

# CLIMATE IMPACT REPORT

Stena Recycling Group, October 2023





# About Stena Recycling

Stena Recycling is one of Europe’s leading recycling companies, offering comprehensive solutions in recycling and circular services. Every year, around six million tonnes of waste and end-of-life products are recycled from more than 100,000 customers across a range of industries. Operations are conducted in Sweden, Norway, Denmark, Finland, Germany, Poland, Italy and a sales office in USA. By keeping resources in the loop, Stena Recycling plays an important and central role in the transition to a circular economy.

At Stena Recycling, the ambition is to create a truly circular society where nothing goes to waste. The company provides reliable waste collection, innovative reuse services and advanced recycling on an industrial level. The offer also

includes comprehensive recycling solutions and circular services, which play a key role in the transition to a circular economy. With advanced recycling processes, Stena Recycling transforms huge quantities of complex waste into high-quality recycled raw materials for use in production instead of virgin natural resources.

These recycled raw materials include ferrous and non-ferrous metals, plastics and paper and are resold for use in the manufacturing of new products. The company works with customers in most sectors, including manufacturing, automotive, retail, energy, transport and logistics, and municipalities. Stena Recycling’s products and services create real value that benefits customers, partners and the society.

**3,830**  
EMPLOYEES

**26,504**  
SEK MILLION  
NET SALES

**176**  
BRANCHES

# Stena Recycling's climate impact and science based targets

## STENA RECYCLING AND CLIMATE IMPACT

Stena Recycling's operations serve an important function by ensuring that our customers' waste is handled safely and in an environmentally responsible manner, and turning it into valuable resources that can be useful in society again. About half of global emissions come from extraction and production of materials, products and food<sup>1</sup>. Adapting a more circular approach is therefore a significant part of the fight against climate change. Recycling is an effective and well-established approach to circular use of resources, and helps reduce emissions and decrease the need for extraction of virgin resources.

However, even though there is a positive climate aspect of recycling to consider, the collection, processing and logistics of waste for recycling also generate emissions. It is therefore important for Stena Recycling to not only strive to continuously develop recycling efficiency and circular solutions, but also to take a systematic approach to measuring and reducing the climate impact.

## STENA RECYCLING'S SCIENCE-BASED TARGETS

To make a clear commitment to setting ambitious and relevant climate targets, the Stena Recycling companies on all markets sent in a joint commitment to the Science Based Targets initiative in April 2022. After a year of identifying, mapping and calculating all emissions from internal operations and the value chain, Stena Recycling sets the targets and finalized the application. The targets were validated and approved by the Science Based Targets initiative in August 2023.

1

Ellen MacArthur foundation: Completing the picture – How the circular economy tackles climate change, 2021

Recycling 1 tonne of iron saves over 1 tonne of carbon dioxide emissions.

Aluminium is a metal that can be recycled over and over again without loss of quality.

Recycling saves 95% of the energy compared to producing new aluminium from new ore.

”

*“Together with our customers we are already contributing to reducing climate impact, by turning their waste into new resources through our advanced recycling technologies. But we are also determined to reduce our own climate footprint in Stena Recycling.*

*The approved science-based targets support us in continuously developing the best services within recycling and circular solutions, while also ensuring that we will do so with a low climate impact throughout our operations and value chain.”*



**KRISTOFER SUNDSGÅRD**  
CEO of Stena Recycling Group

The science-based targets set by Stena Recycling are to reduce greenhouse gas emissions (GHG) from own operations (Scope 1 & 2) with 50% by 2030 from a 2021 base year, and to reduce absolute scope 3 GHG emissions from purchased goods and services, upstream transportation, and downstream transportation by 25% within the same timeframe. In addition

to the 2030 target, Stena Recycling has also submitted a commitment to set net-zero targets for 2050, which yet remains to be validated.

## **ABOUT THE SCIENCE BASED TARGETS INITIATIVE**

The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets. The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi call to action is one of the We Mean Business Coalition commitments. Learn more on [www.sciencebasedtargets.org](http://www.sciencebasedtargets.org)

### **EMISSIONS BY SCOPE AND COUNTRY**

In scope 1 Stena Recycling’s most significant emissions are generated from fuel consumption in working machines and own trucks. There are also some emissions from composting, biological processes, gas leakages and landfills. Stena Recycling controls two landfill sites in Sweden and one in Finland.

There is a continuous ongoing work to reduce the amount of material deposited in landfill and to increase the sorting of easily biodegradable material before deposit. In total, the emissions in scope 1 constituted 8% of total emissions in 2022. Scope 2 refers to emissions from purchased electricity and district heating, and constituted 3% of total emissions.

The majority of Stena Recycling’s emissions for 2022, 89%, occurred in scope 3. The main source of emissions come from externally purchased transportation, by road, sea freight and rail (category 4 and 9). A significant share can also be derived from purchased goods and services and capital goods (category 1 and 2). For the baseline year 2021, emissions from those four categories amounted to over 75% of Scope 3 targets. Since those categories were identified as the most significant sources of emissions in the value chain, the Scope 3 target was set to cover those particular categories<sup>2</sup>.

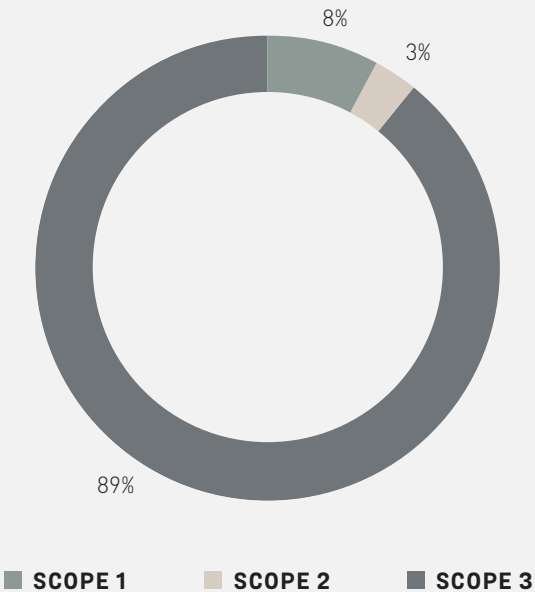
Use of sold products (category 11) is also a category with some notable emissions in Stena Recycling’s Scope 3. Stena Recycling recycles some fractions (wood and oils) that can be used as fuels, and for Stena Recycling, category 11 refer to emissions from when these fuels are combusted. However, since it can be argued that such recycled fuels are a more sustainable alternative than fuels produced from virgin

resources, the target for reducing Scope 3 emissions does not include category 11.

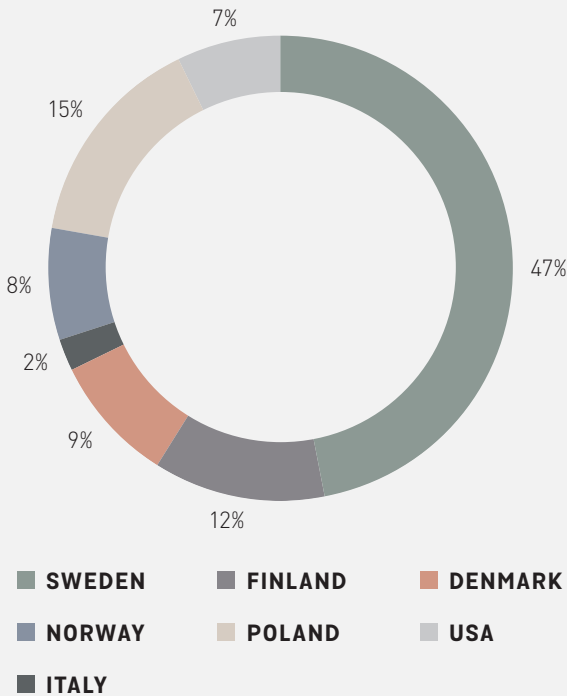
The main part of emissions stem from operations related to Stena Recycling Sweden, which is the home market for Stena Recycling and where about half of the 178 sites are located. Most of the externally purchased transportation is also coordinated from Sweden. Stena Recycling Poland stands for a relatively large part of the emissions, especially in Scope 2, which is due to the largely fossil-based electricity mix that is prevalent in Poland. Emissions from the other markets are quite evenly distributed in relation to the size of the operations. Stena Recycling Germany is not visible in the chart, as operations in Germany currently only consist of a small staff of office workers, and emissions are negligible.

2 In accordance with the science-based targets framework, Scope 3 targets need to cover at least 67% of total Scope 3 emissions.

Stena Recycling emissions by scope 2022



Stena Recycling emissions by country 2022



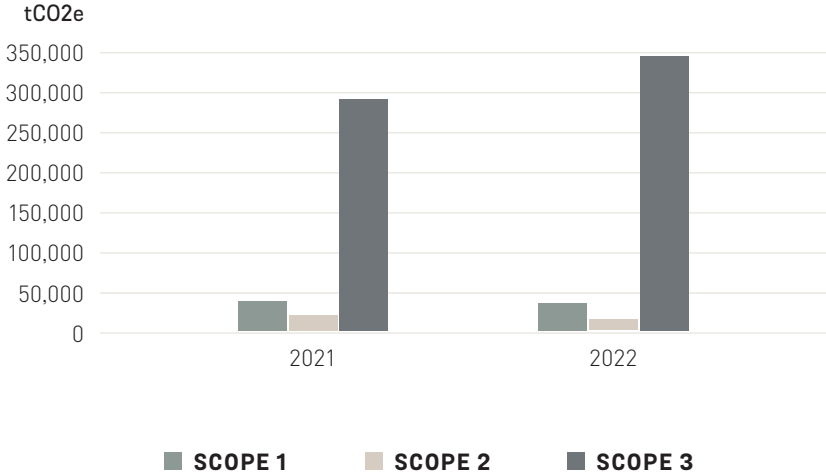
# Climate Impact 2022

## ANALYSIS AND RESULT

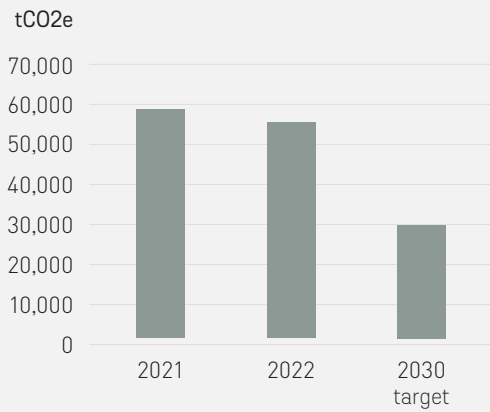
In total, Stena Recycling’s emissions for the science-based target scope increased with 14% between 2021 and 2022 (for total emissions, including categories outside of the target scope, the increase was 9%). This development is caused by an increase in emissions for Scope 3, which went up with 18% during the year in the categories covered by the target. One of the reasons for this is due to the inflation, as the method for establishing emissions from purchased goods and services and capital goods is based on spend. The inflation rate has been somewhat adjusted for, but since the emissions in the purchased goods and services category increased with 37% during the year, this has still most likely had a significant effect. Emissions from purchased transports also increased notably during the year, where category 4 and 9 together saw an increase of 14%. Part of the reason for this increase in transportation is a normalization of business volumes following the slow-down during the Covid years.

Scopes 1 and 2 on the other hand, decreased with 3% and 17% respectively. The main reason for the reduced emissions in Scope 1 is that there has been a decrease in emissions from own trucks and working machines, due to lower diesel consumption in 2022. The decrease in Scope 2 is mainly attributable to a reduction of purchased electricity in Poland, where the energy mix is largely based on fossil sources and reduced energy use entails a notable effect on total emissions. The reduction of purchased electricity can partially be explained by the installation of solar panels at the Wschowa site. An increased share of renewable electricity in Finland also contributed to the reduction.

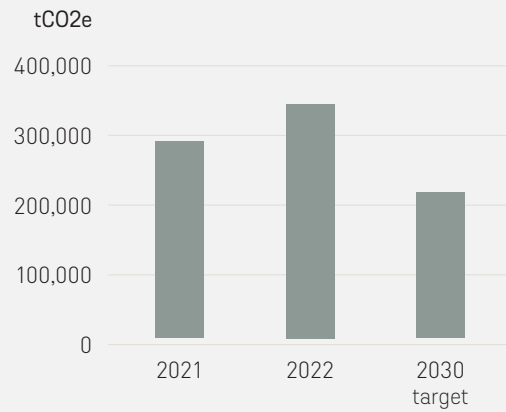
Total emissions 2021 and 2022



### Total emissions scope 1 & 2 2021 and 2022



### Emissions scope 3 (target scope)



#### ACTIVITIES AHEAD

Stena Recycling has initiated several activities and actions to take a systematic approach towards reducing emissions and reaching the targets. Project groups have been established for the major emission categories to coordinate and align best practices across all countries. The targets have also been broken down on country level, where local plans are established so that each country can focus on reductions for their most significant emissions categories locally.

Some of the prioritized activities for the upcoming year are to investigate opportunities to electrify a larger portion of the vehicle fleet and increase the amount of biofuel and to increase the use of renewable energy. There will also be a focus on purchased transport and logistic to investigate how to achieve efficient reductions in this significant emissions category, in

collaboration with logistics partners. For the purchasing-related emissions, a more detailed emissions mapping will be conducted to identify which suppliers and goods and services categories that generate the most emissions, followed by an investigation of how these emissions can be addressed.

To ensure continuous monitoring and follow-up of the progress towards the targets, the reporting frequency will be increased from annual reporting to reporting on tertile basis, providing an update of performance against the targets three times per year. The increased frequency will facilitate continuous analysis and management of climate impact.

# Emissions by category

## SCOPE 1, 2 AND 3

According to the GHG Protocol guidelines, emissions are categorized into different scopes.

Scope 1 includes direct emissions from sources that are controlled by the business. Examples include emissions from company-owned work machines and trucks.

Scope 2 includes indirect emissions from purchased energy,

where the emissions occur during the production of the energy.

Scope 3 includes other indirect emissions that result from the business's operations which are not included in Scope 1 or Scope 2. These emissions can be both upstream and downstream in the business's value chain.

## SCOPE 1

	2021	2022
1.1. Business travel	1,540	1,575
1.2. Own trucks	9,773	8,922
1.3. Working machines	21,264	20,668
1.4. Process energy	1,880	1,949
1.5. Heating	1,519	2,263
1.6. Emission landfill	1,143	988
1.7. Composting	314	290
1.8. Gas leakage	2,785	2,322
1.9. Biological processess	1,380	1,380
<b>TOTAL SCOPE 1 tCO2e</b>	<b>41,596</b>	<b>40,357</b>

## SCOPE 2

	2021	2022
2.1 Electricity	16,654	13,787
2.2. District heating	1,169	1,071
<b>TOTAL SCOPE 2 tCO2e</b>	<b>17,823</b>	<b>14,859</b>

## SCOPE 3

	2021	2022
*3.1 Purchased goods and services	57,453	78,708
*3.2 Purchased capital goods	17,860	18,383
3.3 Fuel- and energy-related activities	12,709	12,933
*3.4 Purchased transports (paid by Stena)	186,427	218,142
3.5 Emissions from waste treatment	12,769	12,552
3.6 Business travel	557	1,124
3.7 Employee commuting	3,809	4,132
*3.9 Purchased transports (paid by customer)	34,356	33,127
3.11 Use of sold products	66,924	58,008
3.13 Downstream leased assets	508	393
<b>TOTAL SCOPE 3 tCO2e</b>	<b>393,372</b>	<b>437,503</b>

<b>TOTAL EMISSIONS FOR TARGET SCOPE tCO2e (1, 2, *3.1, 3.2 3.4 &amp; 3.9)</b>	<b>355,514</b>	<b>403,576</b>
<b>TOTAL EMISSIONS ALL SCOPES tCO2e (1, 2 &amp; 3)</b>	<b>452,791</b>	<b>492,719</b>



## EMISSIONS OUTSIDE OF SCOPE

For transparency, emissions that according to the GHG protocol end up outside the scopes are also reported. These are emissions generated from the incineration of waste that goes to energy recovery.

### EMISSIONS OUTSIDE OF SCOPE

	2021	2022
Energy recovery tCO <sub>2</sub> e	778,414	550,212

## SCOPE 2 CALCULATION METHOD

According to the GHG protocol, the Scope 2 emissions for purchased electricity and heat can be calculated using two different methods. The location-based method is based on the emissions from the actual local use and the market-based method is based on the source of the electricity you buy

through an agreement, for example guarantee of origin. Stena Recycling has chosen to use the market-based method in the Climate Impact Report. In accordance with the GHG protocol, the emissions of both methods are reported, see the table: LOCATION BASED/MARKET BASED .

### LOCATION BASED/MARKET BASED

	2021	2022
Electricity use - guarantees of origin (kWh)	79,428,913	81,601,853
Location based (tCO <sub>2</sub> e)	15,861	16,999
Market based (tCO <sub>2</sub> e)	17,823	14,859

## EMISSION FROM BIOGENIC CONTENT

Emissions of carbon dioxide from biofuels which are produced sustainably, can be regarded as carbon dioxide neutral, as the carbon dioxide released during combustion is offset by the

carbon dioxide sequestered during the growth phase. According to the GHG protocol, biogenic carbon dioxide emissions are not included in the scope but must be separately reported for transparency purposes.

### BIOGENIC EMISSIONS

	2021	2022
Scope 1 (tCO <sub>2</sub> e)	7,049	9,303
Scope 2 (tCO <sub>2</sub> e)	743	640
<b>TOTAL BIOGENIC EMISSION (tCO<sub>2</sub>e)</b>	<b>7,792</b>	<b>9,943</b>

# Methodology

## THE GREEN HOUSE GAS PROTOCOL

Stena Recycling Group's Climate Impact Report is prepared based on the guidelines of the Greenhouse Gas protocol (GHG protocol). The GHG protocol is the most widely used international accounting standard for understanding, quantifying, and managing emissions of greenhouse gases, both in one's own operations and in the rest of the value chain. Adhering to the standard is a requirement within the Science Based Targets initiative.

The GHG protocol is structured around five main principles.

- **Relevance:** Ensure that the Climate Impact Report reflects the business.
- **Completeness:** All sources of emissions must be reported and all exceptions must be reported.
- **Comparability:** Consistent methods must be used so that the results can be compared over time. All changes must be documented.
- **Transparency:** Clear derivation to data. All relevant assumptions must be reported.
- **Accuracy:** Ensure systematic quantification to reflect real emissions. The data must be able to be used for decision-making.

### SCOPE 1, 2 AND 3

Based on the GHG protocol guidelines, the emissions are distributed on different scopes.

**Scope 1** covers direct emissions from sources which are controlled by the business, for example emissions from own work machines and trucks.

**Scope 2** covers indirect emissions from purchases energy, where emissions occur at the producer.

**Scope 3** includes other indirect emissions that the business gives rise to which is not included in scope 1 and scope 2. Emissions in scope 3 are divided into eight categories upstream and seven categories downstream. The upstream and downstream categories as reported in this Climate Impact report can be found in the table on page 8.

In the Climate Impact Report, emissions are also reported which, according to the GHG protocol, fall outside the scope of the SBT. These emissions arise when recycled fuels are burned to generate utility in the shape of electricity or heat and substitute to fossil energy sources.

### CONTROL APPROACH

Stena Recycling operates at 176 locations where facilities, equipment and vehicles may be both self-owned and leased. The Climate Impact Report is compiled based on the operational control approach since that method best describes the emissions which Stena Recycling's operations give rise to, regardless of ownership.

### EMISSION FACTORS

To convert consumption and other activity data for emissions of greenhouse gases (measured in tCO<sub>2</sub> eq.), emission factors for each emission source have been used.

Emission factors for fuel used in the Swedish operations have been taken from The Swedish Energy Agency (which compiles the average greenhouse gas emissions for different fuels). For operations in the other countries, emission factors stem from reports from fuel suppliers and from the Department for Environment, Food and Rural Affairs in UK (DEFRA), that provides annually reviewed emission factors complying with the GHG protocol. Our ambition is to continue revise and review emission factors annually.

Emission factors for district heating reflect the emissions of the individual plants and are mainly taken from the organization Energiföretagen Sweden. For the operations that do not purchase any specific type of electricity, the country-level residual emission factors from the Association of Issuing Bodies (AIB) have been used.

For purchased goods, services, and capital goods, emissions have been calculated based on revenue. For transports, a distance-based method has been used to calculate emissions.

**Sources of emission factors:**

- The Swedish Energy Agency Greenhouse gas emissions for fuel
- Association of Issuing Bodies (AIB) European Residual Mix
- Department for Environment, Food and Rural Affairs in UK (DEFRA) Conversion factors

**COLLECTION OF DATA**

Data for scope 1 and 2 have been collected at site level through the Position Green tool. Data for scope 3 has been aggregated on country level and also reported through the Position Green tool. Purchased goods, services and capital goods are calculated using the spend-based method. Transports (upstream and downstream) is calculated on distance-based method and data has been collected via an internal Stena business intelligence project. The emissions for business travels are calculated based on actual travels with documentation from a travel agency and travel bills. The waste management reflects the actual waste flows from own waste and waste

managed in the business that cannot be recycled for energy or materials. The emissions are calculated using generic emission factors, that is, not plant-specific factors.


**BASE YEAR AND RECALCULATION POLICY**

Stena Recycling has chosen 2021 as the base year for climate targets as it is the earliest year with complete data across all three scopes for all Stena Recycling entities. In the event of major changes to the organization (more than 5% of the base year), through for instance acquisitions or divestments, or in the event of identified sources of error, the base year may be recalculated to better represent actual emissions.

**EMISSION FROM LANDFILL**

The annual emissions are determined based on the First Order Decay model, which calculates emissions arising from waste deposited at any time prior to the reporting year, using models to estimate when emissions arise because of the decay and decomposition of the waste. Using this calculation model, we can make measurements to improve the model and to evaluate methods of covering the landfill and other possible measures, while we continue our systematic work with reducing waste going to landfill.





Find out more about our business and  
sustainability work at [stenarecycling.com](https://www.stenarecycling.com)

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