



On the path to Net-Zero

Zero Waste Scotland's
journey so far

Prepared by: Elaine Dale,
Ramy Saleemdeeb and Fraser Millar

Date: May 2020



Contents

1	Introduction	3
2	Getting the data	4
3	Measuring our impact	5
4	Our actions and results	7
4.1	Reducing emissions from corporate travel	7
4.2	Cap-and-trade printing	9
4.3	Thermostats for heating	10
4.4	Going back to glass milk bottles	10
5	Progress so far and looking to the future	11
6	The impact of wider changes	12

1 Introduction

Zero Waste Scotland is leading work to end the climate crisis by pioneering the sustainable production, consumption and use of goods, materials and services.

This is key to successfully reducing the carbon emissions that are behind the global emergency because a significant amount of those emissions are caused by our consumption of goods and materials and the waste we produce.

Around four fifths (80%) of Scotland's carbon footprint comes from all the goods, materials and services which we produce, consume and throw out, often after just one use. About half of these emissions are generated overseas as we import many everyday items from elsewhere in the world.

The Scottish Government has made a landmark pledge to end the nation's contribution to the climate crisis by 2045. Now as the world focuses on building back better after the coronavirus crisis it is more important than ever to meet that commitment so our economy and the environment can recover and grow back together to mutual benefit. A key part of our role in this is providing leadership by tackling our own emissions, to show what is possible and help other organisations on this path.

Zero Waste Scotland is an organisation of over 160 people. Our main offices are in Stirling, a short walk from the train station, with small satellite offices in Edinburgh and Glasgow which are also conveniently located for public transport.

We have already made great progress towards cutting our emissions¹. However, this has not been a smooth transition. When we first started monitoring our impacts, we found that they were increasing, so we needed to make further changes to decrease that impact.

Since then, we've started to change the way we work to minimise our environmental impacts, and have achieved dramatic reductions in our emissions as a result. While initially our emissions per employee increased slightly in 2018/2019, we have made good progress in 2019/2020.

We recognise that we still have a long way to go, but we are committed to playing our part in meeting the Scottish Government's vital 2045 target.

We hope that sharing our journey will help other organisations to tackle their own emissions, and we welcome suggestions on how we can make further progress. This document sets out some of the measures we have taken to reduce our emissions so far. Sitting alongside this document, Zero Waste Scotland's plan, 'Our Path to Net-Zero', sets out the steps we are taking to reach that goal and move beyond it as our journey to ending the climate crisis reaches the next stage.



¹When we refer to emissions, this includes all greenhouse gases, not just carbon dioxide. We represent these as the total weight of carbon dioxide that they are equivalent to, as different gases have different levels of climate impact.

2 Getting the data

In order to reduce our carbon impact most effectively, we first needed to identify and understand the sources. This knowledge allows us to make evidence-led changes to achieve the greatest benefits.

Emissions are commonly split into different scopes, depending on the source. We measured emissions across all three scopes as set out in Figure 1 below. The Environmental Reporting Guidelines², produced by the UK Government, provide details of how to go about defining, measuring and reporting your emissions. For public sector bodies, guidance on complying with the Public Bodies Climate Change Duties is available from the Sustainable Scotland Network³. Our approach is in accordance with the Greenhouse Gas Protocol⁴.

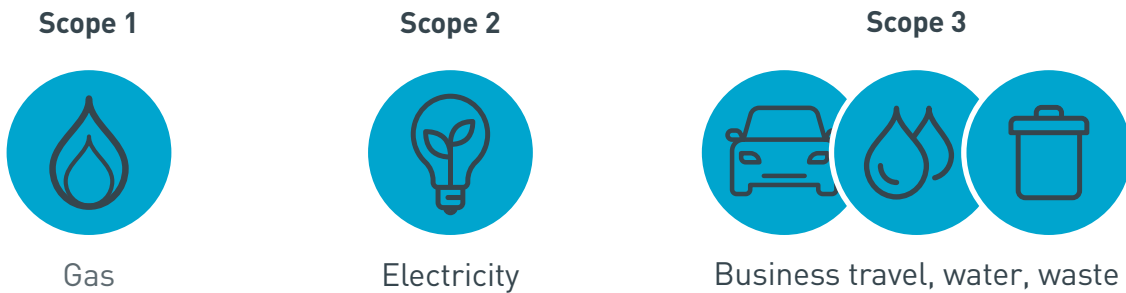


Figure 1: Emissions scopes

We are keen to report our emissions as fully as possible but doing so is dependent on being able to measure those sources, so our organisational boundary is currently restricted to the impacts of our main offices in Stirling and our business travel. Our operational emissions therefore include electricity, gas, waste, water and corporate travel.

We know there are wider impacts which go beyond the core things listed here. We are considering how to monitor and reduce the impact of our satellite offices in Glasgow and Edinburgh, and are seeking to understand the impact of the goods and services we procure.

Although staff commuting is not considered part of our operational emissions, we are monitoring this and have already sought to reduce commuting emissions through the introduction of the satellite offices, moving to agile working and encouraging car-sharing and public transport use.

²HM Government (2019). Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance.

³<https://sustainablesotlandnetwork.org/resources> ⁴<https://ghgprotocol.org/>

3 Measuring our impact

Easily accessible meter readings allow us to measure our impacts from gas, electricity and water use. For other impacts such as waste, business travel and commuting, we have developed our own data collection tools.

	What we measure	How we measure it
	Gas use	Monthly meter readings
	Electricity use	Daily meter readings (automatic)
	Business travel	Expenses and procurement cards
	Water use	Monthly meter readings
	Waste	Weighing food waste, recycling and residual waste bins
	Paper use	Printer server reports
	Staff commuting	Biannual survey

Figure 2: Our sources of emissions and how we measure them

We convert our data to carbon dioxide equivalent so we can see our total operational emissions. The Environmental Reporting Guidelines, published annually by the UK Government, set out how to do this⁵.

Carbon dioxide is the most well-known contributor to climate change, but there are a range of other gases such as methane which also affect the climate. Carbon dioxide equivalent (CO₂e) is a way of showing the total impact of your emissions.

Our efforts to understand our impacts are constantly improving. For example, we recently discovered that travel booked using procurement cards was being unintentionally excluded from our measurements, and have developed a new system for addressing the issue and revising our data for 2018/2019 onwards.

We used our data to identify the biggest sources of our carbon emissions to help find and design ways to target these. As the chart below shows, corporate travel was and still is, by far the greatest cause of our operational emissions, followed by gas and electricity use. Food waste, water use and other waste produced the least emissions.

⁵HM Government (2019). Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance.

3 Measuring our impact

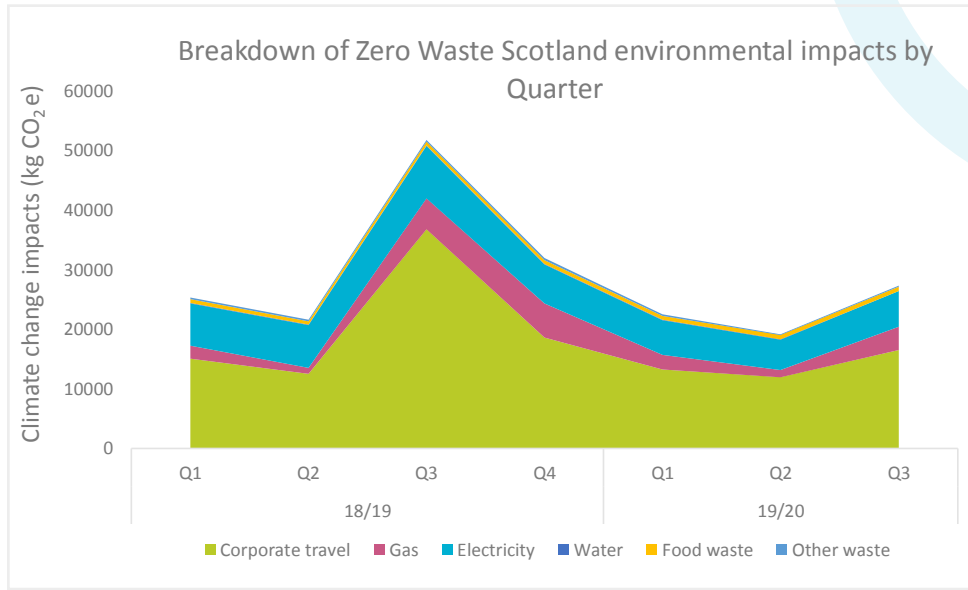


Figure 3: Zero Waste Scotland’s total emissions per quarter, split into categories. There was a substantial increase in our corporate travel emissions in Q3 of 2018/2019 as a result of staff travelling to an event in East Asia

Following the approach in the diagram below, this information enabled us to identify the key areas in which action could make the biggest difference.

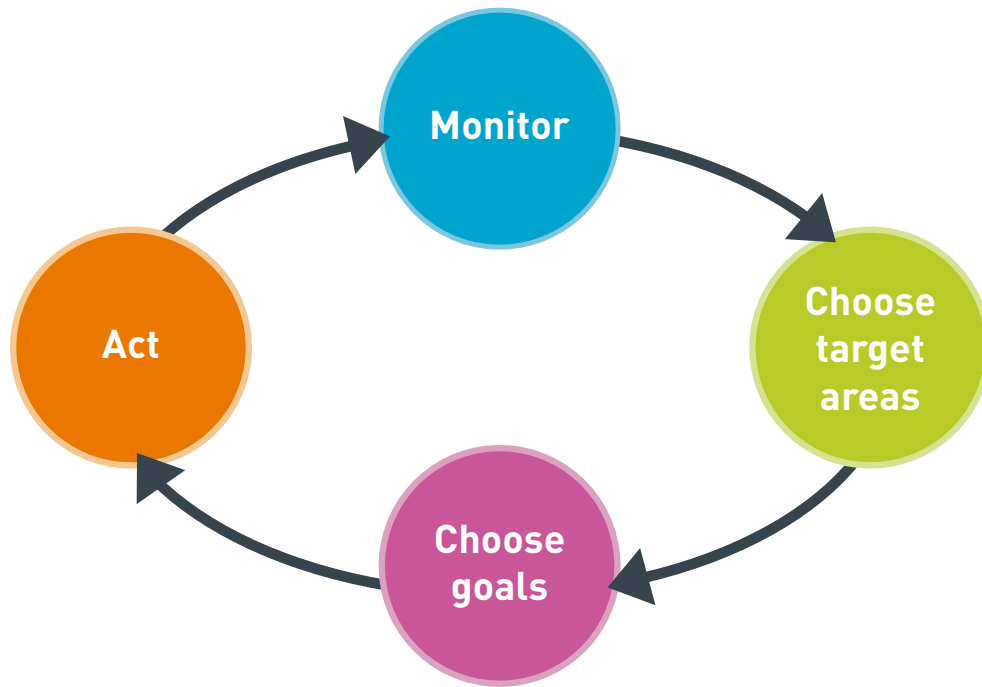


Figure 4: Identifying greatest causes of emissions to create a cycle of improvement

4 Our actions and results

4.1 Reducing emissions from corporate travel

Zero Waste Scotland has had a travel hierarchy in place for several years now. This is intended to steer staff towards the most sustainable option when they are deciding whether they need to travel.

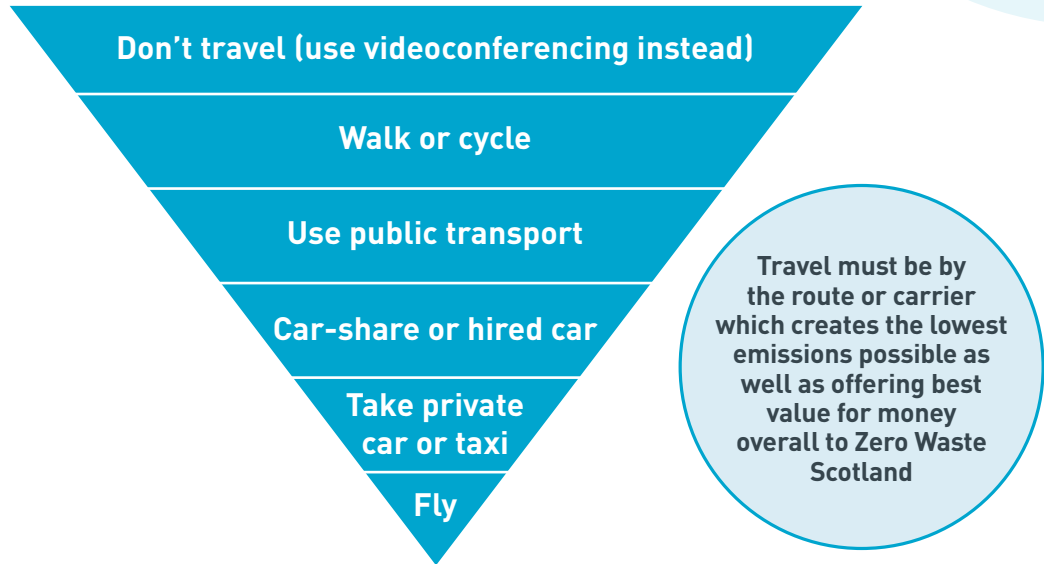


Figure 5: The Zero Waste Scotland travel hierarchy

However, we wanted to go further than this, as corporate travel represented 64% of our total emissions in financial year 2018-2019.

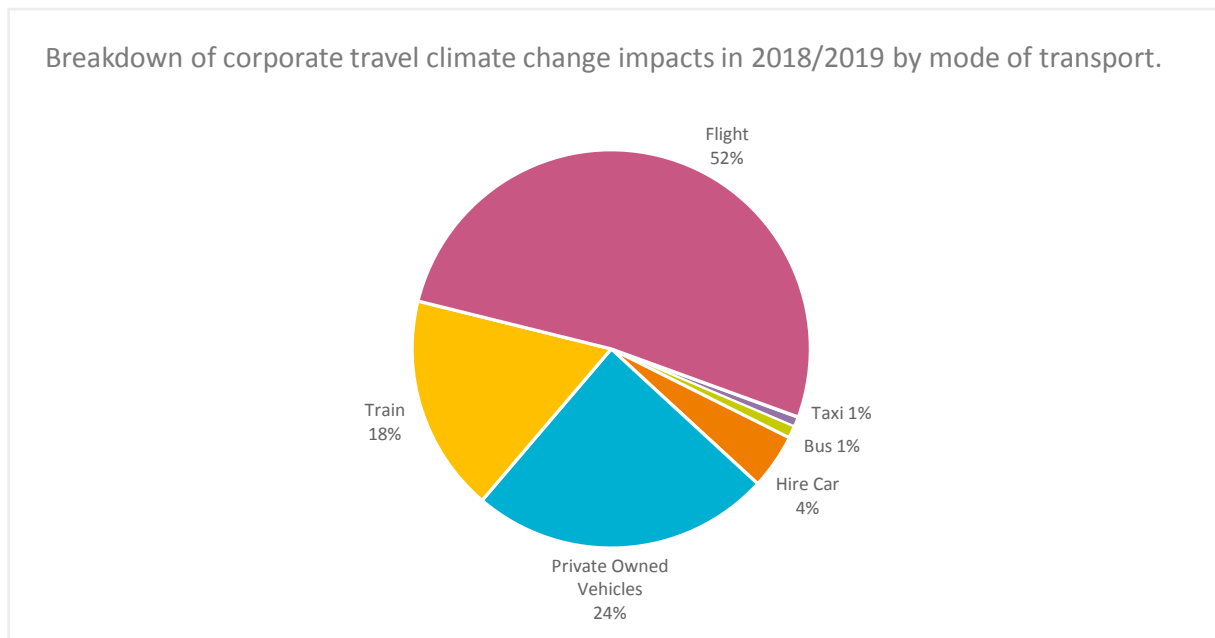


Figure 6: Climate change impacts by mode of transport in 2018/2019

Flying is the most carbon intensive form of travel - a single return flight between Edinburgh and London generates the same emissions as more than five return trips by train. Flights caused 52% of our corporate travel emissions in 2018/2019, so cutting air miles was a logical first step to tackle this. We introduced a mileage cap to bring air miles back down to 2017/2018 levels of 690 miles per employee. Staff are required to seek approval for air travel, and to demonstrate that their flight will not cause us to exceed our cap.

4 Our actions and results

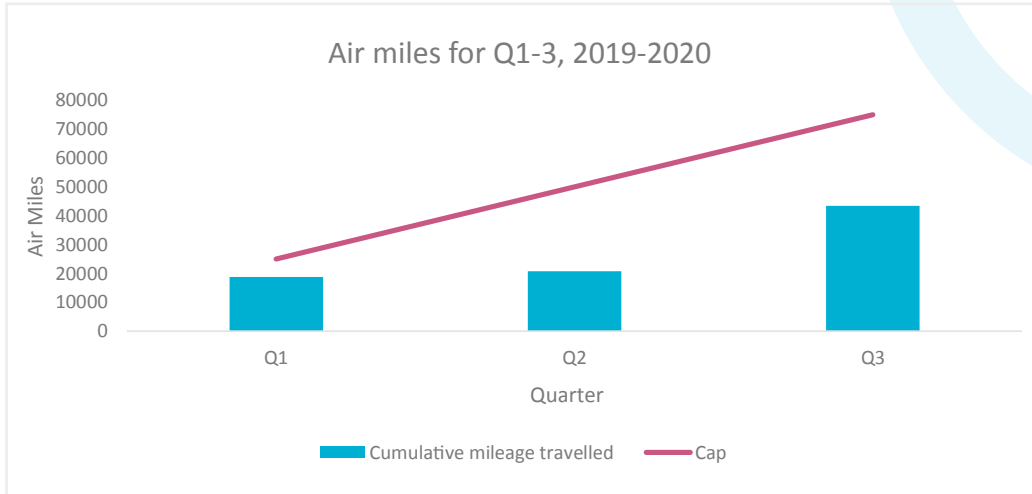


Figure 7: Air miles for 2019-2020 Q1-3. We will substantially undercut the flight cap.

In January 2018, we implemented a no-fly zone for mainland UK and, to help us achieve our target, we extended it to cover Benelux countries and Paris. This encourages staff to consider different modes of transport (generally trains), or avoid travel in the first place by using the growing opportunities for video or teleconferencing which eliminate any emissions from transport.

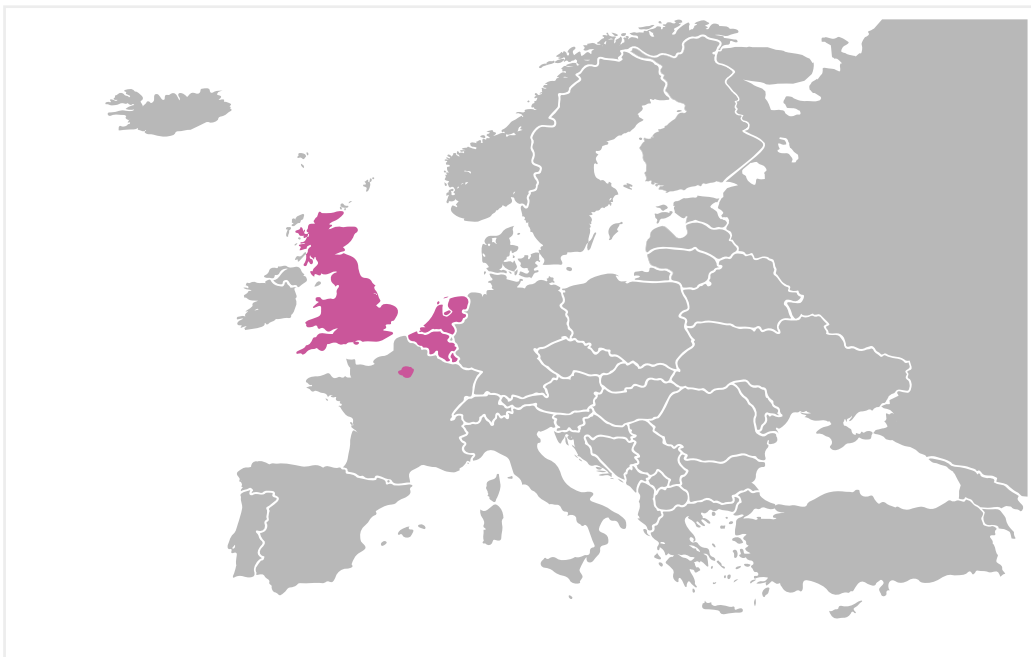


Figure 8: The no-fly zone (mainland UK, Belgium, Netherlands, Luxemburg and Paris).

Corporate travel by staff-owned cars is our second biggest source of transport emissions. We are currently examining how we can support staff to reduce private car use and working with a hire car company to increase our use of hybrid and electric vehicles to help reduce our impact when public transport is not available.

4 Our actions and results

4.2 Cap-and-trade printing

In the last four years, we have reduced office printing by nearly 65%, reducing annual paper usage from around 100,000 sheets to nearer 40,000 sheets. This means that staff now print an average of 13 sheets a month, down from 76 sheets in 2015/2016.

This has saved us money on paper and means we can now consider reducing the number of printers we have on site as well, reducing emissions and costs from the purchase, use and disposal of paper further still.

Our success is down to a simple cap-and-trade system which has significantly changed staff behaviour, stopping printing out documents from being the norm.

Under the scheme, staff are encouraged to avoid printing where possible. Each member of staff has a set allowance of printing 'credits' which they are urged to record, 'trading' with colleagues in their team if they run out to make sure each department keeps its total printouts as low as possible. Results are published internally each month to foster an informal inter-team competition.

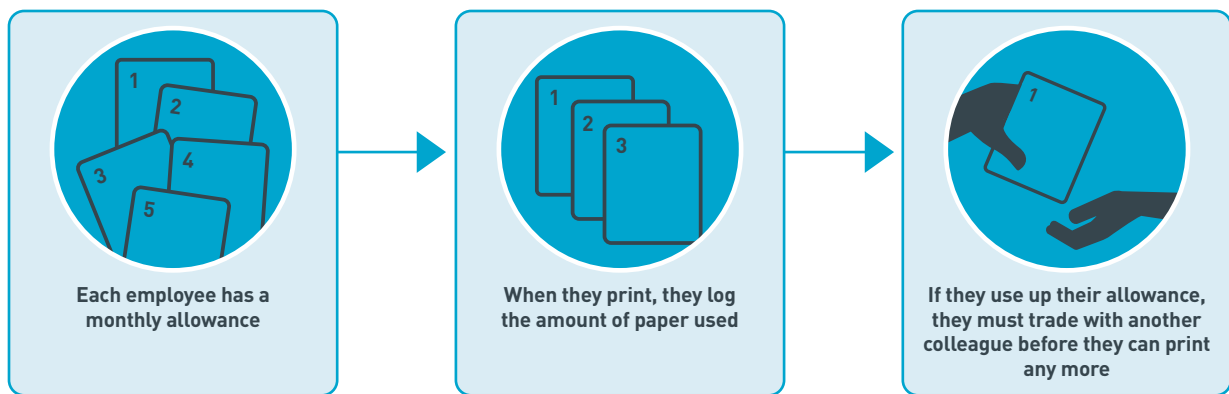


Figure 9: The cap-and-trade system

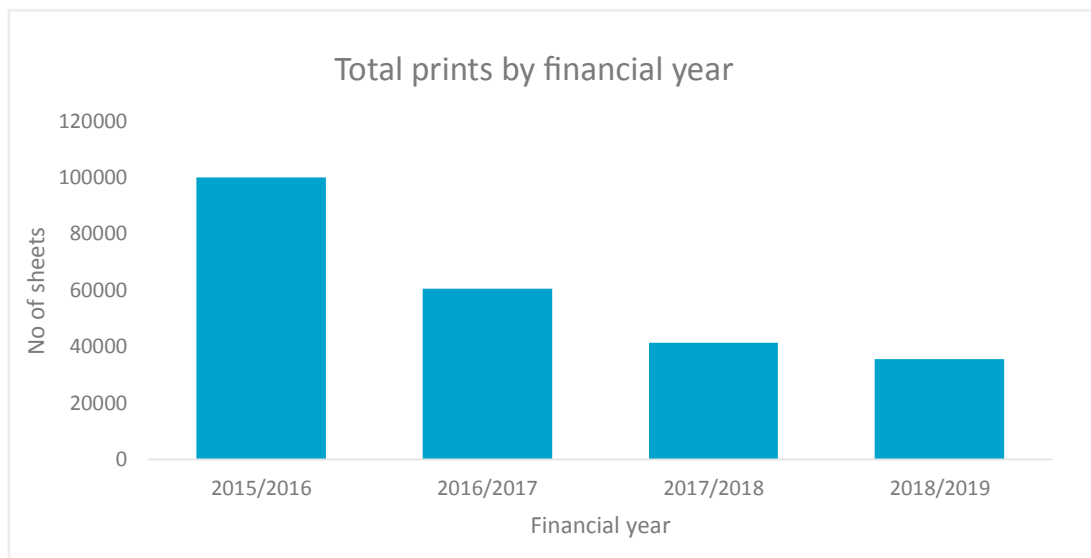


Figure 10: Pages printed per financial year. There is a significant downwards trend.

4 Our actions and results

4.3 Thermostats for heating

We installed a thermostatic heating system in our main building in November 2018 to allow us to monitor the temperature to find out how long the office took to warm up in the morning. As a result, we discovered that the heating could be programmed to come on later, reducing our gas use and related emissions and financial costs.

Quantifying reductions in gas use from changes like this can be challenging, however, as the outside temperature will still cause vast differences in the amount of gas needed to keep the office comfortable.

So, while we reduced our gas use by 7% between the financial years of 2017-2018 and 2018-2019, a portion of this change will be due to the milder winter during the latter year.

Our main building has also recently been connected to a district heating system, using heat from a local wastewater treatment works to replace traditional heating. This was switched on in October 2019, and we anticipate that it will substantially reduce our emissions and costs. District heating is not an option which will work for every building, as it depends on the availability of a local heat source and a network. More information about the Stirling district heating system is available on the Stirling Council website⁶ and you can find more information about district heating generally on the District Heating Scotland website⁷.

4.4 Going back to glass milk bottles

As climate change awareness has grown, concerns have risen over how we use, and often waste, plastic. There is growing evidence of the environmental damage which this causes in both carbon emissions and pollution.

Milk is one of the most common everyday products and typically comes in disposable plastic bottles which are used once and then thrown out.

Zero Waste Scotland goes through over 1,600 pints of milk a year. Buying it in single-use bottles produces 33.5kg of plastic waste annually. To eliminate that we switched to the reusable glass bottles which milk used to be delivered in. In combination with improved stock management, this saves 1.2 tCO₂e, reducing the emissions associated with our waste.

We are now also looking to try oat milk which creates fewer carbon emissions than dairy milk.

For more details about our switch to glass milk bottles and how other organisations could make this change visit the Resource Efficient Scotland blog⁸.



⁶<https://www.stirling.gov.uk/news/2019/august-2019/stirling-s-pioneering-green-heat-network-gets-seal-of-approval-from-first-minister/>

⁷<http://www.districtheatingscotland.com/> ⁸<https://www.resourceefficientscotland.com/blog/how-and-when-switch-plastic-re-usable-glass-milk-bottles>

5 Progress so far and looking to the future

The steps we have taken so far have brought real results which demonstrate what we and others can achieve. Since the start of the 2019/20 financial year, we have cut our total emissions significantly compared to the previous year, by 11% in each of the first two quarters, and 47% in the third, and our paper use continues to fall.

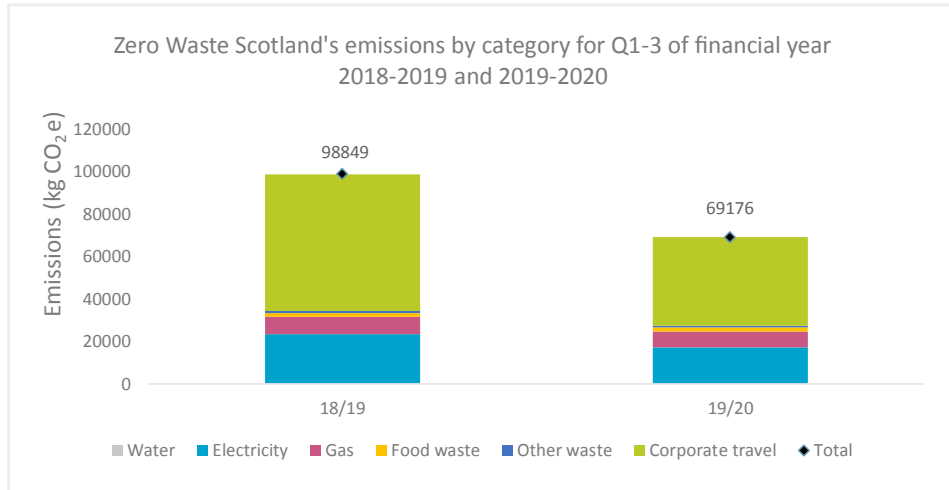


Figure 11: Zero Waste Scotland's emissions by category for Q1-3 of financial year 2018-2019 and 2019-2020. There is a significant decrease, mainly due to our reductions in corporate travel and electricity emissions.

We have made a very promising start, with substantial reductions in our corporate travel and electricity emissions, but there is more to do. Our environmental monitoring system is externally reviewed on a regular basis, and our progress towards our net-zero targets will be assessed as part of this.

We will continue to target the greatest causes of the operational emissions we produce which are driving the climate crisis: corporate travel, electricity and gas.

Ongoing work will involve monitoring the effects of the measures that we have already put in place. We will also continue to innovate to bring the results which we and others need to meet the Scottish Government's pledge to end Scotland's contribution to the climate emergency by 2045.

Key to this is our new plan, 'Our Path to Net-Zero', which sets out how we will cut our emissions further, to reduce them by 45% by 2023. Reaching net-zero is a key milestone but not the end of the journey.

We also need to tackle all our emissions, not just the obvious ones. Finding ways to cut our emissions from commuting and from all the goods and services that we procure will be two key focuses in future. Currently, our survey of staff commuting shows that the journeys our staff take to work have a bigger impact than all of our other emissions including corporate travel and energy. Although commuting does not fall within Zero Waste Scotland's operational emissions, we have already introduced satellite offices to help staff travel less, and we are exploring options to encourage more train travel. In addition, all our staff have laptops and are able to work remotely, and our printing policy means that staff do not have large volumes of paperwork to transport.

We are also considering outsourcing our servers to the cloud to reduce the carbon emissions associated with running them. Like most offices, our electricity supply comes from the national grid, which creates carbon emissions. Outsourcing our servers would allow us to choose a company which produces 100% renewable energy, reducing the amount of energy we take from the national grid. We are also going to look into the possibility of owning and operating our own renewable electricity infrastructure.

To assess the impact of the goods and services we buy we are developing a system to measure this. Once we have a baseline, we can look at how we can adapt our procurement criteria to prioritise low carbon options.

6 The impact of wider changes

Our plan, 'Our Path to Net-Zero', sets out the changes we are going to make to continue to reduce our emissions. However, changes to the infrastructure that we all rely on will also have a role to play. The carbon intensity of the electricity grid decreased by 10% between 2018-2019, which has contributed to the reduction in our electricity emissions. We have also benefitted from being connected to a District Heating Network, and having access to hybrid and electric vehicles. Infrastructure changes like these will continue to play a role in our journey towards net-zero.





@ZeroWasteScot
zerowastescotland.org.uk



EUROPE & SCOTLAND
European Regional Development Fund
Investing in a Smart, Sustainable and Inclusive Future