Shropshire Council

Climate Strategy

Carbon Monitoring Report 2023

In Partnership with:

You may also view our Climate Dashboard which shows our carbon footprint and other environmental and climate key performance indicators (KPI's).

- Climate dashboard | Shropshire Council
- Shropshire Climate Action | Shropshire Council

1. Introduction

1.1 Shropshire Council began monitoring its carbon footprint in 2019 (baseline year). This carbon monitoring and progress report updates the councils carbon footprint highlighting any changes from the baseline and previous year's monitoring. The report addresses the following questions:

1. What is the latest corporate carbon footprint?
2. How has this changed from that reported in our baseline year (2019)?
3. How has this changed from that reported in 2022?
4. What have the projects and initiatives which we've supported contributed to the change?
5. What other factors have had an influence?
6. Are we 'on track' towards our corporate target for 2030?
7. What co-benefits are there: revenue cost savings, public health, air quality and biodiversity?
8. What have Shropshire Council contributed to wider activity to decarbonise Shropshire?
9. What additional activities such as training, support for community climate action, changes to procurement, are planned.

1.2 As well as reporting carbon performance, the report provides a summary of live and proposed projects necessary to tackle the "carbon gap". It is crucial to adopt an evidence led approach and target the areas identified with the biggest carbon footprint.

1.3 Our Climate Strategy aims for an annual reduction of around 10% per year. With UK commitments made in COP26, decarbonisation needs to be continuous and progressive towards the goal of net zero by 2030.

You may also view our Climate Dashboard which shows our carbon footprint and other environmental and climate key performance indicators (KPI's).

- Climate dashboard | Shropshire Council
- Shropshire Climate Action | Shropshire Council

2. Carbon reporting method

2.1 Shropshire Council is reporting its performance for the financial year 2022/23 using the national LGA Greenhouse Gas Accounting Tool. Performance monitoring will be refined as more data becomes available. The Greenhouse Gas Accounting Tool define the emissions scopes (1,2,3) and data sources in more detail in their FAQs.

For the purposes of carbon reporting across the local authority operations the following categories have been identified for each emissions scope:-

Table 1: Scopes as defined in LGA Carbon Accounting Tool (FY 2022/23)

Emissions Scope	Category	Detail
Scope 1	Corporate Landlord Buildings (kWh gas and oil) Passenger transport fleet	Corporate administrative and public buildings, (Litres of diesel/petrol)
Scope 2	Corporate Landlord Buildings and streetlighting (electric)	Factors green tariff and conversion to LEDs, and traffic controls.
Scope 3	Staff business travel Staff commuting estimate. Veolia commercial recycling Veolia domestic recycling Warp It re-use platform. Water supply and treatment	Staff expense mileage and use of pool-vehicles Commuting factors working from home and the office. "Resources" recycling, reuse, and water for the delivery of services.
Scope 3 (outsourced)	Leisure services PFI buildings Schools (state funded) Highway's vehicles contracts	Leisure centre operators Private Finance Initiative Highways: Kier, WSP
(additional to LGA model)	Procured goods and services (across service sectors). Social housing Staff home working	Based on contract spend STAR housing Based on working arrangements and Shropshire domestic (average)

3. Corporate Carbon Footprint 5-year trend

3.1 The last five year's emissions have been compiled using the same methodology in order to make a fair comparison across this timeframe:

Table 2: Authority emissions 5-year comparison

Scope	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	Last year compare	5-Year compare
Scope 1	2,728	2,309	1,894	2,392	2,539	+6%	-7%
Scope 2	5,289	4,841	0	0	0	0%	-100%
Scope 3	87,128	82,228	71,374	74,879	79,489	+6%	-9%
Negative emissions	-30,419	-29,323	-32,643	-29,208	-27,975	+4%	+8%
Gross emissions	95,144	89,378	73,268	77,271	82,028	+6%	-14%
Net emissions	64,725	60,055	40,625	48,063	54,053	+12%	-16%

Annual Change in performance FY21/22 to FY22/23

3.2 The increase in net emissions (by 12% from FY21) is primarily due to increased scope 3 emissions, but also reduced negative emissions due to lower levels of domestic waste recycling compared to FY21.

3.3 The net increase in gross emissions is due to the following:

- Scope 1: (6% increase from FY21). Increased service delivery compared to FY22, which was impacted due to the pandemic.
- Scope 2: (100% reduction from baseline). The WME green tariff has contributed to the zero-carbon electricity, this is REGO accredited.
- Scope 3: (6% increase from FY21):
    - Increased spend across service areas (estimate based on spend).
    - Note:- there has been a change in methodology, the emissions intensity factors provided by Oxygen Finance are higher than those from the Office for National Statistics. Therefore, when factoring the increase in spend (predominantly health and social care), this has resulted in a small increase in gross emissions.

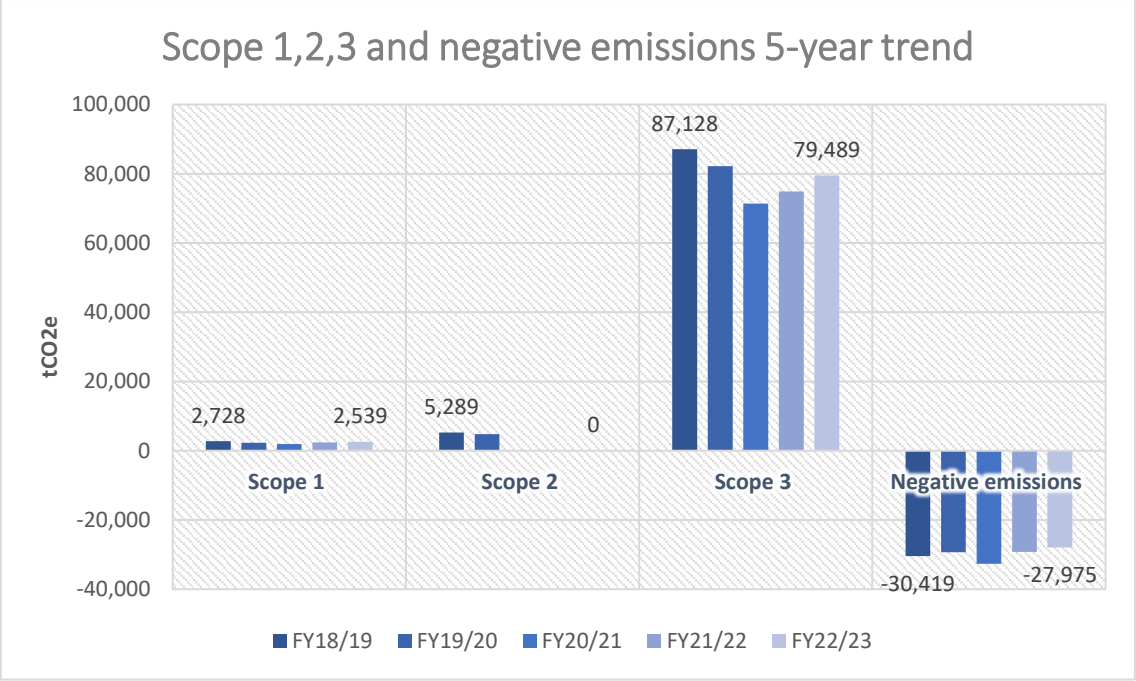


Figure 1: Authority emissions (5-year comparison)

3.4 An increase in Scope 1 emissions has been reported compared to the previous reporting period (FY21). This is expected to be primarily due to increased service delivery following a return business as usual after the Covid pandemic. Shropshire Councils buildings and vehicles are being used more compared to the previous year, and a higher level of services are being offered by the council. In addition, the councils transport fleet are likely to be increasingly utilised during this period of recovery.

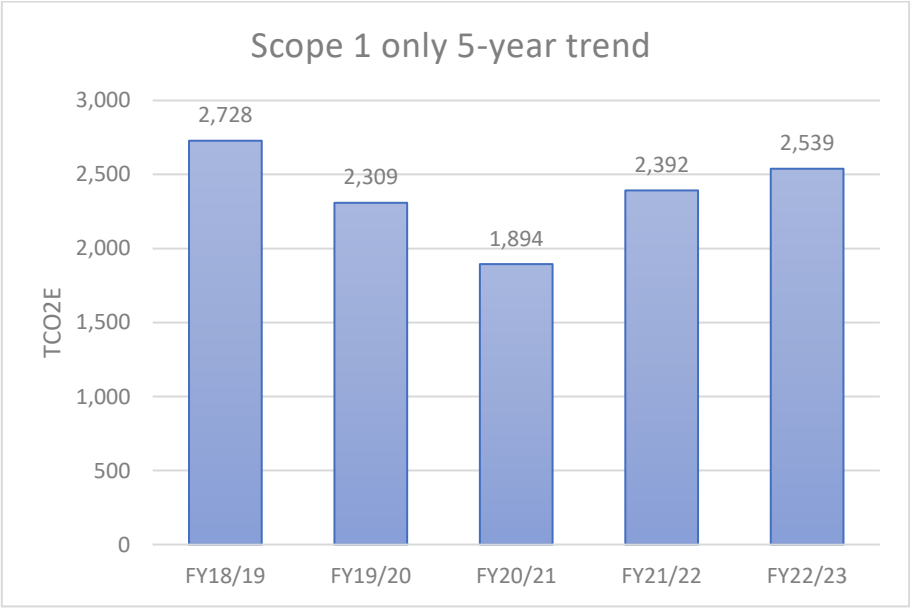


Figure 2: Scope 1 only 5-year trend

3.5 Scope 2 emissions became zero in 2020 due to a zero-carbon electric tariff. However, we recognise that reducing energy consumption is important and we are working to make efficiency savings on buildings as part of our ongoing Carbon Reduction Programme.

3.6 There is a consistent increase in Scope 3 emissions across all 5 years (when compared to the previous methodology). This is due to amended emissions intensity factors ($kgCO_2/£$) as provided by Oxygen Finance (OF). Where the procurement database is used to calculate Shropshire Councils Scope 3 emissions based on the spend of each service area. Since this is not necessarily an exact reflection of emissions, Shropshire Council commissioned a more rigorous reporting method to improve the accuracy of our carbon reporting for commissioned services, this provided a more accurate representation of our Scope 3 emissions and a consistent process to help service areas to improve their performance.

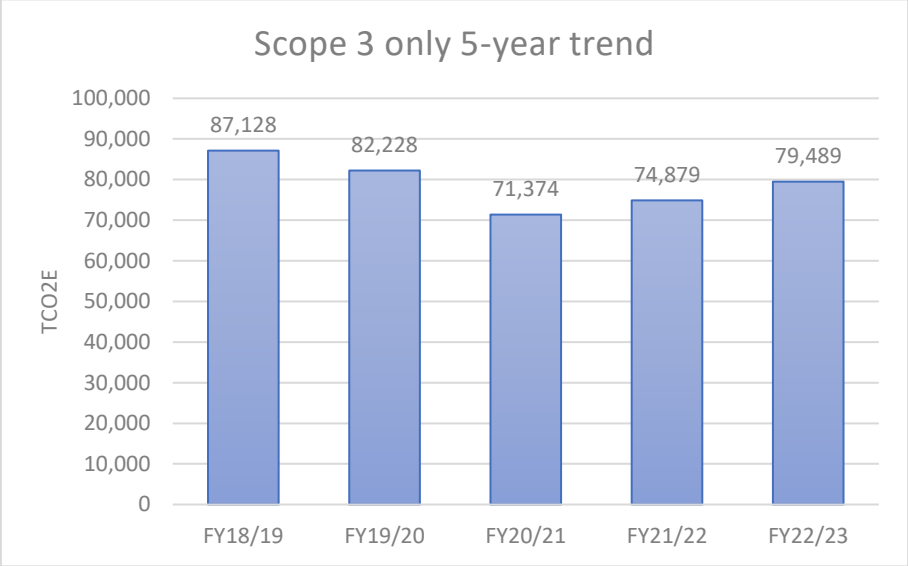


Figure 3: Scope 3 only 5-year trend

3.7 Negative emissions: carbon removal, offsetting and capture activities have decreased by 4%, primarily reflecting lower levels of domestic waste recycling under the contract operated by Veolia.

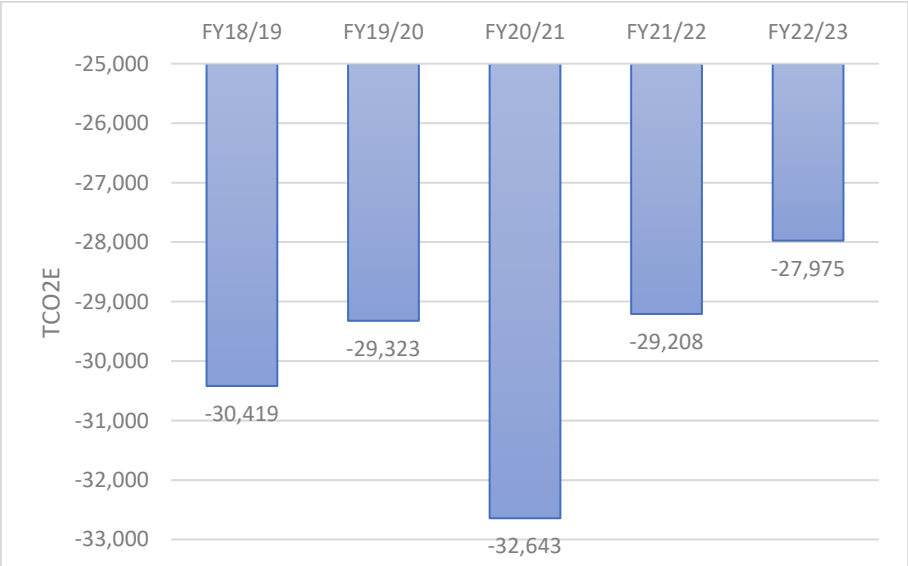


Figure 4: Negative emissions 5-year trend

Are we 'on track' towards our corporate target for 2030?

3.8 Given the 12% increase in net emissions (12,278 tCO_2e) when compared with the previous financial year (when accounting for scope 3 emissions) and without a significant increase in negative emission sets combined with consistent year on year reductions of at least 10% in gross emissions , the target date looks unlikely. However, the 16% reduction (5,990 tCO_2e) across a 5-year period leaves some room for optimism.

3.9 The 2022 Progress Report[2] reported a net increase of 13% of the authorities net CO_2 emissions compared to the previous year with only a 1% decrease in gross emissions and a 2% increase in negative emissions. It should be noted that favourable negative emission sets (from the Veolia domestic waste contract) should not be relied on. However, the methodology for scope 3 emissions has since been updated.

3.10 This year's Progress Report reports the authorities' net emissions (54,053 tCO_2e) have increased by 12% compared to the previous year including a 6% increase in gross emissions (82,028 tCO_2e) and 4% decrease in negative emissions. (-27,975 tCO_2e). It should be noted that the favourable negative emission sets (from the Veolia domestic waste contract) are technically deemed carbon reduction processes rather than removal.

3.11 We have developed and improved our scope 3 supply chain emissions estimate. Moving away from the ONS carbon factors, which are now understood to result in an underestimate (by about 50%). This has been replaced with a procurement and financial analytical tool called Oxygen Finance. This provides a breakdown of annual spend and emissions by sector and basic information on individual suppliers. This evidence was independently compared against a more rigorous tool (called CO2A) which provides further detail on individual suppliers, estimating the footprint to be around 25% higher again. CO2A is understood to also include suppliers' scope 3 and therefore explain the higher overall footprint.

3.12 Our carbon performance monitoring has been significantly influenced by the Covid pandemic, as such establishing a baseline and identifying meaningful trends has been challenging. Our current trends are comparable to those being reported in National Statistics[3].

3.13 Although we have not seen significant reductions in our gross corporate emissions, we should recognise that the majority of the measures and interventions that we are implementing and working on now do not lead to immediate reductions in carbon emissions.

3.14 Programmes and individual projects across buildings, renewable energy, transport and carbon capture and storage are in the pipeline to help achieve our goal of net zero by 2030.

[2] https://www.shropshire.gov.uk/media/26120/2022-progress-report.pdf
[3] UK greenhouse gas emissions: local authority and regional - data.gov.uk

4 Carbon footprint – in more detail

4.1 The gross emissions across all the local authority operations amount to 82 $ktCO_2e$ (the majority of this is classed as Scope 3). This is about 3% of the county total.

4.2 Scope 1 (direct emissions) comprise of heating public and administrative buildings (1.9 $ktCO_2$) and transport fleet (618 tCO_2). Collectively vehicles (including those in Scope 3) account for 3.3 $ktCO_2$ so it is important to decarbonise this sector.

4.3 Scope 3 makes up most of the emissions; ranked highest to lowest. Health and social care (43,405 tCO_2e), social housing (14,049 tCO2e), schools (9,386 tCO2e) then corporate management (2,641 tCO2e) leisure centres (2,653 tCO_2e) and ICT (1,633 tCO_2e).

Table 3: Authority Emissions by Scope

Scope	Emissions Type	Emissions (tCO_2e)	Percentage of gross
Scope 1	Corporate heating	1,921	2%
	Transport fleet	618	1%
Scope 2	Electricity	0	0%
Scope 3	Social housing	14,049	17%
	Health & social care	43,405	53%
	Schools	9,386	11%
	Staff home energy	869	1%
	Maintenance fleet	712	1%
	Leisure centres	2,653	3%
	Staff travel	1,933	2%
	Corporate management	2,641	3%
	Transmission losses	319	0%
	PFI	237	0%
	Legal & financial	626	1%
	ICT & BPO	1,633	2%
	Pending categorisation	0	0%
	Culture & arts	870	1%
	Water	61	0%
	Civil Defence	97	0%
Gross emissions		82,028	100%

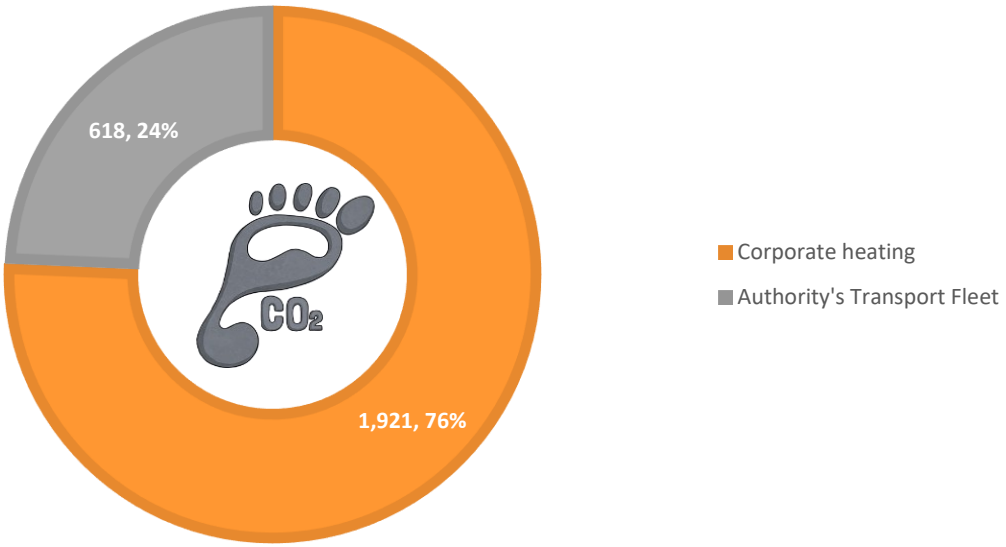


Figure 5: Direct local authority carbon emissions only = 2,539 tCO_2e

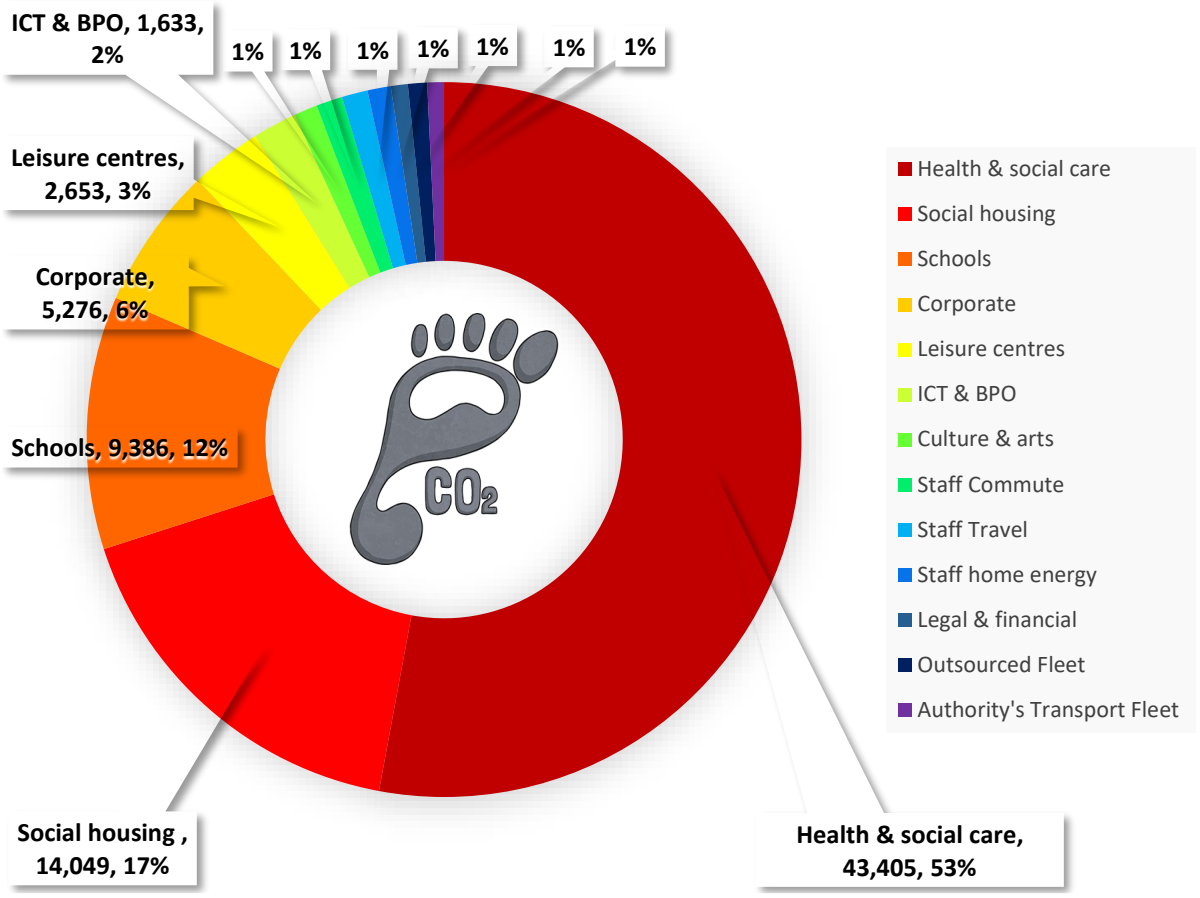


Figure 6: All local authority gross carbon emissions = 82,028 tCO_2e

Negative emission set (or insetting)

4.4 The methodology for calculating how much carbon is released, or captured and stored through the management of land is set out in: Mapping Carbon Emissions & Removals for the Land Use, Land-Use Change & Forestry Sector. The latest dataset available is 2021. For the whole of Shropshire (3,197.3km^2) the summary position is as follows:

4.5 So, for the whole county (3,197.3km^2) the summary is as follows:

Table 4: Carbon Emissions from land uses in Shropshire

LULUCF Net Emissions (2019):	Emissions (kt CO_2/yr.)
Forest land	-191.5
Cropland	153.4
Grassland	-60.9
Wetlands	0.5
Settlements	12.5
TOTAL	**-84.8**

4.6 For council managed land and projects, an estimated -6,792 tCO_2e is sequestered per year by natural carbon sinks. This is across an estimated 2,500m^2 as follows:

Table 5: Carbon Emissions from Shropshire Council Land

Land usage / site category	Area (m^2)	tCO_2e/yr.	Notes / reference
Countryside sites	479	-2,894	
Other freehold	1,810	-3,179	Approximate figures as habitats for all our land holdings aren't known.
Leasehold	206	-355	
Free Tree Scheme	Varied (unknown)	-318	Not including hedgerow plantings. Includes trees planted since 2010
Trees outside woodland	Varied (unknown)	-47	No trees planted for the period
TOTAL	2,494m2 (+ unknown)	**-6,792**	

4.7 We know that in Shropshire we have around 15% tree cover. 9% is estimated as younger woodland and the remaining 6% as 100 years old or more. The remainder is assumed to be primarily either built up or permanent grassland and therefore have negligible emissions or sequestration. Only large sites that aren't Countryside Sites like the Old Riverbeds have been calculated separately. Change in carbon storage for hedgerows or individual trees hasn't been calculated and all figures are approximations for habitat areas on our land holdings. Wide variation exists even for those habitats that are known; For example, different tree types

store carbon quicker than other types and other factors like soil type and land management also have a significant impact. There is not accurately recorded data prior to 2019 on carbon sequestration for council owned land.

Circular economy

4.8 As well as carbon which is captured and stored through land-use, waste management services and projects also generate carbon savings, largely through recycling materials which offset the carbon impact of manufacturing goods from newly extracted materials.

Table 6: Carbon Savings from Sustainable Waste Management

Recycling and reuse	tCO_2e/yr.	Reference
Veolia domestic recycling	-21,127	Net emissions from the WRATE assessment of the Veolia Contract with Shropshire Council: 2021
Veolia commercial recycling contract	-50	Shropshire Council Commercial Movement Analysis Report 2022 - 2023
Warp It (reuse)	-6	Shropshire Council performance metrics https://www.warp-it.co.uk/company/shropshirecouncil

Negative emission set summary

Table 7: Shropshire Council negative emission sets

Negative emission set 2022/23	tCO_2e/yr.	Percent
Material reuse	-6	0%
Commercial waste contract	-50	0%
Domestic waste contract	-21,127	76%
Natural carbon sinks	-6,792	24%
Negative emissions total	**-27,975**	**100%**

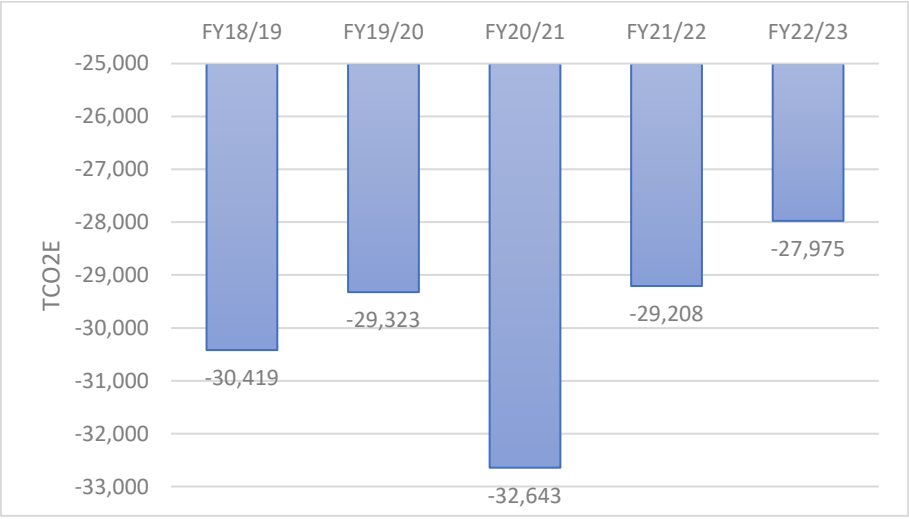


Figure 7: Negative emission set 5-year trend

Shared resources

4.9 Carbon budgeting and setting targets between service areas needs to fairly represent the impact of both controllable and fixed activities associated service delivery. Whilst the wider impacts of service delivery by the council (i.e., the county emissions may not be the direct responsibility of the council it is fair to say the council is the significant stakeholder in terms of influence due to the public services it delivers. This footprint is distributed across the service areas, given that further refinement may be necessary.

4.10 The shared carbon footprint associated with all service delivery is as follows:

Table 8: Shared service delivery emissions

Category	tCO_2e/yr.
Staff home energy	869
Staff travel (business and commute)	1,933
Corporate management (inc. office use)	5,276
ICT & BPO	1,633
TOTAL	**9,710**

Service area carbon budgets

4.11 Whilst the Council's emissions represent ~2.5% of the total for Shropshire, council services can contribute significantly to decarbonising county-wide emissions from domestic property, industry & commerce, and transport.

4.12 Table 9 below shows the corporate carbon footprint associated with delivery individual services, together with Government data for the emissions which that service could influence and the target annual reduction (10% saving per year). They are ranked highest to lowest emissions for each sector.

Table 9: Carbon budgets by council service

Service area responsibility	Council ($ktCO_2$)	Council target reduction/yr.	County sector ($ktCO_2$)	County target reduction/yr.
Transport & highways	3.3	0.4	716	72
Place - Economic growth & planning	1.9	0.2	324	32
Social care & social housing	59.4	0.7	490	49
Resource's governance & assurance	2.6	0.3	84*	8
Culture & leisure	5.5	0.6	(inc. above)	n/a
Public health/Outdoor Partnerships **	-26	-2.6	-85	-8.5

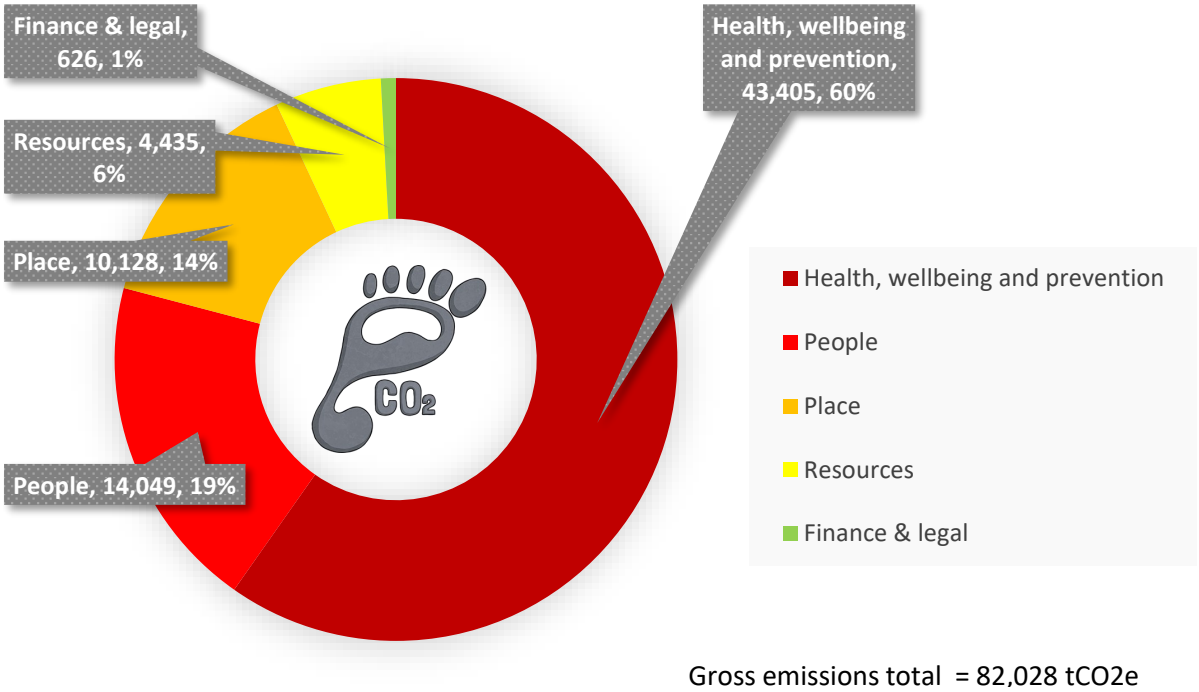
* The total public sector emissions for Shropshire.
** It is understood that public health has some responsibility for land use and therefore will impact on countywide negative emission sets. This would also apply to the AONB, countryside and outdoor partnerships teams. Agricultural emissions are not included.

Directorate carbon budgets

4.12 Table 10 below shows the corporate carbon footprint associated with directorates, together with suggested annual reductions (~10% per year) up until 2029. The directorates are ranked highest to lowest emissions.

Table 10: Carbon budgets by council directorate (tCO2e)

Directorate	2024	2025	2026	2027	2028	2029	Annual reduction
Health, wellbeing and prevention	39,065	35,158	31,642	28,478	25,630	23,067	4,341
People	12,644	11,379	10,241	9,217	8,296	7,466	1,405
Place	9,115	8,204	7,383	6,645	5,981	5,382	1,013
Resources	3,991	3,592	3,233	2,910	2,619	2,357	443
Finance & legal	563	507	456	411	370	333	63



Gross emissions total = 82,028 tCO2e

4.13 The monitoring process for these emissions is likely to improve in future years to fairly identify the influence of each directorate and service areas.

Schools carbon budgets

4.14 Table 11 below shows the carbon footprint associated with all Shropshire state funded schools (academy trusts and council maintained), together with suggested target annual reductions (10% per year) up until 2029.

Table 11: Carbon budgets for state funded schools (tCO2e)

Service	2023	2024	2025	2026	2027	2028	2029	Annual reduction
Schools	9,386	8,447	7,602	6,842	6,158	5,542	4,988	939

5 Reporting and data issues

Exclusions (due to insufficient data)

5.1 It has been necessary to exclude the following datasets from the monitoring process until more data becomes available:

1. Fugitive emissions (such as F-gases, refrigerants).
2. Independent schools.
3. Temporary accommodation.
4. Commercial or residential leases – with own utilities arrangements.
5. Building construction & repairs (embodied carbon and delivery footprint).
6. Public transport – trains and buses by external operators.
7. Staff pension (for legal reasons this is reported separately).

Shropshire County Pension Fund

5.2 It was highlighted at COP26 that there is an urgent need to decarbonise global financial assets and equity. The global financial industry has started to leverage $103 trillion assets globally from the 6 largest investor alliances and developed countries to commit to mobilise $100bn annually.

5.3 In July 2020, Shropshire Council resolved to ask the Pension Committee to follow best practice by:

i. Adding a statement to their strategy that climate change constitutes financial risks to the fund.

ii. Setting a 3-year timescale for the reinvestment of funds currently invested in fossil fuel dependant assets.

iii. Developing an investment strategy consistent with sustainable development goals and developing a local sustainable economy. The Council also recognised that fossil fuel investments constitute part of its 'carbon footprint' and resolved that this element should be reported on within our annual carbon reporting.

5.4 Assuming that the annual contribution to the fund from staff salaries for FY2021-22 is £69,457,000 then the carbon footprint for this annual contribution is around 11,500 tCO_2e. The carbon footprint of the total current equity investments in the fund is estimated at 193,400 tCO_2e.

5.5 The carbon footprint associated with the staff pension scheme was reported as part of the Shropshire County Pension Fund Climate-Related Disclosures (TCFD), although Shropshire Council is only responsible for a proportion of the reported performance since a large number of other organisations also contribute to the scheme. The total staff salary contribution for period 2020/21 is set out in the Annual Report 2020/21.

6 Shropshire County emissions

6.1 As stated previously Shropshire Council's gross emissions represent around 3% of the total for Shropshire, however it is estimated that the authority may influence up to 30% of the total emissions through planning policy across all sectors:- domestic property, industry & commerce and transport. The latest county emissions data are set out below.

Table 12: Shropshire Carbon Emissions Ranked by Sector:

Shropshire County 2021 ($ktCO_2$)	2,858	% of total
Agriculture	1,138	40%
Transport	716	25%
Domestic	490	17%
Industry & commerce	324	11%
Waste Management	106	4%
Public Sector	84	3%

Data source = UK greenhouse gas emissions: local authority and regional - data.gov.uk

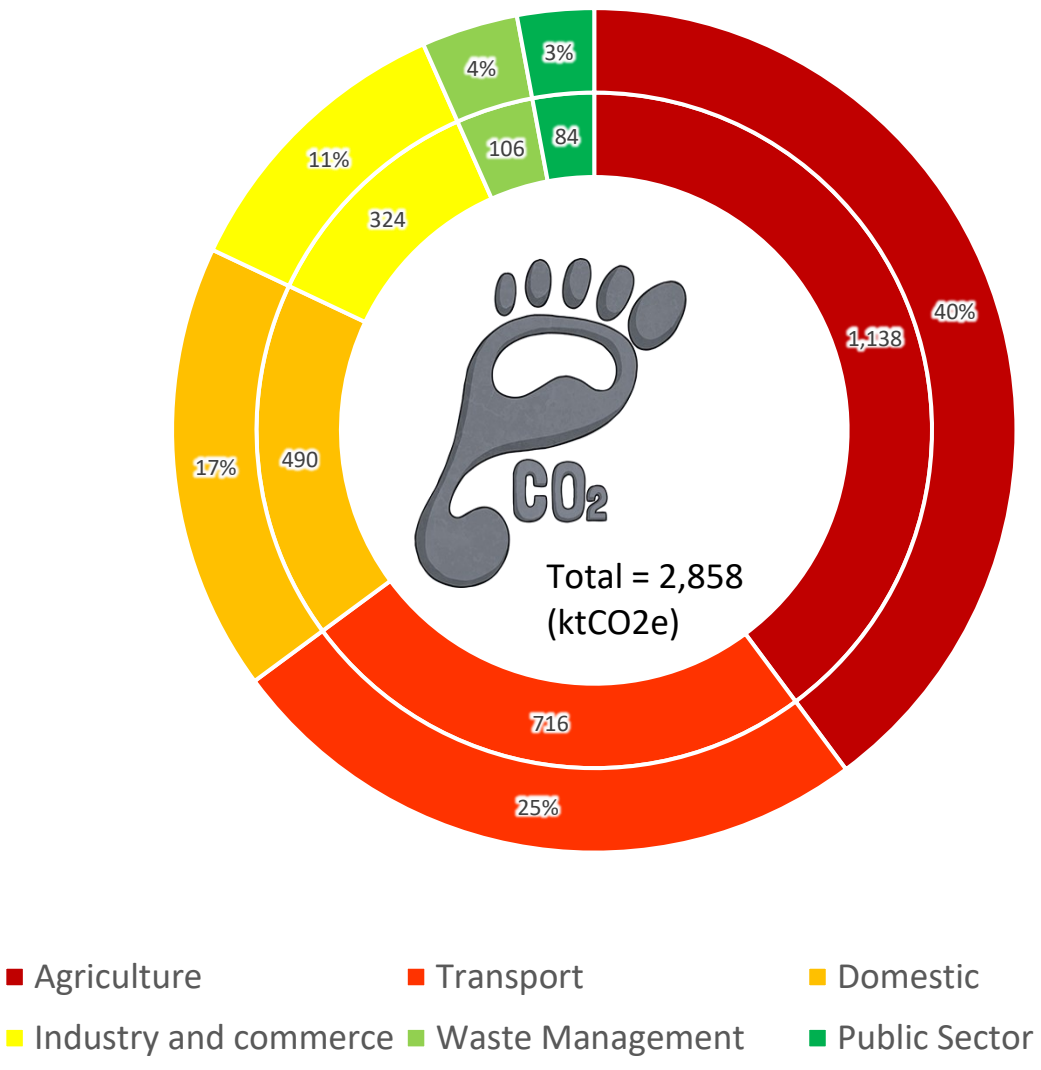


Figure 8: Shropshire Carbon Emissions by Sector 2021

Household emissions

6.1 17% of Shropshire's emissions comes from households. Based on the Shropshire population of 329,687 and 142,403 active households in 2023. The carbon footprint as a proportion of the county total is 26 tCO_2 per household or 9 tCO_2 per person. Domestic activities based on local and national best available data are represented in the table below:

Table 13: Carbon Emissions per Person and per Household 2023

Domestic only	County total (ktCO2e)	Per person (tCO_2)	Household (tCO_2)	As a %
Heating*	1,206	1.2	8.5	32%
Diet**	923	2.8	6.5	25%
Stuff**	626	1.9	4.4	17%
Transport*	501	1.6	3.5	13%
Flights**	343	1.0	2.4	9%
Electric*	136	0.4	1.0	4%
TOTAL	**3,736**	**8.9**	**26.2**	**100%**

*Data source = UK greenhouse gas emissions: local authority and regional - data.gov.uk
**Data source = What's The Average Carbon Footprint in the UK? (2023)

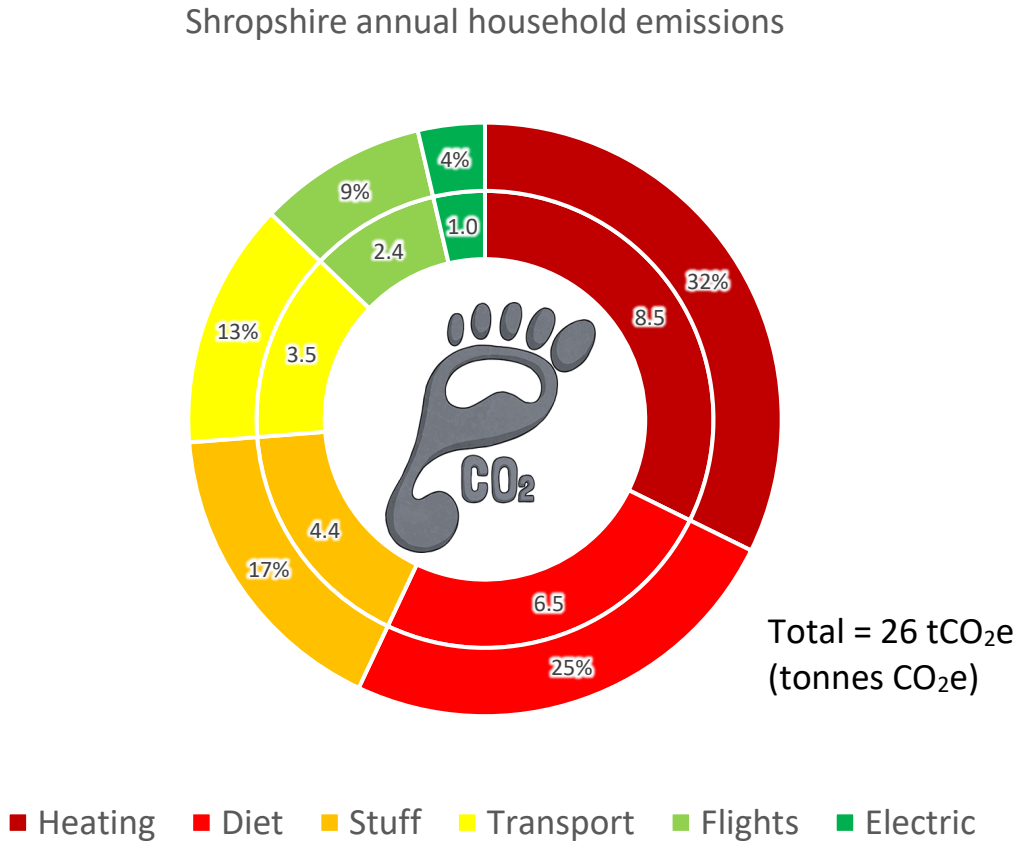


Figure 7: Shropshire Carbon Emissions by Household 2023

Project summary

Live Projects

Project	Summary	Strategy Theme	Benefits (CO2, £ savings)	Corporate or countywide?
Maesbury Solar Farm	2MW solar farm on former landfill, private wire to adjacent business	Power Up - Low Carbon Energy	600t CO2/yr. £	Corporate
Biochar demonstrator plant	Business case for the construction of an automated biochar plant	Carbon Capture / Power Up - Low carbon materials & energy	CO2, £, ABI	Both
Procurement strategy / Supply Chain CO2 Emissions	CO2A commissioned to model Shropshire Council Supply Chain Scope 3 emissions.	Power Down - Corporate governance	CO2, £	Corporate
Carbon literacy training strategy	Roll out accredited in-house CLT training to key target cohorts and develop wider web-based introductory training material	Power Down - Corporate governance	CO2, £	Corporate
Shropshire Council roof mounted Solar PV	Comprehensive assessment of suitable buildings	Power up – Solar PV	c. 1,215t CO2 p.a. £	Corporate
Corporate Construction Policy update	Update current policy, initially for new build, to reflect changes in good practice	Power Down - Corporate governance	CO2, £	Corporate
Climate Challenge	Improve building energy & carbon performance by encouraging zero cost behavioural change by staff	Power Down - Building efficiency	CO2, £	Corporate
Big Solar Co-op	Grant funding for local node co-ordinator (Sharenergy) to provide free advice to business on funded solutions for roof-mounted solar	Power Up - Low Carbon Energy	CO2, £	Countywide
Cool Shropshire & Telford	Grant funding for free business carbon and energy efficiency advice	Power Down - Low Carbon Energy	CO2, £	Countywide

Planned Projects

Project	Summary	Strategy Theme	Benefits (CO2, £ savings)	Corporate or countywide?
Boars Den Solar / Hydrogen	Feasibility for ground-mounted solar array, battery storage and a hydrogen electrolyser	Power Up - Low Carbon Energy	CO2, £	Both
Public Rapid Chargers	Feasibility for the installation of Council-owned 'rapid chargers'	Power Down - Low Carbon Transport	CO2, £	Countywide
Public EV Charging Infrastructure	Take forward Amey Strategy with funding from Govt. LEVI funding	Power Down - Low Carbon Transport	CO2, £	Both
Heat Network / river source heat pump, Sundorne Shrewsbury	Feasibility for the installation of a water source heat pump to community buildings	Power Up - Low Carbon Energy	CO2, £	Both
Climate Strategy Review	Review 2020 Strategy – monitoring, national and corporate policy.	Power Down - Corporate governance	CO2	Corporate
Climate Resilience and Adaptation Plan	Commission a resilience and adaptation plan to identify impacts on Council services, staff and users	Power Down - Corporate governance	CO2, £	Both
Team skills Training	Develop staff capability and professional development	Power Down - governance	CO2, £	Corporate
Waste minimisation	Work with waste management colleagues to reduce waste and promote the circular economy	Power Down – resource efficiency	CO2, £	Both
Staff home efficiency and low carbon heating	Explore home efficiency and decarbonisation measures with Lendology	Power Down - Low Carbon Energy	CO2, £	Corporate
Shirehall / Theatre Severn Virtual Power Plant	Work with DNO's and tech companies to explore the potential to store energy and grid balancing	Power Down - Low Carbon Energy	CO2, £	Corporate
Area-Based Insetting (ABI) – Phase II	Work with multiple Local Authorities to establish a carbon capture investment framework within LA area.	Carbon capture / Power Down carbon reductions	CO2, £	Both