

# CLIMATE IMPACT REPORT 2025

Stena Recycling Group  
Stena Recycling Sweden



**4,000  
EMPLOYEES**

**6,000,000  
TONNES COLLECTED  
FOR RECYCLING**

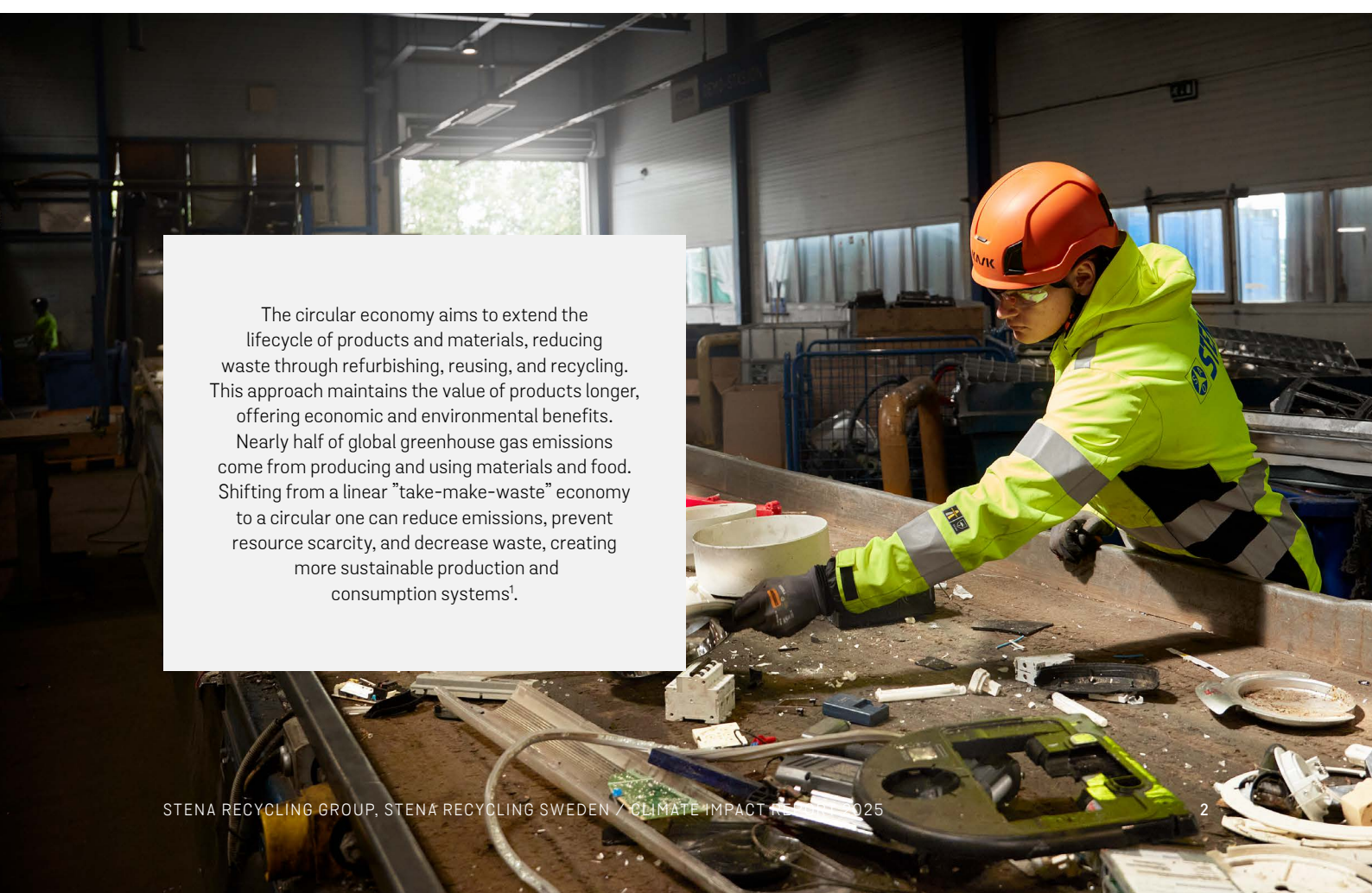
**176  
SITES**

# About Stena Recycling

Stena Recycling is a leading European recycling company with operations in Sweden, Norway, Denmark, Finland, Germany, Poland, Italy, and the US. At Stena Recycling, we want to create a truly circular society where nothing goes to waste. We provide reliable waste collection, innovative reuse services and advanced recycling on an industrial level. We also offer comprehensive recycling solutions and circular services, which play a key role in the transition to a circular economy.

With our advanced recycling processes, we transform huge quantities of complex waste into high-quality recycled raw materials for use in production instead of extraction of virgin 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.

We have established a secure global network of buyers, so we can supply customers from all over the world with high-quality recycled raw materials, steel products and aluminium alloys. Our products and services create real value that benefits our customers, their customers, and society at large.



The circular economy aims to extend the lifecycle of products and materials, reducing waste through refurbishing, reusing, and recycling. This approach maintains the value of products longer, offering economic and environmental benefits.

Nearly half of global greenhouse gas emissions come from producing and using materials and food. Shifting from a linear "take-make-waste" economy to a circular one can reduce emissions, prevent resource scarcity, and decrease waste, creating more sustainable production and consumption systems<sup>1</sup>.



# Building a foundation for the circular economy

Stena Recycling continues to invest in advanced technology and new facilities that contribute to strengthen and accelerate the circular economy.

## RECYCLED PLASTIC IN LINE WITH THE HIGHEST EUROPEAN STANDARDS

In March 2026 Stena Recycling obtained its third RecyClass certificate for its LDPE plastic (Low-Density Polyethylene) recycling line in Wschowa. This is a confirmation that the recycled material is produced in accordance with the highest European standards, and can make a significant contribution to closing the plastic loop and reduce emissions.

RecyClass is a European certification system that:

- Standardizes the rules for plastic recycling processes,
- Recognizes companies that operate according to the highest environmental standards,
- Is based on the requirements of EN15343 and ISO22095,
- Ensures transparency of waste origin and recyclate quality.

To calculate the carbon footprint of its LDPE (Low-Density Polyethylene) regranulate, Stena Recycling Poland has performed a Life Cycle Assessment (LCA).

The LCA analysis shows the importance of using recycled raw material, LDPE, to reduce emissions. LDPE is commonly used to produce a wide range of items, including containers, squeeze and dispensing bottles, tubing, computer component parts and various caps and closures.

The production of granulate from virgin raw materials emits 2,900 kg CO<sub>2</sub>eq (equivalent) per tonne. In comparison, the production of 1 tonnes of recycled pellets, generates 762,9 kg CO<sub>2</sub>eq and needs 1,280 kg of LDPE film waste.

That means that the carbon footprint of the use of secondary raw material (LDPE film waste) is four times less than the use of primary granules, significantly reducing CO<sub>2</sub>e emissions and supporting a circular economy model where resources are returned to circulation.

Production of granulate from LDPE film waste	Recycled LDPE film waste	Avoided CO <sub>2</sub> e emission (comparison of the use of primary and secondary raw materials)
3,511.24 tonnes	3,885.45 tonnes	7,504 ton CO <sub>2</sub> e



STENA RECYCLING / SWEDEN 2025

# From wood waste to furniture – ABB and Stena Recycling in innovative collaboration

## INCREASING RECYCLING RATES TO 90 PERCENT

Stena Recycling and ABB are taking wood recycling to the next level. In a collaboration where wood waste is transformed into raw material for furniture production, ABB Robotics is increasing its material recycling rate from 36 to a remarkable 90 percent. The partnership contributes to a more circular economy and reduced carbon emissions.

Every year, ABB Robotics generates approximately 1,300 tons of wood waste, primarily from single-use pallets used in transportation. Previously, this material was sent for energy recovery to produce district heating and electricity, but through this collaboration, it gets a new life as particleboard for the furniture industry – a significantly more sustainable alternative.

The pallets are collected by Stena Recycling and transported from ABB in Västerås to the recycling facility in Eskilstuna. There, the material undergoes careful quality assurance and sorting before being processed and chipped with a wood chipping machine. The chipped wood is then transported to a large manufacturer in the furniture industry, which uses it to produce particleboard that becomes new furniture. In this way, the material gets an extended life.

## PROMOTING A LOW-CARBON SOCIETY

Several other divisions and factories within ABB have joined the initiative. Stena Recycling now collects wood waste from multiple ABB factories in Sweden.

“We are pleased to be able to collaborate with Stena Recycling on this project. It is an important part of ABB’s sustainability strategy and our goals to reduce environmental impact, increase the recycling of our resources, and promote a low-carbon society. By working together, we can make significant progress toward a more sustainable future,” says Ingrid Sefastsson, Head of Sustainability at ABB Sweden.

In this process, the wood waste is recycled instead of being used for energy recovery – a more environmentally advantageous solution. The material is utilized over a longer period, which increases resource efficiency and reduces the need for new raw materials.

“Our collaboration is an excellent example of how we can work together to create a more circular economy, and the solution demonstrates the innovative opportunities that exist within sustainable recycling. By recycling wood waste and transforming it into new products, we contribute to a more sustainable future,” says Filip Lovemalm, Key Account Manager at Stena Recycling.

# Stena Recycling's climate impact and Science Based Targets

## STENA RECYCLING AND CLIMATE IMPACT

Stena Recycling's operations ensure that customers' waste is handled safely and responsibly, transforming it into valuable resources for reuse in society. About half of global emissions come from extraction and production of materials, products and food<sup>2</sup>. Adapting a more circular approach can therefore be 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 CO<sub>2</sub> emissions and decrease the need for extraction of virgin resources.

However, even though there is a positive climate aspect of recycling, the collection, processing and logistics of waste for recycling also generates CO<sub>2</sub> 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 impact

Transport, handling and processing of the waste generates CO<sub>2</sub> emissions in scopes 1, 2 and 3.



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

## STENA RECYCLING'S SCIENCE BASED TARGETS

The science based targets set by Stena Recycling aim 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 near-term target, Stena Recycling also has net-zero targets. The net-zero target commits

Stena Recycling to reach net-zero greenhouse gas (GHG) emissions across the value chain by 2050. This means reducing absolute scope 1, 2, and 3 GHG emissions by 90% by 2050 from a 2021 base year.

This is Stena Recycling's fifth Climate Impact Report.

### 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 [sciencebasedtargets.org](https://sciencebasedtargets.org)

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*In collaboration with our customers, we already contribute to reducing climate impact by turning their waste into new, circular resources. The science-based targets support us in 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



# Emissions by scope and country

In scope 1 Stena Recycling's most significant CO<sub>2</sub> 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.

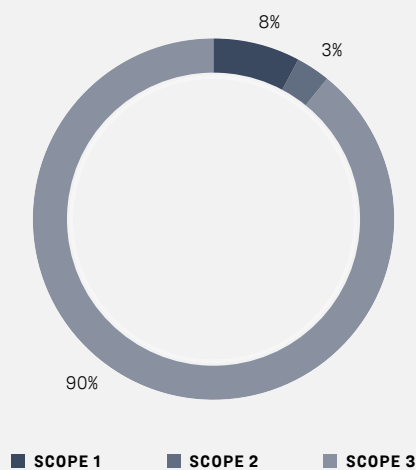
In total, the CO<sub>2</sub> emissions in scope 1 constituted 7,7% of total emissions in 2025. Scope 2 refers to emissions from purchased electricity and district heating and constituted 2,6% of total emissions.

The majority of Stena Recycling's CO<sub>2</sub> emissions for 2025, 90%, occurred in scope 3. The main source of emissions come from externally purchased transportation by road and sea freight (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, CO<sub>2</sub> emissions from those four categories amounted to over 75% of scope 3 emissions. Since those categories have been identified as the most significant sources of emissions in the value chain, the scope 3 target is set to focus on those particular categories\*.

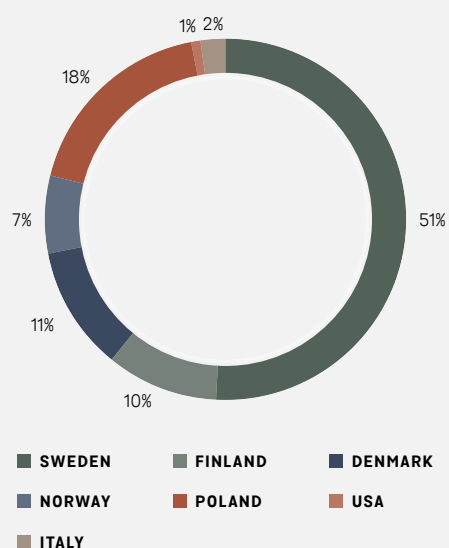
Use of sold products (category 11) is also a category with some notable CO<sub>2</sub> emissions in Stena Recycling's scope 3. Stena Recycling recycles some fractions (wood and oils) that can be used as fuels, and for Stena Recycling, category 11 refers to emissions from when these fuels are combusted. 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 CO<sub>2</sub> emissions stem from operation related to Stena Recycling Sweden, where about half of the 176 sites are located. Most of the externally purchased transportation is also coordinated from Sweden. Stena Recycling Poland accounts for a relatively large share of emissions, particularly in scope 2, due to Poland's largely fossil-based electricity mix. 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.

Stena Recycling emissions by scope 2025



Stena Recycling emissions by country 2025



\* In accordance with the science based targets framework, scope 3 targets need to cover at least 67% of total scope 3 emissions.

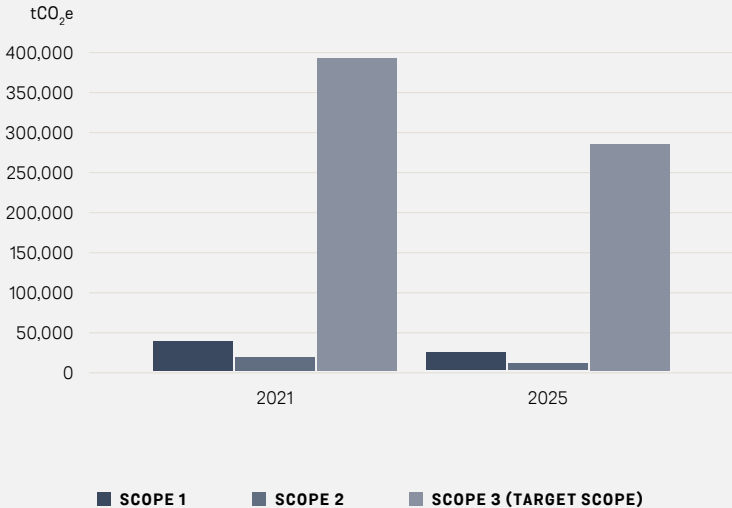
# Climate impact 2025

The total emissions reductions for all categories included in Stena Recycling’s target scope amounts to 12%, while a 2% increase is observed compared to 2024. This indicates that the organization has achieved substantial emissions reductions over time, although progress has slowed in the most recent year. The deceleration is primarily driven by increased emissions within Scope 3, particularly in categories 1 and 4.

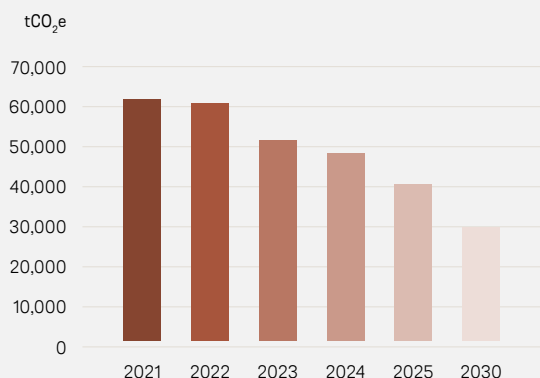
At the same time, the organization has been successful in reducing its direct emissions in Scope 1 and 2, which together have decreased with 32% compared to the baseline year, and also show a 15% reduction compared to last year. This change is mainly driven by dedicated efforts within electrification, fuel switching, and an increased share of

renewable energy. Emissions from electricity have decreased by 50% since 2021, largely due to the transition to 100% renewable electricity in several operating countries. District heating usage has increased by 36%, likely reflecting that more facilities have been connected to district heating networks, a shift that also contributes to reducing Scope 1 emissions. Compared to the baseline year, Scope 1 emissions have decreased with 27% and Scope 2 emissions with 45%.

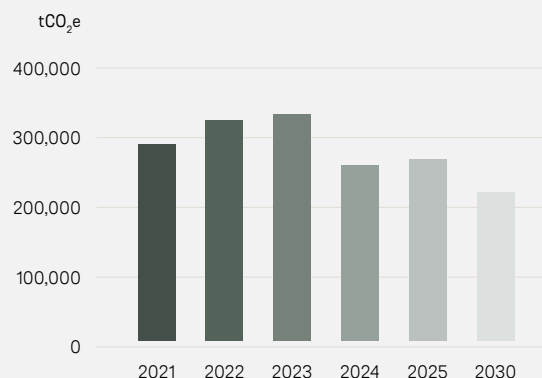
Total emissions 2021 and 2025



**Total emissions  
scope 1 & 2**



**Emissions scope 3  
(target scope)**



**ONGOING ACTIVITIES - GROUP LEVEL**

With focus on reducing CO<sub>2</sub> emissions and reaching the targets within this area, Stena Recycling is taking a systematic approach with several different initiatives.

The aim is to coordinate and align best practices across all countries and companies. The targets are broken down on country levels, where local plans are established. By doing this each country can focus on reductions for their most significant CO<sub>2</sub> emissions categories.

Some of the prioritized activities for the upcoming year are to continue moving towards electrifying a larger portion of the vehicle fleet, increasing the amount of sustainable sourced biofuel and increasing the use of renewable energy. There will also be a continued focus on purchased transport and logistics to investigate how to achieve efficient reductions in this significant emissions category, in collaboration with logistics partners.

For scope 3 transports, continued efforts to improve the accuracy of data is also a continued focus area, since this enables us to make better decisions and strive towards reduced emissions throughout our value chain.

Regarding CO<sub>2</sub> emissions linked to purchasing, a more detailed emissions mapping was started during 2025 and will continue during 2026. The aim is to identify which suppliers and categories of goods and services generate the most emissions, followed by an assessment of how these emissions can be addressed.

To ensure continuous monitoring and follow-up of progress toward the targets, reporting is carried out on a tertial basis. This provides performance updates three times per year. This reporting frequency supports ongoing analysis and management of the Group's climate impact.

# Emissions by category - Group

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 businesses' operations which are not included in scope 1 or scope 2. These emissions can be both upstream and downstream in the businesses' value chain.

## SCOPE 1

	2021	2025
1.1. Company cars	1,565	1,209
1.2. Own trucks	9,841	5,780
1.3. Working machines	21,264	16,937
1.4. Process energy	1,880	3,212
1.5. Heating	1,519	667
1.6. Emission landfill	1,143	694
1.7. Composting	314	300
1.8. Gas leakage	2,249	526
1.9. Biological processes	1,380	1,222
<b>TOTAL SCOPE 1 tCO<sub>2</sub>e</b>	<b>41,596</b>	<b>30,546</b>

## SCOPE 2

	2021	2025
2.1 Electricity	17,542	8,778
2.2. District heating	1,169	1,542
<b>TOTAL SCOPE 2 tCO<sub>2</sub>e</b>	<b>18,711</b>	<b>10,363</b>

## SCOPE 3

	2021	2025
1. Purchased goods and services*	57,453	60,593
2. Purchased capital goods*	17,860	16,897
3. Fuel- and energy-related activities	12,709	8,851
4. Purchased transports (paid by Stena)*	186,427	167,616
5. Emissions from waste treatment	12,769	14,188
6. Business travel	557	942
7. Employee commuting	3,809	4,785
9. Purchased transports (paid by customer)*	34,356	29,007
11. Use of sold products	66,924	51,191
13. Downstream leased assets	508	84
<b>TOTAL SCOPE 3 tCO<sub>2</sub>e</b>	<b>394,733</b>	<b>354,153</b>
<b>Total emissions target scope tCO<sub>2</sub>e (1, 2, *3.1, 3.2 3.4 &amp; 3.9)</b>	<b>356,402</b>	<b>315,021</b>
<b>Total all scopes 1, 2 &amp; 3 tCO<sub>2</sub>e</b>	<b>455,040</b>	<b>395,062</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	2025
Energy recovery tCO <sub>2</sub> e	332,485	379,660

\* The baseline year data has been adjusted due to a reassessment of which fractions should be included, as well as an adjustment of emission factors.

## 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 Group 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 below.

### LOCATION BASED/MARKET BASED

	2021	2025
Electricity use - guarantees of origin (kWh)	79,428,913	127,326,368
Location based (tCO <sub>2</sub> e)	15,861	15,515
Market based (tCO <sub>2</sub> e)	17,823	8,714

## 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	2025
Scope 1 (tCO <sub>2</sub> e)	7,049	9,464
Scope 2 (tCO <sub>2</sub> e)	743	1,111
<b>TOTAL BIOGENIC EMISSION (tCO<sub>2</sub>e)</b>	<b>7,792</b>	<b>10,575</b>

# Stena Recycling Sweden



**1,900  
EMPLOYEES**

**3,647,000  
TONNES COLLECTED  
FOR RECYCLING**

**90  
SITES**

## ANALYSIS OF DATA

Scope 1: Stena Recycling's scope 1 emissions decreased by 21% during 2025 compared to 2024. The main driver behind this reduction was the increased use of biofuels such as HVO100 in our working machines and company-owned trucks. In addition, the electrification of our vehicle fleet - including working machines, material handlers, forklifts and several of our own trucks and company cars - further contributed to lowering our emissions. Another positive measure was the replacement of the oil boiler with a heat pump at the Skänninge branch, which reduced the use of fuel oil and increased the share of renewable electricity. Altogether, these actions increased the share of renewable energy in scope 1 from 35% to 50% from 2024 to 2025.

At the same time, Stena Recycling processed a higher volume of hazardous materials in 2025, requiring specific processes for the treatment. Consequently, the use of fuel oil increased, leading to a 6% rise in emissions in category 1.4 Process energy.

Scope 2: Within scope 2, usage and emissions from both electricity and district heating have decreased by approximately 5%. The decrease is related to a small increase of renewable share of energy usage as well as normal fluctuations in consumption affected by changes in temperature. In total, the share of fossil energy was decreased by 4% between 2024 and 2025 in scope 2.

Scope 3: In Scope 3, a total decrease of 5% is reported. The most positive developments come from categories related to waste treatment (3.5) and the use of sold products (3.1), where emissions decreased by 11% and 9% respectively. We also see a 16% reduction in fuel- and energy-related activities (3.3), driven by our transition from fossil diesel to HVO100.

Emissions from purchased transports (categories 3.4 and 3.9) remained largely unchanged. Even though we added more fossil-free vehicles during the year, the increase in collected material balanced the potential reduction. Emissions in the capital goods category (3.2) also stayed mostly at the same level.

On the negative side, emissions from purchased goods and services (3.1) increased by 9% compared with the previous year, mainly due to various investments.

# Emissions by category - Sweden

## SCOPE 1

	2021	2024	2025
1.1. Company cars	490	296	182
1.2. Own trucks	3,936	1,975	868
1.3. Working machines	8,082	7,809	5,735
1.4. Process energy	1,760	2,813	2,969
1.5. Heating	514	253	120
1.6. Emission landfill	859	479	459
1.7. Composting	314	313	300
1.8. Gas leakage	1,103	568	434
1.9. Biological processes	1,380	1,059	1,222
<b>TOTAL SCOPE 1 tCO<sub>2</sub>e</b>	<b>18,438</b>	<b>15,565</b>	<b>12,289</b>

## SCOPE 2

	2021	2024	2025
2.1 Electricity	152	170	145
2.2. District heating	1,157	1,517	1,450
<b>TOTAL SCOPE 2 tCO<sub>2</sub>e</b>	<b>1,309</b>	<b>1,687</b>	<b>1,595</b>

## SCOPE 3

	2021	2024	2025
1. Purchased goods and services*	25,832	34,357	37,281
2. Purchased capital goods*	11,290	12,242	12,215
3. Fuel- and energy-related activities	5,201	4,631	3,905
4. Purchased transports (paid by Stena)*	73,346	69,597	70,321
5. Emissions from waste treatment	10,214	9,381	8,395
6. Business travel	145	478	366
7. Employee commuting	1,873	1,906	1,996
9. Purchased transports (paid by customer)*	13,638	11,330	10,732
11. Use of sold products	54,970	45,177	41,030
13. Downstream leased assets	274	21	19
<b>TOTAL SCOPE 3 tCO<sub>2</sub>e</b>	<b>196,783</b>	<b>189,118</b>	<b>186,259</b>

<b>Total emissions target scope tCO<sub>2</sub>e (1, 2, *3.1, 3.2 3.4 &amp; 3.9)</b>	<b>143,853</b>	<b>144,778</b>	<b>144 432</b>
<b>Total all scopes 1, 2 &amp; 3 tCO<sub>2</sub>e</b>	<b>216,530</b>	<b>206,370</b>	<b>200 142</b>

Stena Recycling's climate goals are based on reducing emissions, but it is also important to compare the emissions with the company's activities and development.

Here, the total emissions in all three scopes are reported in comparison with total revenue and the amount of collected material.

	2021	2024	2025
Collected material (tonnes)	3,477,686	3,445,278	3,647,064
Turnover (TSEK)	12,565,581	14,177,027	13,864,608
kg CO <sub>2</sub> e/TSEK	17	15	14
kg CO <sub>2</sub> e/tonnes collected material	62	60	55

The table illustrates the proportion of renewable energy sources utilized.

Additionally, the percentage of district heating generated from waste, which accounts for 50%, is not depicted here.

## RENEWABLE ENERGY

	Total (kWh)	Renewable (kWh)	% Renewable 2024	% Renewable 2025
Total fuels*	68,334,204	34,152,560	35,4%	50,0%
Electricity*	86,500,462	86,454,525	99,6%	99,95%
District heating	13,130,304	2,446,866	18,0%	19%
<b>TOTAL</b>	<b>167,964,970</b>	<b>123,053,951</b>	<b>65,5%</b>	<b>73%</b>

\*Company cars excluded

This table provides supplementary information on our emissions.

- Scope 2 emissions for purchased electricity and heat can, according to the GHG Protocol, be calculated using two different methods: location-based or market-based. Stena Recycling has chosen to use the market-based method in the climate report.
- Biogenic emissions from sustainably produced biofuels can be considered carbon neutral since the carbon dioxide released during combustion has been absorbed during the

growth phase. According to the GHG Protocol, biogenic carbon dioxide emissions are not reported within the scopes but should be disclosed separately for transparency.

- For transparency, emissions that fall outside the scope according to the GHG Protocol are also reported. These are the actual emissions that occur during energy recovery from waste, which provide benefits in the form of district heating and electricity.

## SUPPLEMENTARY EMISSIONS

	2021	2024	2025
Electricity* - Location based (tCO <sub>2</sub> e)	522	542	437
Electricity* - Market based (tCO <sub>2</sub> e)	152	149	145
Biogenic emissions - Scope 1** (tCO <sub>2</sub> e)	6,657	6,616	8,071
Biogenic emissions - Scope 2** (tCO <sub>2</sub> e)	743	734	1,112
Out of scope - Waste to incineration** (tCO <sub>2</sub> e)	229,066	253,880	252,722

\*Company cars excluded

\*\*Outside of scope

## ONGOING ACTIVITIES - STENA RECYCLING SWEDEN

Moving forward, the focus to reduce emissions in scope 3 will remain on collaborating with the subcontracted haulers and shipping companies to identify more carbon-efficient transportation solutions. In scope 1, Stena Recycling will continue to increase the share of sustainably sourced biofuels, electric machines and vehicles in its own operations at a similar pace as it has since 2021.

Other important measures include continuously reducing waste sent to landfills. Furthermore, initiatives are underway to enhance plastic recycling, resulting in less plastics present in combustible waste for energy recovery. Investigating the use of methane gas from biological processes for process energy is also a priority. These long-term measures are expected to significantly impact the company's climate footprint across various scopes.

During 2025 Stena Recycling decided to invest 200 million SEK in a new, state-of-the-art, waste recycling facility in Halmstad. With a capacity of 25 000 tons per year, this investment will further increase our recycling capabilities and contribute to

the circular economy. The new facility, which is scheduled for completion at the turn of 2026/2027, will recycle refrigeration equipment, other white goods, and construction waste containing freons. The facility replaces an existing, smaller facility that currently only recycles refrigeration equipment. With a capacity of 25,000 tons per year and a higher degree of automation, the new facility will offer an improved working environment with a focus on ergonomics and safety.

Efforts are made to enhance Stena Recycling's scope 3 calculation models to ensure higher quality emission data. This will lead to better analysis and improvement in the work to identify activities that can contribute to positive environmental impacts.



# 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 purchased energy, where emissions occur at the producer. Scope 3 includes other indirect emissions that the business generates, which are 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 10. 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 a large number of 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 generate, 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. The ambition is to continue to 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 with a distance-based method. 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, not plant-specific factors.

**BASE YEAR AND RECALCULATION POLICY**

Stena Recycling Group 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.

**EMISSIONS 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, measurements can be made to improve the model and to evaluate methods of covering the landfill and other possible measures, while continuing the systematic work of reducing waste going to landfill.

**CONTACT FOR THE CLIMATE IMPACT REPORT**

Anna Sundell  
Head of Sustainability, Brand & Communications, Stena Metall  
+46(0)10- 445 19 34

## CIRCULAR ECONOMY IS NEEDED TO TACKLE CLIMATE CHANGE

Over 50% of global greenhouse gas emissions stem from energy and fuel production, while the remaining half comes from materials and food production. Transitioning to renewable energy addresses only half of the dilemma.

Achieving a transition to a circular economy is also needed, where waste is minimized, pollution is avoided, products and materials circulate through reuse and recycling, and natural ecosystems are in balance<sup>3</sup>.

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Read more about how a circular economy can help climate change on [ellenmacarthurfoundation.org](https://ellenmacarthurfoundation.org)

PUBLISHED APRIL 2026

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

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