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2022

Carbon Footprint Analysis for

Lite cast
Homefloors

Contents

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Message from Positive Planet

Thank you for choosing Positive Planet to help measure your business carbon footprint. We have enjoyed working with you, learning about your business, and understanding your needs and current impact on the environment.

We are on a mission to help as many businesses as possible to measure and understand their carbon emissions. Our goal is to **enable you to take action** to protect the planet and **inspire others** to do the same.

Carbon reduction is a long-term journey but should be made simple, accessible, and even fun; **our aim is to empower**, not overwhelm. Now that you have measured your emissions, we encourage you to join the 300+ Positive Planet community working to reduce emissions to Net Zero and beyond.

"It has never been more important for businesses to take action to reduce emissions associated with their operations. Not only that, but to inspire and influence their employees, suppliers, customers, and stakeholders.

Only 11% of businesses currently measure their carbon emissions – thank you for being one of them. This is an important first step in your carbon reduction journey and we look forward to our continued work with you."

Adam White | Co-Founder, Positive Planet

Learn   Measure   Plan   Reduce   Communicate   Inspire

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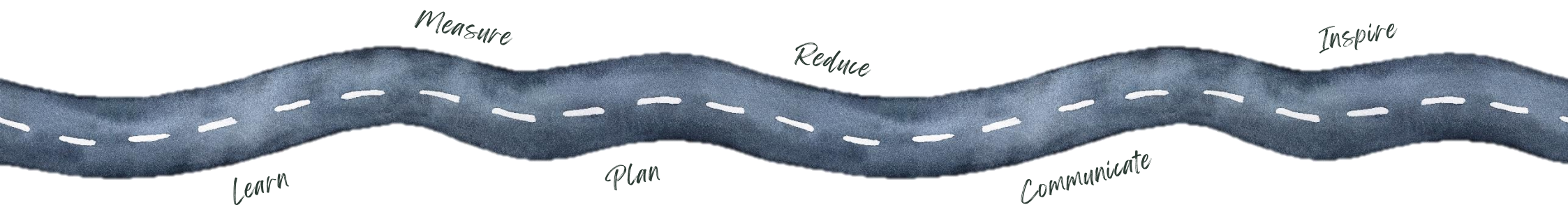
1. Background

Litecast has undergone significant change in recent years, to embed sustainability into the organisation and reduce emissions associated with concrete manufacture. Concrete is an extremely carbon intensive industry - at least 8% of global emissions caused by humans come from cement production.

Litecast's old facility on Pool Road was outdated and inefficient, generating excessive carbon emissions. The Board saw an opportunity to drastically reduce carbon emissions and energy costs by switching to a brand new, energy efficient facility, powered solely by onsite renewable energy technologies.

The new Pipers Lane facility is a £12m purpose-built development powered by 1019 x 350kW solar panels, producing ~284MW of electricity. Similarly, heat is generated from ground source pumps, eradicating the need for a mains gas connection. Furthermore, 95% of the water used in concrete mixes is harvested from rainwater. Litecast has also allocated ~2 acres of land dedicated to planting trees to further mitigate its impact on the environment.

2. Project Scope

To further understand and reduce its carbon footprint, Litecast has commissioned Positive Planet to help measure the impact to date and develop a carbon reduction plan. The project has been split into two phases:

Phase 1. Measure **Litecast's full carbon footprint** (scopes 1, 2 & 3) for the most recent year, 01/10/2021 – 30/09/2022.

Phase 1. Measure the reduction in emissions associated with the Pipers Lane investment, by **comparing energy emissions at Pool Lane (2020) with Pipers Lane (2022).**

3. Methodology

Positive Planet's GHG emissions reports are carried out in accordance with the GHG Emissions Protocol Accounting and Reporting Standard.

Using the most widely recognised and used emission standard in the world ensures all measurements, calculations, and estimations are completed to the most regulated and accurate standards possible.

This assessment was based on the 'operational boundary' principle, i.e. the emissions associated with operations directly influenced by your company.

Positive Planet was supplied information by the client covering each of the emission sources included in the inventory for all sites (where usage occurred), and the greenhouse gas (CO2e) emissions were calculated based on relevant emission factors. The provided data has been subject to high level review, but not verification to source.

Emission Factors

- Scopes 1, 2 & 3 (consumption): UK Government (BEIS / DEFRA) GHG Conversion Factors for Company Reporting (using the relevant year for the measurement period).
- Scope 3 (spend): UK Government Conversion factors by SIC code 2019, updating Table 13. (Year: 2019, Version 2.0, updated using UK inflation rates to the relevant measurement period).
- Homeworking: EcoAct Homeworking Emissions Whitepaper 2020.
- Electricity (location-based): DEFRA Conversion Factors for Company Reporting, 2021 for UK data
- Electricity (market-based): Emissions have been calculated as zero (scope 2) where renewable electricity has been purchased. Scope 3 transmission and distribution of electricity will still be included in a full measurement.

Assumptions & Inclusions

- Radiative forcing (RF) is included as standard in air travel. It is not compulsory to include, but it is highly recommended. RF is a measure of the additional environmental impact of aviation. These include emissions of nitrous oxides and water vapour when emitted at high altitude.
- Well-to-tank energy emissions are included in a standard measurement.
- Transmission and distribution of electricity is included in scope 3 when purchasing energy supplied by the grid.
- Downstream emissions are not included in a standard measurement, except for transportation and distribution.
- Where fuel type is unavailable for company vehicles and any other road travel, diesel has been assumed as it provides the most conservative figure.

3.1.   Greenhouse Gas (GHG) Emissions

Using the GHG Emissions Protocol Standards, business emissions are identified using three scopes of emissions:

Scope 1 (Direct emissions)

Activities owned or controlled by the organisation that release emissions straight into the atmosphere. For manufacturing business these would be emissions from equipment and machinery used in production. Businesses that own or lease vehicles are also included within scope 1. For many office-based businesses, scope 1 emissions are usually very small.

Scope 2 (Energy indirect)

Emissions being released into the atmosphere associated with the consumption of purchased electricity, heat, steam and cooling. These are indirect emissions that are a consequence of the organisation's activities - but occur at sources that the business does not own or control. These emissions would be the energy usage by the organisation and staff working at the business, or from home.

Scope 3 (Other indirect)

Emissions that are a consequence of business activity, which occur at sources which are not owned or controlled, which are not classed as scope 2 emissions. Scope 3 emissions can be quite broad, including areas such as waste management, business travel, staff commuting, events, and the emissions produced from delivery to and from the organisation (including third party delivery services).

Six Greenhouse Gases are calculated as part this emissions report, known as the six Kyoto Protocol GHGs. These gasses occur the most often as a result of business activities, with the highest Global Warming Potential. For the purposes of emissions reporting, these gases are simplified and measured in the unit of tonnes of carbon dioxide equivalent (tCO²e).
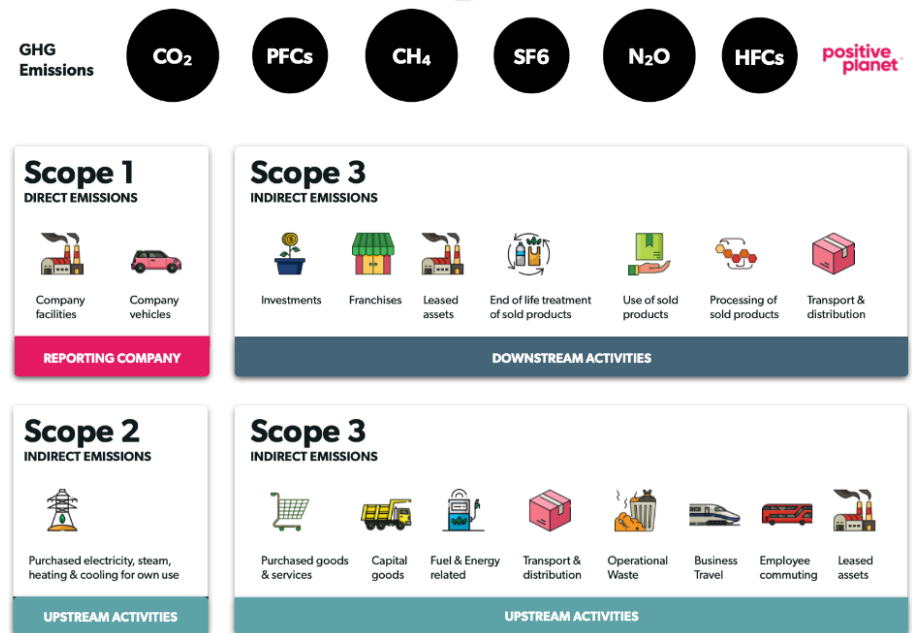
3.2.   Data Quality

Positive Planet uses a data quality rating based on the accuracy of the data supplied by the client. The rating system works on a three-tiered traffic light system with green representing good quality data, orange representing average quality data and red representing poor quality data. The quality of your data is very important, as you cannot manage what you cannot properly measure. Higher quality data provides a more accurate carbon footprint and so we encourage all our clients to improve their data quality year-on-year. The below table shows the data quality rating.

Good data quality
Primary data sources have been used. Data completeness and accuracy is high. Most often consumption-based data, for example kWh electricity used.

Average data quality
Mixed primary and secondary data sources. Limited extrapolation with average completeness and accuracy.

Poor data quality
High levels of estimation and benchmarking. Poor completeness and accuracy. Often means that the client has provided spend data instead of consumption data, for example £s spent on electricity instead of kWh used.

4.   *Your Carbon Footprint (2022)*

This top-level analysis shows you which of the three scopes your emissions are coming from. The below emissions are reported in kg CO2e.

Table 1 Litecast's total carbon emissions for 2022, in kgCO2e

Scope 1			Scope 2			Scope 3		
Total emissions (kgCO2e)	10,684		Total emissions (kgCO2e)	19,864		Total emissions (kgCO2e)	7,987,575	
Stationary combustion (gas)	10,684		Purchased electricity	19,864		Electricity transmission & distribution	3,028	
Mobile combustion (company vehicles)	0		Steam, heat & cooling	0		Waste	810	
Fugitive emissions	0					Water	18	
Process emissions	0					Goods & services	7,854,295	
						Capital goods	0	
						Commuting	15,221	
						Homeworking	16,929	
						Business travel	10,965	
						Upstream distribution	38,542	
						Downstream distribution	47,767	

**Total emissions =
8,018 tonnes CO2e**

**Emissions per employee* =
95 tonnes CO2e**

Emissions per tonne of concrete =
0.17 tonnes CO2e**

*70 FTE average. **46,738 tonnes concrete produced. Categories with 0 emissions and no quality rating have been included in the measurement but are not relevant/no data has been provided. Categories with 0 emissions and a quality rating have had data measured, but no emissions have been produced.

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Litecast's Total Carbon Emissions

0% 0% 0% 0% 0%
1% 0% 0% 0%

1%

98%

- Goods and services

- Upstream distribution (from supplier)

- Downstream distribution (to customer)

- Homeworking

- Commuting

- Business travel

- Stationary combustion (gas)

- Electricity transmission & distribution
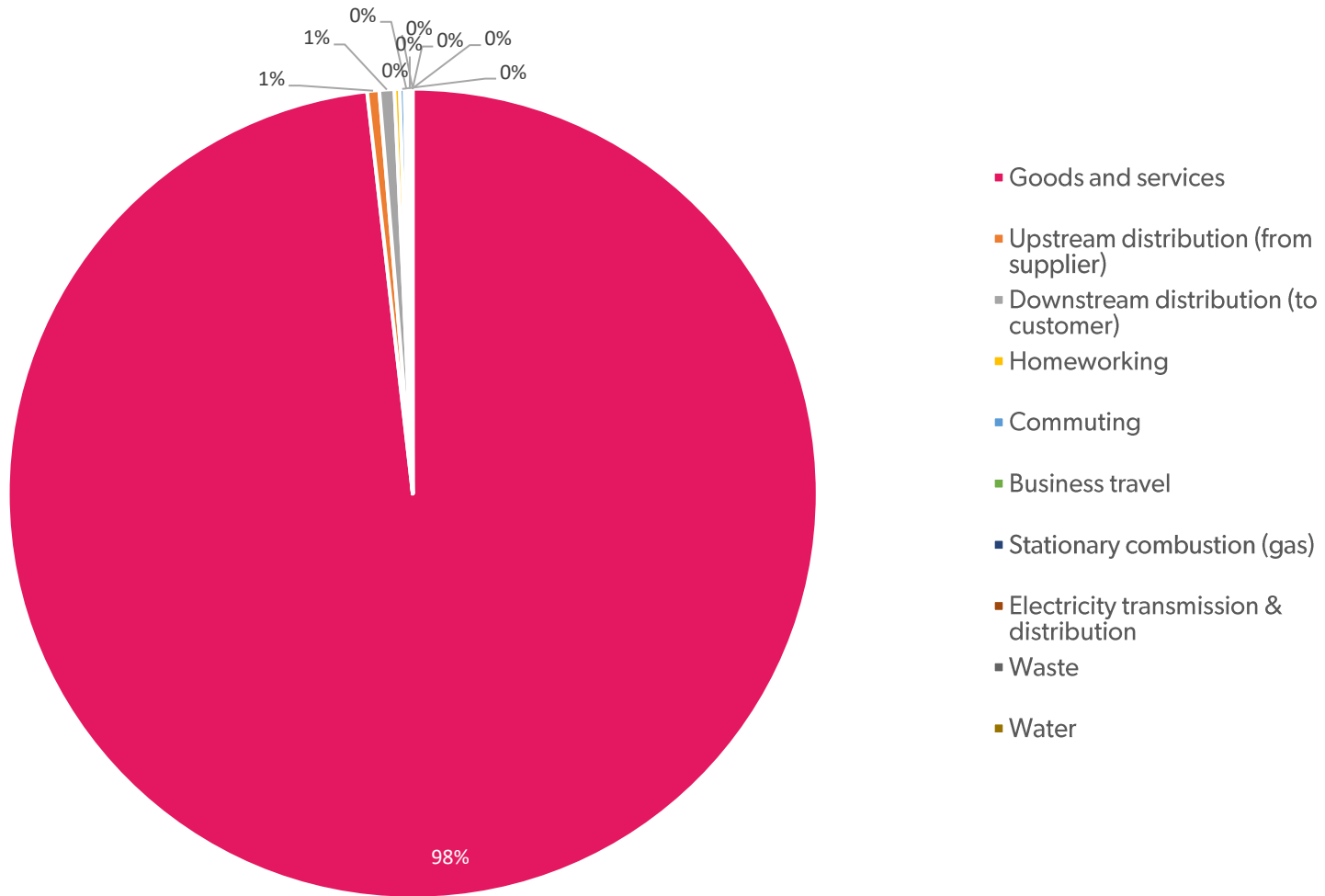
- Waste

- Water

Figure 1 Litecast's total carbon emissions for 2022 broken down by category, as a percentage

Litecast's Total Carbon Emissions (Excluding Goods & Services)

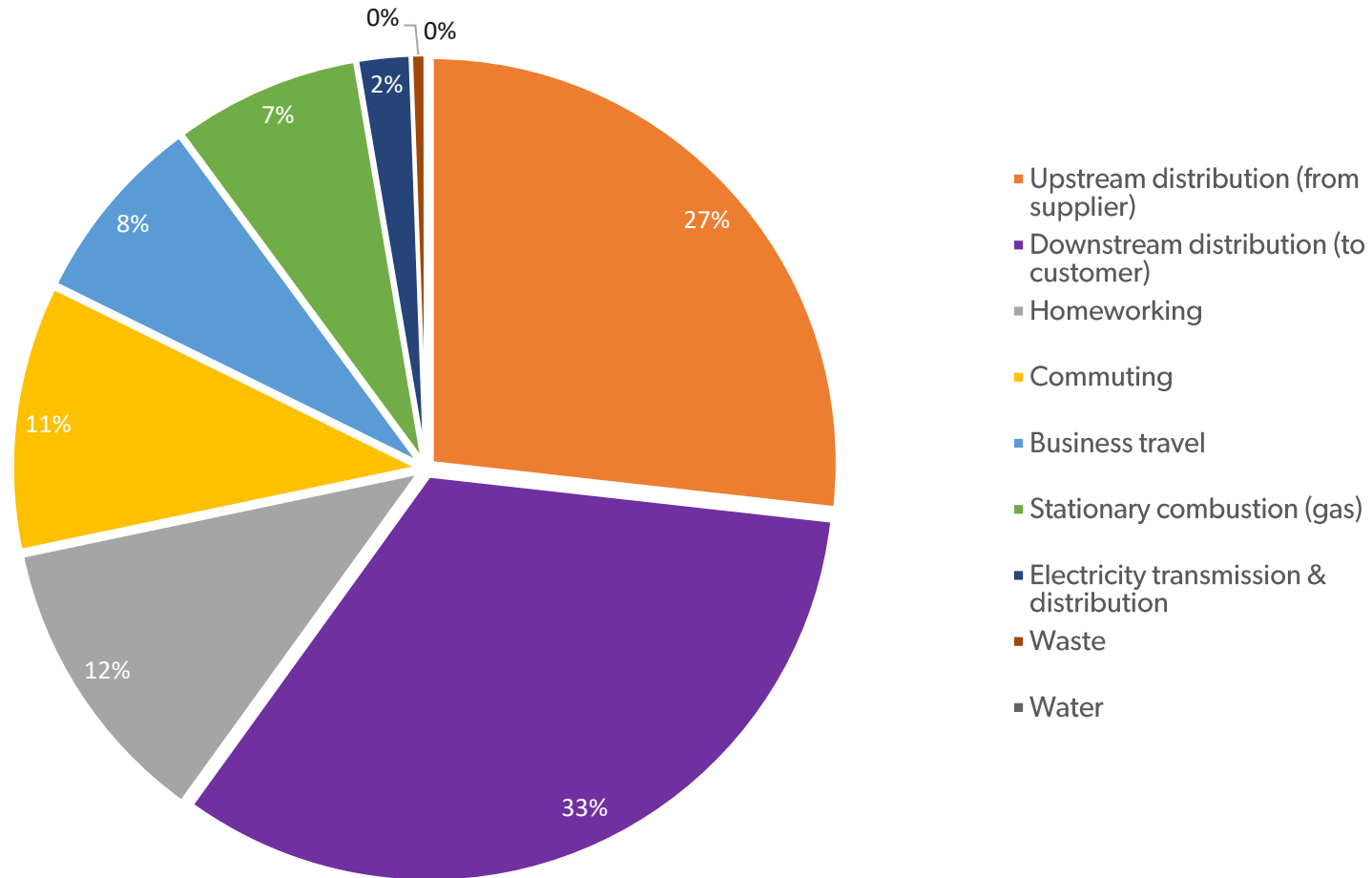|	
■	Upstream distribution (from supplier)
■	Downstream distribution (to customer)
■	Homeworking
■	Commuting
■	Business travel
■	Stationary combustion (gas)
■	Electricity transmission & distribution
■	Waste
■	Water

Figure 2 Litecast's total carbon emissions (excluding goods & services) for 2022 broken down by category, as a percentage

5.   Goods and Services

Purchased goods and services make up the highest proportion of emissions at Litecast (98%). Goods and services typically account for 50-70% of emissions. We have measured this category using the spend-based methodology, and UK government conversion factors (i.e. £s spent x emissions factor). For cement we have used the supplier (CEMEX)'s carbon emissions factor and total tonnes purchased, which provides a more accurate figure.
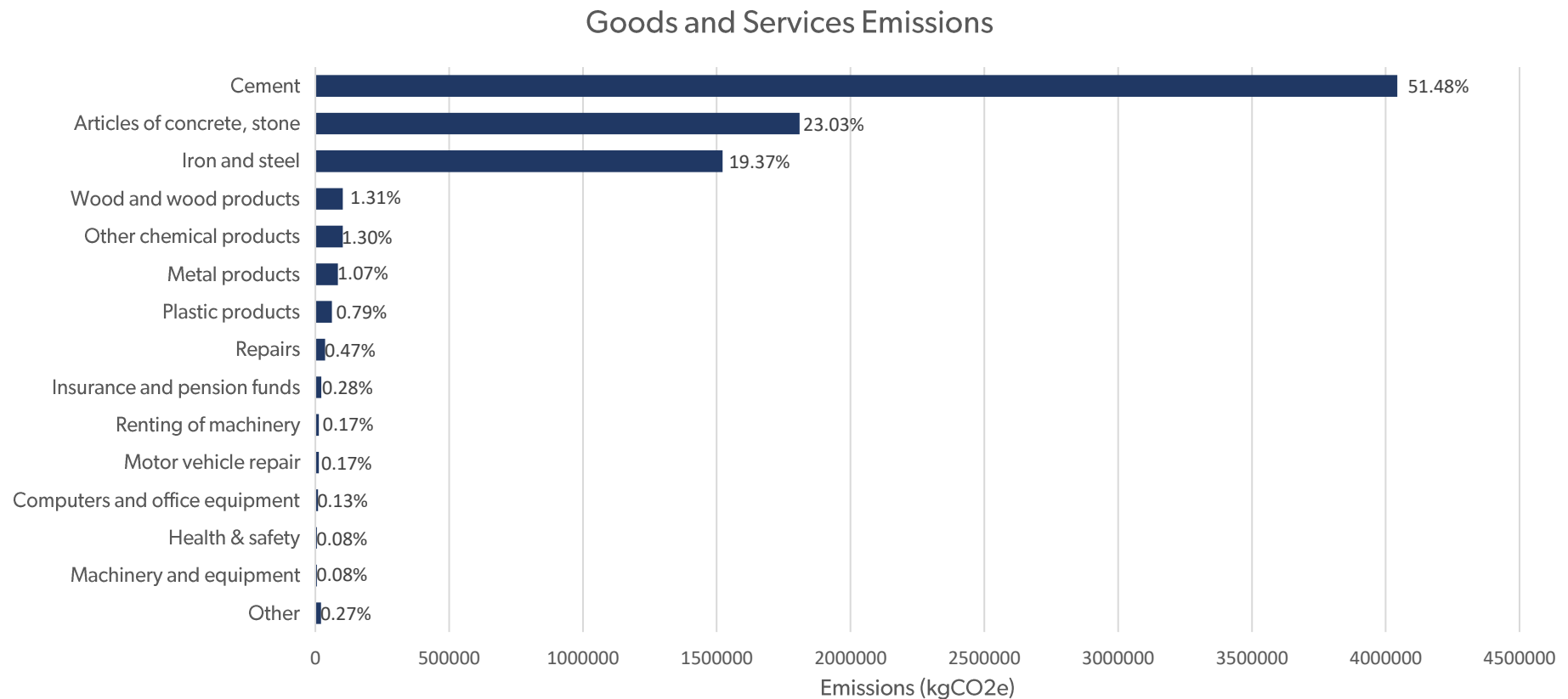
Goods and Services Emissions

Category	%
Cement	51.48%
Articles of concrete, stone	23.03%
Iron and steel	19.37%
Wood and wood products	1.31%
Other chemical products	1.30%
Metal products	1.07%
Plastic products	0.79%
Repairs	0.47%
Insurance and pension funds	0.28%
Renting of machinery	0.17%
Motor vehicle repair	0.17%
Computers and office equipment	0.13%
Health & safety	0.08%
Machinery and equipment	0.08%
Other	0.27%

Emissions (kgCO2e)

Figure 3 Total emissions from purchased goods and service, in kgCO2e and %. 'Other' includes industrial gases and dyes, rent/serviced offices, banking and finance, electrical machinery, tech/web apps/cloud services, membership organisations, marketing, healthcare, and glass (in order of highest emissions first).

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6. Energy Emissions: Pool Road vs Pipers Lane

In 2022 Litecast moved from an outdated, energy inefficient facility on Pool Road, to a purpose-built, energy-efficient facility on Pipers Lane. To quantify the impact on emissions this will have going forward, energy-related emissions at Pool Road in 2020, and Pipers Lane in 2022 have been measured and compared.

Table 2 Annual energy-related emissons from Pool Road (2020) and Pipers Lane (2022), in kgCO2e

Emissions Category	Annual emissions associated with energy at Litecast sites (kgCO2e)			
	Pool Road (2020)	Pipers Lane (2022)	Reduction in emissions	% reduction in energy-related emissions
Stationary Combustion (Natural Gas)	162,082	10,684	151,398	93%
Purchased Electricity	36,738	0	36,738	100%
Transmission of Electricity	5,266	3,028*	2,238	42%
Totals	204,086	13,712**	190,374	93%

*Emissions from the transmission of electricity will become 0 when all electricity is generated from on-site renewables. The current figure considers the transmission of renewably sourced energy via the grid to site. **Total energy-related emissions would be 10,684 kgCO2e if no electricity was purchased. Total reduction in energy-related emissions would be 95%.
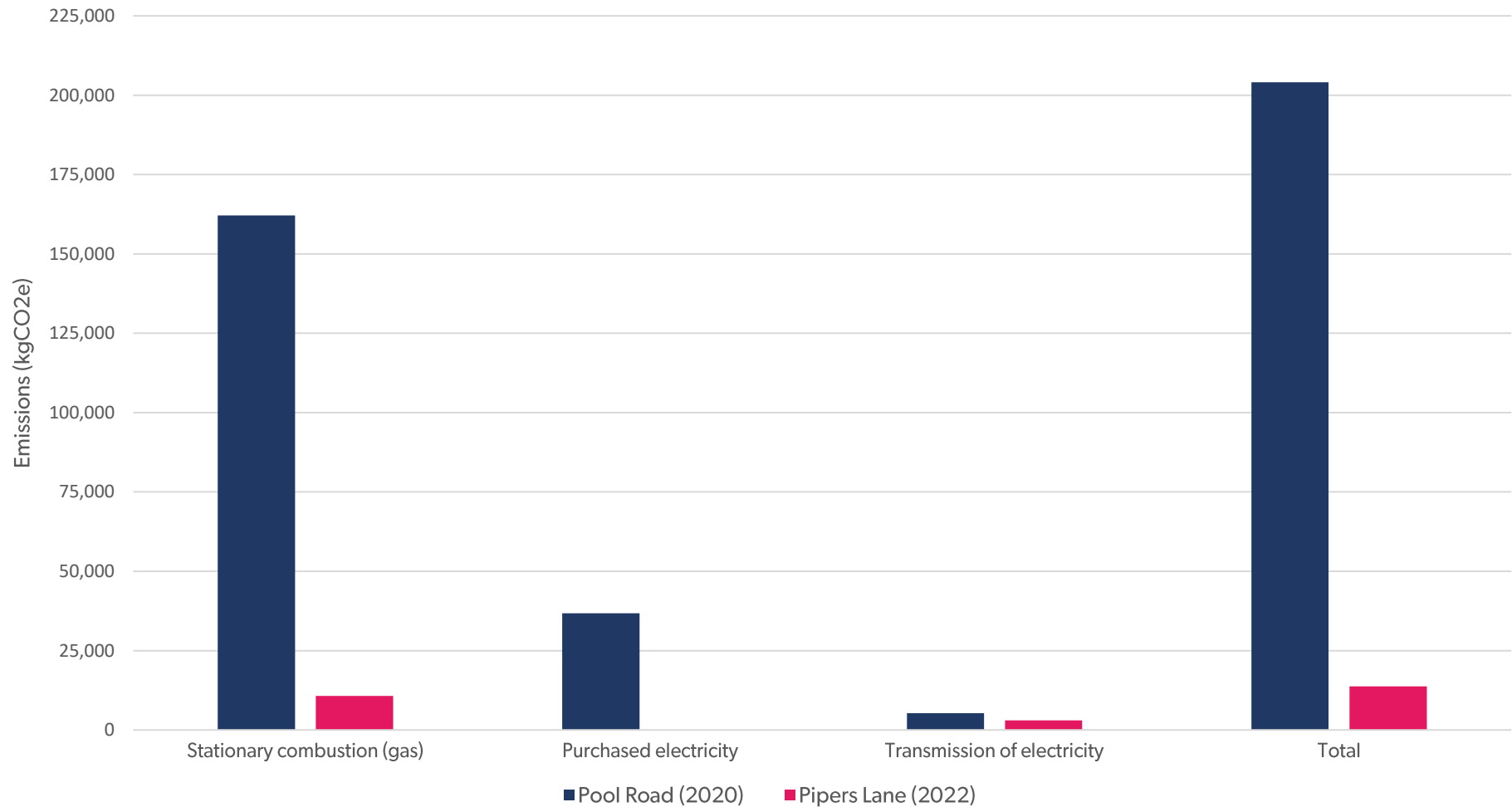
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Figure 4 Annual energy-related emissions from Pool Road (2020) and Pipers Lane (2022), broken down into categories, in kgCO2e

Key Figures

By moving to a new, energy efficient site powered by on-site renewables, **Litecast has reduced annual energy-related carbon emissions by 93%!** Purchased electricity has decreased by 100% to 0 tCO2e, since Pipers Lane is powered by on-site renewable energy and any purchased grid electricity is from renewable sources. There are still 3 tCO2e produced by the transmission of grid-based electricity to site, which can be completely removed once onsite renewable technologies are fully functioning. Purchased gas has also significantly decreased by 93%.

According to Ofgem, the average British household with 2.4 people living it is uses 2,900 kWh of electricity (0.56 tCO2e) and 12,000 kWh of gas (2.16 tCO2e) a year. The Pool Road site therefore had an energy-related carbon footprint equivalent to that of 75 UK homes. This has now been reduced to just 5 UK homes at the Pipers Lane site. **A decrease in energy emissions equivalent to the energy used to power 70 homes!**

The reduction in annual energy emissions of 190,374 kgCO2e is **equivalent to taking 97 diesel cars (driving 20 miles / day) off the road**, or **planting 1,140 trees every year**.

By investing in a new energy-efficient facility, Litecast is reducing annual energy-related emissions by 190 tonnes CO2e! This is equivalent to...

x 70 — ...the energy required to power 70 UK homes.

x 97 — ...taking 97 diesel cars, driving 20 miles / day, off the road.

x 1,140 — ...the emissions 1,140 trees sequester.

7.   Data Quality

It is expected that organisations will not have access to high quality data within their first few years of reporting carbon emissions. However, it is very important to improve the accuracy of data where possible so that a detailed analysis is possible which will support prioritising carbon reduction activities. We recommend focusing on data quality across your highest emitting categories initially. This will be discussed in your carbon reduction meeting.

Table 3 Data quality across Litecast's 2022 carbon footprint

Emissions category	Emissions (kg CO2e)	Data quality	Actions
Goods and services	7,854,295		All purchased goods and services have been reported as spend in £GBP using the Positive Planet template and UK government categories and emission factors. All purchases have been accounted for, as declared by the organisation. Categories could be further broken down in future years to reflect specific purchases which would improve quality. For the largest purchases or any material use (e.g. cement, concrete, steel) this data will be much more accurate provided as weights.
Upstream and downstream distribution	86,309		Data was provided in distances and number of deliveries for land and sea freight. To improve accuracy, the type of vehicle and deliveries weights would need to be provided.
Homeworking	16,929		Homeworking emissions were estimated based on estimated typical number of days in the office, multiplied by the number of FTE, and the UK average homeworking emissions factor. For medium quality data, exact number of days spent working from home during the reporting period needs to be recorded. The only way to capture high quality data is to survey employees about their energy use, waste, and equipment used for work at home.
Commuting	15,221		Commuter data was collected via a Positive Planet survey, with a 100% response rate. Average numbers of days in the office, miles travelled, and vehicles travelled in were provided for the year, which is open to inaccuracies. Data can be improved by measuring commuter data more regularly with exact vehicle and mileage. Highest quality would involve employees providing daily commuting data which may not currently be feasible, but something to think about in the future.

Business travel	10,965	🟨	A mixture of travel spend and mileage was provided, therefore quality was a mixture of low and medium. The most accurate travel data is provided as fuel consumption (litres or kWh), and the next best is mileage. Spend provides the lowest quality data.
Stationary combustion (gas)	10,684	🟧	Data was provided as spend which is low quality. kWh provides high quality data.
Electricity transmission	3,028	🟩	Electricity transmission is automatically calculated and is directly linked to purchased electricity consumption. Data quality will therefore always reflect that of purchased electricity, which was provided as kWh.
Waste	810	🟩	Waste was provided by weight (kg), which is high quality data.
Water	18	🟧	Water consumption was provided as spend, which is low quality. Volume m3 is the most accurate way to measure emissions, if sites have a water meter.
Purchased electricity	0	🟩	Consumption data for the full 12 months was provided in kWh (with percentage of renewable energy), which is the most accurate way to report electricity emissions.

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8. *Next Steps*

It has been a pleasure working with you to measure your carbon emissions. Now that you have this baseline and a better understanding of the carbon impact of your organisation, we invite you to take action to tackle emissions and protect our planet. We recommend taking the following steps to keep the momentum going.

1. Develop a carbon reduction plan

Our team has highlighted core carbon hotspots within your carbon footprint. Now you need to consider actions to start to reduce these emissions and work toward Net Zero carbon, which our carbon reduction team can support you to do.

2. Communicate your impact

Measuring your carbon emissions and taking action to reduce them are extremely important first steps. Communicating this to your stakeholders is a great way to x10 your impact. Share, inspire, and collaborate.

3. Engage your team

Internal awareness is essential to a successful carbon reduction initiative. Not only will this help to reduce your organisation's emissions, but it will have a wider impact on everyone your employees engage with including suppliers, customers, friends, and family. Positive Planet offers certified Carbon Literacy Training which decreases individual emissions by 5-15% on average.

4. Offset your emissions

You may decide to offset your emissions via carbon offsets or nature-based activities (e.g. tree planting). If you do decide this aligns with your corporate goals and offset 100% of full scope 1, 2 & 3 emissions, the organisation can then certify as Carbon Neutral.

5. Improve data quality

Get ready for your next carbon reporting year! It is important to improve the quality of your data over time. In the next few years, this will start to become regulated (high quality data will be required) so it is good to get on top of it early.

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Thank You

If you have any questions, please contact our team or hq@positiveplanet.uk

We look forward to supporting you on the rest of your carbon reduction journey.

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