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Guidance on developing strategy for decarbonising Catholic diocesan building stocks



Report prepared by the Guardians of Creation Project for the
Catholic Church in the UK, with applicability across the Global North

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 reports are frequently updated. Please check the Guardians of Creation Project page on the St Mary's University website for the latest versions.

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.

In addition, two reports from our partners are also available from the St Mary's University website.

Environmental Stewardship in Places of Worship, by the Tyndall Centre for Climate Change Research, University of Manchester, is a practical guide that offers a series of decision trees to help people work out what they might need to do to decarbonise a place of worship.

Caring for our Common Home in the Church and Beyond: theological foundations for a comprehensive decarbonisation strategy in the Catholic diocese by the Laudato Si' Research Institute, Campion Hall, Oxford University, outlines how the concept of integral ecology as developed in Laudato Si' can inform transformative responses to the ecological crisis in Catholic dioceses.

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.



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1. Executive summary

1.1 Introduction

In April 2021, the UK government set a legally binding target to reduce national carbon emissions by 78% by 2035.¹ Ofgem and the Climate Change Committee predict that achieving this target will require near-complete decarbonisation of the built environment nationally, before 2035.² Consequently, we can anticipate that to be in line with UK government legislation, and the United Nations' targets for avoiding the worst effects of catastrophic climate change on which that legislation is based, the diocesan building stock of 2035 will need to be largely or entirely decarbonised. Between this growing regulatory urgency and the extensive positive case for decarbonisation set out in *Laudato Si'*³ and *Laudate Deum*⁴ and again in the Catholic Bishops' Conference of England and Wales' statement on Creation, *The Call of Creation*,⁵ the need for the

Catholic Church in the UK, and in other countries across the Global North, to formulate and implement a decarbonisation strategy has never been greater.

It is common for a Catholic diocese in England and Wales to have hundreds of buildings in its building stock, comprised mostly of church halls, clubs, schools and presbyteries. Because of the size, condition, and use of diocesan estates, the operational energy use of the diocesan building stock has a significant carbon footprint. To illustrate, we calculate that operational energy use in Catholic schools and parish-managed buildings within the Diocese of Salford was responsible for around 25,000 tonnes of carbon emissions in 2019. This is enough carbon dioxide to fill 14 hot air balloons every day.

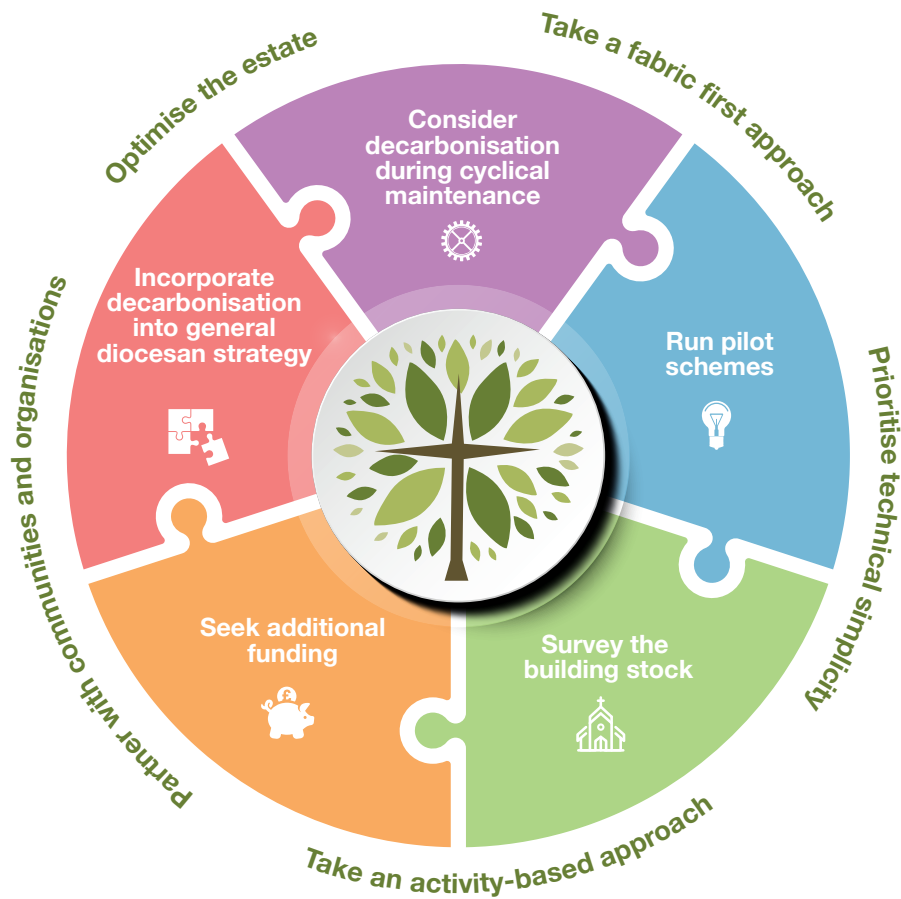


Figure 1. A strategic framework for decarbonising diocesan building stocks

1 UK Government, [Press release: UK enshrines new target in law to slash emissions by 78% by 2035](#)

2 [Climate Change Committee, Net Zero – the UK's contribution to stopping global warming](#) and Ofgem, [Decarbonisation action plan](#)

3 Pope Francis, [Laudato Si'](#)

4 Pope Francis, [Laudate Deum](#)

5 The Catholic Church Bishops' Conference of England and Wales, [The Call of Creation](#)

Even if schools are removed from the calculation, the diocese would still have been responsible for nearly 7,200 tonnes of carbon dioxide emissions from operational energy use in its parishes, schools, halls and religious houses in 2019. Because of the volume of diocesan carbon emissions associated with operational energy use in its buildings, any ambition to decarbonise a diocese is heavily contingent on how a diocese manages its buildings. From our consultations with diocesan managers and expert participants from industry and academia, there is a clear consensus that for a diocese to decarbonise it must begin by developing a strategy for reducing the operational emissions of the diocesan building stock. This report offers guidance on the development of that strategy.

The substance of this report is a strategy framework for developing a decarbonisation strategy for a diocesan building stock anywhere in the UK. Although the approach was developed in the UK, the structure and recommendations of this guidance remain highly applicable throughout the Global North. We invite readers from outside the UK to disregard any substantive references to the UK context in this guidance but to read on in light of the structural similarities between dioceses in developed economies. By 'strategy framework', we mean a set of organised and interacting concepts that can help analyse the task of decarbonising the building stock into comprehensible, manageable elements. These concepts offer a methodical process for formulating and implementing a decarbonisation strategy, which any diocese can follow. Our framework is divided into two sections: the first introduces the activities that a diocese can take to develop a decarbonisation strategy, the second introduces general principles that a diocese can apply whilst doing so. Each section has five sub-sections: the section on activities details five activities associated with diocesan decarbonisation, the section on principles details five different principles to embed within the process. Each of these subsections is then populated with a number of rationales for why that activity or principle should be adopted.

In Figure 1 above, we summarise the substance of this report in a visual model, that articulates the understanding of how to formulate and implement a diocesan decarbonisation strategy that we developed during our investigation. The five diocesan activities that we recommend are depicted inside the circle, occurring as a cyclical, iterative process. The five principles that we identified for decarbonising the diocese are depicted on the outside of the circle, influencing and providing the context for the diocesan activity within.

1.2 Scope of the report

This report has been prepared for the Catholic Church in the UK with the support of the Catholic Bishops' Conference of England and Wales. The Guardians of Creation Project (GoCP) is an interdisciplinary, multi-institutional project investigating sustainability transition and ecological conversion in the Catholic Church. This report by GoCP concentrates entirely on guidance for developing decarbonisation strategy for the management of the diocesan built environment. This guidance will be most useful when used in conjunction with other GoCP resources, in particular ***Guidance on Catholic diocesan carbon accounting***.

The report is not designed to give firm prescriptions in every area related to decarbonisation and built environment. Rather, it is designed to offer a process that dioceses can follow to develop their own strategies for decarbonising their own building stock. A prevalent theme in our interviews and focus groups was the importance of subsidiarity in the diocesan response to the ecological crisis. We have tried to stay as close to this principle as possible in the development of all our guidance, such that dioceses and parishes may take from the guidance what they feel is beneficial in their particular context and leave what they feel is not.

Although the report is broadly non-technical and written for both technical and non-technical audiences, we refer to technical resources throughout the report. The report will be of interest to diocesan managers involved in property, finance, fundraising and environmental management. It will also be of interest to bishops and trustees of dioceses. Because many of the activities described occur at the parish level, it will also be of interest to parish priests and parish committees.

In the preparation of this guidance, GoCP convened a group of 15 experts from industry, academia, and the Catholic Church to discuss decarbonising the diocesan estate. We list these participants' names, role titles and organisational affiliations at the end of the report. Over the following two year period, GoCP then conducted interviews and focus groups with a further 130 Church professionals, religious, clergy and sustainability professionals within the Diocese of Salford and other dioceses in England and Wales. Participation in the second part of the study was anonymous, so we do not identify these participants in this report. This report refers to our 15 named participants as 'expert participants' throughout. However, this is not to suggest that the anonymous contributions we received were any less expert, and we thank everyone who participated in this study for the expertise they shared with us. Where appropriate, this report also draws on industry guidance and UK government policy. This guidance has been prepared using data collection and analysis techniques designed for exploratory organisation and management case study research. The recommendations that the guidance makes should be treated as our analysis, synthesis and reporting of the advice and information shared with us by our diocesan, academic and industry participants.

This guidance is concerned primarily with developing diocesan level strategy for operational carbon emissions in the diocesan building stock (in more technical language, generally 'Scope 1' and 'Scope 2' carbon emissions).⁶ The substance of the report, therefore, is concerned principally with mitigating emissions resulting from heating and electricity used in the operation of buildings. Carbon emissions associated with construction, or embodied carbon in building materials and systems, are broadly outside the scope of this guidance. Although these topics are not in scope, references to several resources dealing with these issues have been included.⁷

This report can be read as stand-alone guidance. However, we strongly recommend that it is read alongside ***Guidance on Catholic diocesan carbon accounting*** and ***Environmental stewardship in places of worship***. Although, in the case of the latter, we have attempted to include as much information from that document in this report as possible. All of the GoCP reports are available to download from the GoCP webpage on the St Mary's University website.⁸

6 See [Greenhouse Gas Protocol, Corporate Standard](#) for a thorough explanation of what is meant by 'scope'

7 See in particular resources produced by the [World Green Building Council](#), [UK Green Building Council](#) and the [London Energy Transformation Initiative](#), [Climate Emergency Design Guide](#) for design approaches, and [Greenhouse Gas Protocol, Life Cycle Databases](#) for extensive information on embodied carbon. The [Embodied Carbon in Construction Calculator](#), otherwise known as the EC3 tool, is an example of a widely used and free-to-use database of product disclosures, through which a diocese can calculate and model its embodied carbon costs. The software was created by the not-for-profit organisation Building Transparency

8 Guardians of Creation Project, [About Guardians of Creation Project](#)

1.3 'Decarbonisation'

During our diocesan interviews and focus groups, we found that the terminology associated with reducing carbon emissions can be perceived as complex to the extent that it may even constitute a minor barrier to action. In this report, we strive to use accessible terminology.

In this report, '*decarbonisation*' describes the process of reducing carbon dioxide and other greenhouse gas emissions that occur as a consequence of using energy. Decarbonising the diocesan building stock, therefore, means reducing the greenhouse gas emissions associated with the diocese's buildings. We recommend the term '*decarbonisation*' when communicating diocesan policy and strategy on operational greenhouse gas emissions reduction. We feel that it is a relatively simple term to understand, and connects to a wider programme of activity in the energy sector and society more broadly, including the guidance of the Intergovernmental Panel on Climate Change.⁹ Using the term '*decarbonisation*' does not normally entail a commitment to a particular emissions target as such, nor a method for reaching it. It does not entail concepts like '*net zero*' carbon emissions, '*carbon neutrality*', '*climate neutrality*', or '*absolute zero*' carbon emissions. These terms are typically held to indicate specific emissions targets along with implied methods for reaching them. Please see Section 5 of [Guidance on Diocesan Carbon Accounting](#) for a more detailed discussion of the perceived differences between the terms 'net zero' and 'carbon neutrality.'

In our interviews and focus groups, we found that diocesan teams may sometimes prefer to avoid technical connotations altogether when communicating their strategy for reducing greenhouse gas emissions. In these cases, participants preferred the idea of communicating their strategy as a '*carbon reduction*' strategy. Perhaps more important than the terminology itself is that dioceses find a vocabulary with which they become comfortable and which helps them to reduce their energy use overall, while increasing their use of renewable systems. The terminology itself should remain secondary to the objectives that the terminology describes.

1.4 The fundamentals

Before we explore the substance of the report in detail, we offer three fundamental takeaways for anyone interested in formulating and implementing a diocesan decarbonisation strategy. These three ideas repeat throughout the report, in different sections and in different ways. They emerged as particularly important during our fieldwork, and we believe that it will be extremely difficult to approach diocesan decarbonisation without careful consideration of each of the three themes. As such, we introduce them here in the executive summary.

1.4.1 There is no decarbonisation without electrification

It is reasonable to infer from our case study findings that gas-based heating systems are currently the major driver of emissions from diocesan buildings' operational energy use in the UK. In the Diocese of Salford, for example, in non-school buildings, the total emissions from gas use are around six times larger than the total from electricity use.

The International Energy Agency (IEA) has warned that any gas-based heating systems installed after 2025 are unlikely to be compliant with the United Nations' targets for mitigating catastrophic global warming, i.e., achieving global net zero carbon emissions by 2050, and limiting

global heating to 1.5 degrees by the end of the century.¹⁰ Although the danger posed by gas-based heating systems is not reflected in UK building regulations at the time of writing, organisations like the Confederation of British Industry (CBI) have stressed that the UK's net zero target will be impossible to meet without a ban on new gas boiler installations by 2025.¹¹ Organisations like the IEA and CBI have no reason to express partisanship for renewable technologies. Indeed, they both exist primarily to support the economic interests of the OECD nations and the UK private sector, respectively. Rather, these bodies are merely translating the same urgent climate science that is celebrated by Pope Francis in *Laudato Si'*¹² into practical recommendations for those with a responsibility for buildings. For advice on what to do when your gas-based heating system needs replacement, see section 2.1 of this report.

In frank, material terms, the emissions from diocesan heating systems may be the greatest negative contribution of the Catholic Church in the UK to the climate crisis. Consequently, it is difficult to see a way that UK dioceses' responsibility for mitigating the worst consequences of the climate crisis does not feature electrifying away the hundreds of thousands of tonnes of carbon dioxide that Church owned and managed buildings emit each year from their gas-based heating systems, whilst simultaneously making all their heating systems as efficient as possible. For advice on how to make buildings and systems more efficient, see Sections 2.3 and 3.2 of this report.

For readers outside the UK, it is worth highlighting that the case for electrification is tightly coupled to the carbon intensity of the grid from which that electricity is drawn. Consequently, in economies undergoing effective energy transitions, the case for electrification tends to improve over time. In 2012, the average UK kilowatt-hour (kWh) of electricity entailed the emission of half a kilogram of carbon dioxide in its production. By 2020, that figure had dipped below 200 grams.¹³ At the time of writing, National Grid anticipates that the UK power sector will get to net-negative carbon emissions in 2033 or 2034, subject to energy security considerations.¹⁴ It is essential to consider the current and anticipated carbon intensity of your grid before committing to electrification as a pillar of your decarbonisation strategy.

1.4.2 Prioritise buildings that are easier to decarbonise

Not all diocesan buildings are equally easy to decarbonise, moreover, not all buildings will have an equal impact on the diocesan carbon footprint once they are decarbonised. Diocesan building stocks contain churches, church halls, schools, presbyteries, religious houses, offices, clubs and other kinds of buildings. Churches are usually the hardest to decarbonise of these building types. However, largely thanks to their use patterns, churches are also likely to represent a relatively small fraction of most dioceses' total carbon footprint. In the Diocese of Salford, for example, Churches represented about 15% of the 2019 emissions from operational building energy use. Even if the diocese were to remove schools from its calculation, churches would still account for less than half of all remaining emissions from operational energy use in buildings.

9 IPCC, [Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels](#)

10 International Energy Agency, [Net Zero by 2050](#)

11 Confederation of British Industry, [Net-zero: The road to low carbon heat](#)

12 Pope Francis, [Laudato Si'](#)

13 UK Government, [Government Greenhouse Gas Conversion Factors for Company Reporting: Methodology Paper for Conversion factors Final Report](#)

14 National Grid, [Future Energy Scenarios](#)

Presbyteries, offices and schools, by contrast, are normally used much more intensively, but the decarbonisation of these building types also often happens to be relatively well understood. Professionals experienced in the retrofitting of domestic buildings will be able to advise authoritatively on decarbonising presbyteries, and those experienced in the retrofitting of non-domestic buildings will be able to advise on decarbonising schools and offices. Consequently, where the diocese must make capital trade-offs about where to invest in decarbonisation in the short term, we strongly recommend that dioceses concentrate on domestic buildings and schools. These are the ‘quick wins’ insofar as decarbonising these buildings is likely to be proportionately cheaper and yield greater energy savings and carbon reduction in the long run.

Although the diocese can often afford to assign them a lower priority, churches, of course, remain a contributor to the diocesan carbon footprint. Churches also have symbolic importance, and decarbonising churches can have an important conscientising effect in the community. What’s more, churches are often fitted with extremely inefficient space heating systems, such that much of the heat generated rises high above the heads of the building users. Decarbonising churches, therefore, remains essential. However, because of their characteristics, churches may require particularly careful consideration relative to many of the other diocesan buildings. Throughout the report, but especially in sections 3.3 and 3.4, we explore some ways to think about the challenges associated with decarbonising churches. The Church of England has produced excellent guidance on heating and decarbonising church buildings which may also be useful for dioceses that are ready to consider decarbonising their churches.¹⁵

1.4.3 Diocesan care for creation cannot depend on government funding and regulation

Government grants and subsidies around decarbonisation come and go. In the case of renewable technologies like solar photovoltaic (PV) panels and electrified heating like heat pumps, these grants and subsidies have generally been most favourable earlier in the technology’s lifecycle. This is to incentivise early adoption and to make up for the relative lack of competitiveness that a nascent technology exhibits against substitutes. The UK Government’s 2022 Heat and Buildings Strategy sets out this logic explicitly.¹⁶ For this reason, much of the best support available to dioceses around the core technologies for decarbonisation has probably passed. Policies like the Feed-In Tariffs scheme to incentivise solar PV adoption and grants like the Renewable Heat Incentive scheme to incentivise electrified heating adoption have been replaced by less munificent policies and grants, like the Smart Export Guarantee in the case of the former, and the Boiler Upgrade Scheme in the case of the latter. However, we can expect that these, too, will change over time.

As political factors change, both increases and decreases in the general level of government munificence around decarbonisation are possible between now and 2035. It is entirely possible that successive governments may become more punitive in their enforcement of the UK carbon budget, but there are also risks associated with future governments underregulating. The 2022 High Court judgment finding that the UK government’s net zero strategy was unlawful in its lack of specification on how the UK’s net zero commitments will be met indicates that it is entirely possible for any government administration to fall behind the United Nations-aligned net zero objectives.

Consequently, we encourage dioceses to apply for government decarbonisation grants where they can, and we note that in England and Wales, there have already been several impactful diocesan successes in this regard, particularly around heritage buildings and schools. However, in our judgement, dioceses hoping to base their decarbonisation strategy on government support and regulation alone are exposing themselves to unacceptable levels of risk. Moreover, such an approach overlooks the position of the Catholic Church as a moral leader in society. As one of our participants observed, ‘there would be no Catholic schools in the UK if the Church had waited for government grants and regulation.’

¹⁵ Church of England, [Heating](#)

¹⁶ UK Government, [Heat and Buildings Strategy](#)

2. Decarbonisation activities

This section details five major categories of activity that a diocese will need to undertake as part of a decarbonisation process. We consider this to be a relatively exhaustive typology of activities. Our analysis suggests that a decarbonisation strategy which does not trace a path through all five of these activities will be difficult to implement successfully.

The first recommendation of this report is to **consider decarbonisation as part of cyclical maintenance (1)**. Thinking in terms of cyclical maintenance may represent a relatively low, and efficient level of financial investment in decarbonisation, which simultaneously protects the diocese from some future costs and regulatory risk. Once the most urgent buildings have been identified, a diocese will need to start to **run pilot schemes (2)**. Running pilots begins to equip the diocese with an understanding that can go on to form the basis of a more systematic decarbonisation strategy as momentum and confidence build. To implement the pilot schemes, and in some cases, to prepare the diocese for funding or investment, the diocese will need to **survey the building stock (3)**. In many cases, the diocese will not be able to, or will not wish to fund such projects without additional income, in which case the diocese will have to **seek additional funding (4)**. Finally, on the completion of the process, to consolidate the organisational learning, and to connect the decarbonisation activity to the wider activity of the diocese, the diocesan management would normally **incorporate decarbonisation into general diocesan strategy (5)**.

We present the five activities in the order in which a diocese may wish to begin considering them. However, these activities would not normally occur in a linear way. In reality, many of these activities will be occurring simultaneously. Moreover, a diocese will need to undertake these activities in a cyclical or recursive process, perhaps revisiting each activity at a larger scale as levels of understanding, organisational momentum, and popular support grow. Please note that this is a process for decision-making at the diocesan level. It is not the same as the commonly accepted hierarchy of activities for decarbonisation that applies at the level of an individual building or site. To see how the commonly accepted emissions mitigation hierarchy might apply to an individual building in a diocese, please see Figure 4 in Section 2.3. In the example below, we describe how a diocese might complete two full 'cycles' of the wheel, illustrating how the kinds of activity described in each wheel segment might intensify as the diocese develops confidence and understanding.

(1a) Consider decarbonisation during cyclical maintenance

The property team of a diocese that has limited experience with decarbonisation may observe that the heating systems in one or two parish halls are due for replacement in the near future, or have already broken down.

(2a) Run pilot schemes

The diocese might propose installing insulation and a simple renewable heating alternative. The parishes that manage the halls are found to be sympathetic to the proposal. The technologies being considered might include the installation of a solar photovoltaic (PV) panel or a split system air source heat pump.

(3a) Survey the building stock

The halls would require an energy survey report or retrofit assessment to make sure that the small projects being considered are appropriate. From this assessment, it would also be possible to determine the financial case for the proposed projects.

(4a) Seek additional funding

It is concluded that the projects will deliver long-run financial value to the diocese. Because the projects are small, they might be affordable with existing diocesan or parish funds or a small grant from an external grant issuer.

(5a) On completion of the projects, the organisational learning from this process could then be formalised as a case study or policy or that might offer governance or direction on how to apply the approach in other parishes.

(1b) Emboldened by the success of the first projects and equipped with some new understanding of what may be effective in buildings with similar features and use patterns, the diocese might begin monitoring when the heating systems of similar buildings need replacement. Once they become due for replacement, the diocese automatically considers them candidates for the PV and heat decarbonisation solutions that it has become comfortable with.

(2b) The diocese might begin to iterate on this solution, perhaps experimenting with installing battery energy storage systems or another complementary technology in a handful of sites. Although it would add some complexity and cost to the solution in the short run, the diocese might conclude that including battery storage on a few sites that the diocese knows are used at night could help significantly with costs in the long run.

(3b) The diocese might now encourage the systematic inclusion of retrofit assessments as part of the cyclical maintenance process across the diocese. For those sites being proposed for battery storage systems, the survey process would now need to include metering the buildings to determine whether they are used enough at night to justify the investment.

(4b) This increased number and complexity of projects would naturally require more money, so the diocese might start to turn to more sophisticated funding models like community energy schemes or other forms of investment for return. The projects may also require more sophisticated financial justification, and working closely with the finance committee and diocesan financial secretary will probably be required.

(5b) Again, the organisational learning could be formally incorporated into diocesan policy after this process is completed. Now might also be a suitable time to incorporate diocesan-wide decarbonisation targets into formal policy around asset maintenance, framing and organising the activities as the same issue in diocesan policy and bringing decarbonisation deeper into the core of the diocese's approach. At this stage, the diocese might also want to consider more sophisticated techniques for monitoring the building stock's operational emissions, for example, by using a software system.

2.1 Consider decarbonisation during cyclical maintenance

A way of embedding decarbonisation into diocesan activity proposed by both our diocesan and industry expert participants was that it would be desirable to embed the decarbonisation process within the existing programme of cyclical maintenance, or scheduled major projects in the diocese. This would mean that buildings due for related work would also be the buildings that would be prioritised for decarbonisation interventions. Diocesan property departments monitor when buildings in the diocese are due for building fabric maintenance or heating system replacement, often through quinquennial inspections in the case of churches. Our expert participants identified three main reasons why interventions could be prioritised according to existing cyclical maintenance or scheduled major projects, all three of which can convey cost saving implications.



2.1.1 Avoids locking in emissions

A boiler replacement cycle represents an approximately 15-year period of guaranteed carbon emissions if a gas boiler is replaced with like-for-like. Currently, gas is slightly less carbon intensive per kWh consumed than electricity from the grid, all other things being equal.¹⁷ However, given the rate of grid decarbonisation required to meet the UK government target of 78% emissions reduction and a complete phase out of unabated energy generation from fossil fuels by 2035,¹⁸ if a boiler were to be installed now, not only would its lifespan vastly exceed the time it will take for the UK grid to become less carbon intensive than natural gas, if the UK grid is fully decarbonised by 2035 as predicted, it may well exceed the time it will take to decarbonise the UK grid entirely.¹⁹ For this reason, our expert participants stressed that wherever possible, gas systems should not be replaced with like-for-like systems.

In more energy efficient buildings it may be appropriate to replace gas boilers at the end of their lifespan with heat pumps. The running costs of the heat pumps will typically be lower, and the efficiency greater than a new like-for-like natural gas boiler or hydrogen boiler.²⁰ This may be a desirable approach in many schools, presbyteries, religious houses, offices, and some church halls and clubs. Installing heat pumps in these sites will be a quick and effective way to begin decarbonising the diocesan building stock. These building types are already well understood by retrofit professionals and the optimal intervention will often be much clearer than in the case of churches. Given that gas heating is the principal driver of operational carbon emissions in a diocese, the installation of heat pumps in all appropriate buildings also represents an opportunity for addressing a very significant proportion of the diocesan carbon footprint. In the case of the Diocese of Salford, for example, in non-school buildings gas use is responsible for six times the carbon emissions of electricity use.

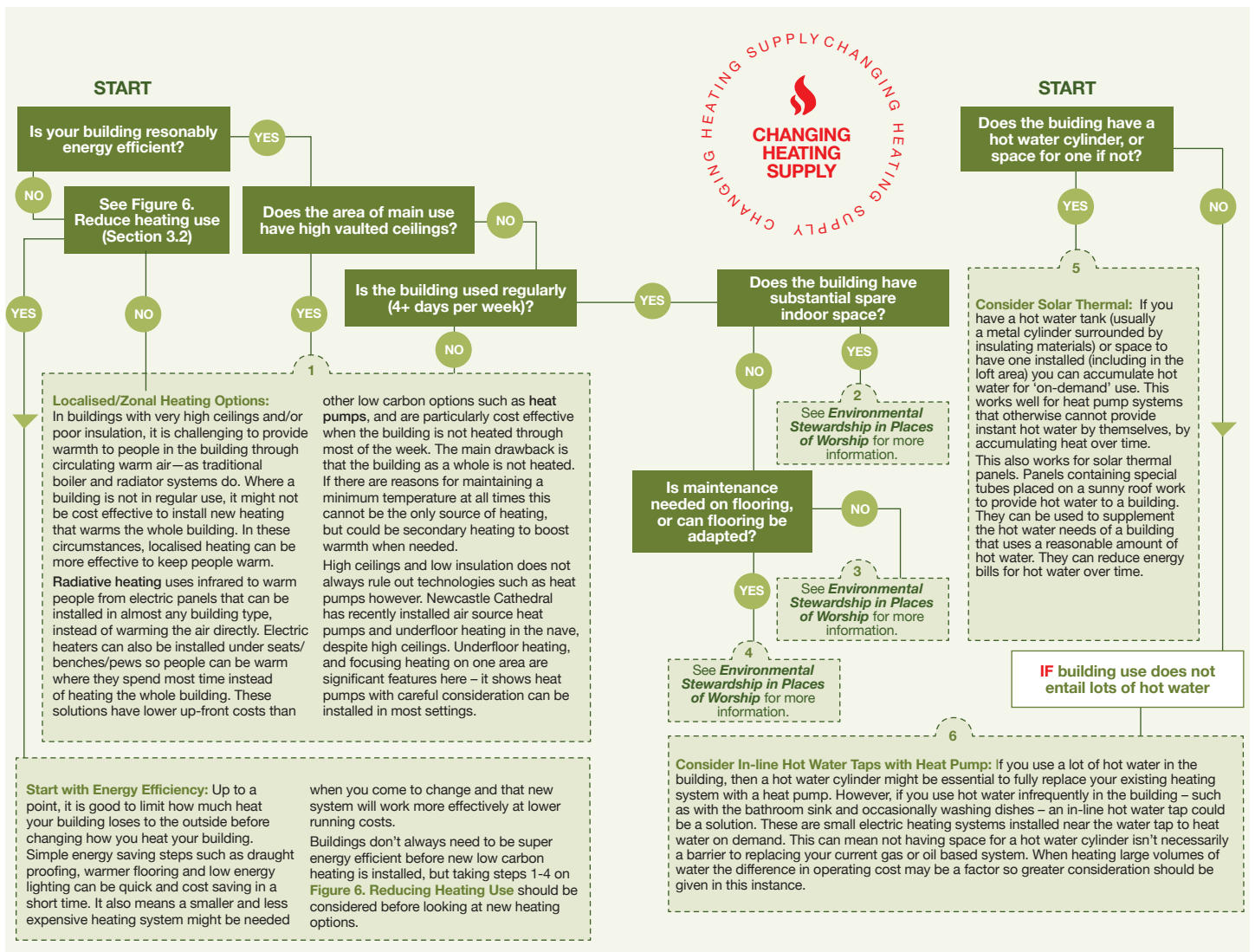


Figure 2. Decision tree: Changing heating supply, adapted from Environmental stewardship in places of worship

17 UK Government, [Greenhouse gas reporting: 2020 conversion factors](#)

18 Climate Change Committee, [Sixth Carbon Budget](#)

19 National Grid, [Future Energy Scenarios](#)

20 London Energy Transformation Initiative, [Hydrogen: a decarbonisation route for heat in buildings?](#)

In contrast to the diocesan schools and domestic buildings, when church heating systems are due for replacement dioceses may face more complicated decisions. We suspect that churches with small congregations may benefit from local heating, and optimal systems for full churches will depend on many factors. The Tyndall Centre for Climate Change Research, University of Manchester, has prepared a guide to decarbonising places of worship for the Guardians of Creation Project. Figure 2 above, from that guide, is a decision tree to help readers decide on changing heating supply in places of worship. Please see *Environmental stewardship in places of worship*²¹ for more decision trees on reducing heating use in places of worship, generating electricity on site in places of worship, and travel to places of worship.

“ We know that out of everything we need to do to reduce our carbon emissions, the number one priority is to move away from fossil fuels. So, avoiding replacing an existing gas system with a new gas system is absolutely key.”

Thomas Lefevre, Director, Etude Sustainability

Even if staggered according to heating system replacement cycles, taken in isolation, replacing gas heating systems with renewable systems will appear to be more expensive than replacing like-for-like in the short term. Like-for-like system replacement may only require the replacement of an appliance, often only incurring costs for the replacement appliance and its installation. By contrast, the installation of a new renewable system may include infrastructural changes to the building such that the building is able to support the new heating system. For example, it is common for air source heat pumps to also require the installation of new, larger, emitters. This is because many air source heat pumps have a lower operating temperature than the gas boiler systems they are replacing. The lower operating temperature of the heat pump will require that the heating systems' emitters have a greater thermal area for them to achieve similar outcomes in the space that they are heating. The costs of these infrastructural changes can exceed the costs of the new heat pump itself in some contexts. However, this is less likely to be the case with 'high-temperature' heat pumps, which operate at a similar temperature to gas boiler systems.

We suggest that for these reasons, installations of renewable systems should be perceived by the diocese as long-term, necessary, infrastructural upgrades to buildings. In the long run, it is quite possible that the installation of renewable heating systems will become a legal requirement for many diocesan buildings. The UK Climate Change Committee and Ofgem estimate that 100% of domestic buildings and 90% of non-domestic buildings will need to be heated by renewable systems before the government's legally binding deadline for net zero carbon neutrality if the UK is to achieve its target.²² The IEA, which is often associated with a moderate position, has recommended that any country hoping to remain in line with the United Nations' targets of net zero carbon emissions by 2050, and limiting global heating to 1.5 degrees by the end of the century, must prohibit all new natural gas boiler sales by 2025.²³ The decision that dioceses, parishes and schools need to make over the coming years is not whether to transition to renewable heating systems but, rather,

when the most appropriate time for doing so will be. We therefore recommend heating system replacement cycles as a cost-effective way of doing this that adopts a cautious approach to policy change, whilst remaining in line with United Nations climate objectives.²⁴

“ Something we can start to do today is to make sure that we're not going to put anything in that we have to deal with in a few years' time.”

Dr Emma Gardner, Head of Environment, Salford Diocese

Using cyclical maintenance to prevent locking in future carbon emissions may be particularly pertinent in the case of heating systems and other operational carbon emissions. However, this approach can also apply to reducing carbon emissions embodied in the materials used in other building maintenance. During our interviews and focus groups with diocesan property departments, diocesan managers expressed a need for access to an authoritative source on embodied carbon and ecological impacts associated with potential building materials. The Greenhouse Gas Protocol keeps an up-to-date list of these life cycle assessment databases,²⁵ including, for example, the Building Research Establishment's Impact database. One of our expert participants cautioned that these databases are not always at a satisfactory level of granularity, however, they remain a useful heuristic that can help property departments feel comfortable about the broad implications of the materials that they are using.

2.1.2 Staggers costs

Our expert participants cited multiple examples of working with organisations, including universities and local authorities that intended to decarbonise but were financially unable to implement an estate-wide decarbonisation programme that retrofitted all the buildings in the estate simultaneously. For these organisations, the cost of retrofitting the entire building stock simultaneously was simply not affordable, even though there was a significant return on investment associated with doing so. On top of this, our expert participants warned us that presenting an organisation with an unachievable cost estimate at the start of the decarbonisation process can make decarbonisation appear to be an insurmountable task. It was argued that the psychological effect of doing so can itself become a barrier to action, as it makes the task appear hopeless.

Catholic dioceses which have relatively large property portfolios but relatively small turnovers, may be examples of organisations that would also struggle to implement a simultaneous, estate-wide decarbonisation programme. Many dioceses may simply lack the liquidity to implement a programme of that kind without significant outside investment. In normal circumstances, therefore, we recommend incorporating decarbonisation strategy into the existing building maintenance cycle rather than planning an independent programme of decarbonisation projects. In contrast to the disempowering experience of contemplating an unaffordable but immediate estate-wide transformation, our expert participants described a virtuous cycle of momentum and hope associated with achieving demonstrable, albeit incremental, progress towards a decarbonised estate.

21 Tyndall Centre for Climate Change Research, [Environmental stewardship in places of worship](#)

22 Climate Change Committee, [Net Zero – the UK's contribution to stopping global warming and Ofgem \(2020\). Decarbonisation action plan](#)

23 International Energy Agency, [Net Zero by 2050](#)

24 See also Green Building Council, [Renewable Energy Procurement & Carbon Offsetting Guidance for Net Zero Carbon Buildings](#)

25 Greenhouse Gas Protocol, [Life Cycle Databases](#)

“ If you add those costs across every building, it's almost paralyzing. Whereas, if you take one building at a time there is the hope that bit by bit, we'll find a way to get the money. Maybe the parishioners can help on this one, maybe the local authority could help on this other one. There's the hope that we'll find a solution along the way if we get going step by step.”

Thomas Lefevre, Director, Etude Sustainability

Another very visible source of hope emerges from the fact that it is not only the diocese in the process of decarbonising but also the electricity grid that the diocese is drawing from. The decreasing carbon intensity of the grid means that the decarbonisation interventions that a diocese made in the past are typically even more effective in the present than they were at the time of installation. Dioceses can also project this hopeful way of thinking into the future. By using the expected emissions intensities of the grid to calculate the anticipated future emissions of the diocese, the diocese can show how investments made this year will become progressively more effective year after year.

2.1.3 Creates economies of scope

Our expert participants highlighted that there are also economies of scope associated with incorporating decarbonisation interventions into the maintenance cycle. Sustainable capital projects and planned maintenance work may share a need for a particular fixed cost that would otherwise have to be expended twice if the projects were to be done separately. Using heating system replacement cycles as a prompt to review the kind of heating system that a building is using ensures that every building in the diocesan estate will have its heating system evaluated from a decarbonisation perspective and that the evaluation comes at a time when work and expense was already anticipated. An example of this in practice is the 'enhanced quinquennial inspections' that some dioceses have been developing. This entails working with the external partners or curial teams that deliver the diocese's quinquennial inspections to incorporate energy surveys and retrofit assessments into the quinquennial inspection process and documentation. Erecting scaffolding is another example of this nature. Scaffolding is often a significant cost for diocesan capital projects and is required for many kinds of building fabric maintenance. However, it is also required for some retrofit energy efficiency or energy generation installations like roof insulation or solar PV.

The economies of scope generated by considering decarbonisation as part of cyclical maintenance do not only apply to financial economies. Diocesan property teams also have limited time and large property portfolios to manage. Considering decarbonisation during cyclical maintenance may also be a more efficient way of managing the limited time and attention available to diocesan property teams. By the same rationale, this approach should also limit the disturbance to each site and its users. In Section 2.5.2 we look in a little more detail at calculating the economics of decarbonisation in the diocese.

2.2 Run pilot schemes

There was a clear consensus among our expert participants from industry and academia, as well as the diocesan managers who we interviewed that dioceses should be running pilot projects implementing decarbonisation technologies as soon as possible. The success of these pilots should then be widely communicated. This was perceived to be a necessary step before any diocesan decarbonisation strategy could be scaled up either within a diocese or across other dioceses.

Pilot schemes were argued by our participants to be a driver of both technical understanding and social engagement. Our understanding in this guidance of the role and nature of pilot schemes, therefore, extends beyond the narrow definition of a pilot as an investigation into the technical feasibility of a technology. Many of the technologies that dioceses are considering are already proven in many of the settings that they are considering implementing them. However, running 'pilots' remains critical because the exploration of these technologies in the diocesan context also performs a social function insofar as they generate understanding, momentum and enthusiasm in the diocese.

“ Strike some momentum, act where you've got some momentum going already, and get some schemes on some buildings.”

Dr Richard Fitton, Reader in Energy Performance of Buildings, University of Salford

Given the relatively low levels of organisational learning around renewable energy and sustainable technology in most dioceses, dioceses may wish to pilot a range of technologies. Some of these pilots should be relatively simple. This could include PV systems, radiant heaters, destratification fans, smart heating controls, participation in a district heating network, zoning, installing temperature controls in buildings, and other proven technologies. Figure 3 below is a decision tree to help dioceses and parishes evaluate different opportunities for renewable energy generation. We also note that given the heavy emphasis placed on energy efficiency and the invitation to **take a fabric first approach** by our expert participants, dioceses may perhaps prefer to focus on insulation and other fabric interventions before or at the same time as investigating renewable systems interventions. This will be less applicable in buildings that are used less frequently, however. In buildings like this, including many churches, the cost of the investment in building fabric may exceed the benefit.

Church Marketplace is a procurement organisation that supports the Catholic Church in the UK. Amongst other activities, it helps negotiate better prices on products and services than an individual diocese might achieve if purchasing by itself. Church Marketplace is currently investigating how to make sustainable technologies available at scale for the Catholic Church. We recommend that dioceses stay in regular contact with Church Marketplace over the evolving portfolio of decarbonisation products and services that it has brokered discounted access to.

2.2.1 Helps the diocese understand decarbonisation technologies

The first rationale provided by our participants for running pilot schemes was technical. Running a pilot scheme for a particular intervention helps the diocese understand whether and how to implement that intervention more widely. Any diocese will probably need to run several exploratory projects to develop an understanding of which technologies and approaches might be suitable in the context of that diocese. These pilots will vary in complexity. In many cases, dioceses will not have any experience in relatively simple decarbonisation technologies, like roof-mounted PV and radiant heaters. We encourage dioceses to familiarise themselves with cheap and accessible technologies of this kind as a priority. For more complex pilots that may rely on specialist understanding or monitoring techniques that do not exist within the diocese, our expert participants recommend partnering with science and engineering departments at local universities. We have found that local universities are often very willing to support decarbonisation initiatives and may wish to work with their local diocese.

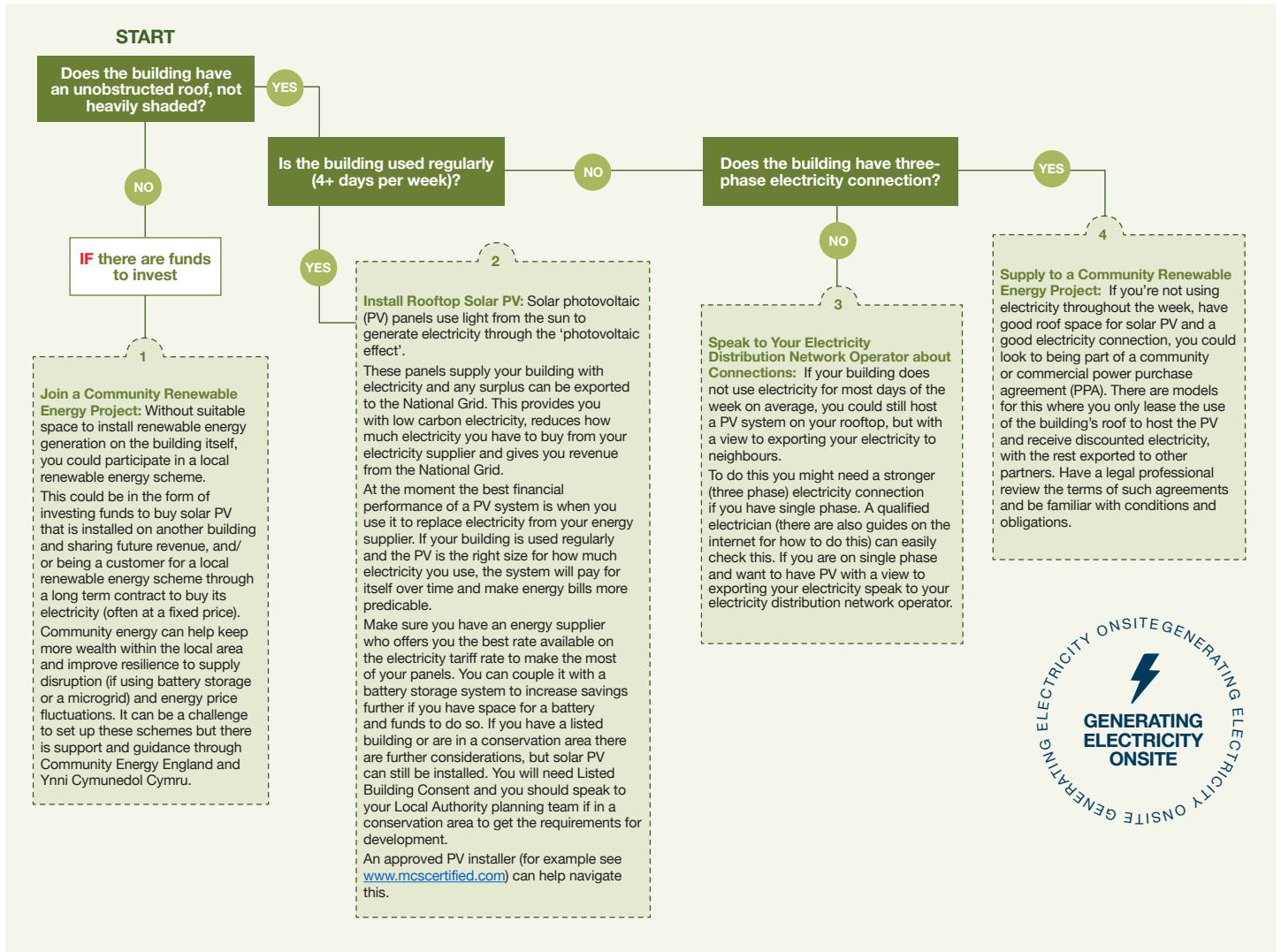


Figure 3. Decision tree: Generating electricity onsite, adapted from [Environmental stewardship in places of worship](#)

2.2.2 Communicates the diocesan commitment to integral ecology

The second rationale provided by our participants was social. Pilot projects also act as demonstration projects, articulating the diocese's engagement in decarbonisation to various audiences, including the organisation itself. Such projects also inform wider audiences, and can have a conscientising effect, for example, indicating to parishioners what might be possible in their own lives. This social function emerged as a particularly salient theme during the diocesan interviews and focus groups in the context of Catholic social teaching, and *Laudato Si'* in particular. Diocesan managers and trustees felt that it was important for dioceses to be articulating a visible commitment to ecology and 'our common home', and undertaking visible projects represented a way of doing this. Because some pilots are not necessarily expensive (implementing a PV system can be quite affordable when compared to many other capital projects, for example), visible pilot projects were also felt to be an impactful way of articulating diocesan commitment to ecology even before dioceses implement a large-scale decarbonisation strategy.

2.3 Survey the building stock

“ The best way to do this exercise is to start with a full appreciation of stock and condition. Then you try and match the characteristics of the building to what you're going to put in them.”

Dr Richard Fitton, Reader in Energy Performance of Buildings, University of Salford

Our expert participants made the case that when feasible, a diocese should look to begin a systematic energy survey process of its building stock. Figure 4 below structures and sequences many of the considerations that should feature in a survey of the diocese's buildings. Parishes and dioceses can use the figure to think about the retrofit of individual buildings or how to structure an estate-wide approach to building surveys. Ideally, this would eventually cover the entire diocesan estate. Surveys will be a necessary component

of any decarbonisation process, so a diocese will certainly already be conducting some surveys opportunistically by the time it begins thinking about an estate-wide approach. A systematic energy survey process in the diocese was considered to be a crucial step in scaling the decarbonisation strategy because it forms the basis for more advanced decision making. It will be necessary for understanding what interventions might be possible in the context of the surveyed buildings, but also for informing potential funding decisions made by external grant funding bodies and investors.

Currently, there are two common energy survey processes for determining the energy efficiency of a non-domestic building: Energy Performance Certificates (EPC) and Display Energy Certificates (DEC).²⁶ An EPC constructs a simplified model of the building to assess the energy performance and provide recommendations for improvements. It is also possible to use the model to assess the energy and carbon benefits of any proposed actions. DECs assess how well the building is being operated and allow comparison of this from year to year by adjusting to different weather patterns each year. The key benefit of DECs over EPCs is that they deal with reality rather than a model. We expect that when future funding opportunities require an energy survey as part of a retrofit assessment, it will typically be an EPC. However, DECs may also be sufficient, and both will provide a document that can be independently audited by an accreditation scheme.

A new government-approved standard for reducing energy demand from non-domestic buildings, Publicly Available Specification 2038: Retrofitting non-domestic buildings for improved energy efficiency – specification (PAS 2038), was published by the British Standards Institute in 2021²⁷, covering all buildings that are not used as private dwellings. The PAS 2038 standard advises a specific process for managing retrofit assessments. PAS 2038 specifies that the building energy improvement process will be managed by a retrofit coordinator, who will provide oversight and direction for retrofit assessors, who are the qualified energy assessors who actually conduct the site surveys. Our expert participants, one of whom has worked on the development of this standard, informed us that this is likely to be the most suitable building energy demand improvement process for a diocese to follow when assessing its non-domestic buildings, both intrinsically, and because it may become an institutional requirement in some scenarios. Dioceses may find that existing staff in the property team are able to achieve PAS 2038 retrofit coordinator certification. Alternatively, if no staff are available or suitable, dioceses may find that they need to acquire this capacity through partnership or recruitment. We give some more consideration to questions of hiring and secondment in Section 2.5.1 and the text box at the end of Section 2.5. Dioceses that need to partner with an external organisation or consultant for energy survey or retrofit assessment and coordination services but are struggling to find an organisation to partner with may benefit from checking the registers of member practices and consultants kept by the Chartered Institute of Building Services Engineers.²⁸

One of our expert participants noted that in the case of parishes and other smaller diocesan buildings, the related Publicly Available Specification 2035: Retrofitting dwellings for improved energy efficiency (PAS 2035) may offer a more suitable process than that outlined in PAS 2038. As with PAS 2038, when a diocese decides to begin implementing PAS 2035 processes, we anticipate that it is of particular importance that the diocese does so having established a close and transparent relationship with the retrofit coordinator. Both PAS 2038 and PAS 2035 processes should be managed in a technology-neutral way that understands the wider context and objectives of the diocese, and dioceses can influence this through how they resource their retrofit coordinator requirement.

Site surveys across a diocese should normally only be pursued if funds have been identified for delivering the actions suggested by the survey reports. Thus, the cost of surveys should be viewed as the point of entry to a wider integral ecology improvement process, and not an end in themselves. When a diocese has identified some funds for interventions but is not in a position to survey the entire stock, we suggest using the following four heuristics for assigning priority to buildings for the surveys that a diocese can afford.

1. Cyclical maintenance or planned major work to a building will often represent the highest priority in terms of long-term cost and emissions saving. Changes in heating system and other scheduled infrastructural changes will typically require a survey, so as the diocese begins to **consider decarbonisation during cyclical maintenance**, it may be appropriate to prioritise these buildings for retrofit energy surveys.
2. In some cases, buildings in a diocese will be reliant on particularly carbon intensive heating systems. Where a building uses oil or coal as a heat source or is understood to be particularly inefficient via quinquennial inspections or other means it may be appropriate to prioritise it for energy survey. However, the intensity with which these buildings are used should also be factored into this decision. Where the building's operation is carbon intensive, and the building is intensively used, there is probably a case for prioritising it.
3. Where building users are already expressing higher levels of enthusiasm to take environmental action, it may be appropriate to prioritise those buildings. Buildings with users who are enthusiastic about decarbonisation may also be particularly suitable if a diocese wishes to **run pilot schemes** that are more complex or experimental.
4. As part of a diocesan decarbonisation strategy, dioceses may be monitoring energy use data. We actively recommend that dioceses do so and have set out a methodology in our **Guidance on Catholic diocesan carbon accounting** to this end. Once a diocese is collecting this data, it will be able to compare which sites are using the most energy or emitting the most carbon. The sites that are using the most energy or emitting the most carbon can then be prioritised for surveying. If the sites have already been surveyed, their energy use data can then be used in conjunction with the recommendations on the sites' EPC or DEC reports to start making decisions about where the most effective interventions might be across the whole building stock.

²⁶ Please see the [EPC Open Communities](#) website for access to the database of existing EPC and DEC survey results

²⁷ British Standards Institute, [PAS2038: Retrofitting non-domestic buildings for improved energy efficiency](#). Please also see British Standards Institute, [PAS 2035/2030: Retrofitting dwellings for improved energy efficiency](#)

²⁸ Chartered Institute of Building Services Engineers, [Directories and registers](#)

Checklist chart for retrofit and refurbishments											
Getting Started	Do you know how your building uses energy?		Carry out a simple building audit/checklist: <ul style="list-style-type: none"> Is anyone taking responsibility for energy spend and do you know what you pay per kWh? What is the building's day/overnight energy consumption? If your building is too hot/cold, why is that? What appliances or systems are on when they shouldn't be? How well insulated is your building? Is your building lighting energy efficient, including in how it is controlled? Are your building's services optimised and well-maintained? Are the systems' filters replaced and in good working order? Is anyone taking responsibility for your heating programmes or controls? What orientation is your building? Would solar generation be possible? 			Adopt an appropriate retrofitting standard:					
						PAS2035/2030 Retrofitting dwellings	PAS2038 Retrofitting non-domestic buildings for improved energy efficiency	SKA Rating Target	BREEAM Refurbishments Target		
Energy Conservation	Doors	Walls	Windows	Heating	Lighting	Cooling	Free Or Nearly Free Things To Do		Typical considerations in very inefficient buildings (DEC Rating F-G)		
	<ul style="list-style-type: none"> Ensure the doorsets are fitted well to avoid draughts. If not, ensure there is doorset draft proofing that is fitted well. Check for draughts coming through the floors that are sealable with fire-resistant foam or silicone. 	<ul style="list-style-type: none"> Have a survey done to determine if the walls are solid or cavity construction, if there is insulation installed, and if there are further insulation opportunities. 	<ul style="list-style-type: none"> Check if any windows are being left open when the heating is on. Check if the windows are fitted properly. If not, check if draught proofing has been fitted well around the windows. Check if the blinds are being shut in summer to reduce heat gain. 	<ul style="list-style-type: none"> Check if the heating has been programmed to be off when it's not needed and at times of low occupancy. Agree on a lower acceptable internal temperature with other building users. 	<ul style="list-style-type: none"> Check for halogen lights that have not yet been replaced with LED. Doing this can lead to a 90% saving. 	<ul style="list-style-type: none"> Check for any cooling systems that are being used in a way that compromises the efficiency of heating systems, or vice versa. If there is a single-pipe heating system, check is it adequately insulated. 	<ul style="list-style-type: none"> Understand how energy is used in the building and make some records to show energy use patterns and baseline. Check what's on when it shouldn't be. Check if there are poorly fitted doors and windows that let cold air in. Check that your heating and cooling systems are serviced and optimised. 				
Fabric Investment	Doors	Walls	Windows	Roof	Floor	First Hit Investment, Key Points		Typical considerations in efficient buildings (DEC Rating E-D)			
	<ul style="list-style-type: none"> Consider replacing existing doorsets with modern thermally efficient doors with insulated panels. Ensure that glass doors are double-glazed with Low-e glass. 	<ul style="list-style-type: none"> Consider filling cavity walls with insulation. Filled cavities can improve U-values from 1.8 to 0.3. Consider fitting insulated plasterboard to external walls with an air gap to potentially improve the U-value to 0.22. Understand the condensation risk in your building. 	<ul style="list-style-type: none"> Improve single glazing to a minimum of secondary glazing with solar film for better insulation and solar shading. Single glazing often has a U-value of 4 or worse, whilst modern double glazing's U-value is ~1.3. 	<ul style="list-style-type: none"> Check the levels of roof insulation and improve it to a minimum of 300mm. Lofts with 50mm of insulation can have U-values of 0.65. Fitting a further 250mm can improve the U-value to 0.13. 	<ul style="list-style-type: none"> Consider insulating the floors, but bear in mind it requires planning and doors may need altering. Uninsulated concrete floors have a typical U-value of 3.36. Applying just 20mm of thermal board and plywood top improves it to 0.77. 	<ul style="list-style-type: none"> Having exhausted opportunities for improving efficiency without investment, it's time to think about direct investment to reduce energy costs, perhaps grouping opportunities to get economies of scale. Lower cost and complexity interventions should be considered at this stage, e.g., solar panels should probably not be the first thing you consider. In many cases, improving energy efficiency by investing in building fabric will be necessary before some systems interventions are even possible. 					
Energy Investment	Low Carbon Heating	Solar Photo Voltaic (PV)	Solar Thermal	Mechanical Ventilation Heat Recovery	Energy Storage	Building Management Controls	Advanced Investment, Key Points		Typical considerations in efficient buildings (DEC Rating D-A)		
	<ul style="list-style-type: none"> Consider fitting air, water or ground source heat pumps. Heat pumps are vastly more energy efficient than boilers. However, do not install heat pumps in poorly insulated buildings, which will result in high operational costs. 	<ul style="list-style-type: none"> Evaluate opportunities for solar PV. Modern solar panels provide about 340 watts per 1.6m by 1m panel. Be aware that installations of over 3.6kW require permission from the Network Operator. Evaluate opportunities for electric vehicle (EV) charging infrastructure. 	<ul style="list-style-type: none"> Consider solar thermal, which can preheat hot water and may meet the whole requirement in the summer. Evacuated tube systems are the most efficient and need to be used with a thermal store. 	<ul style="list-style-type: none"> Consider mechanical ventilation with heat recovery (MVHR), which provides fresh filtered air into a building whilst retaining most of the energy that has already been used in heating the building. 	<ul style="list-style-type: none"> Solar PV and solar thermal can be stored in batteries and thermal water stores, respectively. Consider these as a compliment to any solar systems you are installing. Consider using batteries charged on an agile tariff to further reduce bills. 	<ul style="list-style-type: none"> Modern equipment can be controlled efficiently through a building management system. Consider investing in a building management system if there is the ability to add sensors/meters to optimise control and measure usage. 	<ul style="list-style-type: none"> Now that the building is sufficiently energy efficient, consider renewing or replacing old building services. It may be appropriate to install submeters for more precise electricity consumption information. Thinking about direct utility investments could now also be economical. Integrating more sophisticated controls may now be appropriate, such as building management systems, to control heating and cooling linked to the outside weather 				

Figure 4. Checklist chart: Retrofit and refurbishments, adapted, courtesy of Twelvvetrees Ltd

2.3.1 Characterises the building stock for appropriate interventions

There are churches, schools, clubs, presbyteries, and other buildings in the diocesan building stock. Some of these buildings are listed, many are not. Different kinds of diocesan buildings will have very different use patterns, will be in different conditions and will be amenable to different kinds of intervention. Conducting audits is, therefore, a necessary step in understanding how decarbonisation technologies can be applied to the building stock of a diocese precisely because of the range of different buildings held within the building stock.

Our expert participants cautioned that although it may be tempting to look for one or two interventions that might have apparently universal applicability in the diocese, and then aim to roll them out across the entire building stock, this is high-risk approach given the diversity of diocesan building stocks. They warned that a scaled approach like this should be avoided until the building stock has been properly understood. Our expert participants also reminded us that the cost of surveys is low in comparison to the cost of interventions.

“ **The starting point should be about characterization. The buildings are so unique, and I think there are very individual problems in each building.**”

Dr Richard Fitton, Reader in Energy Performance of Buildings, University of Salford

2.3.2 Facilitates larger scale financing

Energy surveys of the building stock can be an important feature of securing funding for further interventions. To seek public funding, applicants may need a body of evidence explaining what interventions are possible in the building stock, as well as a technical justification for making those interventions. For example, some grants for replacing boilers with heat pumps might require that the actual condition of the boiler be formally determined to be 'end-of-life' by a competent engineer. Equally, impact or community investment will often require an assessment of the sustainability of investments made into decarbonisation.

“ **The main thing is you need to understand what you've got. If you don't understand what you've got and where you're going, you can't be ready when these funding calls come out.**”

Jon Kent, Director, Zeco Energy

2.4 Seek additional funding

There are a variety of different ways to fund decarbonisation in a diocese. In this section, we give some consideration to grant funding and investment models. Despite the range of potential funding mechanisms, however, our expert participants made the case that preparing the diocese for most kinds of decarbonisation funding or financing actually begins from a relatively similar process. Specifically, attracting funding requires developing a project plan that encompasses the following:

1. A comprehensive understanding of the needs of the existing building stock.
2. A plan and rationale for the diocese's proposed interventions.
3. An understanding of the cost of the proposed interventions.
4. Projections for the benefits of those interventions.
5. A way of monitoring the benefits of the interventions.

There was also a strong consensus among our expert participants that in many cases these project plans will need to be fully costed, or even 'shovel-ready', before the diocese begins considering which fund to apply for. This may seem counter-intuitive, however, for both private and public funding, taking such an approach follows a compelling rationale. Our participants argued that in the case of attracting investment, the need for developing fully costed project plans reflected the necessity of high-quality decision information required by investors before approval. In the case of public funding, their advice reflected what they perceived to be the extremely fast-moving and competitive nature of the decarbonisation grant funding landscape.

“ **The public sector decarbonisation fund was a billion pounds [in 2021]. I know from projects that we're working on that a large proportion of that was awarded before the end of 2020. Bids were still going in up until the fourth of January, but a vast proportion of that money was already spent prior to December. The reason being, people have projects ready to go.**”

Jon Kent, Director, Zeco Energy

The particular example of the Public Sector Decarbonisation Scheme (sometimes referred to as the 'Salix fund') being allocated early was corroborated by our interviews and focus groups within the dioceses.

“ **With Salix funding being so oversubscribed, and almost allocated before it is even announced, we should be building up that plan and have a complete estate strategy before we can chase after the money, which can be identified on the back of that. The order needs to be right.**”

Rob Tozer, Director, 1stPlanner

Depending on how a diocese manages its approach to fundraising, the emphasis placed on 'shovel-ready' projects may entail some shift in thinking. Under this model, rather than bid managers working to identify public funds and build applications around those requirements, bid managers will need to begin by identifying potential opportunities for developing attractive, hypothetical projects based on the assets of the diocese. We note that it is possible to see this change in emphasis as an aspect of embedding decarbonisation in wider diocesan strategy, which we discuss in the section **incorporate decarbonisation into general diocesan strategy**.

In our interviews and focus groups with diocesan managers, we found grants to be an extremely salient but also quite problematic theme. We found speculation about grant funding to feature so heavily in diocesan managerial discourse on decarbonisation that we added Section 1.4.3 to the executive summary of this version of the guidance, which outlines why, in the long run, the diocese cannot depend on grants alone.

When properly integrated, grants can be a transformative element of diocesan decarbonisation strategy. Small grants can accelerate the process early on, helping organisations to get new ideas for decarbonisation started, like the Diocese of Salford's creation of a community benefit society for renewable energy generation with grant funding from Electricity North West. By contrast, large grants can be a major milestone in a decarbonisation process, for example, in the cases of dioceses that have developed highly complex, successful submissions to the national Public Sector Decarbonisation Scheme to transform their school estates. However, despite the opportunities associated with grants, we have observed a knot of psychological and organisational factors that dioceses need to recognise before associating grants too heavily with decarbonisation.

Perhaps associated with very reasonable concerns around diminishing income in dioceses, many diocesan managers express the belief that decarbonising the diocese *should* be something that the government supports or even takes the lead on. This view, whilst entirely understandable, interacts quite perniciously with what we argue to be the current reality of decarbonisation grants in the UK. As we started to intimate earlier in this section and Section 1.4.3, the UK grant landscape often exhibits the following challenges:

1. Scarcity in the total amount of money available relative to the total number of eligible applicants.
2. Brevity in the opportunity to apply for that money once the calls are open.
3. Complexity in terms of the understanding that successful applicant organisations are required to demonstrate.
4. Changeability in the requirements, purpose and availability of schemes within the policy environment from year to year.

These four challenges create a competitive grant environment that we interpret to be largely incompatible with the view that governments should feel obliged or motivated to help dioceses decarbonise, despite representations we have made to the UK government arguing for such an obligation. Although our data comes from the UK, we expect these challenges to be similar across many countries in the Global North. Whilst we know of many examples where dioceses have successfully secured decarbonisation grants, they have done so despite these factors and, importantly, with awareness of them. For dioceses that do want to incorporate grant funding into their decarbonisation strategy, we advise that they think in terms of the following process:

1. Acknowledge the scarcity, brevity, complexity and changeability in the grant environment (points 1 to 4 immediately above), and acknowledge how these themes relate to the particular grants the diocese is interested in.
2. Understand and be able to articulate where the grant features in the broader diocesan decarbonisation strategy.
3. Acknowledge that the application standard needs to be similar to the standards that a for-profit investor would expect and follow a process that reflects those standards (points 1 to 5 at the start of this section).
4. Ensure that the diocese has the organisational capacity to deliver the entailed bid coordination, writing, surveying, costing, forecasting and other related work, either internally or through partnership.

If this process sounds difficult to execute or unlikely to succeed, the diocese may want to reevaluate whether this is the right time for it to be applying for grant funding and whether better alternatives might be available in the near term.

Although our expert participants were pessimistic about a diocese's ability to achieve decarbonisation entirely or even principally, through grant funding, they were quite optimistic on other aspects of the financial viability of decarbonisation. A common observation made by the expert participants was that, due to the increasingly favourable economics of renewable energy generation and energy efficiency, occasioned by a new geo-political context that is more exposed to major fluctuations in energy prices, organisations are learning to perceive decarbonisation as a source of revenue rather than a cost. They encouraged dioceses to take a similar perspective. As such, and particularly in the case of renewable energy generation, even if dioceses require external support to set up sustainable capital projects, in the long run, such projects can be designed in a way that they actively generate income for dioceses. We return to this theme in more detail in the section **partner with communities and organisations**.

“ I think renewables can be seen as more of an investment with a long-term revenue stream as opposed to a cost.”

Dr Chris Jones, Technology Transfer Fellow, Tyndall Centre for Climate Change Research, University of Manchester

The rationale for seeking additional funding for decarbonisation is self-evident. Instead of providing rationales, in this box, we outline four broad routes to funding decarbonisation that might be appropriate for a diocese: **grant funding, investment portfolio rebalancing, community investment, and impact investment**.

2.4.1 Grant funding

Having designed and costed some ready-to-go projects, dioceses can work with their bid-writers to identify grant funding that has been made available for organisations and communities seeking to decarbonise. We offer a non-exhaustive list of avenues for exploration below. We apologise for the exceptionally anglocentric character of this section. Please refer to Sections 1.4.3 and 2.4 above for a more generalised discussion of the role of grant funding in diocesan decarbonisation and how to approach it.

Public sector decarbonisation scheme

The public sector decarbonisation scheme is expected to continue until at least 2026.²⁹ This fund may be suitable for decarbonising diocesan schools, however, as intimated above dioceses may need to begin preparing project plans for applications far in advance of the announcement of a new round to compete for the funding when the request for proposals opens. This preparation will need to include a substantial evidence and document gathering process at some expense to the diocese.

“ We know from working with Salix, who manage the funds, that the next round will be distributed next year. But there's no point thinking about that in August or September. You need to be thinking about it now. You need to be looking at projects now so that you can build up a fully worked return on investment and calculate your costs.”

Jon Kent, Director, Zeco Energy

Section 106 funding and the Community Infrastructure Levy

Funding set aside by local government for community infrastructure investment may also be a viable source of funds for dioceses, as explained to us by one of our expert participants. There may be some restrictions on how the diocese can access these funds, and this may require working with a consultant.

“ We've run a pilot in the Archdiocese of Westminster over the last six months or so. Across five local authorities we identified about 2.6 billion pounds of potential funding when you look at education Section 106 funds and housing Section 106 funds.”

Rob Tozer, Director, 1stPlanner

Ofgem and District Network Operators

Under instruction by Ofgem, District Network Operators (DNOs) have been trialling a community energy support scheme which may extend to include schools and dioceses. It may be worthwhile getting in contact with your DNO to explore whether they may be able to support your diocese with capital costs related to decarbonisation.

Ofgem has also made funds volunteered by companies in lieu of fines for breaches of licence conditions available to communities. These funds are distributed through the Energy Saving Trust.³⁰

Local Enterprise Partnerships

Some funds have been made available for community energy projects in England by Local Enterprise Partnerships (LEPs). The BEIS Local Energy Team works with LEPs to create regional funds that can also be applied to.³¹ Dioceses may wish to contact their regional LEP to find out if those funds are currently supporting community energy projects for which a diocese might be eligible. In England, six regional energy networks and five regional 'Net Zero Hubs' work alongside the LEPs in their catchment.³² Regional community energy leads can be contacted via the Net Zero Hubs.

2.4.2 Investment portfolio rebalancing

A technically straightforward, albeit potentially organisationally complex topic worthy of acknowledgement is the reallocation of diocesan financial investments into capital projects for decarbonising the building stock. Many dioceses are currently undergoing some form of ethical review process for their investments. It is conceivable that as dioceses divest financial assets that they determine to be unethical, they may elect to use the cash released by divestment to invest in return-yielding renewable capital projects in the diocese. Renewable energy generation in the diocese can be an attractive investment proposition, as we outline in the cases of community energy and impact investment below. We note here that if renewable energy generation and associated business models are a viable investment for community schemes or impact investors, then it is feasible that the diocese could itself be the investor.

2.4.3 Community investment

Dioceses may wish to consider community investment as a way of financing decarbonisation. Community benefit societies and cooperatives are often used as a legal and financial vehicle for coordinating community investment in renewable energy generation projects that will yield a return. These entities are created specifically for the benefit of the investing communities and are typically designed with governance structures that protect the community that is investing. They can generate a return by providing energy to the communities that they serve (at rates that benefit the community), selling surplus energy back to the grid through the Smart Export Guarantee,³³ and depending on the technology used by the scheme, providing other energy services like helping to balance the grid. Dioceses can engage with existing regional or national community benefit societies and cooperatives, or they can develop their own. If a diocese does elect to develop its own, the model affords a high degree of control to the Church through the design of a scheme's governance.

For example, the boundaries of the communities participating in a Church-led community energy scheme can be defined by the scheme. A scheme could be designed to be local to a parish, a diocese, or even Church-wide. The opportunity to invest could be made available to specific groups within a geography, like the parishioners of certain parishes or dioceses only, or to a wider community of all faiths and none. The Church can also set a maximum size of investment that an individual may invest in the scheme to protect individuals from risk, and community energy schemes are often designed in a way that supports the fuel-poor with the provision of energy.³⁴

“ With return on investment to the investors and the general public of around four to four and a half percent, I think we're going to see a growing wave of community led projects. In these projects, the costs are split and not placed on a single organisation. This will make decarbonisation much more affordable.”

Dr John Hindley, Director, Twelvetreets Consulting

Facilitating community investment through these vehicles may be a particularly suitable route to funding decarbonisation in some dioceses for two reasons. Firstly, the rationale of community investment is already somewhat aligned with the financial dynamic that exists between dioceses and their congregations. Offeritory typically represents the majority income of a diocese under normal conditions, and dioceses may find that relatively large numbers of parishioners contributing relatively small investments into ecological transformation in the Church at scale is ethically and financially agreeable to both dioceses and congregations. Secondly, unlike grant funding, community investment vehicles can be scaled indefinitely.

2.4.4 Impact investment

A complex topic, but worthy of acknowledgement in this guidance is the possibility of developing commercially attractive investment propositions for impact investors who are aligned to the Church's mission.

“ In the Catholic community there are a lot of entrepreneurs and investment managers who would be potentially quite happy to engage in such a process.”

Stephen Brenninkmeijer, Founder of Willows Investments, Chair of the European Climate Foundation

Unlike community investment above, impact investment might tend toward larger-scale investments in dioceses. Larger scale investments in renewable energy generation, when correctly organised and financed, can generate noteworthy return on investment, as one expert participant noted in the quote below.

30 Ofgem, [Voluntary Redress Fund](#)

31 Association for Public Service Excellence, [BEIS Local Energy Team](#)

32 Community Energy England, [Our How To section for all things community energy](#)

33 Ofgem, [About the Smart Export Guarantee](#)

34 Green Alliance, [Community Energy 2.0](#)

“ We’ve seen that larger organisations are able to take advantage of power purchase agreements and other financial vehicles for renewables. The economics have become increasingly favourable, particularly if you have tax status that can sand some of the edges off it as well.”

Dr Chris Jones, Technology Transfer Fellow, Tindall Centre for Climate Change Research, University of Manchester

Because of their scale, such investments might require a comprehensive programme of investment-grade building audits, robust calculations exploring the return on investment and the creation of a fund for coordinating the investments. We suggest that the complexity of orchestrating impact investment in diocesan decarbonisation renders it a longer-term goal, relative to some of the other funding options above.

“ For every investment, you need to look at the return. We have done lots of work with corporations. Because the PV has a payback period of less than 10 years, they naturally go for it. For bigger investment, like infrastructure investments, you can look at the internal rate of return to look for good financial investment. And on top of that, it’ll be good to identify social value.”

Dr Mei Ren, Director, Buro Happold

2.5 Incorporate decarbonisation into general diocesan strategy

Our expert participants reflected that for a diocesan decarbonisation strategy to be more successful, it needs to be incorporated into central planning and strategy-making in the diocese. From our interviews and focus groups with the Diocese of Salford and other dioceses, we understand that currently, decarbonisation does not necessarily feature in more general diocesan decision-making about the building stock. Our expert participants identified three areas of diocesan strategy making to which decarbonisation might be particularly relevant: reorganisation, estate development, and land management.

2.5.1 Connects decarbonisation to other aspects of property strategy

During our interviews and focus groups, we came to understand that property departments may not necessarily have a sustainability policy or sustainable design guide informing how they approach their capital projects. Property departments may instead be relying primarily on Building Regulations, which are minimum standards for compliance, for project governance. We note that with the implementation of the UK Government’s Future Buildings Standard, relying primarily on Building Regulations for project governance will begin to incorporate some aspects of decarbonisation by default by 2025. Interim uplifts to part F and part L of building regulations, dealing with fuel, power and ventilation, have already gone some way towards this.^{35, 36}

However, despite often relying on Building Regulations for project governance, we have observed that some members of diocesan property departments have expressed a desire to develop departmental policy that extends beyond Building Regulations, and takes a more proactive and diocesan-centric approach to project governance in relation to decarbonisation. In the short term, resources like the London Energy Transformation Initiative Climate Emergency Design Guide,³⁷ which offers some policy-making and design guidance may be useful for developing diocesan property strategy. In the longer term, dioceses may wish to collaborate to develop a standard that can be shared throughout the Church. As an alternative, or in addition to developing diocesan governance on decarbonisation, dioceses can either hire or partner closely with a retrofit coordinator and retrofit assessors whose expertise can perform a similar function to a departmental policy or design guide.

Regardless of how it is achieved, UK government policy developments over the coming years will necessitate that decarbonisation will have to be more profoundly incorporated into the activities and governance of property departments. With the implementation of the Future Buildings Standard, and other possible future regulatory developments, our expert participants reflected that not incorporating decarbonisation into estate development strategy may have the potential to become a regulatory risk for the diocese in the long run. We recommend that property departments act in anticipation of these changes, as well as according to the proactive motivation that we identified during our diocesan interviews and focus groups, and incorporate decarbonisation into departmental governance before it is imposed on them by Building Regulations. Figure 5 below outlines a process for thinking in detail about incorporating sustainability into capital developments.

“ It is essential that the energy efficiency strategy is built into the estate development strategy. I don’t think the two things can sit in isolation. When we’re doing the scoping and development planning for the projects, energy efficiency has to be factored in. Otherwise, you’re doing it as a retrofit.”

Rob Tozer, Director, 1stPlanner

As decarbonisation becomes a more prominent theme in the property strategy, the question of how it will be resourced will need to be addressed. Dioceses may find that many aspects of decarbonisation can be subsumed within the roles of existing staff. However, the distinct and specialised competencies of retrofit coordination and assessment bear specific consideration. Retrofit assessment will typically require qualified energy assessors. Currently, energy assessors are often engaged via Church Marketplace, and so this may remain the best way of resourcing the energy assessment requirements of a diocese. However, PAS 2038 and PAS 2035, which are likely to become the institutionalised governance for energy demand improvement processes, also require a retrofit coordinator. A retrofit coordinator is responsible for project managing the whole process of reducing energy consumption on a site. Dioceses might want to consider training existing staff into the role of retrofit coordinator according to the PAS 2038 standard. Where the diocese has a well-staffed property team, this may be entirely possible. Where this is not possible, the diocese may need to consider either hiring a new member of staff who can perform the role of retrofit coordinator among other functions, or partner with an organisation that can. It is important to remember that this is an investment in a cost-saving measure. The new staff member is very likely to have a net positive effect on a diocese’s bottom line. We also note that many parishioners

35 UK Government, [Ventilation: Approved Document F](#)

36 UK Government, [Conservation of fuel and power: Approved Document L](#)

37 London Energy Transformation Initiative, [Climate Emergency Design Guide](#)

may have the competencies required of retrofit assessors and coordinators. The text box below gives an example job description similar to one used by the Diocese of Salford used as part of a request for proposals that it issued to energy consulting firms to help it fulfill its energy and retrofit assessment requirements.

2.5.2 Connects decarbonisation to diocesan financial management

Decarbonisation is more than a retrofit issue, even in property-rich dioceses. We think that effective decarbonisation in any organisation often benefits from wide participation in both the formulation and implementation of the decarbonisation strategy. Our interviews and focus groups revealed that creating cross-departmental environmental or care for creation committees and working groups was a common and effective way of involving each department in decarbonisation.

In the preceding sections, we made the case that dioceses managing decarbonisation as an integral element of the overall property strategy will decarbonise more effectively and affordably. As a continuation of this logic, it may be appropriate for dioceses to think about the involvement of diocesan finance professionals in the decarbonisation strategy. The ability of financial professionals to interpret decarbonisation through robust financial language and methods can be an essential reason to involve financial managers in decarbonisation strategy. Powerful techniques are available to financial managers that dioceses may need to incorporate into their decarbonisation decision-making.

During our interviews and focus groups, we learned that many diocesan managers think making financial judgements related to decarbonisation according to the 'payback' of the decarbonisation interventions is inappropriate for various reasons. Some financially minded managers were particularly critical of basing decisions on payback period analysis as an insufficiently sophisticated method for valuing a project. Some managers preferred financial techniques that consider the 'time value of money', specifically in the form of discounted cash flow analysis. Although financial models created through discounted cash flow analysis rely heavily on assumptions, a fact that is typically well understood by those who use them, they can also stimulate more considered and rhetorically powerful financial decision-making.

A marginal abatement cost curve (MACC) is a popular financial tool borrowed from environmental economics that combines discounted cash flow analysis with assumptions about the emissions abatement, i.e., reduction, associated with the project to help users prioritise the most effective decarbonisation projects. MACCs plot multiple decarbonisation interventions' anticipated emissions abatement against each intervention's net present value. The information is visualised as a 'curve' of interventions, typically with the cost of abatement on the y-axis and the amount of emissions abated on the x-axis. This kind of analysis will often identify interventions with a negative cost of abatement, i.e., that will save the diocese money in the long run. It becomes very straightforward to build a rhetorical case for these interventions once they are presented through robust financial logic and framed in the context of alternatives. Although we will not explain how to create a MACC in detail here, many online tutorials are available, and a MACC can be built relatively easily using a spreadsheet, especially when the spreadsheet has an inbuilt function for calculating net present value.

It will be difficult to produce a persuasive MACC without involving at least both the property and finance teams. Calculating an accurate figure for an intervention's anticipated emissions abatement is likely something the property or environment team will be able to do best. They will at least be able to draw on building survey reports with intervention recommendations, and, eventually, they may even have a fully modelled decarbonisation pathway to draw on. However, finance teams are likely to be best at determining an appropriate discount rate, or 'hurdle rate', to apply to the intervention's anticipated cash flow to calculate the intervention's net present value. Calculating a hurdle rate can require understanding the organisation's cost of capital and determining whether and how much of a risk premium to add to the calculation. This second point is likely something that the financial and property managers need to work closely to establish.

Financial secretaries and finance teams also have a role in the difficult task of diocesan reorganisation. Many dioceses in England and Wales are undergoing reorganisations, which often feature a review of parish boundaries. Occasionally, parishes are amalgamated. This kind of decision-making has implications for the diocesan building stock when the use, management, or ownership of diocesan buildings changes because of reorganisation. Our participants argued that decarbonisation needs to be thought about during these processes, as an important factor in deciding which buildings to keep, and how to use the ones that are being kept.

“It's about ensuring that when we're doing strategic reviews in our dioceses, which may be driven by mass numbers, number of clergy etc., that sustainability and decarbonisation are part of that conversation so that it's not dealt with as a separate topic.”

Lyn Murray, Chair of the National Conference of Diocesan Financial Secretaries of England and Wales

Job Description for a Seconded Energy Efficiency Consultant

The job description below is based on a request for proposals issued by the Diocese of Salford, the overall objective of which was to run a systematic survey programme of the diocese's building stock and prepare a detailed diocesan decarbonisation plan.

We have adapted the job description text for inclusion in this guidance to reflect the lessons learned by the Diocese of Salford while implementing the process. For example, the recommendation to scale the programme deanery-by-deanery did not feature in the Diocese of Salford's original request for proposals. However, during the process, the Diocese of Salford learned that the efficiencies afforded by working with a sympathetic dean in a sufficiently small geography coverable by a smaller number of subcontractors, who could offer a more predictable timetable to a smaller number of parishes, exceeded the benefits associated with scaling to the entire diocese simultaneously.

Although the Diocese of Salford opted to second an individual, consultants or a qualified staff member could also do this work. Dioceses will benefit from thinking carefully about which approach to resourcing such a programme will be best for them. Under labour market conditions at the time of writing, consultants may often be the most available option.

We encourage readers to adopt and adapt parts of the following text for requests for proposals issued by their dioceses if they find it useful.

To inform our work, we are looking to second an individual into the diocese to:

- Provide advice and ad-hoc support to the diocese on energy efficiency, carbon reduction, decarbonising heat, thermal comfort, mechanical and electrical (M&E) systems, and associated themes across the diocesan building stock.
- Coordinate or conduct a programme of energy surveys across the diocesan building stock of sufficient granularity to enable the preparation of a detailed decarbonisation plan for the whole diocese.³⁸
 - First, work with the relevant diocesan departmental leads, such as the Director of Property, Head of Environment,³⁹ and any other relevant curial professionals, to agree on the format of the survey reports. See the next main bullet point below for more information on the minimum standard of reporting expected by the diocese.
 - Next, prioritise appropriate buildings for the first round of surveys. Criteria should include the highest energy consumers and buildings where it is known a heating system is either near or at end-of-life.
 - Arrange site visits directly with the relevant parish priest or school business manager.⁴⁰ Contact details will be provided by the diocese. If building users responsible for the building are uncertain about access or do not allow access, contact a diocesan representative.
 - Once the programme of surveys is underway, produce and issue survey reports and update the diocesan decarbonisation plan in stages to enable work on interventions to begin quickly after a building has been surveyed. Agree on the length of time between stages with the relevant curial professionals.
 - Once the programme of surveys is underway, provide monthly updates on the progress of the surveys and reports.
 - Once the surveys for the highest priority buildings in the diocese are complete and incorporated into the diocesan decarbonisation plan, scale the process from deanery to deanery. Work with relevant curial professionals to determine the best sequence of deaneries and survey as much of the first deanery as possible before proceeding to the next.
- Provide a survey report per site that includes, at minimum, the following information:
 - A building summary.
 - Usage patterns.
 - Main energy use (e.g., current heating, lighting, small power, fans, pumps, and motors).
 - The building's gross internal area.
 - The potential for heat decarbonisation, carbon reduction and energy efficiency improvements and interventions.
 - Proposals for fabric interventions that will be the most efficient in terms of carbon, energy, and financial cost.

- Proposals for M&E systems that will be the most efficient in terms of carbon, energy, and financial cost.
- Suggestions for behavioural interventions.
- Figures expressing potential energy savings, carbon savings, and indicative costs of the proposed improvements and interventions. Include the methodology used to calculate the figures.
- Locations of the energy meters alongside energy meter numbers (MPAN/MPRN). Note where meters read the energy of more than one building. For example, report if one meter reads the energy for both a presbytery and a church.
- An evaluation of site opportunities and risks in matters relating to the decarbonisation of buildings.
- Develop a detailed decarbonisation plan for the diocese.
 - Collate findings from the programme of surveys into Microsoft Excel, and/or Microsoft Power BI, and/or other appropriate software that can be made easily available to relevant curial professionals.
 - Create and manage a system for prioritising and scheduling decarbonisation interventions, i.e., a decarbonisation pathway, based on the surveys' findings. Include a clearly articulated rationale and methodology in the reporting.
 - Include features that aid in understanding, visualising and communicating the decarbonisation plan and underlying data in the software and reporting. For example, waterfall diagrams, treemaps and tables.
 - Align the decarbonisation pathway to the diocese's existing decarbonisation targets.⁴¹
 - Ensure that the reporting is sufficiently detailed to provide a list of 'shovel ready' projects to implement the diocese's decarbonisation pathway.
- Develop a paper on potential decarbonisation funding sources for the diocese.

³⁸ This element will not be appropriate in dioceses where this role does not exist.

³⁹ This element will not be appropriate in dioceses that are not responsible for the school estate.

⁴⁰ This element will not be appropriate in dioceses where this team does not exist.

⁴¹ In dioceses where there is no decarbonisation target, it may be appropriate to review [Guidance on Catholic Diocesan Carbon Accounting](#) and include 'Support the development of a decarbonisation target for the diocese' in the request for proposals.

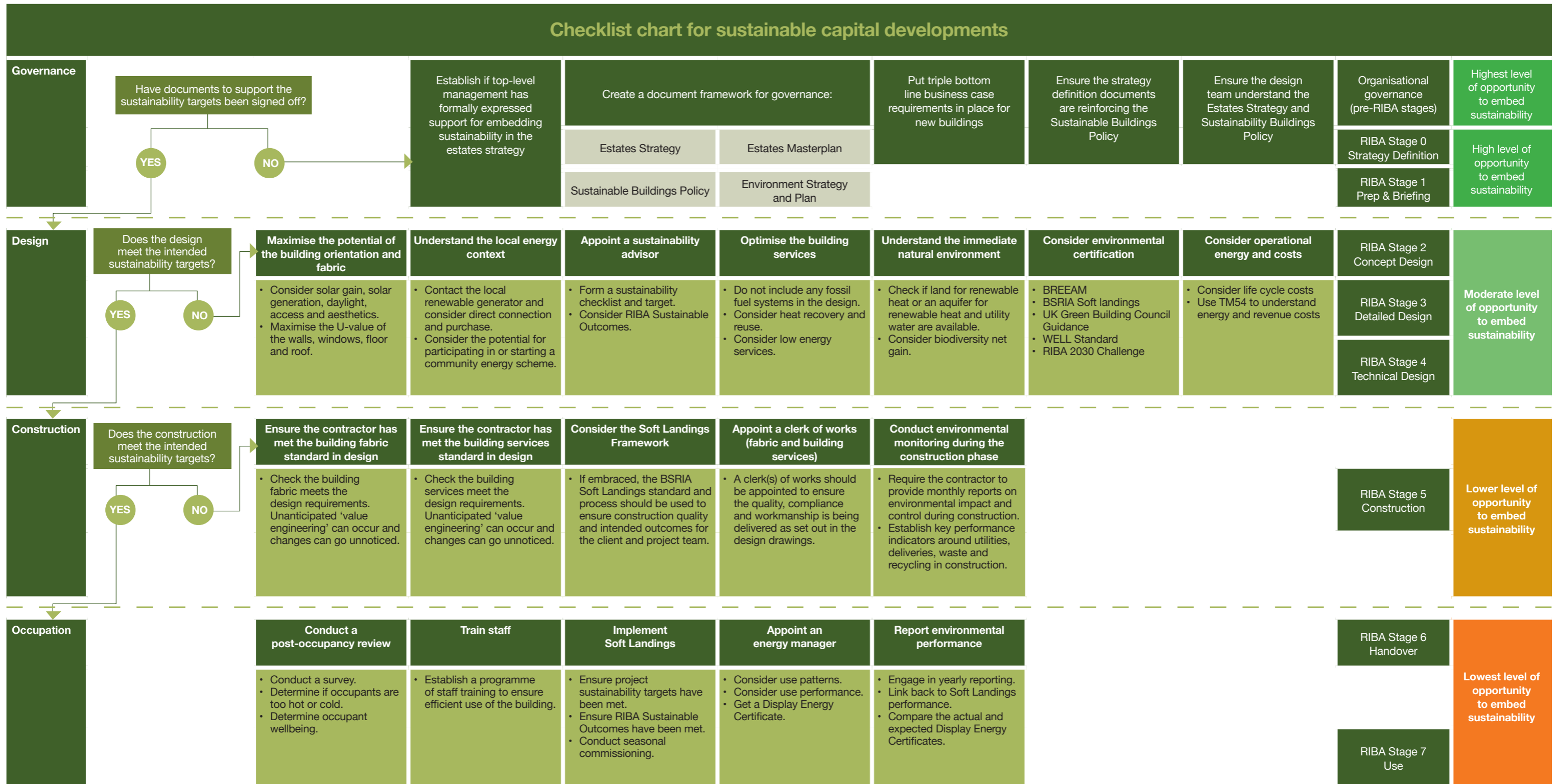


Figure 5. Checklist chart: Sustainable capital developments, adapted, courtesy of Twelvetrees Ltd

3. Decarbonisation principles

The previous section offered an empirically informed sequence of activities that a diocese may wish to engage in as it develops a decarbonisation strategy. In this section we offer a group of principles, also derived from our participants' input, which a diocese may wish to consider as it designs the content of these activities. The first three of these principles are concerned to a great extent with how to prioritise interventions. They broadly mirror the approach advocated by the UK Green Building Council and others.⁴²

First, a decarbonisation strategy should contain within it some consideration of whether, and how to **optimise the building stock (1)**. Before considering intervention, this principle invites diocesan managers to consider whether it is even physically or financially possible to decarbonise the diocesan property portfolio in its current form. It invites the further question of whether decarbonisation objectives can be considered as part of the decision-making processes that determine use change or property divestment decisions.

The next principle we propose is to **take a fabric first approach (2)** to thinking about the buildings that the diocese does want to concentrate on. Our participants generally considered prioritising intervention to the building fabric before systems interventions to be preferable from both decarbonisation and financial perspectives. However, they also noted that this principle should not be followed dogmatically, for example to the exclusion of obviously beneficial systems interventions or repairs.

The third principle is to **prioritise technical simplicity (3)** in the systems interventions that the diocese does opt for. Dioceses are in an interesting position in that they have large building stocks, but the users and managers of those buildings are often relatively non-technical. Any novel technology that is introduced needs to be low-risk and operator-friendly for the benefit of the building users and managers.

The fourth principle encourages dioceses to **take an activity-based approach (4)** to designing solutions. Thinking carefully about the kinds and patterns of use in a building should help to design more applicable and efficient solutions across what, in the case of dioceses, is a very diverse building stock.

Lastly, we identified that dioceses may want to think about how to **partner with communities and organisations (5)**. In the particular context of diocesan decarbonisation, our participants indicated a range of specific financial and social benefits associated with careful partnership.

These five principles can be considered in conjunction with the activities detailed in the previous section. When designing a programme of activities for decarbonisation, a diocese can view the programme of activities through the prism of the principles we detail below. For example, if a diocese is designing a pilot scheme and an associated funding application, it might ask itself the following questions based on the principles explained in this section.

1. Does the proposed scheme prioritise the most relevant buildings?
2. Does it concentrate on fabric before systems or have a strong rationale for not doing so if it does not?
3. Are the interventions designed to be usable by the least technical users of that building?
4. Are the interventions designed with the use patterns and user activity of the buildings in mind?
5. Does the intervention benefit any communities, and could it be supported by any partner organisations?

If a diocese decides that an intervention or programme of activity passes these 'tests', then it may find that the decarbonisation strategy as a whole becomes more effective.

3.1 Optimise the estate

As a principle, our expert participants proposed that before considering either fabric or systems intervention, dioceses should evaluate whether a building is truly valuable to the diocese and community in the long term, in its current form. We do not propose particular heuristics for determining which buildings may be more or less valuable to the diocese, as this will certainly be motivated by a nuanced and contextualised consideration of religious, financial, social and ecological value at both the level of the diocese and the parish. We also do not propose heuristics for determining whether buildings that are deemed to be less valuable to the diocese should be changed in their use, management, or ownership. Our intention, and the intention of our participants, with introducing this principle is to draw attention to the fact that if a diocese is operating with a maintenance deficit, decarbonisation will be practically impossible.

Although we do not propose specific criteria here, we do propose that a diocese develops its own criteria and indicators for evaluating whether its most energy inefficient buildings are possible candidates for change of use, management or ownership as part of a decarbonisation strategy. Given that the issue of property divestment is highly connected to other aspects of diocesan management, this principle might be particularly appropriate to consider as a diocese moves to **incorporate decarbonisation into general diocesan strategy**, as outlined in the previous section. As mentioned in the previous section, a diocese may find that Mass and clergy numbers motivate decisions of this kind, however, dioceses may also wish to consider environmental risks associated with climate change, such as coastal flooding in this decision-making process.

3.1.1 Saves or generates money while reducing carbon footprint

There is a relatively self-evident rationale for selling or otherwise removing some of the buildings from the building stock, which are simultaneously less important to the diocese or parish and more energy-inefficient. Divesting difficult-to-manage property will generate immediate decarbonisation benefits for the diocese in that the diocese will no longer have to power or maintain buildings which, by virtue of their condition, are more likely to be energy inefficient. At the same time, the diocese will be able to generate short-term income from their sale.

⁴² UK Green Building Council, [Net Zero Carbon Buildings: A Framework Definition](#)

“ We can talk about energy savings, and we definitely should, and we should definitely talk about carbon. But there clearly appears to be some kind of backlogging in maintenance, and maybe cyclical and preventative maintenance hasn't taken place. There comes a day when you have to address the fact that some of these buildings are too big, too old, and maybe not designed for the Church of now.”

Dr Richard Fitton, Reader in Energy Performance of Buildings, University of Salford

Instead of selling energy inefficient buildings of low religious and community value, our participants noted that dioceses are full of opportunities to use the building stock to create social value whilst also generating some income. The opportunity for developing social housing was a particularly common observation made by diocesan managers and trustees during our interviews and focus groups. Participants argued that if problematic sites were redeveloped into carbon neutral social housing that made use of renewable technologies,⁴³ then the diocese would be able to meet several of its objectives at once.

“ We're looking at some schemes where we're putting a grid connected battery storage unit in, which has been fed by a green, renewables contract, and then looking at building social and affordable housing on top. The battery can supply energy on a community interest company basis. So, it's not for profit, and it's a lot cheaper than buying it from the grid.”

Jon Kent, Director, Zeco Energy

Some of our expert participants were already working on such a model in the Archdiocese of Westminster, which, amongst other financial benefits was unlocking access to Section 106 funds, local government managed mandatory contributions from private developers for community infrastructure, that the diocese may not have otherwise been able to access as it redeveloped the school estate.

“ We're looking at the Catholic school estate across the Archdiocese of Westminster as being something that can actually start generating an income rather than becoming a cost. The school estate can also be something which provides housing and provides community facilities. The first thing we do is identify how much funding there is in the local authority.”

Rob Tozer, Director, 1stPlanner

3.2 Take a fabric first approach

A fabric first approach to decarbonisation prioritises maximising the energy efficiency of the building by addressing the building fabric before turning to other elements of the building, like heating systems. This approach is a common recommendation in the sector and coherent with the wider discourse on sustainability transition. The IEA, for example, models that 40% of global decarbonisation will need to be achieved through energy efficiency.⁴⁴ A large part of this will need to be delivered through building fabric interventions. Our expert participants made the case that a fabric first approach is a cautious and desirable approach to decarbonising the diocese for two reasons.

Firstly, when executed in a way that does not exacerbate any existing issues with the building, it protects the diocese's buildings from falling into disrepair as an indirect consequence of investment in other decarbonisation methods or as a direct consequence of inappropriate systems interventions to the buildings themselves. Secondly, it is associated with cost-saving benefits, especially in the long term. Figure 6 below is a decision tree that can help the users of churches think about appropriate energy efficiency and fabric measures they can take.

3.2.1 Protects the diocese's buildings

A major motivation for taking a fabric first approach in the diocese is to preserve the integrity and consequently value of the diocese's buildings. If the building fabric is allowed to deteriorate because a diocese has not attended to its fabric in favour of concentrating on systems interventions, over time, more fundamental issues with the building structure or roof might emerge.

“ If you go and start to interfere with the ventilation and heating strategies of a building that's already on the edge it will become a very, very bad building at the end of it. So you may well have a carbon neutral building, but it may fall over.”

Dr Richard Fitton, Reader in Energy Performance of Buildings, University of Salford

In thinking about building fabric before engaging with systems and technology, dioceses can make sure that the systems interventions they go on to design are appropriate for those buildings. In practice, this means that a diocese should conduct retrofit assessments of the building stock before designing technical interventions and in a way that thoroughly takes account of the condition of the building. This would include, for example, the calculation of peak heat losses pre- and post-fabric interventions. Equally, it might be desirable to fold this principle into the strategy process as the diocese begins to **consider decarbonisation during cyclical maintenance**.

“ What we're doing down at Westminster Archdiocese is looking at building condition. Because there's no point putting renewable, or more efficient technology in the building if the fabric of the building isn't going to be able to adapt to it.”

Jon Kent, Director, Zeco Energy

A fabric first approach is likely to be appropriate for most categories of diocesan buildings. We feel that it is worth acknowledging a caveat to this principle for churches, however. Schools, presbyteries and clubs may see sufficiently frequent use, be commonly heated to sufficiently high temperatures, considered to be of lower architectural merit and easier to insulate such that they warrant the benefits of a fabric first approach. Churches, however, have use patterns and features which may, in some cases, make taking a fabric first approach less suitable, although worth investigating nevertheless. Given the difficulties and cost of insulating many churches, there may be merit in remedial air leakage sealing to reduce the escape of heat, but this will need to be in line with other maintenance and heritage considerations.⁴⁵

⁴⁵ For more advice on heating churches, see the Church of England's guidance at <https://www.churchofengland.org/resources/churchcare/advice-and-guidance-church-buildings/heating#na>

⁴³ See for example <https://www.passivhaustrust.org.uk>

⁴⁴ International Energy Agency, [Energy Efficiency](#)

For more detail on retrofitting historic buildings, see Historic England's guidance at <https://historicengland.org.uk/advice/technical-advice/retrofit-and-energy-efficiency-in-historic-buildings>

3.2.2 Saves the diocese money while decarbonising

Ofgem reports that around 40% of the electricity used in the UK in the final quarter of 2020 was generated from non-fossil fuel sources.⁴⁶ Under some of the National Grid's more ambitious estimates, it is possible that the UK electricity sector will have entirely decarbonised by 2033.⁴⁷ Even if a later date is achieved, grid decarbonisation remains an inevitable step in achieving national net zero. An increasingly, and eventually entirely, decarbonised grid means that in the long run, a diocese may be able to decarbonise the operational energy use of its buildings entirely if it simply electrifies all its heating. For most buildings in the diocese's building stock, including schools, some presbyteries, some church halls, some religious houses and other buildings, we can expect this to be through the installation of heat pumps, which are already often more energy efficient than most alternatives.⁴⁸ Despite the gains in energy efficiency, or Seasonal Coefficient of Performance (SCOP) in technical parlance, associated with heat pumps, dioceses may want to think about how they can mitigate current and future electric heating costs through energy efficiency as a priority, which will also have the desirable effect of reducing the diocese's carbon footprint in the short run.

“ You don't want to have an all-electric building on a fully decarbonised grid that's really inefficient and becomes very expensive. Within the next few years when electricity is more decarbonised than gas, energy efficiency is going to come right back to the table.”

Dr John Hindley, Director, Twelvetreets Consulting

3.2.3 Avoids the embodied costs of renewable technology

Although renewable technology facilitates decarbonisation, paradoxically, it carries an embodied carbon and sometimes embodied social cost. One of our expert participants has conducted extensive research on the topic of embodied carbon in renewable technologies,⁴⁹ and dioceses engaging seriously with the issue of embodied carbon as part of decarbonisation may wish to review this information. In addition to the carbon cost, like other technologies, many renewable technologies require some material inputs that are often extracted or produced in weak governance zones and undemocratic regimes.

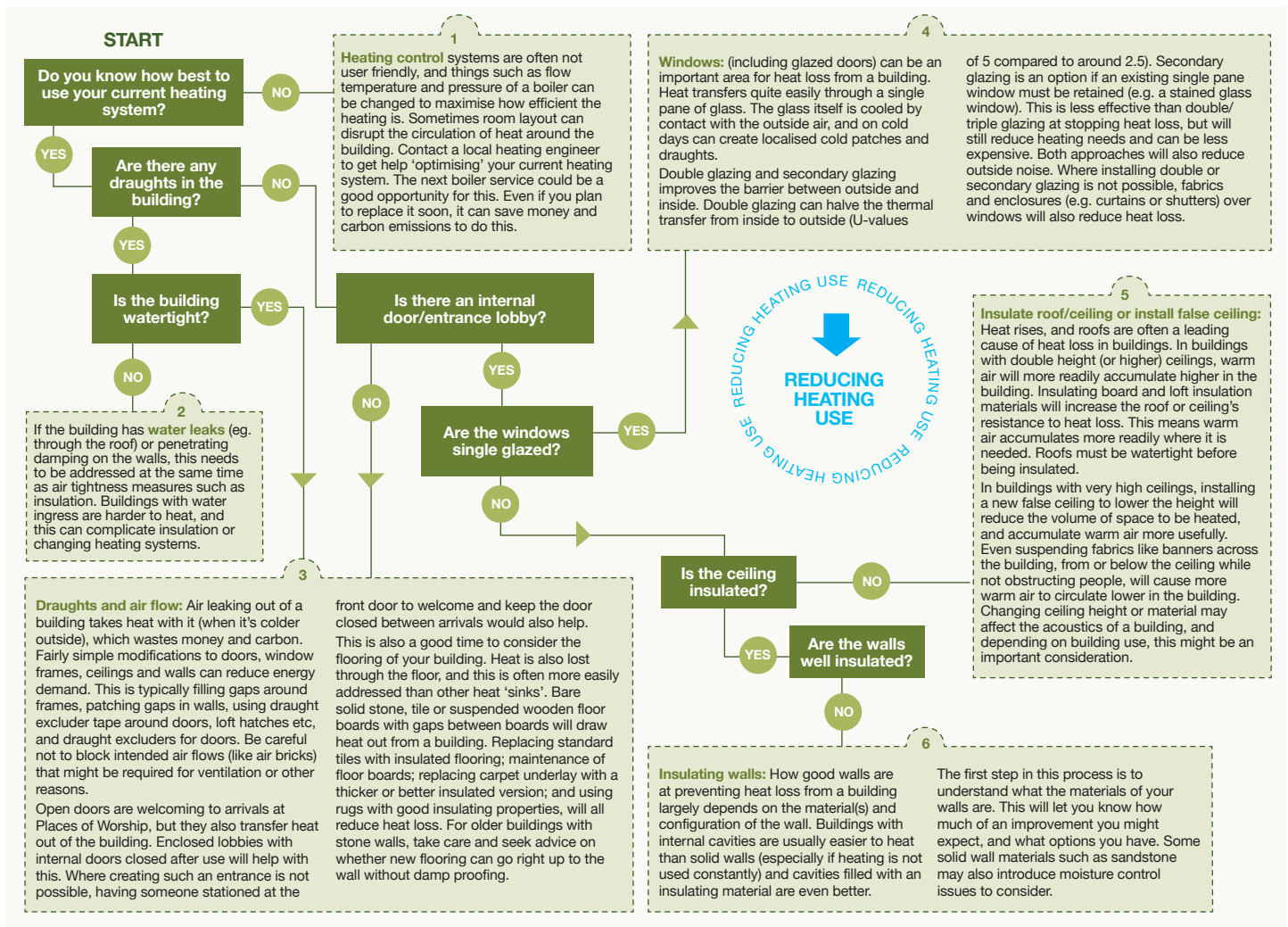


Figure 6. Decision tree: Reduce heating use, from Environmental stewardship in places of worship

46 Ofgem, [Electricity generation mix by quarter and fuel source](#)

47 National Grid, [Future Energy Scenarios](#)

48 London Energy Transformation Initiative, [Hydrogen: a decarbonisation route for heat in buildings?](#)

49 Finnegan, Jones and Sharples, [The embodied CO2 of sustainable energy technologies used in buildings: A review article](#)

Therefore, implementing some renewable technology bears the risk of having incurred a social cost in its production or extraction.⁵⁰ We note that there are also embodied costs associated with fabric interventions, which dioceses can review and compare to the embodied emissions in systems.⁵¹ However, the technical complexity and resource intensity of renewable technology often entails that it can carry a heavy embodied cost. For this reason, finding ways to use less energy through simple fabric interventions like installing insulation will often carry a lesser embodied carbon cost. We also note that purchasing technology through Church Marketplace, which purchases according to Catholic social teaching, may help to address the issue of social cost in the supply chain.

3.3 Prioritise technical simplicity

A recurring theme that emerged during our diocesan interviews and focus groups and our conversations with expert participants was the importance of concentrating on decarbonisation solutions that were not complex. We hope that this emphasis on simplicity runs through this entire framework. The first principle we introduced in this section invites the diocese to consider the simple question of ‘Is this building necessary?’ The second principle asks the relatively fundamental question ‘Is this building structurally sound and efficient?’ In most cases, only once those fundamental questions have been answered do we suggest moving to the question ‘What technical approaches to decarbonisation can be implemented?’

We do reiterate, however, that there may be diocesan buildings that are used with insufficient frequency to justify major fabric interventions on energy efficiency grounds alone, including many Churches. In these cases, simple technologies may prove useful even without fabric interventions.

“ If I look at it from a diocesan perspective, the approach needs to be simple.”

Lyn Murray, Chair of the National Conference of Diocesan Financial Secretaries of England and Wales

When the diocese does move to consider technical interventions, our expert participants typically recommended exploring technically simple, electrified solutions for decarbonising the diocese. For many non-church buildings, after insulation, the installation of a heat pump heating system is likely to be an effective next step. In the case of churches, in many parishes, this exploration may begin with installing PV on church hall roofs or purpose-built car park canopies for on-site energy generation.

“ I think if we want to implement successful solutions to mitigate climate change, we have to favour the simple solutions and only make them more complex when it's required, or when there's a clear case. A simple PV system exporting the energy and using electricity directly for something like radiant heating, when you can, is often the best way forward. I think it's really healthy to start with a simple system, and then ask why would you spend more time, or money, or more complexity on something else?”

Thomas Lefevre, Director, Etude Sustainability

50 International Institute for Sustainable Development, [Green Conflict Minerals](#)

51 See Greenhouse Gas Protocol, [Life Cycle Databases](#)

3.3.1 Reduces risk of user error

A feature of the diocesan built environment that is particularly pertinent to how a diocese might formulate a decarbonisation strategy is the experience of the building managers and operators. One can expect to see a high level of diversity in the levels of engagement, available time, and technical ability of the various building users and managers throughout an entire diocese. The most obvious rationale for implementing simple solutions that can be understood widely is the lower risk of user error that might be associated with such a diverse group of users. Our expert participants cited several cases from their experience with other organisations where technical solutions were seriously undermined by the way that the building was used. When designing interventions, we recommend thinking carefully about how users will interact with the solutions that are being designed. Where possible, solutions should be sufficiently simple to require no additional training for the building users and managers.

“ Having informed, capable people is very important in making the transition. And in the parish, I think it's pretty rare, perhaps, to have someone on the finance committee, say, who really knows the building and is able to cope with it. And it's not something you can expect the parish priests to do.”

Dr Sarah Darby, Associate Professor and Acting Leader, Energy Programme, Environmental Change Institute, Oxford University

However, there may be cases where at least some level of training is required. In those cases, dioceses need to think carefully about how that training will be administered and who the recipients might be. One of our expert participants, speaking on her experience working with the Church of England, stressed the importance of taking the social elements of decarbonisation seriously in an organisation like the Church.

“ The people power, the understanding of the issues, the mechanisms through which to facilitate it, the peer learning - that capacity building should not be underestimated.”

Catherine Bottrill, Director, Pilio

We were also cautioned of the risks associated with taking agency away from the existing building users. One participant gave the example of an organisation where establishing a remote management system for the building's heating systems generated several adverse unintended consequences associated with both the efficiency of the building and the experience of the building users. From the perspective of users, therefore, better results can be achieved by solutions that do not deprive them of agency yet also appear as manageable and comprehensible to them. This approach is perhaps particularly important in the context of the Catholic Church, considering the subsidiarity principle of Catholic social teaching.

3.3.2 Improves opportunities for ecological education

A secondary benefit to installing technology that users understand is that those users will know how to communicate the benefit of that technology to others. Our empirical work in schools suggests that benefiting from sustainable technology does not necessarily increase an individual's awareness of ecological issues or even an awareness of the technology from which they are benefiting. Consequently, where technology is installed, and users want to harness the secondary benefit of that technology as a way of conscientising those benefiting from it, we found that it was extremely important for informed users

to introduce and explain that technology to those whom they would like to conscientise. These themes are explored in greater depth in our report *Developing whole school approaches to sustainability in Catholic education*. This may be of particular importance to the Catholic Church insofar as a diocese perceives educating the laity on issues of ecology to be an element of the Church's mission. The educational benefit of clearly understandable technical interventions is likely to apply both in schools and parish-managed buildings. In schools, the technology can be incorporated into the pupils' education. In parish-managed buildings, the technology offers an example to parishioners of what they might want to do with buildings that they are responsible for. One can consider this principle in conjunction with the social benefits that we noted may occur when the diocese begins to run pilot schemes. Simple demonstration projects can be communicated more easily and reach a wider audience.

“ Do we want to include this into the educational syllabus? Yes, we do. If we're going to put battery storage at a school, why not have it as a teaching aid?”

Jon Kent, Director, Zeco Energy

3.4 Take an activity-based approach

This guidance has already intimated that dioceses may benefit from adopting a range of approaches that reflect the diversity of buildings in the diocese and ways in which those buildings are used. On this theme, a principle that emerged in discussion with our expert participants was the concept of designing optimal decarbonisation solutions by thinking about the activities occurring in the building that the solutions are being designed for.

“ What's the sort of activity we need the energy services for? What's the nature of that demand? Churches and schools are both pretty specialized places in terms of what goes on in them, yet we tend to think of the provision of heating and power in a very general sort of way and treat all buildings more similarly than we need to.”

Dr Sarah Darby, Associate Professor and Acting Leader, Energy Programme, Environmental Change Institute, Oxford University

3.4.1 Supports more effective solutions

Presbyteries are typically used as domestic buildings and so following normal decarbonisation guidance for domestic buildings will typically be appropriate.⁵² Equally, schools have distinct patterns of use that make particular interventions more favourable. For example, the frequency and predictability with which both of these buildings types are used are likely to make them suitable candidates for air or ground source heat pumps. Of all the diocesan buildings, however, churches may have the most unusual patterns of use, and will benefit the most from carefully designed activity-based heating solutions. For churches, taking an activity-based approach principally means concentrating on heating the worshippers.

“ In a church, we perhaps think too much about heating the space and not about warming the worshippers. So, we should perhaps be moving away from thinking that we've got to keep the whole space to a particular temperature.”

Dr Sarah Darby, Associate Professor and Acting Leader, Energy Programme, Environmental Change Institute, Oxford University

Although heating the worshippers should be a priority for designing heating solutions for churches, designing heating solutions for churches is complicated by a range of factors, not least heritage considerations. These complications mean that optimal technological solutions for many churches are still unclear. We offer some speculative suggestions below, informed by our own expertise and input from our expert participants. Ultimately, the lack of certainty around optimal heating solutions for churches highlights how important it is that dioceses **survey the building stock** and **run pilot schemes** prior to implementing scaled interventions.

For churches, typically cathedrals, which are occupied throughout significant parts of every day by significant numbers of people, underfloor heating fed by a heat pump system may heat the people most efficiently. The heat pump might be ground source using boreholes or air source with the outdoor component on a neighbouring roof. For churches that are occupied less, it may be appropriate to maintain the existing whole building heating system for as long as possible. If the church is heated by gas blower heaters or electric heaters it will be easy to replace these on an ad hoc basis. If the church is heated by a central system, however, and that system must be replaced, we speculate that a handful of technologies may be worth investigating.

Heat pump multi-split systems may be an efficient approach to heating churches in some cases. These heating, ventilation, and cooling systems have 'indoor units' delivering warm air into the building and at least one 'outdoor unit' collecting heat. If enough are installed these may be able to deliver heating quickly and locally to worshippers, along with providing some level of destratification depending on how they are installed. However, we note that the noise and aesthetic implications of such an approach will need to be evaluated. Multi-split systems are relatively inexpensive and so may be suited to churches where low capital cost and running costs override aesthetic and perhaps noise considerations.

Where a church is wide across the nave, such 'forced-air' systems may struggle to deliver enough heat to the centre of the nave. Pew-heaters, effectively specialist electric fires fitted under pews, or inexpensive and widely available local electric underfloor heating systems may be suited if consideration of pews drying out and cracking is made. Rechargeable heated seat cushions or electric blankets may also be effective for warming worshippers. However, heated cushions and blankets may need to be managed by the congregation or pastoral associates and so have practical drawbacks that other solutions may not.

There are also various types of radiant heater that are designed to heat surfaces (including people) rather than the air around people. These might also be effective in some circumstances. Radiant heaters powered by PV were deemed to be particularly worthy of further investigation by our expert participants. Radiant heating can leave feet cold, however, which is important to the perception of warmth, so radiant heating may benefit from being supplemented by destratification fans or multi-split systems to warm feet.

Where there is a wet system, if a gas boiler has to be replaced and can't be repaired, then hybrid boilers may be worth consideration. Hybrid boilers are combination heating systems that include heat pumps, which deliver heat whenever possible. The system also contains a gas boiler. On particularly cold days the gas boiler can be used to increase the temperature of the hot water in the radiators to fully heat the space. Of the suggested avenues for exploration this may be the least activity-based, and so may bear combination with some kind of destratification or zoning approach to deliver more heat to the worshippers.

52 See <https://energysavingtrust.org.uk> for example

3.5 Partner with communities and organisations

The final principle that we advocate for dioceses developing decarbonisation strategies is to embrace the idea of partnership with other organisations and wider groups. Partnership, as such, is often considered an important part of managing for ecology, and the general arguments for partnering on issues of ecology and sustainability are well explored elsewhere.⁵³ In addition to the general mandate for working collaboratively associated with ecology, there are some specific community and financial benefits associated with forming specific kinds of partnerships, which we offer an overview of in this section.

We acknowledge that some aspects of the kinds of partnership that we outline below might appear to be novel or complex, but we also note that the Catholic Church is highly equipped to deal with complex organisational and social relationships. The organisational structure of the Church is itself a network of related but distinct organisations, often with complicated boundaries between them. The Church's tolerance for complex and diffuse organisational structure places dioceses in very good stead to apply its already nuanced approach to partnership to the issue of decarbonisation.

3.5.1 Creates opportunities for financial sustainability

One of the main questions raised by diocesan managers regarding decarbonisation was how to finance it. In the previous section we outlined several ways through which a diocese could **seek additional funding**. Community and impact investment in particular, which we consider to be some of the most scalable and versatile ways that dioceses can fund decarbonisation, rely on developing some kind of partnership agreement with one or more groups of stakeholders.

“ My concern is if we can't get funding from the government or the public sector the cost is going to fall on the diocese. And there's just no way that all of the dioceses across England and Wales could fund this type of activity. So, if there is the ability to generate some income, then I think that would be helpful.”

Lyn Murray, Chair of the National Conference of Diocesan Financial Secretaries of England and Wales

We concentrate here on using partnership to generate returns for dioceses through the creation of 'business models.' We discussed above in the section on considering how to **optimise the estate** how the diocese might begin to think about the diocesan building stock as something capable of generating income. We note here that the business models through which returns are made possible are often reliant on partnering with other sectors. An example offered by an expert participant below included partnering with the local council to develop an energy demand management business model that would earn money by helping balance the national grid. Such a model might, in part, be possible using assets that a diocese would have invested in anyway as part of decarbonisation, but would also require partnership with a local authority because of the reduced cost of capital available to local authorities.

“ There's a very lucrative market available for frequency response, which means you get paid to store energy when there's an excess, and the national grid buy it back off you when there is a shortage in supply. You can do it by forming a special purpose vehicle or a joint venture with a local authority. That will be a long-term revenue generating opportunity for both parties.”

Jon Kent, Director, Zeco Energy

A policy organisation supporting the UK government Department for Transport has recently argued that the UK charging infrastructure is vastly under-equipped to support projected growth in electric vehicle (EV) use. To keep pace with demand the current rate of EV charging point installations will need to increase fivefold.⁵⁴ Not only is the demand for EV charging points growing, but EV charging points also have very short payback periods relative to many of the other technologies referred to in this guidance. If dioceses consider the installation of EV charging points in Church car parks, for example, to be compatible with the Church's mission, then EV charging may come to represent a highly lucrative business model for dioceses.

Our expert participants also highlighted opportunities to develop EV charging infrastructure-based business models, which might require partnering with a combination of public and private sector organisations. As noted by an expert participant below, the government's prioritisation of EV infrastructure may mean that the public sector will be able to support some of the infrastructural elements of an EV charging business model, whilst the private sector may be able to provide and manage the charging technology.

“ Local authorities and DNOs will definitely have more money to spend for looking at how they implement EV charging infrastructure. So that's an area that has been untapped so far, but perhaps by working with corporates something could be done collectively and creatively to tap into that.”

Dr Mei Ren, Director, Buro Happold

3.5.2 Creates community benefit

Partnering with other organisations and stakeholders does not just have the potential to create financially sustainable business models to ease the costs of decarbonisation, it also has the potential to create community and social value in areas that the Church wouldn't normally be able to reach. Issues like access to affordable housing or fuel poverty are issues that one might normally consider a concern for the Church but that fall partly outside its direct sphere of influence.

“ A really critical issue here is the availability of affordable energy. There's no point in us driving to net zero carbon emissions if parishioners don't have the resources and the funds to do it too. Then it's actually driving more hardship. So, there's maybe some unintended consequences to think about.”

Catherine Bottrill, Director, Pilio

53 See for example United Nations, [Partnerships for the goals](#)

54 Policy Exchange, [Charging up](#)

During our interviews and focus groups, diocesan managers observed that partnering to develop social housing powered by on-site renewable energy might be an effective way to respond to both the 'cry of the earth' and the 'cry of the poor' simultaneously within the diocese.⁵⁵ In the quote below, an expert participant articulates one way of thinking about how a community-oriented partnership and operating model for social, ecological and financial benefit might work.

“ **If the church is a part of a community, perhaps a low temperature heating network powered by ground and air source heat pump could be solution to serve the community. Together with PV and battery, this could create a business model, like an energy services company, to bring social value back to the community.**”

Dr Mei Ren, Director, Buro Happold

3.5.2 Creates opportunities for decarbonising the Church's supply chains

A final consideration related to how the diocese understands partnership and community for decarbonisation concerns the ability of the Church to exert moral leadership in the supply chain and encourage suppliers to also commit to decarbonisation. Not only can working with partners and suppliers to decarbonise express moral leadership, but it can also have a quantifiable impact on the emissions that result from activities supporting the Church's operations (often referred to as Scope 3 emissions).

It is an increasingly common practice for organisations concerned with decarbonisation, especially the rapidly growing number of organisations accepting accountability for their Scope 3 emissions, to expect some level of carbon disclosure and action from their suppliers. Procuring organisations' requirements can often include suppliers implementing an ISO14001⁵⁶ compliant environment management system in their operations, disclosing their carbon footprint via the Science Based Target Initiative for corporates⁵⁷ and small to medium-sized enterprises,⁵⁸ or setting and reporting progress against decarbonisation targets co-developed directly with the purchasing organisation itself.

There is already a strong precedent for this kind of activist procurement in the Catholic Church. Church Marketplace works with suppliers to ensure that their products and services are produced in line with Catholic social teaching. Moreover, there are also clear parallels with the stance some dioceses take on activist investment. Many clerical and curial professionals whom we interviewed expressed the opinion that rather than divesting from organisations like large fossil fuel companies, the Church, or at least their dioceses, should instead continue to invest in the fossil fuel companies but exert ethical pressure on those organisations to transition faster.

A powerful and highly related mechanism is already available to dioceses in the form of the expectations that dioceses express of their suppliers. All dioceses should consider adopting or developing environmental standards in procurement as part of their decarbonisation strategy. However, this recommendation is especially appropriate for dioceses that have chosen to remain invested in fossil fuel companies on activist grounds as part of their environmental strategy. Given the relative bargaining power of the organisations, exerting ethical pressure on supplier firms is likely to be even more effective than exerting it on the fossil fuel majors in their investment portfolios. For these dioceses, especially, implementing environmental standards in their procurement can be a congruent and relatively low-cost strand to their environmental strategy.

55 Pope Francis, [Laudato Si'](#)

56 International Standards Organisation, [ISO14000 family](#)

57 [Science Based Targets Initiative](#)

58 Science Based Targets Initiative, [Set a target as a small or medium enterprise](#)

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⁵⁹ Figures 2, 3 and 4 were created by Chris Walsh and Dr Chris Jones. Views expressed in this report do not necessarily reflect those of the Tyndall Centre for Climate Change Research.

DIOCESE OF  SALFORD



Guidance on developing strategy for decarbonising Catholic diocesan building stocks

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