



2023

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# Annual Green Bond Report

Stockholm Exergi Holding AB (publ)

# Impact reporting for the Green Bond Framework 2023

Stockholm Exergi is Stockholm's energy provider. Using resource-efficient solutions, we ensure that the growing Stockholm region has access to heating, electricity, cooling and waste services. We provide heat to more than 800,000 Stockholmers and our 3,000-kilometre-long district heating network forms the basis for the societal benefits that we create together with our customers and partners. We are owned by the City of Stockholm and Ankhiale and our 750 employees work every day to reduce Stockholmers' climate impact. By developing carbon capture technologies, we are committed to making zero emissions a reality.

Stockholm Exergi issued its first Green Bonds in 2015. In November 2023 Stockholm Exergi established a new Green Bond Framework to align with the ICMA's\* Green Bond Principles (as of 2021 with June 2022 Appendix 1). S&P Global Ratings has performed a Second-Party Opinion on the framework, verifying its credibility, impact and

alignment with the ICMA Green Bond Principles. S&P Global Ratings has given the Framework the assessment Dark Green. Both the Green Bond Framework and the Second Party Opinion from S&P Global Ratings can be found here (link). As per 2023-12-31 Stockholm Exergi had thirteen Green Bonds outstanding, with a nominal value of MSEK 8,100.

This corresponds to 80% of the total outstanding bonds.

All bonds outstanding under the previous Green Bond framework qualify for the framework update 2023 and have been included in this report.

\* International Capital Market Association

The overall CO<sub>2</sub> removal from projects aligned to Green Bonds was

**25,5**

tonnes/MSEK and year

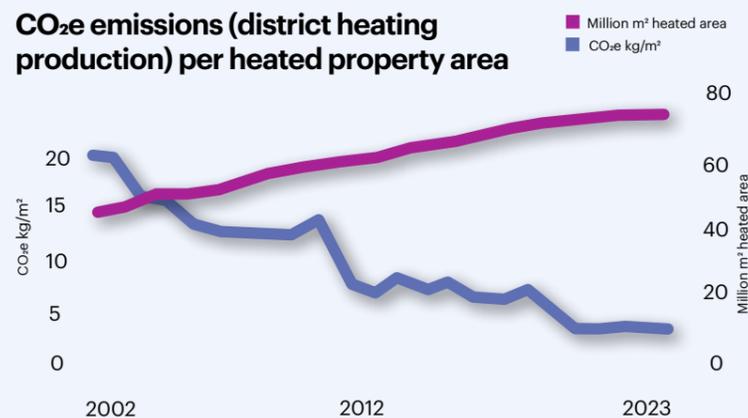
**75%**

of the Company's energy production from renewable sources

**77%**

of the investments allocated to Green Bonds are aligned with the EU Taxonomy

CO<sub>2</sub>e emissions (district heating production) per heated property area



## About district heating in Stockholm

Over the past 20 years, the heated area connected to district heating in Stockholm has more than doubled. At the same time, total emissions from district heating have decreased by more than 55 percent, meaning that the emissions per heated property area have decreased by more than 78 percent. This sharp decrease has been achieved together with property owners and businesses' own energy efficiency improvements and replacements of fossil based heat production.

## Sustainable production and distribution

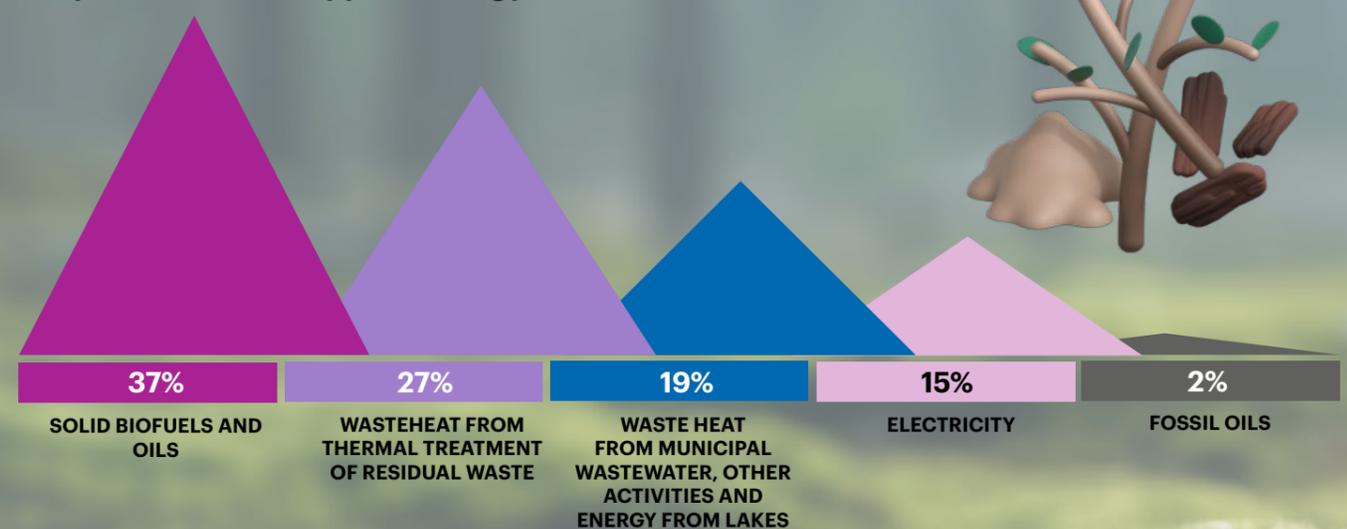
Our efficient and flexible production processes meet Stockholm's heating, electricity and cooling needs. Stockholm Exergi has around 30 production plants which, in co-ordination with each other and our partners' facilities, process various energy sources to ensure that the Stockholm region is supplied with cost-effective and sustainable energy regardless of weather conditions and temperatures.

For the last decade, Stockholm Exergi has been involved in structured renewal of the distribution network. New networks have improved thermal insulation which reduces energy losses while repairs of leaks and increased capacity in the network improve operational efficiency. At present, about 98 per cent of the district heating we provide is produced from recovered or renewable energy.

Our production is based on the following five sources:

- 1. Renewable fuels:** We use renewable biofuels in the form of residual material from forestry and industry, such as wood chips and bio-oils, to generate energy.
- 2. Waste treatment with energy recovery:** We produce electricity and heat by incinerating residual waste that remains when society has finished sorting it.
- 3. Residual heat:** We use the heat in Stockholm's wastewater, residual heat from data centres and supermarkets, and heat created by district cooling.
- 4. Electricity** is required for operating heat pumps and other electricity consumed in production is based on origin-labeled electricity from renewable energy sources.
- 5. Fossil fuels:** We use a certain amount of fossil oils partly to start and stop plants and partly in plants that we mainly use during severe cold periods. Coal has been entirely phased out from our production. We also plan to phase out the remaining use of fossil oils.

Solid biofuels and bio-oil account for 37 per cent of our supplied energy:



# We demonstrate our sustainability impacts across the value chain

**We are a society-critical business** and have considerable responsibility to contribute to sustainable development. Therefore, we regularly analyse where our impact is greatest and which sustainability issues are most important to those affected by our operations.

This assessment is called a materiality analysis, and the most recent analysis was conducted in 2020. We confirmed that this materiality analysis is still relevant for us in 2023. The analysis is intended to help us understand who are affected by, and the effects of, our operations and thereby consider what we should focus on and what we can improve. This will form an important basis for our development and for our planning process. You can see the results of the analysis on this page and read more about it in the 2023 Annual Report. We also need to create economic value for our owners, customers, suppliers, employees and society in order to know that we can continue to operate long-term and so that we can afford to continue investing in the development of Stockholm's energy system.

## Employees

Stockholm Exergi is Stockholm's energy company. Our employees have many different skills and tasks. Our shared aim is to reduce climate impacts. Our most important sustainability issue linked to employees is wellbeing and health, diversity and inclusion, and a safe working environment.

We contribute to the following UN SDGs:



## Production

We meet Stockholm's electricity, heating and cooling needs through efficient and flexible energy production. We operate around 30 production plants that, in conjunction with each other and our partners' plants, ensure that greater Stockholm is supplied with cost-effective and sustainable energy regardless of weather or temperature. Our most important sustainability issues linked to our production are waste from operations, emissions to air and water, climate impact and disturbances to the local environment caused by our activities.

We contribute to the following UN SDGs:



## Distribution

We pump hot water from our production plants into a network of pipes that serves thousands of properties all over greater Stockholm. Our plants and customers are connected in large and flexible networks, which enable us to optimise operations. Our most important sustainability issue linked to our distribution of district heating is disturbances to the local environment caused by our activities.

We contribute to the following UN SDGs:



## Customers and society

Our customers have many different needs, but they all want district heating to be simple, affordable and sustainable to use. Our most important sustainability issues linked to customers and society are responsible actions based on Stockholm Exergi's position on the heating market, offering sustainable products and services, and offering employment to excluded groups.

We contribute to the following UN SDGs:



## Society's waste products

We offer a community service that manages residual waste created when society has finished sorting – and we do this through the efficient use of resources. By incinerating residual waste, we produce electricity and heat from so-called energy recovery. Our most important issue related to society's residual products is waste treatment with energy recovery.

We contribute to the following UN SDGs:



## Suppliers

Our choice of suppliers is vital to our efforts to establish sustainable value chains. We focus our monitoring activities where sustainability risks are greatest, and our ambition is to develop together with our suppliers. We take responsibility and manage risks in the value chain by imposing sustainability requirements on and auditing our suppliers. Our most important sustainability issues linked to suppliers include anti-corruption, renewable fuels, sustainable purchases and investments, transports, and the extraction of the Earth's resources.

We contribute to the following UN SDGs:



# BECCS - Bio-Energy Carbon Capture and Storage project

Beccs Stockholm is Swedish district energy provider Stockholm Exergi's large-scale Bio-Energy Carbon Capture and Storage (BECCS) project. Beccs Stockholm's goal is to create a world-class, full-scale BECCS facility at Stockholm Exergi's existing heat and power biomass plant in the heart of Stockholm.

Combining CO<sub>2</sub> capture with heat recovery, Beccs Stockholm will capture and permanently store large quantities of biogenic CO<sub>2</sub>, resulting in carbon removal from the atmosphere and creation of so-called "negative emissions".

The Beccs Stockholm project has potential to remove around 7 million tons of CO<sub>2</sub> over the first ten years of

operation, an important component of reaching climate neutrality by 2050. In addition to producing concrete climate benefits, Beccs Stockholm is also intended to accelerate the development of a new market for net carbon removals. Firstly, the Beccs Stockholm technology can be replicated in other sites. Secondly, it has the potential to be scaled up across the economy by replicating the technology in other industries.

Finally, by contributing to the establishment of all necessary links in the CCS value chain in Northern Europe, Beccs Stockholm is an important early adopter that has potential to lead many other CCS projects to follow suit.

## About Beccs Stockholm

BECCS (Bio energy with carbon capture and storage) is a technique for permanently removing biogenic CO<sub>2</sub> from the atmosphere. The European Strategic Energy Technology Plan (SET Plan) identify the technique as one of the priority actions for accelerating the energy system's transformation. The Beccs Stockholm project is divided into three phases with the objective to operate the BECCS facility in full scale in 2028.



# Projects financed under the 2023 Green Bond Framework

Under the Green Bond Framework, Stockholm Exergi issued green bonds with a total nominal value of SEK 8 100 MSEK. All of the proceeds have been allocated by the Green Bond Committee to the eligible projects presented in the table below.

The total investment amount for the chosen eligible projects amounts to SEK 13,8 billion.

Green Project Category	Project	Description	Total yearly impact for investment	Yearly impact for disbursed green bonds amounts
<b>ICMA GBP categories, Renewable energy</b>  				
<b>EU Taxonomy objective, Climate change Mitigation (CCM)</b>				
Bioenergy CCM 4.20, 4.24	Biomass (CHP8) Värtan, completed 2016. Financing of new infrastructure projects associated with CHP8	Refinancing of new capacity for production of renewable energy. CHP8 has produced 1,573 GWh renewable heat and 367 GWh renewable electricity during 2023. Projects have been conducted to support and improve the production facility.	Actual savings: 130,140 tonnes CO <sub>2</sub> e	Actual savings: 76,555 tonnes CO <sub>2</sub> e
	CHP1 Värtan	Renovation of the CHP1 plant in Värtaverket including conversion to biofuels. A measure to secure sufficient electricity capacity in order to enable society's necessary transformation from fossil fuel based road traffic to electric.	Expected emission reduction: 15,460 tonnes CO <sub>2</sub> e	Expected emission reduction: 7,650 tonnes CO <sub>2</sub> e
	G3 Värtan	Renovation of Gas turbine 3 in Värtaverket including conversion to biofuels. A measure to secure sufficient electricity capacity in order to enable society's necessary transformation from fossil fuel based road traffic to electric road traffic.	Expected emission reduction: 3,340 tonnes CO <sub>2</sub> e	Expected emission reduction: 2,086 tonnes CO <sub>2</sub> e
	Projects enabling and improving bioenergy production	Modernisation and maintenance projects in Brista 1, Hammarby, Årsta and Orminge, that have together produced 699 GWh renewable heat and 122 GWh renewable electricity during 2023.	Actual savings: 50,380 tonnes CO <sub>2</sub> e	Actual savings: 50,380 tonnes CO <sub>2</sub> e
Waste heat CCM 4.25	CHP Brista2, completed 2014	CHP plant for waste incineration. Brista 2 has produced 472 GWh heat and 80 GWh electricity during 2023, thereby reducing the use of primary energy resources and emissions from landfill.	Actual savings: 30,910 tonnes CO <sub>2</sub> e	Actual savings: 6,655 tonnes CO <sub>2</sub> e
	P8 Högdalen, completed 2022	Construction of a new CHP plant for waste incineration in Högdalen, replacing boiler 1 and 2. Emission reductions are achieved by a new flue gas cleaning system. The plant is in operation since the beginning of 2021.	Actual emission reductions: - NOx 85 tonnes - NH <sub>3</sub> 15 tonnes Estimated reduction of the use of ammoniac: 500 m <sup>3</sup>	Actual emission reductions: - NOx 84 tonnes - NH <sub>3</sub> 15 tonnes Estimated reduction of the use of ammoniac: 493 m <sup>3</sup> per year
	Rosersberg	Heat recovered from data center. 74 GWh waste heat was delivered to the district heating network.	Actual savings: 2,975 tonnes CO <sub>2</sub> e	Actual savings: 2,975 tonnes CO <sub>2</sub> e
	Lövsta	Project planning for the construction of a new CHP plant for waste incineration in Lövsta that will reduce reducing the use of primary energy resources.	N/A	N/A

Green Project Category	Project	Description	Total impact for investment	Impact for disbursed green bonds amounts
<b>ICMA GBP categories, Energy efficiency</b> <b>EU Taxonomy objective, Climate change Mitigation (CCM)</b> 				
Efficient district heating and cooling network CCM 4.15, 4.16	DH network connection to Nacka	New DH network connection to Nacka municipality will enable an increase of 200,000 MWh distributed heat per year.	Expected emission reduction: 46,080 tonnes CO <sub>2</sub> e	Expected emission reduction: 20,800 tonnes CO <sub>2</sub> e
	Sum of distribution projects enabling the connection of new end-users	These distribution projects will enable an increase of 60 GWh distributed heat per year and an avoidance of 20,160 tonnes CO <sub>2</sub> emissions in total from year 2022 to 2025.	Actual savings: 2,416 tonnes CO <sub>2</sub> e	Actual savings: 2,416 tonnes CO <sub>2</sub> e
	Modernisation and maintenance of distribution projects	Modernisation and maintenance of DH network that enables DH distribution.	N/A	N/A
	Smart Buildings and Demand Side Management	Investments in hardware and infrastructure enabling reduced carbon emissions in production mix and enabling customers to reduce energy consumption further. This technology has the potential of reducing CO <sub>2</sub> emissions with approximately 10,239 tonnes in total from year 2021 to 2025.	Actual savings: 316 tonnes CO <sub>2</sub> e  7,190 MWh heat	Actual savings: 316 tonnes CO <sub>2</sub> e  7,190 MWh heat
	DH Network connection	Project planning for the integration of the Northern and Central/South DH networks. The project will enable further development of the distribution system and thus allow an increase of environmental beneficial DH production.	N/A	N/A
Low carbon water transport infrastructure CCM 6.16	Energihamnen	Infrastruktur maintenance of fuel storage enabling conversion to biofuels.	N/A	N/A

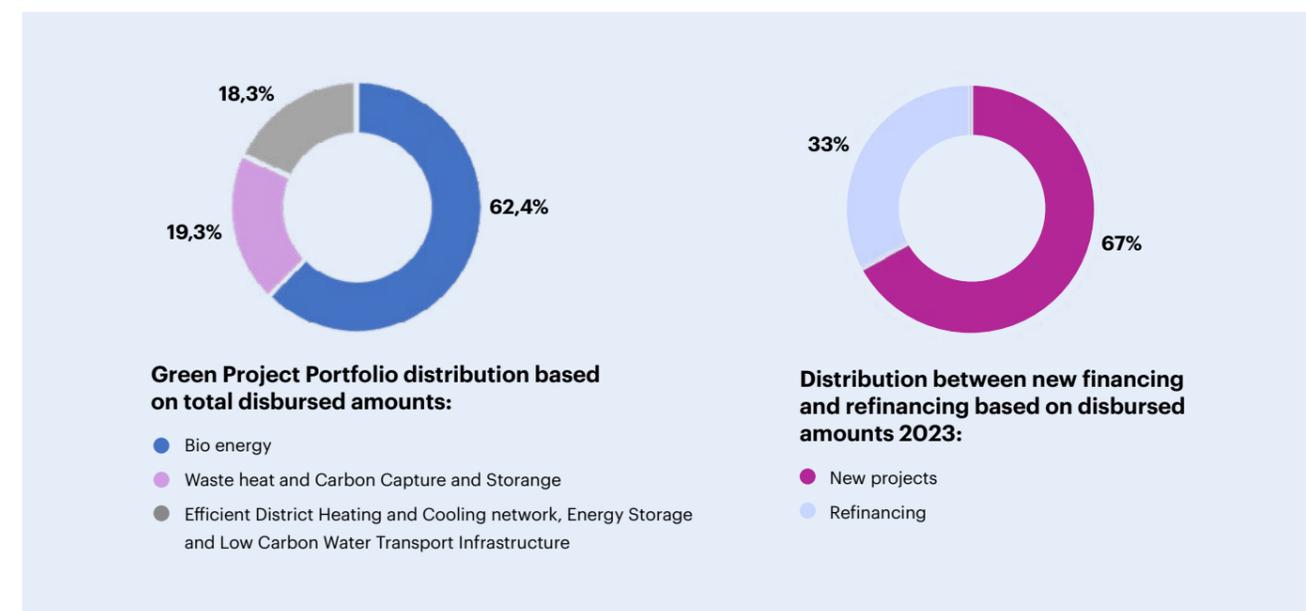
<b>ICMA GBP categories, Pollution prevention and control</b> <b>EU Taxonomy objective, Climate change Mitigation (CCM)</b> 				
Carbon Capture and Storage CCM 5.11, 5.12, 9.1	BECCS	Project for building Bio-carbon capture system at CHP8 in Värtaverket. The plant is planning to achieve a permanent removal of 800,000 tonnes of CO <sub>2</sub> per year.	N/A	N/A

## Outstanding Green Bonds

ISIN	Nominal amount (MSEK)	Issued	Maturity
SE0013101896	400	2020	2024
SE0013101896	200	2021	2024
SE0016274468	400	2022	2026
SE0012193829	1,600	2019	2026
SE0013101904	600	2020	2027
SE0013101912	1,000	2020	2027
SE0013102241	250	2021	2028
SE0013102258	750	2021	2028
SE0020356517	150	2023	2028
SE0020356525	300	2023	2028
SE0016274476	350	2022	2029
SE0016274484	750	2022	2029
SE0020356533	400	2023	2030
SE0020356541	750	2023	2030
SE0020356541	200	2023	2030
TOTAL	8,100		

Total available Green Pool, SEK 13,8 billion

Outstanding Green Bonds, SEK 8,1 billion



## Reporting methodology

### Biomass (CHP8) Värtan, KVV1, G3, other bioenergy production projects, CHP Brista 2, Rosersberg

Stockholm Exergi's green bond framework only covers investments in projects that maintain or develop the entire district heating system with regard to climate impact, share of renewable energy, resource efficiency or environmental impact. Individual projects are evaluated in terms of climate performance by comparing the performance of Stockholm Exergi's entire district heating system with a reference that corresponds to an average value for Swedish district heating.

To calculate the actual annual avoided climate impact of the project for heat production, Stockholm Exergi district heating system with the completed project is compared to a baseline in which the investment does not exist. For electricity production, the impact is calculated based on the project specific emissions for electricity production compared to a baseline for electricity production. The impact of heat and electricity production are then added. The baseline used for heat production is estimated from national Swedish average for avoided alternative heating

and from avoided alternative waste treatment, 84 g CO<sub>2</sub> per kWh according to NPSI Position Paper on Green Bonds Impact Reporting 2024. The baseline used for electricity is the European mainland mix including Norway, 191 g CO<sub>2</sub> per kWh according to NPSI Position Paper on Green Bonds Impact Reporting 2024.

Actual annual avoided climate impact (CO<sub>2</sub>e) of the project = actual annual output of heating for the project\* (baseline emission factor for heat production - Stockholm Exergi's district heating system emission factor) + actual annual output of electricity\* (baseline emissions factor for electricity - project emission factor for electricity production).

### P8 Högdalen

To calculate the emission reductions related to the project, the expected improved performance of P8's new flue gas treatment system is compared to the emissions before project implementation. The same comparison is made concerning the use of ammoniac for NOx-reduction.

### Smart buildings

The CO<sub>2</sub> emissions savings regarding smart buildings and Demand Side Management are based on reduced customer

energy consumption and Stockholm Exergi's district heating system annual environmental impact. The annual environmental impact of optimized production is estimated to 0,8 tonnes CO<sub>2</sub> savings per customer which is itself based on how the production fuel mix is optimized.

### Sum of distribution projects enabling the connection of new end-users, Nackaledning

To calculate the actual annual avoided climate impact of the projects, the sum of the completed projects is compared to a reference scenario in which the investment does not exist. The baseline emissions factor for heating is estimated from national Swedish average for avoided alternative heating and from avoided alternative waste treatment, 84 g CO<sub>2</sub> per kWh according to NPSI Position Paper on Green Bonds Impact Reporting 2024.

Actual annual avoided climate impact (CO<sub>2</sub>e) of the projects = actual annual output of heating to new end users\* (baseline emissions factor for heating - Stockholm Exergi's district heating system emission factor).

## Auditor's Limited Assurance Report on Stockholm Exergi's Green Bond Report

To Stockholm Exergi Holding AB (publ), corporate identity number 556040-6034.

### Introduction

We have been engaged by Stockholm Exergi Holding AB (publ) ("Stockholm Exergi") to undertake a limited assurance engagement of the Impact reporting for the Green Bond Framework 2023 as set out on pages 2 and 7-10 in the Annual Green Bond Report for 2023 ("the Reporting").

### Responsibilities of Management

Stockholm Exergi Management is responsible for the preparation of the Reporting in accordance with the applicable criteria, as explained in the Stockholm Exergi Green Bond Framework 2023 (available at <https://www.stockholmexergi.se/om-stockholm-exergi/finansiell-information/finansiering/>) as well as the accounting and calculation principles that the Company has developed. This responsibility also includes the internal control relevant to the preparation of the Reporting that is free from material misstatements, whether due to fraud or error.

### Responsibilities of the auditor

Our responsibility is to express a conclusion on the Reporting based on the limited assurance procedures we have performed. Our engagement is limited to historical information presented and does therefore not cover future-oriented information.

We conducted our limited assurance engagement in accordance with ISAE 3000 (revised) Assurance Engagements

Other than Audits or Reviews of Historical Financial Information. A limited assurance engagement consists of making inquiries, primarily of persons responsible for the preparation of the Reporting, and applying analytical and other limited assurance procedures. The procedures performed in a limited assurance engagement vary in nature from, and are less in extent than for, a reasonable assurance engagement conducted in accordance with International Standards on Auditing and other generally accepted auditing standards in Sweden.

The firm applies International Standard on Quality Management 1, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We are independent of Stockholm Exergi in accordance with professional ethics for accountants in Sweden and have otherwise fulfilled our ethical responsibilities in accordance with these requirements.

The procedures performed consequently do not enable us to obtain assurance that we would become aware of all significant matters that might be identified in a reasonable assurance engagement.

Accordingly, the conclusion of the procedures performed do not express a reasonable assurance conclusion.

Our procedures are based on the criteria defined by Stockholm Exergi Management as described above. We consider these criteria suitable for the preparation of the Reporting.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion below.

### Conclusion

Based on the limited assurance procedures we have performed, nothing has come to our attention that causes us to believe that the Reporting for 2023, is not prepared, in all material respects, in accordance with the applicable criteria, as explained in the Stockholm Exergi Green Bond Framework 2023.

Stockholm 16 April 2024  
Deloitte AB

Daniel Wassberg  
Authorized Public Accountant

Adrian Fintling  
Expert Member of FAR



## Stockholm Exergi in brief

Stockholm Exergi is Stockholm's energy provider. Using resource-efficient solutions, we ensure that the growing Stockholm region has access to electricity, heating, cooling and waste services. We provide heat to more than 800,000 Stockholmers and our 3,000-kilometre-long district heating network forms the basis for the societal benefits that we create together with our customers and partners. We are owned by the City of Stockholm and Ankhiale and our 750 employees work every day to reduce Stockholmers' climate impact. By developing carbon dioxide capture technologies, we are committed to making zero emissions a reality.

## Links to related documents

- [Green Bond Framework 2023](#)
- [Second Party Opinion from S&P Global ratings](#)
- [Annual and Sustainability Report 2023](#)

Stockholm Exergi Holding AB (publ)  
Org. nr. 556040-6034  
020-31 31 51  
[stockholmexergi.se](https://www.stockholmexergi.se)

