



SESI Food and Household Refill LLP GHG Emission Report Dec-25

1. OBJECTIVE AND REMIT

Under the Environmental and Climate Change Policy SESI is committed to modelling its emissions and prioritizing strategies to reduce emissions further and set targets for becoming a Net-Zero organization. This is the first report that achieves this.

2. STRATEGY

Step 1: Broad based survey of the company to list the main areas of activity responsible for emissions under Scope 1, 2 and 3, and to list what savings / offsets are created by the expansion of our zero waste business model. Use online databases to calculate approximate emission factors.

Step 2: Pinpoint which areas of activity have scope for impactful emission reduction being a product of size of potential emission reduction versus cost of making the savings.

Step 3: Develop plans of action in the prioritized activities using appropriate level of LCA modelling to decide between A and B scenarios

3. MODELLING UNDERTAKEN FOR STRATEGY STEP 1

We have analysed and modelled our emissions under Scope 1, 2 and 3 of the international framework. To do this we obtained consultancy advice from Oxford Local Enterprise Partnership and from Environmental Information Exchange in February and April 2025.

We have used Emission Factor data from a range of sources to model different aspects of our operations. These include

<https://ghgprotocol.org/calculation-tools-and-guidance>

<https://www.climatiq.io/>

<https://www.sciencedirect.com/science/article/pii/S0048969725019771>

www.gov.uk: Journey emissions comparisons: methodology and guidance

<https://www.iea.org/data-and-statistics/charts/comparative-life-cycle-greenhouse-gas-emissions-of-a-mid-size-bev-and-ice-vehicle>

<https://rmi.org/insight/hidden-climate-impact-of-residential-construction/>

Data for the survey was drawn from company records for the period between 1/11/24 and 31/10/25 to generate the tables.

4. RESULTS OF STEP 1 SURVEY – EMISSIONS BY SCOPE

The analysis showed emissions in the three scopes in the international GHG Protocol

SESI ANNUAL EMISSION SOURCE BY SCOPE	kg CO ₂ e
SCOPE 1 EMISSIONS (Direct fuel burn)	34020

SCOPE 2 EMISSIONS (Purchased energy)	1610
SCOPE 3 EMISSIONS (Indirect emissions)	23910
	<u>59540</u>

Against this emission there is a saving of emissions as the SESI zero waste supply model allows consumers to avoid creating waste packaging as they move away from single use packaged items. This amounts to 770,000 plastic and glass bottles and plastic wrappers per year:

SESI ANNUAL EMISSION SAVINGS	kg CO2e
OFFSET FROM PACKAGING ITEMS SAVED	<u>69744</u>

So savings notionally exceed emissions, which is encouraging as it indicates that growing SESI's operations lowers total emissions in the whole economy. In fact, this underplays the effect as SESI's growth shrinks production from mainstream producers so SESI emissions substitute mainstream producer emissions while the saving from plastic reduction is additional.

However, we don't rest on our laurels because this saving is a temporary effect in as much as at some point the whole economy will be running on a zero-waste basis. Then offset savings are no longer countable. So, we need to focus on increasing our emission efficiency of operations.

5. RESULTS OF STEP 1 SURVEY – EMISSIONS BY SOURCE

The modelling showed these sources of GHG emission factors ranked from highest to lowest:

SESI EMISSION SOURCE BY IMPACT	Kg CO2e
Van fuel	32550
Embedded emissions in the vans	7292
Embedded emissions in plant and machinery	4211
Commuting to work - car	2957
Embedded emissions in purchased plastic containers	2398
Goods-in delivery	2271
Electricity consumption	1612
Building space embedded GHG emissions	1561
Gas boiler energy	1472
Connectivity - mobiles, laptops, PCs	940
Waste disposal - non recyclable materials (Est half plastic film, half paper based)	530
Waste disposal - recyclable plastic (HDPE / PET)	496
Waste disposal - paper	275
EV van delivery in Oxon	252
Waste disposal - Metals (steel / Aluminium)	183
Commuting to work - bus	157
Freight by 3rd party	149
Courier service by 3rd party	105
Waste water from washing	70
Waste disposal - Wood (mixed natural and laminate)	58
Commuting to work - bike	0

There is a missing emission source from the list, which is embedded emission of the product content itself. It is particularly complex for manufactured detergent and toiletry product which are more complex in constitution than the generic emission factor databases can provide. It will be important to work with manufacturers to model these emission factors to feed into consumer information on which product has the superior carbon footprint.

However there is much value in the non product emission factors generated. The dramatic conclusion of this survey is that running diesel vans is nearly 2/3rds of our emissions both from the fuel burnt and the embedded GHG in the manufacture of the vehicle. And 90% of our emissions result from just five types of activity:

ANNUAL SESI EMISSION SOURCE BY IMPACT	Kg CO2e
Van fuel and depreciation	67%
Machinery and buildings	10%
Utilities (gas and electricity)	5%
Travel to work	5%
Transport of goods by 3rd party	5%
Starter kits and containers	4%
Other sources	4%

6. ACHIEVEMENTS SO FAR

Practices and ongoing reduction actions by emission source:

EMISSION AREA	SESI MITIGATION ACTIONS
Van fuel for delivery	Initiated EV deliveries in London and Oxford with delivery partner
Embedded emissions in purchased plastic containers	Removed virgin plastic bottles from our portfolio, now using 100% recycled bottles
Goods-in delivery emissions	Maximise the collection of goods by our vans on the return journey
Electricity consumption	Using 'green' tariff supply
Gas boiler energy consumption	Using 'green' tariff supply
Connectivity - mobiles, laptops, PCs	Buying second hand refurbished devices
Waste disposal	Separated bins and weighing waste by category to raise awareness with staff

7. STRATEGY STEP 2 – PINPOINTING FURTHER AREAS OF ACTION FOR GHG MITIGATION

VAN FUEL AND DEPRECIATION

The emission data confirms the importance of expediting and expanding the existing effort towards transforming the distribution methodology of the company.

This isn't merely a matter of handing over the goods distribution function to courier companies that may boast of having a fleet of EVs. This is because the

courier offering is not compatible with return of empty tubs, and for topping up of refill barrels which is a major part of our offering.

We have had success in partnering with local EV delivery companies in London and Oxford, and now we need to model a whole country delivery network that involves these components:

- a) EV 'last mile' delivery
- b) Regional storage units for stock
- c) HGV delivery between main warehouse and regional hubs as the emission factor for HGV carriage is about one third of the van based emission factor

MACHINERY AND BUILDINGS

Most of this emission factor is derived from acquisitions of machinery in the year surveyed and relates to a move to greater mechanization of processes in SESI, which historically has been under-capitalised from a business process perspective. The main option for mitigating emissions in this area is to buy used equipment where available. But mechanization of processes is necessary to scale up the business and achieve greater packaging savings.

Building space emissions (the emissions inherent in the construction of the premises rather than the running of the building) is very much a long term emissions issue. SESI has long aspired to achieve the scale whereby an ecological new build could house operations and we can leave behind leasing from disinterested and investment averse landlords.

UTILITIES

To some extent, after choosing suppliers of utilities with good ecological ratings, this issue is tied up with the buildings question above where a new build would move us to zero emission utilities. We have surveyed our building with the help of the Environmental Information Exchange and some minor changes were highlighted around the control of mobile heating devices and pipework insulation. The big ticket items highlighted related to air source heat pumps, warehouse heating and PV panels could not be pursued on the current leased premises without permission from the landlord and the prospect of a renewal of lease ending in 2027.

TRAVEL TO WORK

Car use for commuting is quite prevalent at SESI because the unit is distant from most of the workforce. We have taken three steps to encourage bike and ebike usage:

- a) We offer staff zero interest loans to purchase an ebike
- b) We are running bike maintenance workshops to improve DIY cycle repair skills for those staff adopting bike usage
- c) We created a secure covered cycle park bay

8. TARGETS

SCOPE 1	CURRENT (KG CO2e)	ACTION	BY	SAVING
Gas boiler energy	1472	Investigate use of gas boiler to de-chill warehouse space in place of electric fan heating	Oct-26	-5%
Gas boiler energy	1472	Create new build eco-factory based on passive and heat pump tech	Dec-30	105%
Van fuel	32550	Launch Regional Hubs	Mar-28	10%
SCOPE 2	CURRENT (KG CO2e)	ACTION	BY	SAVING
Electricity consumption	1612	Investigate use of gas boiler to de-chill warehouse space in place of electric fan heating	Oct-26	5%
Electricity consumption	1612	Create new build eco-factory based on solar and battery	Dec-30	90%
SCOPE 3	CURRENT (KG CO2e)	ACTION	BY	SAVING
Goods-in delivery	2271	Launch Regional Hubs - incorporating goods in pick up	Mar-28	50%
Commuting to work - car	2957	Bike support strategy	Jun-26	5%
Embedded emissions in the vans	7292	Launch Regional Hubs	Mar-28	10%
TOTAL SESI EMISSIONS	59539			8271

9. EMISSION MODELLING PRIORITIES

- a) Work with manufacturers to do LCA modelling on products to the factory gate
- b) Do comparative emission modelling of different network hub and distribution options using LCA software
- c) Repeat the Scope 1. 2 and 3 emission factor exercise annually