Diocesan Carbon Emissions Reporting for 2019

Summary

The estimated 'net' carbon emission for the Diocese was 13,433.9 tonnes CO2e.

For comparison the average annual UK per capita carbon emissions is 5.3 tonnes carbon. In 2019, the Diocese of Leeds had a carbon footprint equivalent to 2,535 people's emissions.

The gross carbon emissions was 15,974.1 tonnes CO2e. Renewable electricity purchased by 207 churches and carbon offset gas purchased by 158 churches offset this figure by 2,540.2 tonnes CO2e.

Approximately half the emissions come from church energy use, a quarter from the Diocesan VA schools and a quarter from the clergy property.

The scope of the emission included has been based on the proposed national definition of "net zero carbon" for the Church of England.

There are a significant data gaps in assessing the carbon emission of the Diocese. No data is available for staff travel, clergy travel or glebe land. Church energy use has been extrapolated from the third of churches using the Green Journey scheme. The data set is, however, a considerable improvement on 2018 reporting and establishes Leeds Diocese as one of the national leads in carbon accounting.

To offset the whole of the 2019 diocesan 13,433.9 tonnes CO2e emissions would cost £268,678 at a standard rate of £20 a tonne of carbon.

Carbon Emissions Breakdown

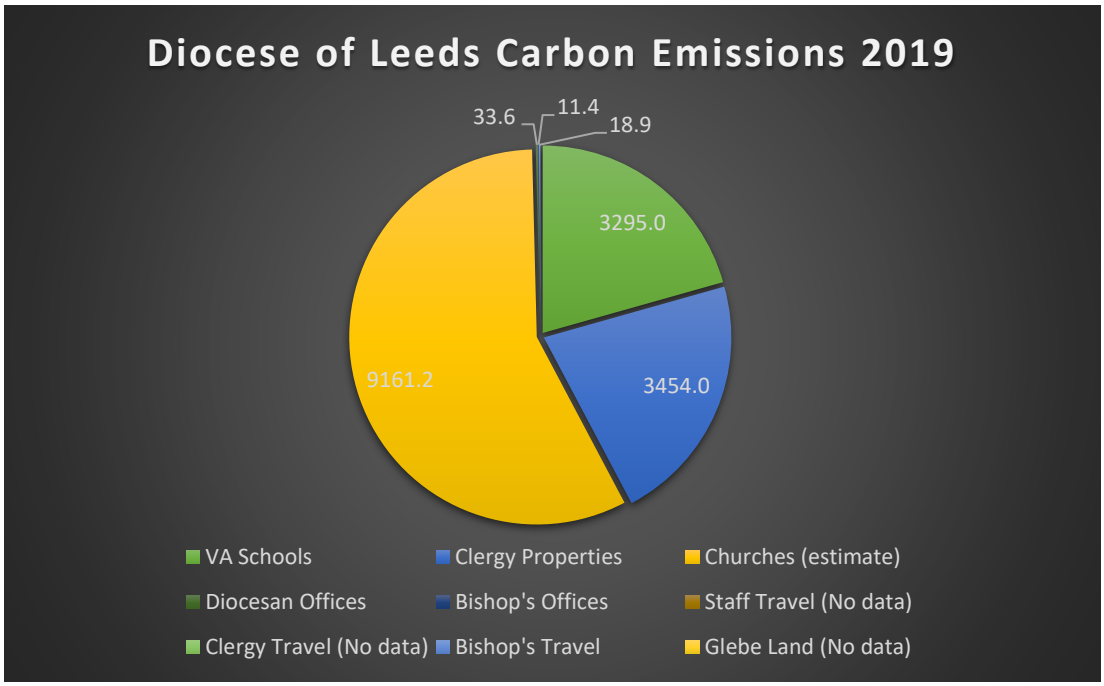

Figure 1: Diocese of Leeds Carbon Emissions 2019 (Tonnes CO2e). Full data set in Appendix.

Over half of the emission from the Diocese come from the energy use of the 601 church buildings. However, this figure needs to be treated with caution as it is extrapolated by multiplying the emission from the known energy data from the third of churches who are part of the Green Journey scheme.

The 456 clergy properties and 57 VA schools account for approximately a quarter of the remaining emissions.

Figure 2 illustrates the proportion of emission from different energy sources in the Diocesan VA Schools.

Gas and oil heating systems contribute the bulk of the emissions. Emitting 0.339 kg of CO2e per kwh, oil is a more carbon intensive form of fuel than gas at 0.208 kg of CO2e, or electricity at 0.316 kg of CO2e.

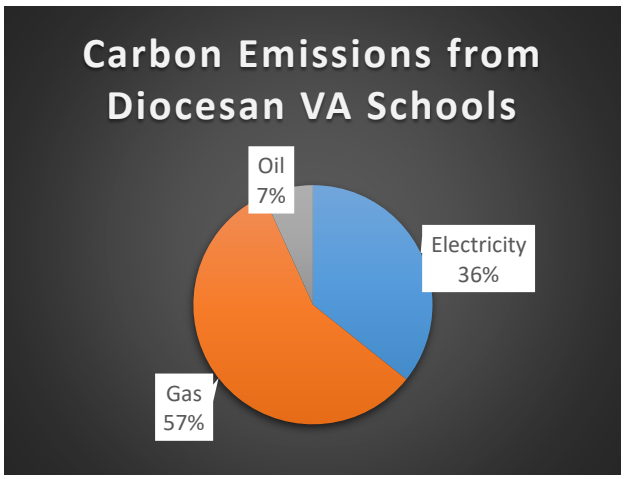

Figure 2: Carbon Emissions form Energy Use in Diocesan VA Schools.

The 33.6 tonnes CO2e emissions from diocesan offices are relatively small when compared to the more numerous other property holdings, but in themselves are not insignificant.

Data is not available for staff or clergy travel, which would be expected to be a smaller, but significant proportion of emissions.

The Bishops' and their team's travel starts to give some indication of the impact of diocesan travel on the emissions accounts. However, the Six Bishops' collective 66,280 car miles and 37,859 aviation miles are unlikely to be representative.

Carbon Emissions and Church Growth

With the church growth that the Diocese is seeking to achieve, some additional carbon emissions would be expected eg heating the church building for more hours, additional clergy travel.

As the quality of the carbon emission data improves, it would be helpful to assess the emission per member of the congregation/ school pupil across the Diocese.

Carbon Offsetting

To reach a 'net' carbon emissions figure carbon offsets can be deducted.

2,540 tonnes CO2e can be deducted due to the 1,761,442 kwh of renewably generated electricity purchased by 207 churches and 9,536,480 kwh carbon offset gas purchased by 158 churches in the Diocese.

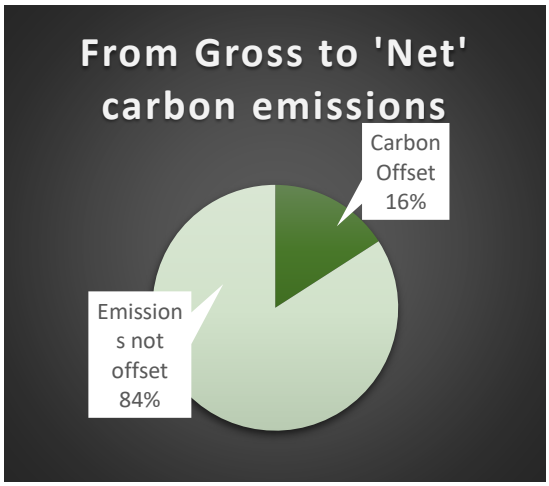

Figure 3: Proportion of carbon emissions offset in 2019

No data is available for other carbon offsets that the Diocese may have. For example exporting renewably generated electricity to the national grid from solar on church, clergy property or office roofs or certified additionality in tree planting schemes.

To offset the whole of the 2019 diocesan 13,433.9 tonnes CO2e emissions would cost £268,678 at a standard rate of £20 a tonne of carbon.

Comments

The 13,433.9 tonnes CO2e emitted in 2019, should be serious matter of concern for the Diocese. To keep global average temperatures below 1.5^{O}C, there is a small and dwindling remaining global carbon budget of approximately 60 tonnes CO2e per person in perpetuity.

The size of the diocesan emissions, and their contribution to climate change, raise moral, ethical and spiritual questions that go beyond purely accounting figures.

Although work still needs to be done on improving the data set, there has been a significant development in data collection from 2018, when only church energy use was collated. Continuing to improve the carbon emissions data will be important to inform the strategic work needed to achieve the Diocese objective to become carbon neutral.

The quick win in terms of carbon reduction would be switching churches, schools and clergy housing to a renewable electricity supply and carbon neutral gas. Tackling poor thermal retention, particularly in clergy housing and schools, as well as generating renewable electricity and using renewable heat instead of gas and oil also need to be planned for.

While the emissions reported here are those that the Diocese is directly responsible, the influence on carbon emissions across thousands of members of congregations and school pupils to households, businesses and communities across the Diocese must not be underestimated.

Jemima Parker
Diocesan Environment Officer
19.6.20

APPENDIX

Carbon Emissions Full Account

	Carbon emissions tonnes CO2e							Carbon Offsets tonnes CO2e			
.	Electricity	Gas	Oil	Other fuel (no data)	Travel (car)	Travel (air)	Total	Renewable Electricity Purchased	Renewable Electricity Generated (No Data)	Other offsets	Total Offsets
VA Schools	1177.4	1894.8	222.8				3295.0				
Clergy Properties							3454.0				
Churches (estimate)	1616.1	7545.2					9161.2	556.6		1983.6	2540.2
Diocesan Offices	27.8	5.8					33.6				
Bishop's Offices	5.038	6.35					11.4				
Staff Travel (No data)											
Clergy Travel (No data)											
Bishop's Travel					13.2	5.7	18.9				
Glebe Land (No data)											
Gross Carbon emissions (tonnes CO2e)							**15974.1**				
Net Carbon Emissions (tonnes CO2e)											**13433.9**

Figure 4: Breakdown of carbon emissions for the Diocese of Leeds 2019 (CO2e = Carbon dioxide equivalent).

For comparison the average annual UK per capita carbon emissions is 5.3 tonnes carbon. In 2019, the Diocese of Leeds had a carbon footprint equivalent to 2,535 people's emissions.

Measuring the Diocese's Carbon Footprint

The data gathered to calculate the carbon emissions for the has come form a number of sources. The summary energy use and travel miles figures are shown in Figure 5. The details of how these figures were reached are below.

	Energy Use kwh				Travel miles		Total
.	Electricity	Gas	Oil	Other fuel	Travel (car)	Travel (air)	.2
VA Schools	3725834.9	9090240.0	657356.5				13473431.4
Clergy Properties							
Churches	5114137.6	36274838.5					41388976.1
Diocesan Offices	87841.0	27894.0					
Bishop's Offices	15942.0	30527.0					46469.0
Staff Travel (No data)							
Clergy Travel (No data)							
Bishop's Travel					71553.0	37859.0	109412.0
Glebe Land (No data)							

Figure 5: Energy use and travel miles by sector for the Diocese of Leeds 2019

1. VA Schools

Energy data was gathered for each VA school from the Display Energy Certificate available on the Department of Education website. Three out of the 60 VA schools did not have a Display Energy Certificate available and they are omitted from the data. While many of the Display Energy Certificates are recent (in the past 2 years) small school are only required to have this assessment every 10 years, so some of the data dates from 2012. The full data set can be viewed in the accompanying spreadsheet.

2. **Clergy Properties**

456 of the 475 clergy properties have had energy audits conducted in the past two years. As part of this assessment, an estimate of carbon emissions is given and this figure has been used. The 19 unassessed properties have been omitted. A monetary estimate of energy use is given, but not a kwh consumption figure, so this does not appear in Figure 5. No account has been made for the bishop's properties for which the diocese is responsible as the data is in a different format. The full data set can be viewed in the accompanying spreadsheet.

3. **Churches**

Energy use data for gas and electricity from the Green Journey scheme has been used. An average church electric and gas usage has been calculated using the 207 churches purchasing renewable electricity through the Green Journey and the 158 churches purchasing carbon offset gas. There is no data to clarify if church halls are included. The full data set can be viewed in the accompanying spreadsheet.

The national Energy Footprinting Tool is now available as part of the 2020 Parish Returns process. This asks for energy data for each building, floor area, and number of people using the building. The resulting energy ratings are weather adjusted. This will retrospectively give a much better assessment of church and church hall energy use and carbon emissions.

4. Diocesan Offices

Energy bills have been collated. No data available for Bradford Office gas use or the solar export from Church House, Leeds. The full data set can be viewed in the accompanying spreadsheet.

5. Bishops' Offices

Energy bills have been collated for those offices for which the Diocese has responsibility. The full data set can be viewed in the accompanying spreadsheet.

6. Staff Travel

No data has been collated for 2019. From July 2020 car miles will be collated from expenses claim forms.

7. Clergy Travel

No data has been collated. This will be challenging to collect.

8. Bishop's Travel

Expenses claims have been used to arrogate the miles travelled by car and by air. The full data set can be viewed in the accompanying spreadsheet.

9. Glebe land

No data is available to date.

Carbon Emissions Factors

Each kwh of energy and each mile travelled has be converted into a measure of greenhouse gases, CO2e (carbon emissions equivalent), using standard conversion factors issued annually by the UK government. The following factors have been used:

- One kWh of electricity (incl. well to tank, transmission & distribution) = 0.316 kg of CO2e
- One kWh of natural gas (non-renewable sources, including well to tank) = 0.208 kg of CO2e
- One kWh of fuel oil (including well to tank) = 0.339 kg of CO2e
- One kWh of LPG (including well to tank) = 0.259 kg of CO2e
- One kWh of wood chips = 0.024 kg of CO2e
- One kWh of pellets = 0.053 kg of CO2e
- One km of car travel in a medium sized petrol car = 0.192 kg of CO2e
- One km of air travel in economy, long haul = 0.150 kg of CO2e