

Environmental Management System (EMS) Report Q1 2020/21¹

Purpose

- This paper provides:
 - A breakdown of how COVID-19 has affected organisational carbon output;
 - An overview of Zero Waste Scotland's environmental impacts in Q1 of 2020/2021; and
 - An update on the company's Net Zero carbon plan commitments.

Foreword on COVID-19

COVID-19 has had a very significant impact on Zero Waste Scotland emissions during Q1 of FY 2020/21; but has also impacted our ability to measure these. In order to provide as accurate an account as possible, this report combines current data with historic emissions and calculated impacts based on homeworking calculations where relevant, however the following must be considered in the context of this report:

- Obtaining operational carbon data during COVID has proven difficult, and the accuracy of this Q1 report is necessarily diminished as we are currently unable to access office and home energy and water data.
- We know that our carbon footprint is significantly lower in Q1 of this year than in previous years, due to the cessation of corporate travel and commuting, as outlined in our homeworking report
- When comparing this report to environmental performance in previous quarters, these fundamental deviations from the standard methodology should be considered.

The organisation's overall environmental impacts

- **Summary**
 - Total measured climate change impacts, expressed in carbon dioxide equivalent, in Q1 of FY 2020/2021 were 6.8 tonnes of CO₂ eq. *Whilst overall impacts were 70% lower than in the same period last year* (fig. 1) results are not directly comparable. During Q1 of FY 2020/21, all staff were exclusively working from home (WFH). Consequently, there has been no corporate travel and no commuting during this period. Data in relation to staff water use and waste generation was not readily available and so emissions totals for these sources have been estimated using historic data and current staff role.
 - We estimate that both water use and waste generation during homeworking have remained unchanged from office-based levels². Consequently, these totals are estimated as being higher than in previous years, as they have been calculated on a simple per-capita basis.

¹ This report is prepared by Fraser Millar and reviewed by Michael Lenaghan

² It is likely that non-food waste generation will actually be lower during homeworking conditions, as fewer to-go meals are being purchased and less packaging waste generated however this was not accounted for within these calculations.

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- Gas use is considered as being zero. While office gas consumption falls significantly with rising spring and summer temperatures, some consumption remains throughout the year, whereas the homes of employees are considered to remain unheated from April – September, in line with Government guidance on home heating.³
- Electricity impacts have been calculated using historical data and current staff role. Impacts are estimated to have decreased by ~4%, largely due to decarbonisation of the grid.

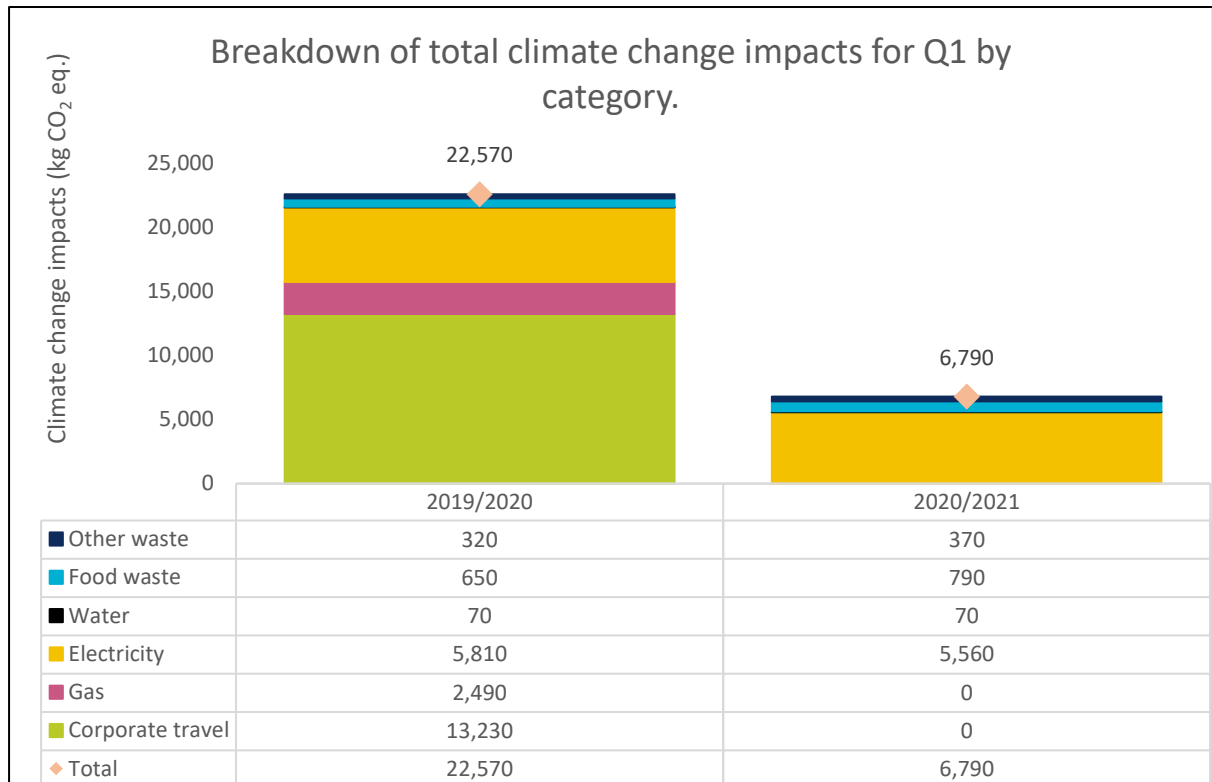


Figure 1 Breakdown of total climate change impacts by category for Q1 in 2019/20 & 2020/21

• Corporate travel impacts

- As a result of the country-wide Covid-19 lockdown, corporate travel impacts for Q1 were 0 tCO₂eq., compared to 13.2 tCO₂eq for the same period last year. This represents a very significant saving during his period, albeit due to circumstances out with the control of the organisation.

³ UK Government, Department of Energy and Climate Change 2011, 'Report 4: Main Heating Systems' [online]; found [here](#)

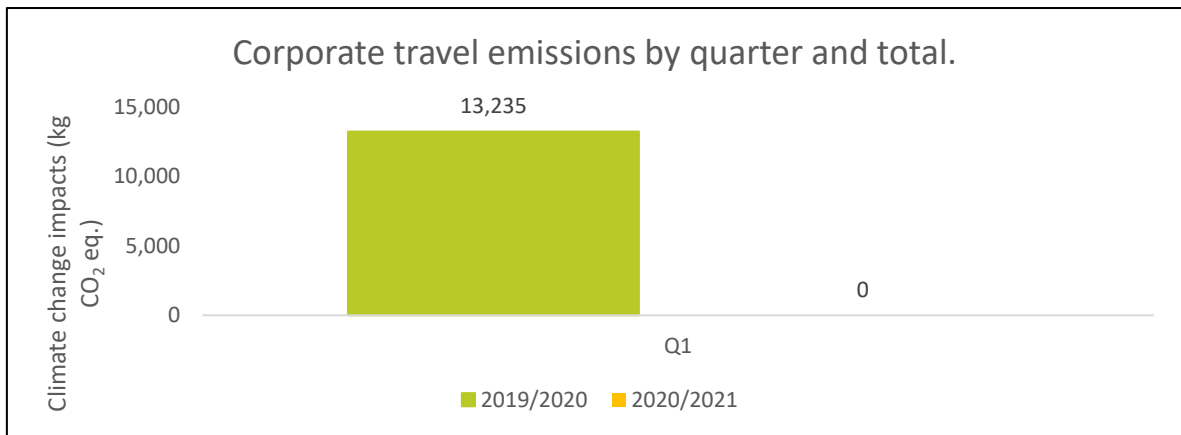


Figure 2 Corporate travel emissions Q1 comparison (2019/20 vs. 2020/21)

- **Flights mileages**

The company flight cap for 2020/21 is set at 34,800 miles – 80% of the total flight mileage recorded by staff in FY 2019/20 (43,500 miles). Ordinarily, restraining flight miles to less than 9000 per quarter would represent a considerable challenge for any organisation, however due to the complete cessation of business travel during Q1 of FY 2020/21 (ongoing at time of writing), zero flight miles have been recorded during this period. A total of 18,680 airmiles were flown by Zero Waste Scotland over the same period last year, with an attendant footprint of 4.8 tCO₂ eq.

Figure 3 (below) shows the remaining quarterly flight cap for the year. As is evident, the cap remains intact, and our cumulative mileage allowance (34,800 miles for the year) has thus far been preserved. Consequently, this balance will now be spread over the remaining quarters in FY 2020/21. At time of writing, ZWS policy continues to stipulate a moratorium on business travel of any kind, which will of course play a significant role in reducing our travel emissions, and the carbon output of the organisation generally in FY 2020/21.

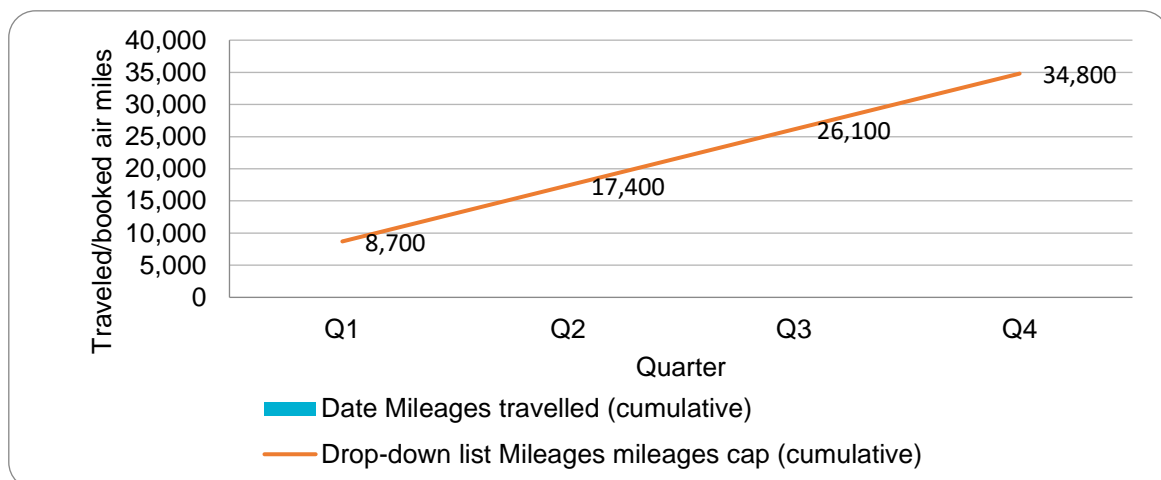


Figure 3 Air miles vs the annual cap for 2020/21.

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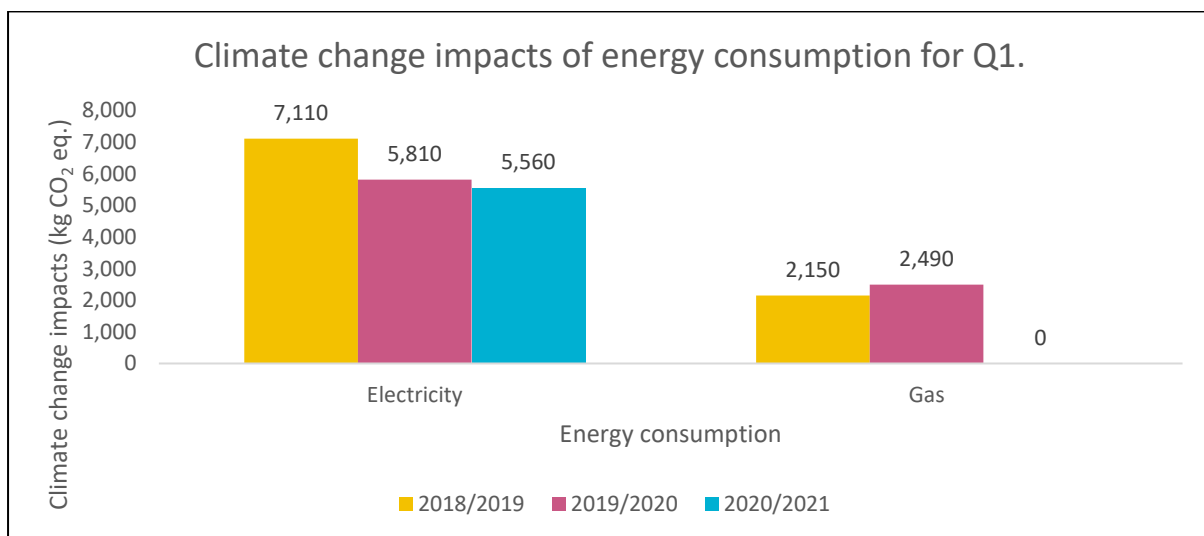
- Office impacts

Electricity

- It is estimated that impacts of electricity consumption amounted to 5.6 tonnes of CO₂e in Q1 of the financial year, *~4% below Q1 levels for last financial year* (Figure 4). As the Q1 total for this year is spread across the homes of staff members⁴, it was not possible to get an exact electricity emissions figure for this period. Rather, per capita electricity use for homeworking was considered to remain unchanged from office-based usage, if constrained to I.T equipment and server power only.
- To obtain the Q1 total for this year, a daily per-capita average usage rate was calculated using historical electricity data. This figure was multiplied by the number of working days in the quarter and again by the number of staff working across the organisation. This calculation provided an estimate of 23,800 kwh over the period, with an attendant emissions output of 5.6 tonnes of CO₂e⁵.

- Heating (gas)

- The estimated impact of *gas consumption was 0 (zero) tCO₂e for Q1 of FY 2020/21*, contrasting with an output of 2.5 tCO₂e for the same period last year. The figure of 0 tCO₂e was estimated with reference to U.K. Government reports detailing the three months of Q1 (April, May and June) as ‘non-heating’ months; during which homes are not routinely heated. (Figure 4).
- In normal office-based working conditions, buildings are routinely heated throughout the year which accounts for the 2.5 tonne carbon output for Q1 of FY 2019/20. As ZWS offices are currently closed, heating is not required, and so office-based usage has dropped to zero.
- In ‘heating’ months (Oct – Mar), heating ZWS office space becomes far less carbon intensive than heating individual homes. If universal homeworking continues into the heating season, there will likely be a significant rise in gas emissions within the organisation during Q3 and Q4 of 2020/21, compared with office-based working.



⁴ The total number of ZWS employees during Q1 FY 2020/21 was 174, according to HR records.

⁵ 2020 DEFRA grid factors have been applied in order to provide an accurate total. Decarbonisation of the grid accounts for the 4% decrease in electricity impacts, compared with last financial year.

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Figure 4 Climate change impacts of energy consumption in Q1.

- **Resource loss and waste management**

- As it was not possible to accurately measure the volume of waste being generated in Q1, historical data was used to generate a per-capita figure for both food and non-food waste.
- To generate estimated waste levels during Q1, per-capita totals for each waste stream were multiplied by the staff roll across the organisation. Consequently, waste generation across all streams appears to have risen as the staff roll within Zero Waste Scotland has increased.
- *Food waste is estimated to have increased by 17% since Q1 2019/20. Non-food waste is estimated to have increased by 14%.* These figures are based on previous totals multiplied by current staff role, and do not account for waste saving initiatives or reduction measures.
- Water usage remains unchanged from Q1 of 2019/20, despite an increase in staff role. This is due to gradual decarbonisation of the water supply, along with the limited carbon impacts of water usage generally.
- Impacts for the same period last year can be seen in Figure 5 (below) and detail *the combined impact across waste generation and water usage to be ~1 tonne CO₂e for the quarter*, representing a relatively minor contribution to ZWS carbon output.

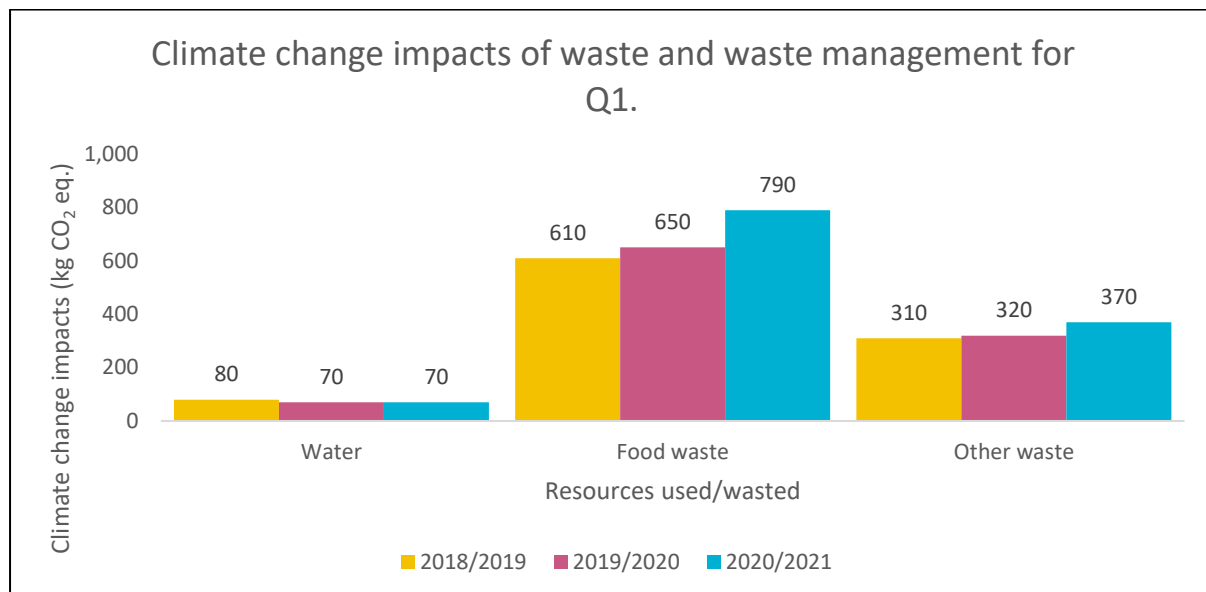


Figure 5 Climate change impacts of water and waste management in Q1.

- **Paper use: printing & copying**

- As ZWS office space was closed during Q1 2020/21, no printing occurred during this time. The total number of sheets printed in the same period last year was 6,320. This is another area in which imposed homeworking has mitigated the environmental footprint of the organisation.
- The figure of 0 sheets does not account for staff printing from devices within their own homes, however it is not anticipated that staff members were routinely printing documents during this period of homeworking, and so it is likely that the figure of 0 sheets in Q1 is relatively accurate.

- **The Net-Zero Carbon initiative**

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COVID-19 has changed the profile of ZWS emissions considerably and will likely continue to do so for some time. Despite this, the net zero carbon project is still progressing, and many actions under it are being advanced. Whereas some initiatives, such as the installation of double glazing within existing office space, may need to be reviewed to assess their continued relevance; others, such as the private vehicle cap and commitment to offset⁶ remain vital to the success of the strategy.

As the ZWS path to net zero continues to evolve, the suitability of all current actions under it will be subject to continuous review. The relevance of existing actions will be comprehensively evaluated upon any easing of COVID-19 restrictions, in order to assess their impact on Zero Waste Scotland emissions. This will be done with respect paid to any new ways of working that are adopted by the organisation in the wake of its temporary shift to universal homeworking.

⁶ The ZWS reduction offsetting choices for FY 2020/21 have now been purchased based on staff preferences. At time of writing, sequestration offsets are still being finalised.

Appendix 1: List of commitments under the net zero plan

Below is a list of commitments that form the basis of the Zero Waste Scotland net zero carbon plan. The plan was published in June 2020 and as such the commitments expressed under it are in their early stages. COVID-19 and a temporary shift to homeworking has also delayed implementation of many of the office-based initiatives. This list replaces EMS objectives and RES commitments for previous years.

Table 4. Forthcoming net zero commitments and status

No.	Impact Area	Actions	Start date
1	Offsetting	Offset to net-negative status – shortlist of options finalised. Awaiting instruction to send out to staff for consultation.	01/04/2020
2	Commuting	Encourage use of cycling through improvement of cycling facilities – A clothes drying unit has been purchased and will be installed within Moray House to encourage staff to cycle to work.	01/04/2020
3	Corp. Travel	Cap and reduce flight miles by 20% per annum until 2022/23 – On-going measure, supported by ‘no-fly zone’ and stricter accountability air travel.	01/04/2019 – Ongoing commitment
4	Corp. Travel	Cap and reduce private vehicle miles by 50% per annum until 2022/23 – ZWS has worked closely with local car hire rental firms to promote greater use of electric and hybrid hire vehicles, including an EV familiarisation day.	01/04/2020 – Ongoing commitment
5	Office impacts	Installation of double glazing within Moray House – Air quality monitoring tests have been completed in support of this measure, and talks are on-going with Stirling council. Long term aspiration.	01/04/2020 – (estimated completion 2022)
6	Office impacts	Move 60% of servers to the cloud – Work is underway in support of this measure, and the I.T Department are currently transferring ZWS data to Sharepoint cloud-based server.	01/04/2020 – (estimated completion 2021)
7	Procurement	Switch to ~50% oat milk for the office – taste testing sessions have been rolled out and a survey drawn up – currently postponed due to coronavirus homeworking	01/07/2020 – Delayed
8	Commuting	Undertake gap analysis of commuting with Sustrans – Sustrans have agreed to assist ZWS with this measure, however currently postponed due to coronavirus homeworking	01/07/2020
9	Procurement	Establish system for measuring catering and contract impacts – E.A team and I.T. are working to develop an online carbon calculation tool, for use by caterers and contractors.	01/07/2020 -
10	Office impacts	Establish system for measuring impacts of satellite offices - talks on-going. Measure on-hold due to coronavirus, and assessment of whether satellite offices will be retained upon easing of homeworking restrictions.	01/07/2020 – Delayed
11	Office impacts	Explore options to own and operate renewable electricity infrastructure.	01/10/2020
12	Commuting	Explore options to encourage greater commuting by train – net-zero team is currently researching case studies of how other organisations are achieving this.	01/10/2020
13	Corp. Travel	Improve video conferencing and video calling facilities within Stirling offices – measure postponed until offices are again occupied, however this measure will be prioritised due to inevitable increase in tele-conferencing.	01/04/2021 - Delayed

N.B – ‘Delayed’ here exclusively refers to unavoidable delay due to COVID-19 homeworking

Appendix 2: Shortlist of Reduction Offsetting options

Zero Waste Scotland has committed to offsetting 200% of our operational emissions each year; 100% through Scottish-based sequestration offset schemes⁷, and a further 100% through five carbon reduction projects. five projects are intended to reduce existing emissions across the developing world. They also have real quality of life benefits for their communities which we've summarised below:

Project 1

Project:	Sidrap Wind Farm Project
Location:	Sulawesi, Indonesia
Type:	emissions reduction; renewable electricity, wind
Summary:	The project consists of 30 wind turbines located on 3 neighbouring ridge lines. The project generates an estimated 141ktCO ₂ e savings annually by displacing electricity from the national grid.
Cost:	\$10 USD/tonne CO ₂ e

Project 2

Project:	improved cookstoves diffusion programme
Location:	Qori Q'oncha, Peru
Type:	emissions reduction; energy efficiency, improved home cookstove
Summary:	The Qori Q'oncha project replaces dangerous traditional stoves with safer, more efficient ones which can still be built using local materials and labour. Each stove has an expected lifetime of 7 years and generates an estimated annual carbon saving of 1.28tCO ₂ e due to reduced fuel consumption.
Cost:	\$15USD/tonne CO ₂ e

Project 3

⁷ We are buying 88 tonnes of sequestration offsets this financial year; split evenly across two Scottish-based Woodland Carbon Code certified projects:

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Project:	Cleaner cook stoves programme
Location:	Rwanda
Type:	emissions reduction; energy efficiency, improved home cookstove
Summary:	This project distributes efficient cook stoves which reduce fuel consumption by 80% compared to traditional open stoves, cutting emissions and household fuel costs, while also reducing respiratory risks. So far the project has saved 140kt CO ₂ e, helped over 20,000 families, and avoided combustion of 75kt of trees.
Cost:	\$15UDS/tonne CO ₂ e

Project 4

Project:	National biodigester programme
Location:	Cambodia
Type:	emissions reduction; renewable energy, small-scale anaerobic digester
Summary:	This project helps rural families in Cambodia acquire small-scale biogas plants to convert manure from 2-3 cows or 4-6 pigs into biogas for clean cooking, as well as liquid field fertiliser, saving an average of 79ktCO ₂ e/year. Additional benefits include reduced respiratory health risks from wood or charcoal smoke, and household financial savings on fuel.
Cost:	\$19USD/tonne CO ₂ e

Project 5

Project:	PET recycling plant
Location:	Buzau, Romania
Type:	emissions reduction; circular economy, PET recycling
Summary:	Greentech's PET recycling plant is the first PET recycling facility in Europe to receive Gold Standard certification. The plant has 3 outputs: food grade PET flake for bottle-to-bottle recycling, flake for wool fibre, and PET strap. Total output is 6kt/month.
Cost:	€50/tonne CO ₂ e