisation, unlike the following two approaches, there is no widely recognised method for setting a net zero 2030 target. A 2030 target's implications for reducing Scope 1 and 2 emissions will depend on how measures assumed to balance out carbon are accounted for in the organisation's carbon accounting methods, e.g., the use of carbon offset credits and market-based accounting methods. We discuss the former in section 5.4., and the latter in a text box in section 7.1.2. In principle a net zero target set in this way could mean real carbon reductions of 70%, for example, with accounting approaches used to balance the remaining emissions to zero in some way. Subsequent targets for getting Scope 1 and 2 emissions to zero will be required post 2030 in this example, as the method will almost certainly rely on reporting market-based accounting. This is a relatively common approach, with notable adopters including the Church of England. Despite 2030 targets often relying on accounting techniques and voluntary carbon offsets, it should be noted that net zero operational carbon for buildings and electric vehicles should be technically possible before 2030 with sufficient capital investment. Many, if not all of the requisite interventions will also have clear economic cases associated with them.

5.2 Target approach B: UK Government aligned target

The UK has a statutory net zero 'no later than 2050' framework, which also has an interim target of 78% reduction in all greenhouse gases from 1990 levels by 2035. Organisations can choose to align their decarbonisation to this pathway. If an organisation is using 2019 as a baseline, this means a 63% reduction on 2019 by 2035. The UK Government aligned target is based on the UK's current statutory minimum emissions reduction commitments under the Climate Change Act. For a diocese following this approach, and using a baseline of 2019, to be on track it requires a change of at least 63% in greenhouse gas emissions by 2035 in the diocese. The diocese will then need to reach net zero greenhouse gas emissions by 2050 at the latest. Climate Change Committee advice on their recommended 'Balanced Net Zero' pathway has building energy and surface transport related emissions reaching zero by 2050 for this target.³⁹ The blue trajectory in Figure 2 above shows a scenario in the Diocese of Salford where Scope 1 and 2 building emissions are reduced from the 2019 baseline according to the UK statutory approach. Following this trajectory, total carbon emissions over this period for the Diocese of Salford would be 356 ktCO₂.

39 Climate Change Committee (2019), Net Zero – The UK's contribution to stopping global warming

5.3 Target approach C: Local authority aligned science-based target

For the science-based target approach the Greater Manchester carbon budget pathway has been applied to the diocesan baseline. This aligns the diocese with the relevant local area science-based emissions pathway based on the Tyndall Centre carbon budget method, one of the localised climate targeting methods in the Science Based Target Network and UN Race to Zero targets framework.⁴⁰ The orange trajectory in Figure 2 shows an emissions reduction pathway for Scope 1 and 2 building emissions for the diocese based on Greater Manchester's science-based target. This pathway sets the diocese a target to limit its contribution to climate change (its carbon budget) from building energy use to 210 ktCO₂ from 2019 to the end of the century. Following an even distribution of these emissions the diocese would need to be near zero emissions from building energy use no later than 2038.

5.4 Considerations for target setting

Motivation, investment, and all other things being equal, the achievability of a diocese's net zero target will be a function of the boundary and scope conditions that it has decided on, and the date that it chooses. In addition to reflecting on the rationale, boundary, and scope that the diocese is working to when setting a target date, a diocese will need to make several further considerations which we explore below. The diocese's stance on each of these considerations should follow from the diocese's decarbonisation policy and rationale for carbon accounting, and work in concert with the diocese's determination of boundary and scope. Most important when making these considerations and setting a target date is ensuring coherence in the diocese's approach. The way that the target is set should be coherent with Catholic teaching and achievable within the boundary and scope that the diocese is prepared to adopt.

Communications trade-offs

Managing trade-offs is considered an unavoidable aspect of the decarbonisation process for any organisation.⁴¹ Because the Catholic Church is a highly visible organisation with a great deal of responsibility and leadership within society, with an explicit and visible commitment to ecology,⁴² it may be particularly important that the Church is seen to be doing the 'right' thing on climate. Although the general thrust of authentically motivated decarbonisation is unlikely to be perceived as the 'wrong' thing in civil society, the kind of approach that a diocese takes towards setting targets for decarbonisation will need to be communicated in a way that reflects the priorities of the target.

Earlier targets, for example 2030 targets, have typically been associated with less comprehensive scope and boundaries but will have the advantage of conveying a greater sense of urgency. Net zero 2030 targets are commonly associated with high levels of ambition and concern, and 2030 is a highly symbolic date in the global decarbonisation process more broadly.⁴³ Later targets are more likely to facilitate comprehensive scope and boundaries, but risk being perceived as less urgent. As such, dioceses may have to manage a trade-off between apparent levels of **legitimacy** and **urgency** in the setting of their targets, and the communication of those targets.

If communicated effectively, in the eyes of stakeholders the impact of the trade-off should diminish proportionately to the size of the substantive commitment of resources that a diocese makes to decarbonisation. However, to some degree this trade-off is an endemic challenge that a diocese will have to reflect on in the setting of its target. In this way, the target date that is chosen, and whether the choosing of that date is underpinned by a logic of urgency versus legitimacy should be determined in part by the kind of message that the diocese wishes to communicate about its commitment to climate and ecology to its stakeholders.

We note that there are multiple, and flexible approaches that can be taken when setting and communicating net zero targets. For example, the Church of England has a 2030 target, and the scope and boundaries of that target can be seen as relatively lean. The Church of England generally does not consider emissions sources which we label as moderate priority or below in section 4 above,⁴⁴ and maintains the ability to use market-based accounting and offsetting as part of their carbon accounting (i.e., decarbonisation mechanisms that are generally considered to be less legitimate). However, it also makes the commitment to revise its parameters after 2030, towards a more inclusive boundary and scope. Through the prism of the above trade-off between legitimacy and urgency in target setting one can see how this is an example of attempting to manage for and communicate both legitimacy and urgency by growing the parameters of the targets over time.

Local government objectives

We also invite dioceses to reflect on the **local authority target** when setting a net zero target date. Some dioceses work closely with local government on a number of issues, and a diocese may determine that decarbonising in step with the local authority may be beneficial for both the decarbonisation process and its relationship with local government. For example the Diocese of Salford has worked with local authorities and the Greater Manchester Combined Authority, which have a 2038 science-based net zero target, to explore the implications of aligning to that target.⁴⁵

40 See <https://sciencebasedtargetsnetwork.org/take-action-now/take-action-as-a-city/>. More information on this method at Kuriakose, J., Anderson, K., Broderick, J., & McLachlan, C. (2018), Quantifying the implications of the Paris Agreement for Greater Manchester

41 Peñasco, C., Anadón, L.D. & Verdolini, E. (2021), Systematic review of the outcomes and trade-offs of ten types of decarbonization policy instruments. *Nat. Clim. Chang.* 11, 257–265.

42 Pope Francis (2015), *Laudato Si'*

43 The United Nations (2015), *Transforming our world: The 2030 agenda for sustainable development*

44 Church of England (2020), *General Synod November 2020*; in particular see Church of England (2020), *GS Misc 1262*

45 For more information on local authority target setting, please see work by the Tyndall Centre for Climate Change Research and Greater Manchester Combined Authority at <https://carbonbudget.manchester.ac.uk/reports/>

Science-based targets

A further consideration that a diocese may need to make is over whether the diocese wishes to develop a target that it can refer to as a ‘science-based target.’ A science-based target can be simply defined as a measurable and actionable environmental goal aligned with societal sustainability goals and planetary boundaries and focused on emissions reductions.⁴⁶ In the case of climate change the key planetary boundary is atmospheric concentrations of greenhouse gases. It is this measure primarily that determines levels of global warming and therefore the climate risks we face. Science-based climate change targets start from an understanding of the relationship between emissions of greenhouse gases (primarily CO₂) on warming, and set goals to reduce emissions in line with avoiding related changes in global temperature. Typically, science-based targets will not only be concerned with an end point (such as net zero 2050) but also the total emissions of greenhouse gases over coming years, and will therefore require annual accounting of emissions and the tracking of progress against an emissions pathway aligned with the target. A science-based target may also give an organisation a total ‘carbon budget’ indicating what it should limit its overall emissions of CO₂ to over the coming century to more precisely determine the organisation’s contribution to climate change. Science-based targets can be applied to measurable sources of greenhouse gases from an organisation and be used alongside other targets for sources of emissions that are not yet measured.

To develop a target that a diocese can describe with confidence as science-based, we encourage diocese to engage to work with a partner with expertise in climate science. The Diocese of Salford, for example, worked with the Tyndall Centre for Climate Change Research. However, if a diocese develops an approach to carbon accounting that adheres to the principles that we set out in section 1.3 and adopts a similar decarbonisation scenario to the science-based scenario illustrated earlier in this section, then the diocese will be following the same science-based target setting process prescribed by the Tyndall Centre for Climate Change Research to the Diocese of Salford.

The understanding of a science-based target that we offer above is an institutionally agnostic understanding that is broadly shared among many sustainability practitioners and climate scientists. However, because of the reach and influence of the SBTi standards organisation, it is possible that some people may associate the concept of science-based targets with the eponymous SBTi Net Zero Standard only.⁴⁷ Targets set according to the SBTi Net Zero Standard are science-based in the broader sense that we describe above, however, the SBTi Net Zero Standard also prescribes many specific methodological and operational features that are not a prerequisite for understanding a target as ‘science-based’. As we remark in the text box ‘understanding net zero’ in section 5., many faith-based organisations may struggle with some of the features of the SBTi Net Zero Standard if engaging with it when they first begin their decarbonisation journey. More advanced dioceses would be well advised to consider the SBTi Net Zero Standard, however, it probably should not be where any diocese begins. We stress that it is possible for a diocese to set a science-based target that does not rely on the SBTi Net Zero Standard, by working to the Tyndall Centre process outlined in this report, or with other

academic partners specialising in climate science. Finally, on the topic of the SBTi, we also note that there is currently an SBTi framework for faith-based organisations in development. Once this is disseminated, this will also be a useful resource for Catholic dioceses.

Grid decarbonisation

A diocese will need to think about the rate at which the national power grid is decarbonising when setting its net zero target date. The national grid is unlikely to be fully decarbonised before 2035, and will possibly not achieve full decarbonisation until later in the same decade.⁴⁸ This is material for any diocesan target which uses location-based accounting for purchased energy, as the Greenhouse Gas Protocol asks all carbon accounting organisations to do. In a text box in section 7.1.2 we will explain the difference between location-based and market-based accounting in detail.

With location-based accounting, and the emphasis that the method places on accounting for the energy that an organisation actually uses rather than what it transacts for in principle, the diocese’s reported carbon footprint is necessarily informed by the energy mix of the grid as a whole.

For most dioceses, efficiently electrifying the majority of its heating is likely to be a, if not the, principal component of decarbonisation. Consequently, one can see how an organisation’s success in achieving a net zero target is contingent on the decarbonisation of the national grid. Dioceses can also influence the rate of diocesan decarbonisation relative to grid decarbonisation by producing electricity via solar panels where appropriate.

Changes to the advertising of renewable energy tariffs that may impact on market-based accounting methods

The UK Government Department for Business, Energy and Industrial Strategy is currently reviewing the standards of transparency associated with renewable energy tariffs in the UK. It is possible that this review will affect the use of Renewable Energy Guarantees of Origin (REGOs) in determining the ‘renewable’ status of tariffs, as well as how the carbon content of those tariffs is communicated to customers.⁴⁹ We suggest that this review process entails reputational exposure for even the most well-meaning organisations who are relying on market-based accounting only to report their carbon footprint. This review may also have an implication for organisations setting net zero or carbon neutral targets that use the market-based approach to calculation. Organisations setting targets on the basis of tariffs that are currently advertised as renewable, but are advertised as such on the strength of an instrument under review and with an uncertain future risk losing some of the benefits of the market-based accounting technique that was assumed for the purpose of the organisation’s decarbonisation strategy, if those tariffs lose the ability to describe themselves as renewable.

46 See <https://sciencebasedtargetsnetwork.org/how-it-works/what-are-sbts/>

47 See <https://sciencebasedtargets.org>

48 National Grid (2021), Future energy scenarios

49 UK Government (2021), Designing a framework for transparency of carbon content in energy products: call for evidence

Changes to the standard of voluntary carbon offsetting products

For dioceses that have not already invested directly in their decarbonisation process, it is unlikely that the indirect mechanism of carbon offsetting is going to be considered by wider society as an appropriate primary method of decarbonisation. There is a broad consensus across the many institutions that offer guidance on decarbonisation on the relative priority of actions that an organisation should take to mitigate its carbon emissions. This order of priority is sometimes referred to as the 'carbon reduction hierarchy', or 'mitigation hierarchy', and offsetting almost always appears at the bottom of this hierarchy. Even some of the more offset friendly interpretations of the emissions mitigation hierarchy (e.g., PAS2060) prioritise the avoidance and reduction of existing emissions before offsetting. Not only is offsetting commonly held to only be appropriate as the last part of the decarbonisation process, but many institutions hold that it should also be the smallest. For an organisation to meet the prevalent SBTi Net Zero Standard, for example, they are expected to offset no more than 5-10% of their baseline emissions.⁵⁰

If a diocese decides that offsetting absolutely must be part of its decarbonisation plan, it will be confronted with an extraordinarily broad range of products. Voluntary offsets can be priced anywhere from a few dollars per tonne to \$1,000 dollars per tonne. Annex G of SECR offers a good, short, guide to the key variables one needs to consider when evaluating the quality of an offset.⁵¹ Broadly, the more one spends on an offset, the better it will satisfy these criteria, and the closer it will come to truly neutralising the emissions that it was bought to offset. However, even the very best offset products carry risks that are not associated with simply not emitting the carbon in the first place.

Although we do not currently recommend voluntary offsetting as part of the diocesan decarbonisation process because of ongoing and widely held concerns with the efficacy and accountability of offsetting products in general, for these same reasons a high profile taskforce is currently reviewing the potential for introducing further governance into carbon offset markets.⁵² If effective governance mechanisms can be implemented in the future, dioceses may wish to begin considering voluntary offset as part of their decarbonisation strategies. The potential for accountable voluntary offsetting may have implications for the kinds of target that dioceses are willing to set.

6. Collect data

6.1 Energy and fuel use in buildings

Step 1 – identify the insurance schedule and other lists of properties

A diocese should generally begin its data collection process by examining the property insurance schedule(s), which can be requested from the diocese's Chief Operating Officer or Financial Secretary. The insurance schedule(s) should offer a complete list of all buildings owned by the diocese at the time that the insurance schedule was produced, given the assumption that a diocese is insuring all its buildings. Dioceses may also be able to extract this information from the diocesan accounts, which will be particularly applicable to dioceses which perceive themselves to have a number of uninsured properties in their portfolio.

For schools, request a list of maintained schools or academies from the diocesan education lead. If the diocese has determined independent schools to be outside of the diocesan boundary for carbon accounting, the schools may still like to work alongside the diocese in which they are based on their own decarbonisation plans, and can be given this opportunity.

Step 2 – request fuel and energy data from IFM

Once it has located a copy of the insurance schedule and has a list of schools, the diocese should request its fuel and energy use data from IFM.⁵³ IFM is the centralised energy procurement organisation for the Catholic Church in England and Wales, and is able and willing to request diocesan fuel use data directly from its supplier to provide dioceses with the information that they need to calculate a carbon footprint. Most parishes in England and Wales as well as many schools purchase their fuel and energy through IFM. As such, from a diocesan carbon accounting perspective, IFM is an extremely useful institution, insofar as it is able to provide data to dioceses for all organisations within a given diocese that purchase through IFM. Under guidance from IFM, we recommend that dioceses requesting data arrange a fixed date in the year on which IFM share the annual fuel use data with the diocese. In cases where an individual parish does not yet procure any of its fuel or energy through IFM, we encourage it to consider doing so on the renewal of their contract. Please note that IFM may not have access to fuel and energy use data associated with a parish or school unless the school or parish purchases fuel or energy through IFM.

Step 3 – identify absent fuel and energy data

Once the diocese has requested its fuel and energy data from IFM it will be able to determine how exhaustive the coverage of the IFM data is by cross referencing it with the insurance schedule and list of school properties identified in Step 1. IFM may also procure for buildings that are not included in the insurance schedule or list of schools, for example religious orders and independent schools, which do not need including in the data collection exercise unless the diocese agrees to provide such assistance for these nominally external entities. Data associated with organisations outside the diocesan boundaries will need to be identified, and removed from the dataset at this stage.

50 SBTi (2021), Net Zero Standard

51 SBTi (2021), Net Zero Standard

52 Taskforce on Scaling Voluntary Carbon Markets (2021), Phase II report summary

53 Dioceses that have no relationship with IFM, particularly some dioceses in Scotland and Northern Ireland, should progress directly to Step 4

It is important to note that even if a diocese generally procures fuel and energy through IFM, it is highly likely that some buildings in that diocese will not be on an IFM tariff, and will be procuring their fuel and energy via a different route. This is especially common in the case of schools, as due to historic purchasing arrangements between local authorities and schools it has been harder for schools to join the IFM tariff. Since 2016, Catholic schools have been joining IFM and we encourage all Catholic schools to consider doing so on renewal of existing contracts.

IFM will share energy and fuel use data as .xlsx files with dioceses. The IFM spreadsheet and codes will differ from the diocese's building codes and spreadsheet cells, also there may be more than one line per parish on the IFM spreadsheet which further complicates the 'LOOKUP' function. Therefore, extracting data from the IFM .xlsx file to a diocese building spreadsheet provides a challenge. We recommend that the diocese manually reads through the insurance schedule and list of school properties and cross references those properties on the schedule directly with the gas and electricity meters listed on the IFM spreadsheet. This will entail manually cross referencing as many addresses with gas and electricity meters as the diocese has buildings; however, the diocese will finish the exercise with a comprehensive list of absent data points. Naturally, this is not a process that the diocese will wish to repeat every year, and so we recommend creating or adjusting a system of existing codes to establish a common factor between the two lists at this point in the process, for use in future years.

Each of the absent data points for building energy or fuel use that the diocese has now identified will be absent from the IFM list of electricity and gas meters for one of three reasons.

Reason 1: The building is not associated with a gas and/or electricity meter on the IFM spreadsheet because the building does not consume gas and/or electricity. The building may use oil, biomass or renewable energy for example.

Reason 2: The building does use gas and/or electricity, but it is not purchased through IFM.

Reason 3: The building is not associated with a gas and/or electricity meter on the IFM spreadsheet because whilst the building uses gas and/or electricity, that use is metered in a different building.

Now that the diocese has identified absent data, it is able to determine an approach for dealing with that absent data. Broadly, the diocese has two options available to it: either identify an alternative source for the absent data, which we describe below, or assume the values of the absent data, which we describe in section 7.2. Given the volume of absent data associated with the operational energy use of the diocese's buildings that that we anticipate in the case of every diocese, especially pertaining to the school estate, we expect that most dioceses will wish to progress to the next step of the data collection process which we outline below.

Step 4 – acquire absent fuel and energy data

Where the diocese has been able to identify buildings for which there is no fuel data available through IFM, the diocese will need to determine alternative routes through which it may be able to generate this data. There are different routes available depending on whether the buildings fall within a parish or school estate. We distinguish between these below.

Identifying oil and biomass use

Some buildings in some dioceses will be heated by less common fuel sources like oil or biomass. Although IFM does purchase oil and biomass for dioceses, these buildings may not necessarily be purchasing these fuels through IFM. As such, when the diocese is in the process of acquiring absent fuel and energy use data buildings using unusual fuel types may fall outside the dataset. This means that when the diocese is in the process of acquiring absent fuel data it should also take this opportunity to try and understand what kinds of fuel are being used. If it does so, it is likely to capture all the uncommon fuel use. It is important to identify the different fuel types in use, as different fuels have different emissions implications. Oil is a particularly carbon intensive fuel, for example. Because of this variation, the amounts of different fuels being used will have a bearing on the overall diocesan carbon footprint, as well as the interventions that the diocese might want to prioritise. When a diocese does identify a building using oil, annual oil use may have to be estimated from receipts held by the parish responsible for the building. Because of the way in which oil is stored and purchased, these estimates may be less precise than the figures associated with other fuels.

Parishes

A diocese can expect that data associated with energy and fuel use in parish buildings that is absent from the IFM database to be absent for any one of the three possible reasons introduced in Step 3 above. It is common for parish buildings to be left off the IFM tariff by parishes and dioceses, and many dioceses will have a number of buildings in this category. On occasion, parish buildings will rely on a fuel other than gas, like oil. Parish buildings also often share meters between them, for example churches and church halls or presbyteries may all share a mains gas or electricity connection. Because of this likely diversity of situations in the cases precipitating absent data in parishes, as well as a general lack of alternative data sources, in the case of parishes a direct, targeted survey may be the best route for acquiring fuel and energy data that is not available through IFM.

It is worth pursuing these instances of absent data, as all these cases of absent data have potential impacts that extend beyond mere carbon accounting. As well as for footprinting, dioceses will likely be using this data to prioritise building surveys and retrofit interventions, as discussed in **Guidance on developing strategy for decarbonising Catholic diocesan building stocks**.

Where a mains connection and meter is shared between several buildings, if the energy or fuel use data is associated only with the address at which the meter is located, the building at that address is likely to misleadingly appear to be a particularly emissions intensive building, and will probably be erroneously prioritised for intervention.⁵⁴ Conversely, any buildings absent from the IFM data because they are using oil should be identified because they may be the buildings with the fastest financial and emissions payback periods. Identifying buildings that are not on the IFM tariff, but could be, is also likely to have cost saving implications.

A diocese could contact parishes directly with a bespoke survey instrument that it creates, which includes a request for fuel and energy data and any other information that a diocese requires. However, a diocese may also find that a simple phone call or email may suffice. Because it is important for a diocese to determine which of the three reasons introduced in Step 3 above led to the absence of the data, a diocese may want to include questions to that effect in its communication to the parishes. To determine whether the absence was precipitated by Reason 1 or Reason 2 above, the diocese may wish to ask the parish which kinds of fuel are used in those buildings for which there is no data. To determine whether the absence was precipitated by Reason 3 the diocese may wish to ask whether the building shares a meter with any other building.

A diocese may also have the option to seek this absent data via a software tool that already exists, without having to create a new digital survey. For example, 360 Carbon is a free carbon calculator for churches, which offers a particularly comprehensive method of self-reporting, and is designed specifically for analysing the carbon emissions associated with the operations of parishes.⁵⁵ This, or a similar piece of software may be useful at this stage.

Parish level carbon accounting

This guidance concentrates on carbon accounting at a diocesan level. Catholic diocesan building stocks often contain hundreds of buildings and have total annual carbon footprints in the order of 10,000s of tonnes. These quantities place diocesan carbon accounting at quite a different scale to parish carbon accounting, with each parish only contributing a very small fraction of a diocese's total carbon footprint. The techniques that we describe in this report are suitable for a diocese, but an ecologically engaged parish that wants to calculate its carbon footprint will find these techniques insufficiently granular. For engaged parishes that are interested in understanding their carbon footprint in more detail, or including elements that may be absent from this diocesan level approach, tools are available. These include 360 Carbon, as mentioned above.

CASE: MAPPING IFM AND DIOCESAN CODES IN THE DIOCESE OF SALFORD

The Diocese of Salford has building codes for parishes, however, these are not the same codes that IFM use, and were therefore not a feature of the spreadsheet that IFM shared with the Diocese of Salford. The Diocese of Salford interpreted that these codes needed to be matched to the corresponding diocesan codes, to determine more precisely where energy was being used. Diocese of Salford location codes describe entire parishes, whereas IFM data describes individual meters.

Developing a system that identified individual buildings was a time-consuming exercise. On occasion building addresses differed on the IFM spreadsheet to addresses held by the diocesan codes, meaning that even after a system for translating the data had been developed, more time was needed to check the validity of the data. Irregular metering caused further complications. Some properties share one gas meter but may have more than one electricity meter, or vice versa. For example, there were parishes where one gas meter was shared by the church and presbytery, but each building had an individual electricity meter.

Schools

Although the energy and fuel use data associated with schools may be absent from the IFM database for any of the three reasons articulated in Step 3 above, in most dioceses Reason 2, i.e., that the school does not purchase its energy or fuel through IFM, is likely to be by far the most common reason. Because of the numbers of schools in a diocese, having to contact schools directly to ask for data is an unattractive option, although still an option if the collective approaches are not appropriate or fruitful. Fortunately, data for multiple schools is likely to be available from one of three locations, depending on the situation of the school.

Schools that are not in multi-academy trusts are likely to purchase energy and fuel via the local authority. As such, it is possible to approach the local authorities within the diocese to ask for the energy and fuel data for the Catholic schools that buy through that local authority. If schools are in multi-academy trusts then the multi-academy trust may hold data about its member school fuel and energy use. This is especially likely if the multi-academy trust is large enough to need to complete SECR, or if the trust has a collective fuel or energy purchasing contract. Multi-academy trusts are likely to have a governor responsible for procurement, or for fuel and energy procurement. Although their official role title may vary between trusts it may be worthwhile to identify, and ask to work with this governor. Lastly, a building's energy consumption data can be collected from Display Energy Certificates (DEC). A DEC is a legal requirement for all public buildings with a usable floor space over 250m², which will include most schools. DEC's may be held by the diocesan property or education departments. DEC's are also held on a central government register that is searchable by postcode.⁵⁶ We note that when collecting school energy use data it is also useful to collect additional school data such as pupil numbers and m² for relative metrics and comparisons between schools.

54 In cases where this is identified, we recommend considering submetering the buildings. Energy suppliers may provide additional metering at nominal cost, advice should be sought from IFM and CMP.

55 See <https://360carbon.org/>

56 Accessible at <https://find-energy-certificate.digital.communities.gov.uk/>. For more information see <https://www.gov.uk/check-energy-performance-public-building>.

CASE: COLLECTING DATA FROM SCHOOLS IN THE DIOCESE OF SALFORD

Because many of the schools in the Diocese of Salford were not procuring gas and electricity through IFM, the Diocese of Salford chose to directly contact many schools to understand how their energy was being procured, and how much they were using. Because of this, the diocese perceived that data collection for schools needed more time and effort than for parishes.

One example school explained that it procures energy through a service level agreement with the local council. On learning this, the diocese then contacted the local council for the energy use data. In this instance the diocese was fortunate, insofar as the council responded with data for all diocesan schools across that local authority. In another example, each school within a local authority had to provide a letter of approval to the council before the council would share the data with the diocese. A third example school procured their own energy and sent the energy bills directly to the diocese on request.

Date Standardisation

For emissions baselining and higher-level measurement, annual meter data for building energy and fuel use can be satisfactory. However, for more precise carbon accounting it is desirable to have at least one standard date annually on which all building users in the diocese take and submit a reading for the meters in their building. A diocese may wish to issue an annual communication to building users, encouraging them to take and submit at least one meter reading on an agreed date. Standardising this reading to exactly the same day each year is desirable, although standardising to the same week can be satisfactory. The installation of SMETS2 smart meters will help significantly with this process, as they provide data at regular half-hourly intervals. Please contact IFM to arrange the installation of smart meters via their supplier, which energy companies are obliged to install free of charge.

A second kind of standardisation that is desirable relates to the dates of the insurance schedule and the dates that diocesan energy and fuel use data are produced. The insurance schedule will likely be produced on a given date annually, which means that it will offer a snapshot of the diocese's building stock on that particular day, of that particular year.

It is possible, however, for a diocesan building stock to change in the time between the date that the insurance schedule is produced, and the date that annual fuel use data is collected by the diocese. This may lead to discrepancies between the two datasets. Dioceses which purchase fuel and energy heavily through IFM may find that the contracts managed through IFM tend to have billing dates at the end of the calendar year. In these cases, it may be desirable to take the diocesan property snapshot from the insurance schedule at year end as well, so that the report generated for the diocese by IFM reflects the current property portfolio of the diocese.

6.2 Staff travel

As we show in the table in section 4, if a diocese has limited resources to dedicate to carbon accounting and feels as though it must prioritise accounting for only one or two emissions producing activities, the diocese may wish to prioritise the operational energy and fuel use of the building stock. These emissions producing activities are central to the organisation's operations and will have very large emissions implications, especially in the case of fuel use. However, if the diocese is able to consider additional kinds of emissions producing activities, or is expected to by SECR, staff travel will also be a significant source of emissions in most dioceses and is also relatively central to the organisation's functioning. Although prioritisation of staff travel can be justified on the grounds of potential emissions impact alone, there are also symbolic arguments for decarbonising staff travel. In the same way that diocesan buildings are highly visible and play a symbolic role in expressing the commitment of the Church to ecology, so too are the actions of a diocese's staff and clergy. We encourage dioceses to include not only curial and clerical travel in these calculations, but also volunteer travel, where the travel can be demonstrated to be on behalf of the diocese and a part of the value creating activities of the diocese.

It is possible to calculate travel related emissions from the fuel used in travelling, the money spent on travel, or the distance travelled.⁵⁷ In the context of dioceses we recommend that travel emissions be calculated from data presented as miles travelled, along with typological information about the vehicle or journey coherent with categories used in the UK government conversion factors.⁵⁸ This does not just apply to private vehicles, but includes all forms of transport, and breaks some forms of transport like cars down into subcategories. We recognise that diocesan systems may not have a way of capturing this information reliably for both surface and aviation travel when it first begins carbon accounting. For many dioceses, therefore, rather than collecting this data straight away, the first step is likely to be setting up a system which can yield staff travel information as travel miles, or establishing an action plan for reducing travel emissions in lieu of an accurate estimate of total travel emissions.

At least in principle, some staff travel is recorded in many dioceses for the purpose of reimbursing those members of staff for financial expenses incurred as a result of that travel. Staff travel expenses that are claimed back from the diocese will offer an indication of staff mileage incurred as a result of the core operations of the diocese. This makes looking at reimbursed travel a good point of departure for understanding the travel related emissions in the diocese over which the diocese has the greatest level of operational control and responsibility. Whether the existing system of records is satisfactory to make an estimate about staff travel will depend on whether the diocese deems the data to be representative. Complete coverage may not be necessary, but the diocese will need to be confident of the total amount of travel occurring and have data on what it deems to be a representative range of travel from which to estimate the absent data points. Because a reliable travel management system is likely to provide more informative data, some dioceses may wish to implement a reliable travel reimbursement record keeping system before attempting to

57 Greenhouse Gas Protocol (2013), Technical Guidance for Calculating Scope 3 Emissions

58 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

incorporate staff travel into the diocesan footprint. Unlike curial travel, parish priest travel is usually recorded at a local level, meaning that any data collection system may need to operate at both the level of the parish and the curia. For a diocese that takes this approach, staff travel might not feature in the first year's carbon accounting but would become a feature later after a reliable way of recording travel was introduced in the diocese.

Alternatively to a travel management system, a regular survey of diocesan staff travel that is sent directly to diocesan staff should also generate some usable travel data. Although regular travel surveys ask additional effort of respondent diocesan staff and are likely to yield less accurate results, dioceses may prefer issuing regular travel surveys over implementing a new system for managing travel expenses. A diocese might decide this if the administrative effort or costs associated with a travel management system are deemed prohibitive. However, given that such an approach will ask for a greater degree of estimation from the respondent staff, the utility of the resultant data will also be more limited.

We note that it is entirely possible to have a credible, science-based net zero strategy without ever measuring staff travel at all. However, in these cases, instead of an approach to measurement, the diocese will need to have articulated a robust and achievable travel management plan that explains how the diocese intends to decarbonise transport. Such a plan is likely to involve fleet electrification, among other themes.⁵⁹ Given that currently Catholic priests typically privately own or lease their cars, the diocese will have to decide whether, and how, it wishes to go about fleet electrification sensitively.

Aviation

Like surface travel, any flights taken as part of staff travel can be recorded via expenses. Like surface travel again, in the long run dioceses will benefit from introducing a travel management system that can record aviation information as well as surface travel information. For information about aviation to be converted into emissions data it needs to be presented as miles travelled between the departure and arrival airports, class (economy, premium economy, business or first-class) and haul (domestic, short-haul, long-haul or international). It is also useful to collect cost for future data analysis and trends.

Many dioceses lead their own pilgrimages, for example to Lourdes. Where possible, this data should be captured and converted into emissions data. Parishes also organise their own pilgrimages. If dioceses wish to account for these they will need to develop a process whereby parishes share aviation data with dioceses.

Overnight accommodation

If staff are travelling for diocesan business that includes overnight accommodation in a hotel, the location and duration should be collected. In the diocesan context business travel would include clergy formation and clergy training. If the diocese wishes to take a broader view, hotel stays associated with diocese organised pilgrimages and retreats could also be accounted for. Overnight stays carry a Scope 3 carbon cost, which can be accounted for using the normal UK Government conversion factors. Again, deciding if this data will be collected as part of carbon accounting is dependent on resource, and would be made easier by a travel management system. Otherwise, this data can be collected from travel expenses.

Surface travel

In terms of scope, there are two kinds of staff surface travel. Staff travel to and from work is generally considered to be a Scope 3 activity, i.e., peripheral to the organisation and only an indirect consequence of the organisation's actual activities. Unlike commuting, staff travel during work as part of organisational activity is considered to be a Scope 1 activity, i.e., a core part organisation's functioning. To illustrate, a member of the diocesan curia travelling to work from home in the morning, and from work to home in the evening is considered a Scope 3 activity. However, that same member of the curia in that same car making work related visits during the day can be understood as travel that is integral to the value created, or the service offered by a diocese. As such this kind of travel can be thought of as Scope 1. This technical point may not affect the extent to which a diocese feels responsible for its commuting related travel emissions, nor effect the extent to which it wishes to mitigate them. Nevertheless, this categorisation is worth noting here, in part for formal reasons. In particular, it is only Scope 1 travel that a diocese reporting via SECR is obliged to report.

A useful rule of thumb to help understand if a given instance of staff travel can be understood as a Scope 1 or Scope 3 emissions producing activity is to ask 'can the mileage be claimed for?' If staff travel is reimbursable, it is highly likely that that the resultant emissions should be treated as Scope 1 emissions.

CASE: EXCLUDING TRAVEL DATA IN THE DIOCESE OF SALFORD

The diocese attempted to collect data for Scope 1 travel, and was able to collect some, from travel receipts for example. However, total diocesan travel emissions were difficult to substantiate, due to inconsistencies in the data that the diocese was able to collect, and the incompleteness of the data set overall. Consequently, Scope 1 travel data was emitted from the final 2019 calculation and baseline, and the diocese resolved to develop methods for including it in future years' accounts.

7. Analyse data

7.1 Setting a baseline

7.1.1 What is a baseline?

An emissions baseline calculation marks the start point of the decarbonisation journey for the purposes of future calculations and reporting. An emissions baseline is a figure that represents the emissions total for a given year, which is then assumed as the organisation's original emissions figure for comparison with future emissions calculations. Because it represents the total emissions that an organisation was responsible for at the start of the carbon accounting process a baseline allows an organisation to determine how much it has improved over a period following the baseline. Net zero can be said to have been achieved when the organisation's

59 UK Government (2021), Transport decarbonisation plan

total emissions figure drops from the baseline figure to zero. Setting a baseline is a necessary and indeed technically inevitable step for any organisation undertaking a carbon accounting process that continues over a period of time.

For measuring the progress of net zero in the UK, the UK uses 1990 as its baseline date because it is a party to the Kyoto protocol.⁶⁰ As such, for the UK government, new emissions figures are compared against the total emissions in 1990 when targeting and describing percentage change.⁶¹ Although this is the date being used by the UK government, there is no requirement for an organisation in the UK to use the same date. In fact, it is desirable for an organisation to set their baseline at the start of their own decarbonisation process, so that they can track the implications of their interventions, provided they have a satisfactory level of data available to set a baseline at the start of that process. Given that IFM holds some historic data on diocesan energy use, a diocese may wish to use the date that it switched to IFM as the baseline. This will convey the advantage of being able to immediately demonstrate the impact of IFM's tariffs through market-based accounting.

Baseline data for setting carbon targets needs to have sufficient **coverage, representativeness** and **consistency** in relation to a particular source of carbon emissions to be suitable for measurable targets. If this is not the case it will be difficult for an organisation to determine what has changed. We do not propose a rigid method for determining coverage, representativeness and consistency, but instead invite dioceses to exercise their own judgement, informed by the approach laid out in their environmental policies. For example, consider a diocese that has 80% coverage of its building stock for fuel use, expressed in meter readings taken at a consistent time across all properties. Moreover, in this example, the 80% coverage is known to include a representative spread of the buildings, including outliers like the diocesan cathedral. In this case, if the diocese is particularly action oriented or less concerned with reporting the precise figure it may deem this a satisfactory level of data to estimate the remaining 20% for its baseline.

CASE: DECIDING ON A BASELINE YEAR IN THE DIOCESE OF SALFORD

The Diocese determined that diocesan building use patterns in 2021, or 2020 for that matter, did not describe the 'normal' activity of the diocese. In particular, choosing data from 2020 or 2021 would not have represented normal building use patterns or operational energy use in the schools, parishes, and curial offices. Consequently, the diocese decided that the baseline year should be 2019, the last year before 2021 in which diocesan patterns of activity had not been affected by the Covid-19 pandemic.

Many dioceses are likely to struggle with establishing coverage, representativeness and consistency in their travel data, at least at the start of the carbon accounting process before more effective data collection methods have been introduced. In the pilot Diocese of Salford, the diocese was able to produce some travel data, but it was impossible to determine what percentage of total travel that data described, and whether the journeys described by the data were indicative of travel patterns not described by the data. For this reason, the Diocese of Salford determined that it had insufficient coverage and representativeness for reporting its travel emissions.

This section now continues with specific examples of the data analysis process undertaken for the Diocese of Salford by the Tyndall Centre for Climate Change Research. The results of the baselining for Scope 1 and 2 emissions associated with the operational energy use of buildings are shown in Figures 2, 3, 4 and 6. These baselines draw on the central estimate for missing buildings energy use data, explained in section 7.2.

7.1.2 Applying conversion factors

Once energy, mileage or any other data is compiled into an inventory a carbon emissions baseline is set using emissions factors. An **emissions factor, conversion factor, or intensity ratio** is a representative value that makes it possible to convert quantitative data about an emission producing activity into a quantity of emissions. Emissions factors are often expressed as a single number, representing the quantity of a greenhouse gas emitted per unit of activity. This means that to apply an emissions factor one need only multiply the unit of activity by the emissions factor to determine the amount of emissions that resulted from that activity. The unit of activity could be the consumption of a kWh in the case of electricity, or a mile in a small car in the case of travel. Emissions are commonly expressed in kg of greenhouse gasses. See the text box below for a simple example of this in practice.

The emissions factors that we recommend using are maintained by the UK Government, and are updated every year. They apply to a single year and so dioceses should make sure that they are using the appropriate conversion factor when calculating a historic year. This is very important in the case of electricity data, given the rapid rate of UK grid decarbonisation. The analysis represented in Figures 3, 4, 5 and 6 uses UK Government emissions factors for 2019.⁶² Transmission and distribution losses for supplying electricity can be treated as Scope 3 emissions, however, as they are measurable emissions for a diocese in this case they have been included with the Scope 1 and 2 emissions calculations for a combined building energy emissions baseline (see Figure 6). Gross calorific value and mains gas blend is used here for natural gas emissions factors.

60 Committee on Climate Change (2019), Net Zero: The UK's contribution to stopping global warming

61 E.g., Climate Change Committee (2020), Sixth Carbon Budget

62 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

Worked example of applying a conversion factor to calculate Scope 2 emissions

Imagine that a diocese used 1,000,000kWh of mains electricity in 2019, and wanted to understand the emissions implications of this energy use. It would begin by identifying an emissions factor that applied to that particular activity in that particular time period. We recommend using the UK Government conversion factors for calculating all diocesan emissions.⁶³ The emissions factor for one kWh of electricity in 2019 is 0.2556kg of carbon dioxide equivalent greenhouse gas emissions. The diocese would therefore multiply the 1,000,000kWh of electricity used by the conversion factor of 0.2556, to learn that its electricity use in 2019 led to 255,000kg of carbon dioxide equivalent greenhouse gas emissions. In this example we use 1,000,000kWh for the purpose of simple illustration, however, in reality this is a very small number relative to normal diocesan energy use.

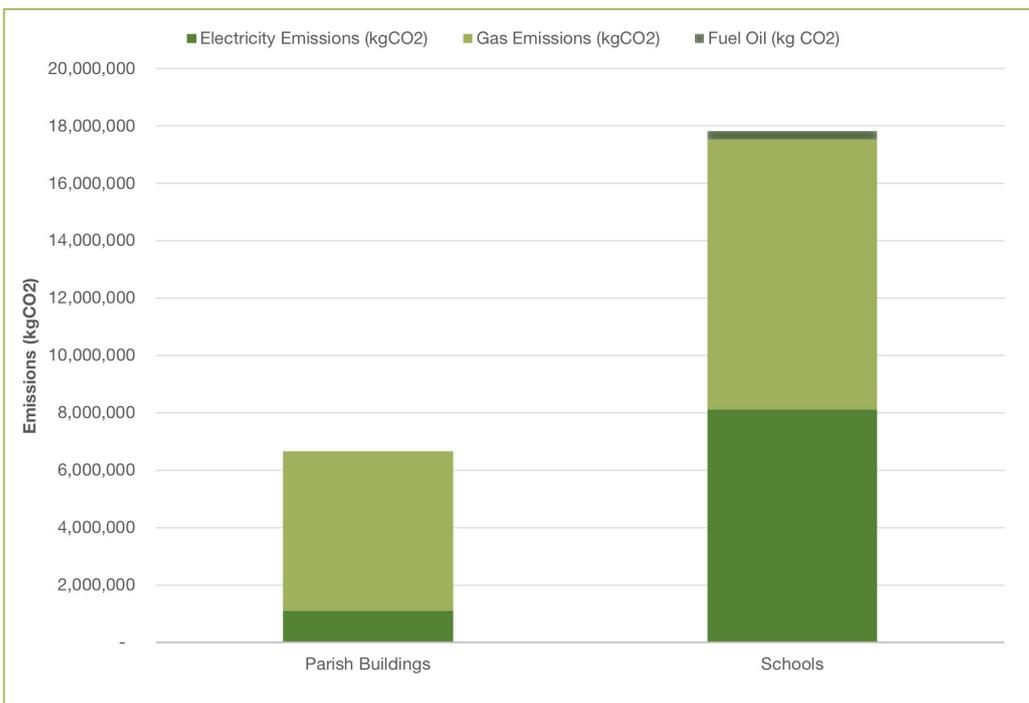


Figure 3. Diocese of Salford baseline for operational fuel and energy use in buildings

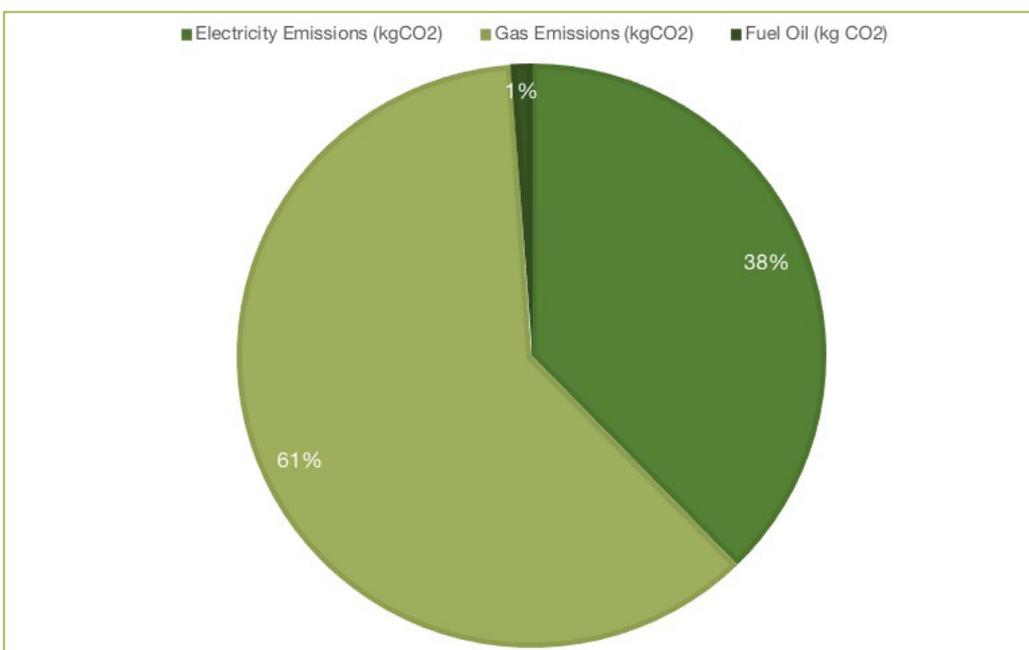


Figure 4. Proportion of emissions from operational fuel and energy use in buildings by source in the Diocese of Salford during 2019

63 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

'Market-based', or 'location-based' accounting for Scope 2 carbon emissions?

The Greenhouse Gas Protocol is an international standard developed by the World Resources Institute and others to provide guidance on accounting for greenhouse gas emissions. Its prescriptions can be seen as forming the methodological basis for most carbon accounting implementations around the globe. In 2015 the Greenhouse Gas Protocol added the option for organisations to report their Scope 2 emissions using a method of accounting called 'market-based accounting', with the stipulation that this should only be done alongside reporting using the existing method of 'location-based accounting', and not instead of it.⁶⁴ It states that organisations should only report both their location-based Scope 2 emissions and their market-based Scope 2 emissions where energy suppliers are able to provide users with certificates or other product or supplier specific data explaining and guaranteeing the emissions intensity of a service.⁶⁵ At the time of this report's publication, if a diocese is buying renewable energy or gas from IFM's main tariff, then the supplier meets these conditions.

Location-based accounting for purchased fuel or energy is the original method, and asks the organisation to calculate its emissions on the basis of the energy that is actually used by the organisation. Any organisation that draws its energy from a national grid will be using energy that is aggregated from the different sources of energy that that grid has been fed by. In a practical, physical sense, therefore, if we are interested in the emissions intensity of actual organisational energy use, it does not matter what energy the organisation has paid for. Whether the energy provider that the organisation buys from funds the development of renewable generation, advertises its tariffs as renewable, and so on, has no bearing on the actual energy used by the purchasing organisation. The only way that an organisation can guarantee that it is using energy with an emissions intensity different to that of the grid will be for it to acquire that energy via a private infrastructure that directly links the generation facility to the organisation.

If the organisation is taking its energy from the national grid, then the organisation's energy use will carry the same emissions intensity as the aggregate emissions intensity of the grid itself. As of 2021, around 40% of the national electricity grid generation mix is classed as 'zero carbon' by the National Grid.⁶⁶ According to the UK Government's conversion factors this means that for every kWh of electricity used from the national grid, around 212 grams of carbon dioxide equivalent greenhouse gasses are emitted.⁶⁷ Therefore, in an example of diocesan electricity use in 2021, the location-based method of accounting for electricity purchased would dictate that the diocese account for its electricity use by multiplying the

number of the total kWh used by the organisation over the reporting period by the conversion factor of 0.21233.⁶⁸

Market-based accounting, by contrast, asks the organisation to calculate the carbon emissions of the organisation's activities according to the carbon intensity of the electricity that it purchases rather than uses. When calculating the organisation's emissions, rather than using conversion factors that reflect the emissions intensity of the grid, organisations instead apply conversion factors that they establish with the energy supplier themselves. These conversion factors will not reflect the energy that the organisation actually uses. Rather, they will represent an abstraction that can be understood as the energy that the organisation paid for, and used in principle. To establish conversion factors for market-based emissions calculations, organisations first need to understand the emissions intensity of the tariffs that they are on.

Fortunately, for dioceses purchasing energy through IFM this is relatively straightforward. Dioceses are able to request their 'Renewable Energy for Business Certificate', and their 'Green Gas for Business Certificate' via IFM. These certificates will show what percentage of the energy purchased over the period specified by the certificate was attributable to renewable sources, as backed by REGOs or Green Gas Certificates respectively. Illustratively, in the case of the Diocese of Salford, electricity use was certified by the supplier as being 'from' 100% renewable sources in the period from 2018-20, whilst gas was 'from' 59% renewable sources in the period 2017-18, and 71% in the period 2018-19. Green Gas for Business Certificates requested by dioceses for the most recent accounting period are likely to display a further increase of renewably sourced gas to 78%.⁶⁹

Equipped with these percentages, a diocese can begin to calculate its market-based emissions figure. In the case of both energy and gas, a diocese with a REGO backed Renewable Energy for Business Certificate, or a Green Gas Certificate Backed Green Gas for Business Certificate can treat the percentage of their energy use described as 'from renewable sources' by their gas and energy certificate as having an emissions factor of zero.⁷⁰ However, this only applies to the energy and gas that the diocese uses that is certified.

64 Greenhouse Gas Protocol (2015), Scope 2 Guidance
65 Greenhouse Gas Protocol (2015), Scope 2 Guidance
66 National Grid, (2021), Road to zero carbon in numbers
67 UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions

68 The UK government conversion factors are actually more precise than this example indicates. Please review UK Government (2022), Government conversion factors for company reporting of greenhouse gas emissions.
69 The Greenhouse Gas Protocol guidance on implementing market-based accounting focusses on Scope 2 emissions. In section 4 we classified fuel for heating as a source of Scope 1 emissions. Despite this difference in classification, because of the similarities in how these goods are purchased and certified, it is equally possible to use market-based accounting to account for renewable gas tariffs as it is for renewable energy.
70 Dioceses may still wish to apply a Scope 3 calculation describing the transmission and distribution losses of the energy use, meaning that the energy use may not carry a value of zero overall.

Therefore, in an example where a diocese has a Green Gas for Business Certificate that covers 78% of the gas bought through IFM the remaining 22% will still need to be accounted for through a location-based conversion factor. Naturally, this second figure will also need to be included in the total market-based emissions figure that the diocese reports.

These certificates only apply to fuel or energy that the diocese procures from the provider to which those certificates pertain. Continuing the example of IFM's main tariffs, where dioceses do not buy an amount of fuel or energy through IFM, the diocese will need to determine what percentage of that fuel or energy which is bought from other providers is renewably sourced. If the tariff through which it is bought is a renewable tariff, the diocese will need to request the equivalent certification from their supplier directly to determine what percentage of the energy or fuel used through that tariff can be certified as renewably sourced. As before, it should treat all energy and fuel use from 100% certified renewable sources as having an emissions factor of 0. Also as before, whatever percentage of that fuel and energy use is not certified as renewable will need to be accounted for using the normal location-based conversion factor. If the non-IFM tariff has no certified renewably sourced element, then the diocese need only apply the location-based method to calculate the emissions associated with that fuel or energy. As before, this figure should be added to the total market-based emissions figure.

At the end of this process the diocese will be armed with two carbon footprints. One market-based figure that will help the diocese communicate some positive impacts associated with its ethical procurement, and one location-based that communicates the actual, physical emissions that the diocese is causing. The Greenhouse Gas Protocol does not specify which accounting method should be used for targets and benchmarks by organisations, and in many cases it is this accounting technique that renders near term decarbonisation targets technically possible, if not necessarily substantively possible.

Having articulated the distinct processes of location-based and market-based accounting for dioceses that wish to engage in both methods, it is now important to be very clear on the limits and risks of market-based accounting. We set out three important caveats that any diocese needs to be aware of when considering conducting a market-based calculation in addition to its location-based calculation.

1. Location-based accounting is a more accurate representation of the greenhouse gases that are actually emitted, in reality, by the activities of a diocese. It is important not to communicate market-based figures as the actual emissions of the diocese, as this will be misleading. This risk is particularly pertinent where the renewable tariff being used for market-based accounting is backed by REGO certificates, rather than what is referred to as an investment-based tariff, or a direct procurement tariff. The latter two forms of tariff facilitate the development of additional renewable electricity generation capacity, whereas tariffs backed by REGOs send comparatively tiny incentives and market signals to the producers of renewable energy.

2. Because the electricity and gas being used by the diocese has exactly the same carbon intensity as it would have if the diocese were not on a renewable tariff, efforts to reduce wasted electricity and gas still need to be pursued by a diocese regardless of the energy tariff the diocese is using. The worst-case scenario that can occur in organisations using renewable tariffs and market-based accounting is that the organisation comes to act as if its electricity is carbon free, and therefore does not prioritise energy conservation or generation measures that would have led to real emissions reductions.

3. There is significant uncertainty around whether the gas network will be part of a low carbon heating future for buildings. The electrification of heating, by contrast, is expected to play a central role.^{71/72} As it stands, 40% of the national electricity grid's generation mix is 'zero carbon',⁷³ and it may be entirely decarbonised by 2035.⁷⁴ By contrast, less than 1% of the UK's natural gas supply by mains gas is currently low carbon (e.g. bio-methane).⁷⁵ Targets and baselines applying market-based calculations to green gas certificate backed energy tariffs may encourage an organisation to remain on the gas network, despite the evidence that the gas network is, on the whole, not decarbonising.

71 Committee on Climate Change (2019), Net Zero – The UK's contribution to stopping global warming

72 National Grid (2021), Future energy scenarios

73 National Grid (2021), Road to zero carbon in numbers

74 National Grid (2021), Future energy scenarios

75 UK Government (2021), Digest of UK Energy Statistics (DUKES)

CASE: CALCULATING THE CARBON EMISSIONS FROM GAS AND ELECTRICITY USE FOR A PARISH IN THE DIOCESE OF SALFORD

To calculate the total footprint of a parish, the Diocese of Salford began by reviewing 2019 consumption data from the IFM spreadsheet. Electricity consumption in the parish for 2019 was 12,891kWh, with one meter on site. Gas consumption was 180,423kWh, across two meters, one meter reading in the church (69,978kWh) and one in the presbytery (110,445kWh).

With these totals, the diocese could then calculate carbon emissions for gas and electricity use, using the UK Government carbon conversion factors for 2019. The Diocese of Salford chose to use a conversion factor of 0.2773 per kWh, which accounted for the transmission and distribution losses from diocesan energy use. Transmission and distribution losses are treated as Scope 3 by the GHG Protocol, and so, whilst we recommend using a conversion factor that includes them, it is not necessary for a diocese to do so if it only wants to know its Scope 1 and 2 emissions. Therefore, the calculation to determine the emissions from electricity used in the parish was $12,891 \times 0.2773 = 3,575 \text{ kgCO}_2\text{e/kWh}$. The 2019 gas conversion factor was 0.18385 per kWh. Therefore, the calculation to determine the emissions from the gas used in the parish was $180,423 \times 0.18385 = 33,171 \text{ kgCO}_2\text{e/kWh}$.

7.1.3. Using the data to inform interventions

As well as providing a baseline for target setting, the process of assessing emissions across the building stock of a diocese also helps identify 'hot spot' areas. For example, Figure 5 shows energy use per pupil across schools in the Diocese of Salford for 2019. Dioceses can use this information to help prioritise sites for interventions. In this case, the diocese may wish to begin by reviewing the DEC's of the worst performing schools, and then prioritise them for a further energy survey that would offer more detailed recommendations.

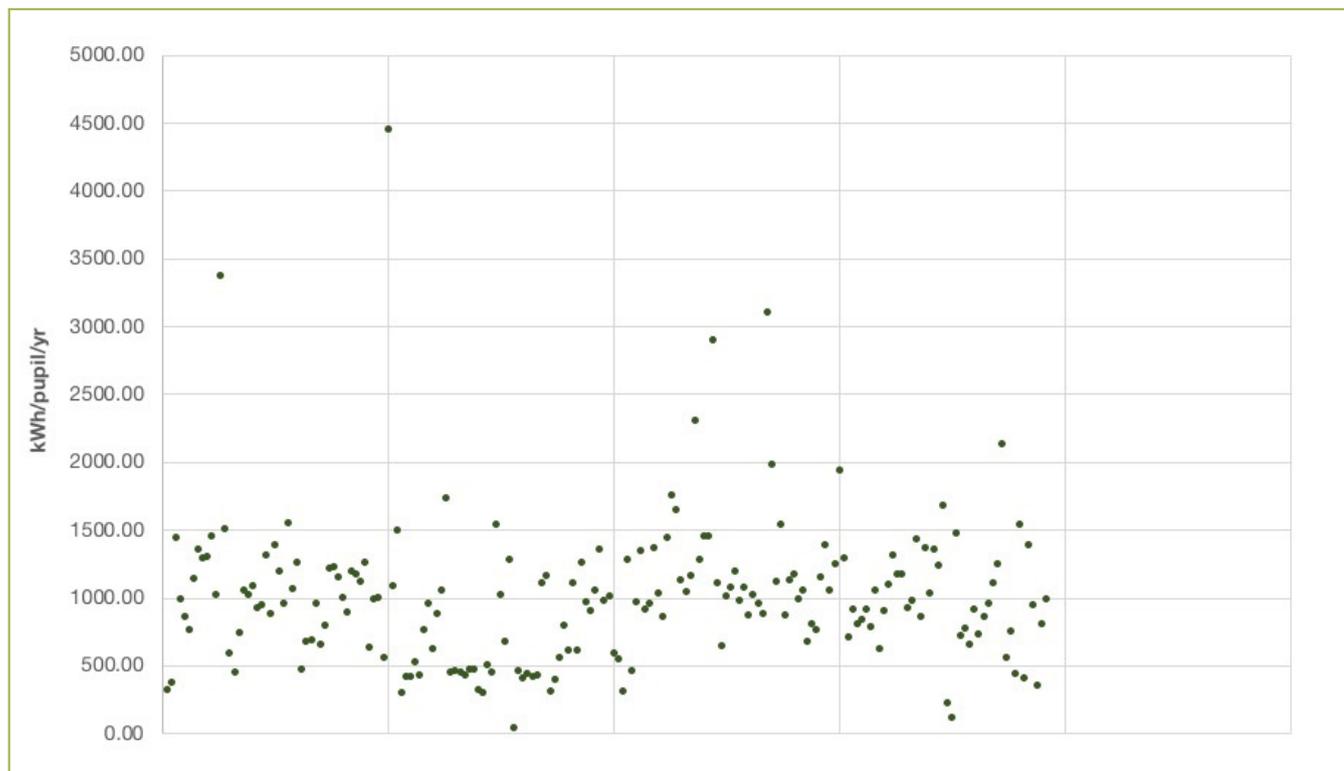


Figure 5. Distribution of schools by energy use per pupil in 2019

7.2 Dealing with missing data

7.2.1 Buildings

A significant proportion of parish buildings in the Diocese of Salford procure services through the central IFM process, providing good visibility of energy use. The Diocese of Salford has also been able to obtain good coverage of energy use in the schools under its auspices. However, there are still significant gaps in the data.

There is no metered electricity data for 19.5% of the parish buildings listed as owned by the diocese, and 25.5% have no gas meter data. From the available data it was not possible to discern clear patterns of average energy use by building type (e.g. presbytery, parish hall) alone. With limited information on the occupancy and floor space of the buildings, average building energy use data for diocesan parish buildings was used to provide an estimate of building energy emissions for missing building meter data. The averaging of energy use accounted for Salford Cathedral as an outlier with significantly higher energy demand than other building types. While this gives a central estimate for the baseline

it was necessary to do sensitivity analysis of the building average demand figure, see Figure 6. A +/- 33% range of this value was used to assess the implications of the average usage on the baseline results. This +/-33% value is a relatively standard value to use in this context, and another diocese undertaking the same process may wish to use the same range.

For diocesan school data, meter data was not available for 18% of buildings. However, the majority (all but four of the missing data schools) of schools had Display Energy Certificates searchable online. This data was used to gap fill the initial inventory of school data. For the 2% of schools with no metered or DEC data, average energy use per pupil data from the available data set was used to estimate a value for these buildings.⁷⁶

Figure 6 shows the variance in the 2019 emissions baseline for buildings applying a sensitivity assessment to the averaged values used to infer energy usage for buildings with no metered data. It may be that the buildings with no metered data or DEC have energy use significantly different than the adjusted diocesan average, but otherwise the sensitivity range indicates that the central estimate for buildings with missing meter data is reasonable when parish and school buildings are aggregated.

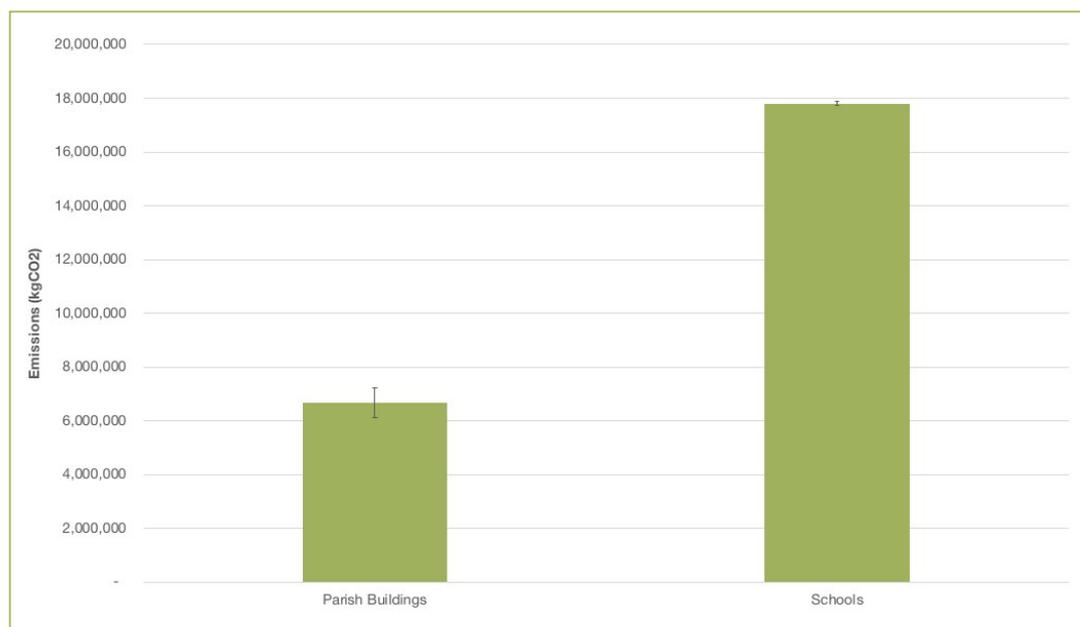


Figure 6. Emissions baseline for 2019 including ranges from sensitivity analysis

7.2.2 Travel

It was acknowledged by the Diocese of Salford that as yet there is only partial data on Scope 1 emissions for business travel and Scope 3 data on parishioner travel. While for buildings data it was possible to gap fill using reasonable estimates, travel data is currently too incomplete to produce an approximate baseline. This is partly because it is not clear what proportion of travel is covered by the sample data available. An improved inventory of travel is needed to set quantitative targets in this instance.

⁷⁶ Although not enforced, it is illegal for a school not to have an up to date DEC. A DEC contains a report recommending interventions, so is not simply a compliance exercise. In cases where a diocese identifies a school without a DEC, it may be desirable for the diocese to request that the school complies with the law, and arranges for a DEC to be completed. DECs are generally affordable, with an approximate average cost of £350 per school.

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Recognitions

We would like to acknowledge the contributions of all those who have participated in the project's advisory group. The advisory group has included, but was not limited to those listed below.

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Diocese of Salford

We extend our thanks to the entire Curia of the Diocese of Salford for their kind and thoughtful contributions to this work.

Interdiocesan Fuel Management

IFM has agreed to work directly with dioceses to coordinate a way of sharing fuel and energy use data that can support the dioceses in their carbon accounting processes. We thank the team at IFM for their constructive input into this research, and for taking a proactive role in future Catholic diocesan carbon accounting.

⁷⁷ All views contained within this report are attributable solely to the author and do not necessarily reflect those of researchers within the wider Tyndall Centre.

DIOCESE OF  SALFORD



Tyndall°Centre
for Climate Change Research

Guidance on Catholic diocesan carbon accounting

**Report version 2.1
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The Guardians of Creation Project