GREENHOUSE GAS EMISSION DISCLOSURE
2021

STENA RECYCLING SWEDEN

COMPLETE SOLUTIONS FOR RECYCLING AND CIRCULAR SERVICES

Stena Recycling offers complete solutions within recycling and circular services – and plays an important role in the transition to a circular economy.

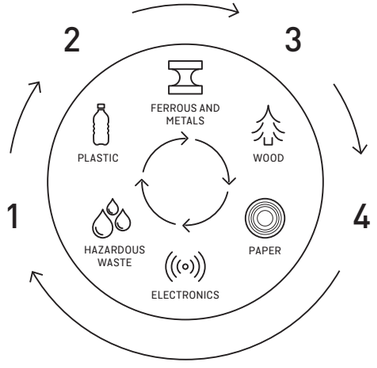
Nearly four million tons of waste and end-of-life products from more than 70,000 customers in various industries are recycled each year. This produces new, recycled raw materials, which are resold and become materials in new products.

70,000	1,700	12,570	90
CUSTOMERS	EMPLOYEES	NET SALES, SEK MILLION	FACILITIES

HOW STENA RECYCLING CONTRIBUTES TO A MORE CIRCULAR RAW MATERIALS SUPPLY

More efficient and responsible use of resources contributes to both increased profitability and reduced environmental impact. Stena Recycling supports customers with optimizing resource management throughout the entire life cycle – from design and production to recovery or reuse. This creates long-term solutions that benefit both customers and society at large.

Stena Recycling's customers are represented in many industries – ranging from municipal utilities, retail and manufacturing industries to car wreckers, engineering and hospitals.



1 DESIGN FOR CIRCULARITY

We contribute with knowledge about choice of materials and design. By making the right decision from the start, together we can create recyclable products.

2 MANUFACTURING

Our work with our customers' materials is based on optimizing waste management and safeguarding material values. Systematic safety work is the starting point for everything we do.

3 RECYCLING

With efficient processes for recycling and continuous technological development, we ensure a high recycling rate and preservation of materials.

4 RECYCLED RAW MATERIALS

Our work throughout the raw materials' cycle enables more recycled resources of higher quality.

CEO AND HEAD OF SUSTAINABILITY IN CONVERSATION

OUR GOAL – A CLIMATE-NEUTRAL BUSINESS

Today's resource utilization places a high burden on ecosystems, which in the long term affects opportunities for sustainable business. Making use of and reusing end-of-life resources is therefore a condition for the transition to a fossil-free and climate-neutral world.

Stena Recycling started its operations by collecting scrap metal in the 1930s and has since developed into a large-scale industrial recycling company. Today, the company is an enabler of the circular transformation and offers services in the fields of recycling, circular strategy and recycled raw materials.

"We want to act responsibly through sustainable business and work for sustainable long-term growth. Taking advantage of resources that would otherwise have been wasted is our core business. We make a difference by processing materials and retaining raw materials in the circular flow," says Fredrik Pettersson, CEO of Stena Recycling Sweden.

"Through our work, other players can use recycled materials in their products and thereby reduce their own carbon footprint. Climate change is one of the major challenges of our time and we are working actively to reduce the emissions from our own production in order to offer the market recycled materials as climate-efficiently as possible," says Malin Baltzar, Head of Sustainability at Stena Recycling Sweden.

CONTINUOUS EMISSION REDUCTIONS OVER TIME

Stena Recycling has for many years worked to reduce its climate impact and presents annual greenhouse gas emission disclosures together with the Haga Initiative.

"The fact that we're also reporting our own greenhouse gas emission disclosure this year is very important to us. Climate issues are high on the agenda and are a recurring topic of discussion in our customer relationships. Our customers have never set higher requirements for transparent reporting of our greenhouse gas emissions. This naturally also concerns mapping where we have our largest emissions, so we can focus our efforts in our work going forward," says Fredrik Pettersson.

"The climate goal for the 2010–2020 period was to reduce emissions by 40 percent in Scope 1 and 2, as well as from business travel. We achieved this goal by a wide margin: 62 percent. Among other things, we've increased the use of renewable fuels, phased out heating oil and switched to origin-labeled electricity," says Malin Baltzar.

Last year, emissions decreased by four percent, mainly due to reduced emissions from transportation.

"The transportation sector is crucial to achieving our goals. We depend on the full transformation of society and on the rapid technical development of climate-friendly transportation solutions," says Fredrik Pettersson.

CIRCULAR SOLUTIONS PROVIDE CLIMATE BENEFITS

A shift to a more circular economy is key to sustainable development. Half of all global emissions come from energy production, while the other half come from the production of materials and food.

"A complete transition to renewable energy therefore does not resolve the entire climate challenge, since we also need to implement a circular transition. Every time we avoid creating waste, there is a double benefit for the climate," says Malin Baltzar.

"A major climate benefit arises when a customer chooses to use recycled material. They can then offer a product with a small carbon footprint, while also avoiding the use of virgin raw materials," says Fredrik Pettersson.

INVESTMENTS IN NEW TECHNOLOGY AND NEW BUSINESS AREAS

In recent years, Stena Recycling has made several major investments in its own operations to increase sorting levels and secure materials for recycling of a higher quality. The latest investment concerns battery recycling at Stena Nordic Recycling Center in Halmstad.

"Electrification enables fossil-free operations, but it's already important now to ensure that the material in the batteries can be handled efficiently and safely, and used in new batteries," says Fredrik Pettersson.

Getting it right from the start when a product is designed and constructed is crucial to being able to recycle the product efficiently at the end of its useful life. Correct design of products, processes and production enables circular solutions, thereby creating great environmental and commercial value.

"It's incredibly important that the new products and materials launched are designed to circulate through reuse and recycling. The products we're introducing are also the raw materials to which we'll have access tomorrow," says Malin Baltzar.

"To meet this growing need, we've established Stena Circular Consulting, to support our customers at a strategic level. This paves the way for conversion and circularity when we review customers' production, as we have done with Electrolux and Polestar, for example," says Fredrik Pettersson.

REUSE OF COMPUTERS AND MOBILE PHONES

Automation and digitalization entail increased amounts of electronic waste. Reuse makes it possible to use functional components in new products, or even keep using whole, functional electronic products.

"This is a new area of activity for us. Computers, mobile phones or their components can be reused in the same way as we choose to buy other second-hand goods. This creates great value, with reuse as another step up the waste hierarchy," says Malin Baltzar.

FREDRIK PETTERSON CEO

MALIN BALTZAR HEAD OF SUSTAINABILITY

SCIENTIFICALLY BASED CLIMATE GOALS

In 2021, Stena Recycling took the first steps towards committing to Science Based Targets, a global initiative that aims to support companies in setting targets that limit global warming to 1.5°C.

Stena Recycling Sweden has two climate targets. Within its own operations (Scope 1 and 2), absolute emissions must be reduced by 70 percent by 2030, compared with 2020. For the rest of the value chain (Scope 3), which accounts for 85 percent of emissions, absolute emissions must be cut by 30 percent during the same period.

"I'm proud of the determination in our organization. By committing to the Science Based Targets initiative, we gain a common platform and the opportunity for best practice that ensures the right conditions for us to succeed," concludes Fredrik Pettersson.

AMBITIOUS NEW CLIMATE TARGETS

In spring 2021, Stena Recycling committed to the Science Based Targets initiative, with the aim of setting ambitious climate targets in accordance with the 1.5°C goal. By 2030, Stena Recycling's emissions in Scope 1 and 2 will be reduced by 70 percent, and emissions in the rest of the value chain will be reduced by 30 percent. Read more about Stena Recycling's climate goals on page 3.

RAIL IS BECOMING INCREASINGLY IMPORTANT

Increased use of rail transportation is an important piece of the puzzle in achieving our climate goals. During the past five years, on an average basis transportation equivalent to 200 million ton kilometers has been rail-based, giving annual CO_2 savings of around 10,000 tons compared with road transport.

CLIMATE-SMART INVESTMENTS

In 2021, a 254-kW solar cell plant was installed at Stena Nordic Recycling Center, and in spring 2022, an energy storage system was installed at the head office in Gothenburg. The latter project took place in collaboration with Batteryloop, a company within the Stena Metall Group that reuses batteries from electric cars and electric buses to build energy storage facilities for properties.

CLIMATE IMPACT AND CLIMATE BENEFIT IN A CIRCULAR ENTERPRISE

Stena Recycling's operations fulfill an important function by ensuring that waste is handled safely and environmentally correctly, while recycled raw materials and fuels can circulate and be of benefit to society again. Our greenhouse gas emission disclosure can transparently describe both the impact and the benefits our activities generate.

In 2021, we began to map the climate-impacting emissions that arise in our own operations and the rest of our value chain. The latter includes the impacts arising as a result of our operations, as well as the climate benefit that is created through the circulation of materials and fuels. When recycled raw materials can replace virgin raw materials in our customers' production, less energy is required, which leads to lower emissions. Recycled fuels can replace fossil alternatives and generate electricity and district heating for cities and industry. Even when the business is of benefit to society, our goal is to minimize our negative climate impact. The vision is to become climate neutral in our own operations.

To ensure a basis for comparison over time and with companies in other industries, the greenhouse gas emission disclosure is presented in accordance with the GHG Protocol.

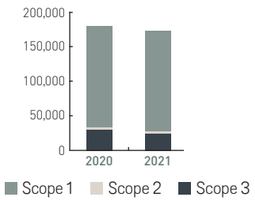
STENA RECYCLING'S CLIMATE GOALS

Stena Recycling will reduce absolute emissions in scope 1 and 2 by 70 percent by 2030, from 2020 as the base year.

Stena Recycling will also reduce absolute emissions within the first six categories in Scope 3 (purchased goods and services, capital goods, energy and fuel-related activities, transport (upstream), waste management and business travel) by 30 percent during the same period. These categories account for 85 percent of total emissions in Scope 3 and are also the categories that we ourselves have the greatest opportunity to influence.

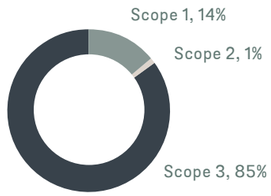
>>

RESULTS

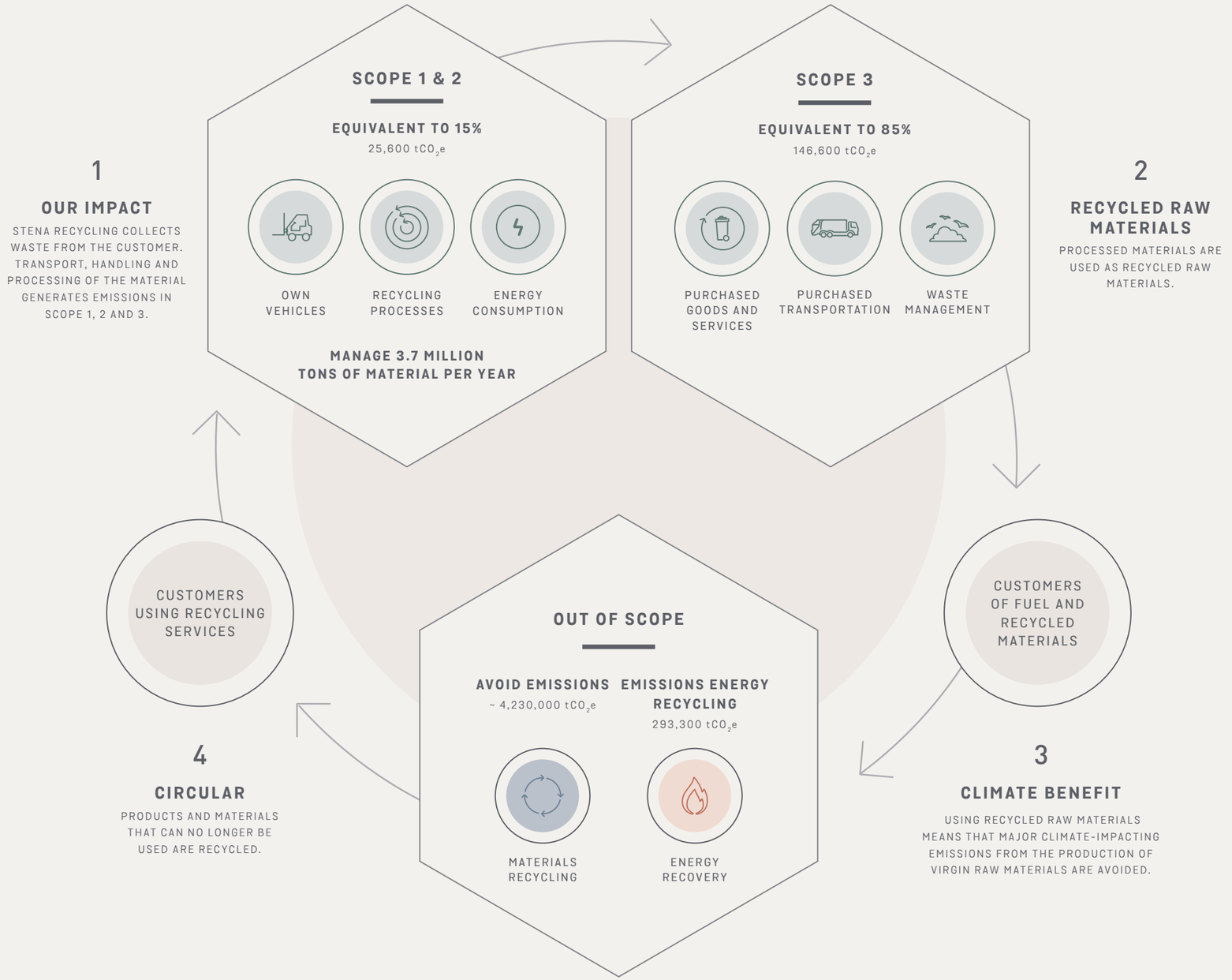


Total emissions fell by 4 percent in 2021.

DISTRIBUTION OF EMISSIONS



15 percent of Stena Recycling's emissions arise directly or indirectly in our own operations, while 85 percent occur in the rest of the value chain.



DESCRIPTION OF ACTIVITY

Stena Recycling's basic activities involve collecting, handling and transporting waste, and then sorting and processing the material into recycled raw materials at our 90 facilities.

Materials are transported by our own hauliers and vehicles, but also in cooperation with other operators via purchased land- and sea-based transportation services. Stena Recycling also continuously purchases containers, production equipment and machines that have been manufactured outside the business. The waste that cannot be recycled is forwarded for final treatment outside Stena Recycling's operations or to our own landfill.

ANALYSIS AND RESULTS

The 2021 greenhouse gas emission disclosure also includes a mapping of Scope 3 in its entirety, which means that emissions upstream and downstream in the value chain are included. The four categories for which we have the greatest ambition to reduce emissions are purchased transport, fuel consumption in our own vehicles and machinery, waste management services and equipment purchases.

Most of Stena Recycling's emissions, just over 85 percent, take place in Scope 3 of the value chain. Emissions arise primarily from the purchase of road, sea and rail transportation services. Besides transportation, Stena Recycling also has significant emissions relating to the purchase of products, services and capital goods, as well as waste management.

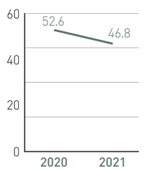
In our own operations, Scope 1, the largest emission items are fuel consumption from our own vehicles and heavy-duty machinery, as well as emissions from organic degradation in our own landfills. At our own landfill sites we are continuously working to reduce the amount of material deposited and to increase the sorting of easily degradable material before disposal.

ACTIVITIES GOING FORWARD

To achieve our climate goals, we focus on continuous oversight of our logistics solutions in order to achieve greater efficiency, move long-distance transportation from road to rail, and further develop our partnerships with haulage contractors and shipping companies to achieve the transition to fossil-free road and sea transportation. As far as technically possible, new vehicles and machinery must either be electric or run on renewable fuel. We also focus on recycled materials in our own procurement and investment activities, so as to increase opportunities for materials recycling and processing.

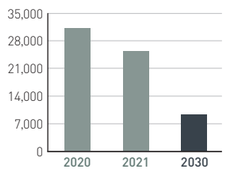
Achieving our climate goals is greatly dependent on the comprehensive transformation of society's transportation infrastructure, and requires national and European investments in an expanded charging infrastructure, access to fossil-free fuel and increased access to railways. It also requires initiatives to increase the use of recycled raw materials and reward recycled, rather than virgin, raw materials.

KG CO_2e PER TON OF MATERIAL HANDLED



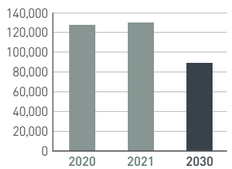
In 2021, Stena Recycling increased the proportion of collected material by 7 percent, while emissions decreased by 4 percent.

SCOPE 1+2



Emissions from fuel consumption decreased by 9 percent in 2021, primarily through increased use of biofuels. In total, emissions in Scope 1+2 declined by 21 percent.

SCOPE 3 (CATEGORY 1–6)



Emissions in Scope 3, categories 1–6, increased by 2 percent in 2021, primarily due to a 30 percent increase in emissions from purchased products and services, as well as capital goods. The impact of transportation decreased by 8 percent during the same period.

RESULTS

SCOPE 1, 2 AND 3

Based on the GHG Protocol's guidelines, emissions are divided into different scopes.

Scope 1 shows direct emissions from sources that are controlled by the business, such as emissions from own machinery and trucks.

Scope 2 shows indirect emissions from purchased energy, where the emissions occur at the producer.

Scope 3 concerns other indirect emissions that the business generates, but which are not included in Scope 1 and Scope 2. Categories can be upstream and downstream in the business value chain.

SCOPE 1	2020	2021
Business travel, own company cars	577	490
Own trucks	4,493	3,827
Machinery	8,415	7,858
Process energy	2,421	1,739
Heating	111	511
Landfill gas from own landfills	11,323	7,068
Composting	355	313
Handling of refrigeration equipment	902	1,103
Biological processes	1,380	1,380
Total scope 1 tCO_2e	**29,977**	**24,289**

SCOPE 2 (MARKET-BASED)	2020	2021
Electricity	233	152
District heating	957	1,157
Total scope 2 tCO_2e	**1,190**	**1,308**

SCOPE 3	2020	2021
1 Purchased goods and services	13,071	16,137
2 Purchased capital goods	11,091	15,166
3 Energy and fuel-related activities	4,936	5,598
4 Purchased transport (own)	90,974	83,671
5 Waste management	5,817	9,685
6 Business travel	1,266	159
Total scope 3 tCO_2e category 1–6	**127,153**	**130,416**
7 Commuting	1,873	1,873
8. Transportation downstream (customers)	19,077	14,054
9 Leased assets	258	274
Total scope 3 tCO_2e	**148,360**	**146,617**
Total target range 1+2+3 (category 1–6)	**158,320**	**156,013**
Total amount 1+2+3	**179,527**	**172,214**

EMISSIONS OUTSIDE OF SCOPE

For transparency, emissions that are "outside of scope" according to the GHG Protocol are also reported. These are the actual emissions that occur when recycled fuels are combusted to generate electricity and heating that are of benefit in the form of e.g. district heating.

EMISSIONS OUTSIDE SCOPE	2020	2021
Energy recovery – combustible mix	223,011	229,066
Energy recovery – biofuels	3,444	3,897
Energy recovery – recovered heating oil	61,274	60,323
Total outside of scope	**287,729**	**293,287**

Due to rounding, the sum of the rows may differ marginally from the sum given in the tables above.

CALCULATION METHOD SCOPE 2

According to the GHG Protocol, Scope 2 emissions for purchased electricity and heating can be calculated by two different methods. *The location-based method* is based on emissions from actual local use, and the *market-based method* is based on the source of the electricity purchased through contracts, such as guarantee of origin.

Stena Recycling applies the *market-based method* in the greenhouse gas emission disclosure. In accordance with the GHG Protocol, the emissions for both methods are reported, see the table: Scope 2 (market-based), on the previous page.

LOCATION-BASED/MARKET-BASED	2020	2021
Electricity consumption, origin-labeled electricity (kWh)	75,825,829	79,428,813
Electricity consumption, residual mix (kWh)	685,815	413,449
Location-based (tCO_2e)	4,398	5,988
Market-based (tCO_2e)	1,190	1,308

BIOGENIC EMISSIONS

Carbon dioxide emissions from sustainably produced biofuels can be deemed to be carbon neutral as the carbon dioxide released during combustion was bound during the growth phase. When sustainably produced biomass is used for energy purposes, biomass combustion replaces some of the natural degradation. These carbon dioxide emissions therefore do not strengthen the natural greenhouse effect.

According to the GHG Protocol, biogenic carbon dioxide emissions are not reported within the scope, but must be reported separately to ensure transparency.

BIOGENIC CO_2 EMISSIONS (tCO_2)	2020	2021
Scope 1	4,244	6,657
Scope 2	991	743
Scope 3	13,146	11,764

AVOIDED EMISSIONS

Stena Recycling's model for avoided emissions is based on comparing energy consumption during secondary production with primary production for a number of different materials. When recycled raw materials can be used instead of virgin materials, the manufacturing industry saves both energy and resources, which means that Stena Recycling's operations contribute to the avoidance of greenhouse gas emissions.

The climate calculations are based on recycling of such materials as ferrous, aluminum, copper, zinc, lead, tin, nickel, chromium, paper, plastic, glass, gypsum and regenerated oil, energy recovery from wood and biogas production from organic material.

EMISSIONS AVOIDED THROUGH RECYCLING (tCO_2e)	2020	2021
Ferrous and metal	3,574,400	3,765,400
Paper	230,400	229,900
Plastic	78,000	83,300
Hazardous waste (oil, metals)	2,400	3,100
Alternative raw materials (wood, plaster, organic)	133,200	143,600
Total	**4,018,400**	**4,225,300**

EFFICIENCY

Stena Recycling's climate targets are based on absolute reduction of emissions, but it is also important to compare emissions with the company's activities and development. The total emissions in all three scopes compared with total revenue and the amount of material collected are reported here. In 2021, the company increased the proportion of material collected by 7 percent, while emissions decreased by 4 percent.

FINANCIAL KEY PERFORMANCE INDICATORS	2020	2021
Amount of material collected (tons)	3,443,565	3,678,616
Revenue (TSEK)	8,839,773	12,565,581
Emissions, Scope 1+2+3	179,527	172,214
Kg CO_2e per ton of material handled	52.1	46.8
Kg CO_2e/TSEK	20.3	13.7

METHOD SECTION

GHG PROTOCOL

Stena Recycling Sweden's greenhouse gas emission disclosure has been prepared on the basis of the Greenhouse Gas Protocol's guidelines. The GHG Protocol is the most widely used international accounting standard for understanding, quantifying and managing greenhouse gas emissions, both in our own operations and in the rest of the value chain. Adherence to the standard is a requirement under the Science Based Targets initiative.

The GHG Protocol is structured around five main principles.
Relevance Ensure that the greenhouse gas emission disclosure reflects the business.
Completeness All emission sources must be reported and any exclusions must be justified.
Consistency Use consistent methodologies to allow for meaningful comparisons of emissions over time. All changes must be documented.
Transparency Clear audit trail for all data. All relevant assumptions must be disclosed.
Accuracy Ensure systematic quantification to reflect actual emissions. It must be possible to use data for decision-making.

SCOPE 1, 2 AND 3

Based on the GHG protocol's guidelines, emissions are divided into different scopes.

Scope 1 covers direct emissions from sources controlled by the business, such as emissions from own machinery and trucks.

Scope 2 covers indirect emissions from purchased energy, where the emissions take place at the producer.

Scope 3 concerns other indirect emissions that the business generates, but which are not included in Scope 1 and Scope 2. Scope 3 emissions are divided into eight categories upstream and seven categories downstream. The upstream and downstream categories reported in this greenhouse gas emission disclosure can be found in the table on page 4.

The greenhouse gas emission disclosure also reports emissions that are "outside of scope" according to the GHG Protocol. This concerns the actual emissions that occur when recycled fuels are burned to generate electricity or heat that is beneficial in the form of district heating. There is also a benefit when recycled raw materials can replace virgin raw materials, and this climate benefit is also reported outside the ordinary scope.

INSPECTION APPROACH

Stena Recycling operates at 90 locations where facilities, equipment and vehicles can be owned or leased. The greenhouse gas emission disclosure is compiled according to the operational control approach, as this method best describes the emissions generated by Stena Recycling's operations, regardless of their type of ownership.

EMISSION FACTORS

To convert consumption and other activity data to greenhouse gas emissions (CO_2e), emission factors for each emission source are used. Emission factors for fuel are obtained from the Swedish Energy Agency (which compiles the average greenhouse gas emissions for different fuels) and from reports provided by fuel suppliers. As emission factors are updated at year-end, there is a one-year lag in the factors used, so that the 2019 data is applied to 2020. Emission factors for district heating reflect the emissions of the individual facilities and are primarily sourced from the Energiföretagen Sverige (Swedenergy) organization. For purchased goods and products, as far as possible emissions are based on weight and materials, and emission factors for different materials. In cases where it has not been possible to specify data for purchased goods and products, emissions are calculated on the basis of revenue.

Emission factor sources:

- Swedish Energy Agency – Greenhouse gas emissions for fuel
- Swedenergy – Environmental assessment of district heating
- Defra – Conversion factors

DATA COLLECTION

Data for energy use and fuel consumption is collected at facility level for Scope 1 and Scope 2 using the Position Green tool. Scope 3 emissions are compiled by combined inventory and screening.

Purchased goods and services are specified at 58 percent, while the rest is calculated on the basis of revenue. Regarding purchased capital goods, 71 percent is specified and the rest is calculated on the basis of revenue. Road transport within Sweden is based on revenue and actual fuel mix. Emissions from shipping and transportation by truck outside Sweden are calculated on the basis of ton kilometers and generic emission factors for the selected vehicle type.

Emissions from business travel are calculated on the basis of actual travel using data from travel agencies and travel expenses claims. Business travel in Scope 3 for 2020 is based on figures for 2019, to reflect a normal year.

Waste management reflects the actual waste flows from our own waste and the waste handled in our operations that cannot be recycled as energy or materials. Emissions are calculated using generic emission factors, i.e. non-facility-specific factors.

BASE YEAR AND CONVERSION POLICY

Stena Recycling has chosen 2020 as the base year for climate targets, as this is the earliest year with complete data for all three scopes. 2020 is also a representative year for Stena Recycling, despite the coronavirus pandemic. However, the categories of business travel were affected during the pandemic. This means that in Scope 3 we use values from 2019, instead of 2020, for business travel.

In the event of major organizational changes, for example through acquisitions, or identified error sources, the base year may be recalculated to better represent actual emissions.

LANDFILL EMISSIONS

Emissions from our own landfills are based on volumes of easily degradable material and a three-year average for inflows and outflows. The easily degradable material has been assumed to degrade within one year and is reported in the greenhouse gas emission disclosure for the current year.

LIMITATIONS

Spontaneous degradation in contaminated water and oil stored in tanks has been estimated to account for less than 2 percent of total direct emissions and is not reported in the greenhouse gas emission disclosure.

Read more about how the circular economy contributes to climate transformation at https://ellenmacarthurfoundation.org/

HALF OF GLOBAL EMISSIONS MUST BE RESOLVED BY CIRCULAR MODELS

More than half of global greenhouse gas emissions come from the production of energy and fuels. The other half comes from the production of materials and food. A transition to renewable energy only solves half of the challenge.

It will also require transition to a circular economy in which waste volumes are minimized and pollution is avoided, where products and materials can circulate through reuse and recycling, and where our natural ecosystems are in balance.

STENA
RECYCLING