

Tough goals yield results in the fight against global warming

In the Focus area: The Planet (the environment and the climate), the overall goal is net-zero carbon emissions by 2030 at the latest. Preventing global warming is among the highest priorities for both Castellum's operation and the world in general. The Earth's population continues to increase, and resources must be sufficient for more and more people. That is why this area is completely fundamental to Castellum's sustainability efforts.

Focus area: The Planet



ORIENTATION

Castellum will responsibly and efficiently reduce resource use and carbon emissions that cause global warming.

TARGETS

- 15% in energy savings per square metre in 2025, compared with the 2015 index.
- Energy savings of >1.5% yearly in the like-for-like portfolio (properties under administration for two years).
- Net-zero carbon emissions and 100% non-fossil fuel energy by 2030.
- 100% of all vehicles to be non-fossil fuel powered by 2020.
- 1% water conservation per year in the like-for-like portfolio.

OUTCOME

- 15% savings (8) cf. 2015 and 12% savings (saving: 8) in the like-for-like portfolio.
- 85% (77) less CO₂ emissions from property management. (Scope 1 and 2) since 2007. For monitoring of Scope 3, see page 164.
- 95% (96) renewable energy.
- 100% (86) non-fossil fuel powered vehicles.
- 13% (3) water conservation in the like-for-like portfolio.

More efficient energy use

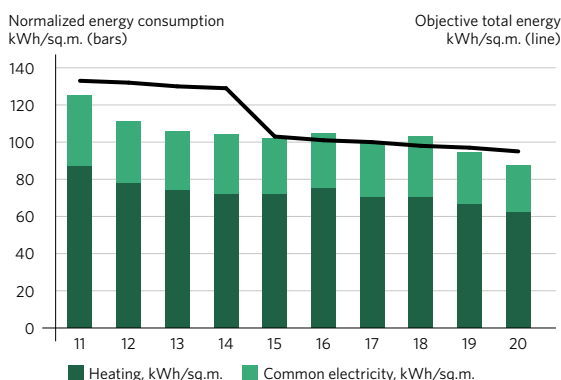
Castellum works continuously to reduce energy use by optimising operations and investing in energy-efficient technologies. Over the past year, 93 developments comprising MSEK 82 were implemented for the purpose of enhancing efficiency. Energy use within the Group is systematically monitored and then analysed. The measures implemented are prioritised in order of greatest potential for enhancing efficiency.

Expansion is under way for Castellum's own portal for online property monitoring, enabling values relating to operation, alarms, elevators and entries to be tracked. This project saves energy and time, and creates customer benefits in the form of better services through preventive measures. At present, 385 properties representing 2,852,000 square metres are connected to the portal.

In 2020, the normalised energy consumption for heating and property electricity in the like-for-like portfolio decreased 12% year-on-year. The efficiency enhancements are due in part to active work to reduce energy use in Castellum's buildings, in part owing to the pandemic – which has entailed lower capacity utilisation in our premises, and thus less need for energy – and in part to milder weather in 2020 compared to the preceding year. Heating use decreased 10% in 2020, while electricity use decreased 5%. Since 2007, energy consumption has decreased by a total of 37% per square metre.

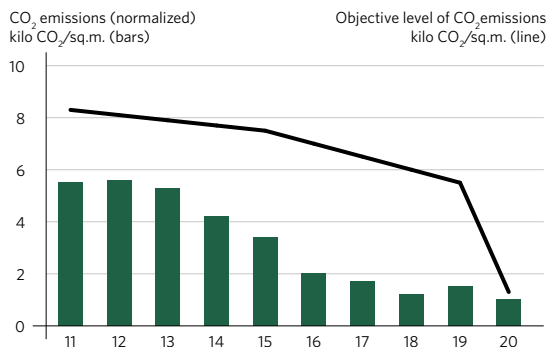
TARGET AND OUTCOME, ENERGY CONSUMPTION PER SQ. M.

Absolute consumption per square metre in the properties Castellum manages.



The actual change in the like-for-like portfolio was 11%, non-degree day adjusted. Castellum began systematically measuring energy consumption and heating in 2007, which is why it is utilised as a comparison year.

CARBON EMISSIONS, PROPERTY MANAGEMENT (SCOPE 1 & 2 MARKET BASED)



Solar cells on the roof generate added value for AFRY

Castellum's "100 on Solar" initiative is one of the Nordic region's largest investments in solar cells, which means that nearly one hundred solar cell installations will be constructed on Castellum properties through 2025.

One of the initiatives is the AFRY office in Solna, where a 255-kilowatt installation covering 2,500 square metres of roof went into operation in 2020.

"As consultants in sustainability and sustainable solutions in buildings, we want to practice what we preach. That is why it is a great pleasure to be able to have this exchange with Castellum, contributing our knowledge as regards solar cell installations," says Kaia Eichler, Sustainability Manager Business Area Buildings at AFRY.

AFRY is a major societal stakeholder that advocates for legislation concerning the imposition of requirements in projects that promote more sustainable energy supply.

"The issue of sustainable entrepreneurship has increased markedly over the last several years, and especially in 2020. For us at Castellum, it is a tremendous feeling to really have worked out a project that is sustainable and good for AFRY, the environment and the economy. We are looking forward to more exciting customer projects that will push us into new challenges and solutions concerning sustainable property management and project development in the near future," says Hanna Björklund, Account Manager for AFRY at Castellum.



Kaia Eichler

100 on Solar

Castellum started the Nordic region's largest solar cell installation in 2019. Since then, the company has constructed 39 out of its target of 100 large solar cell installations.

DISTRIBUTION OF CARBON DIOXIDE EMISSIONS



- District heating and cooling **93%**
- Refrigerant **5%**
- Natural gas **2%**
- Oil **0%**
- Vehicles **0%**

DISTRIBUTION OF TOTAL ENERGY CONSUMPTION



- District heating **68%**
- Building electricity **25%**
- Cooling **5%**
- Bio gas **1%**
- Geo energy **1%**
- Direct acting electricity **0%**
- Natural gas **0%**
- Oil **0%**

The goal of 100% non-fossil fuel powered vehicles has been fulfilled and thus all vehicles – service cars, carpool vehicles and company cars – used by Castellum are either electric or run on biofuel.

Castellum's heating consumption of 50 kWh per square metre can be compared with the industry average, which uses the Swedish Energy Agency's reference value for heating premises of 117 kWh per square metre. This means Castellum's buildings are 57% more energy efficient than the Swedish average for these premises.

Increased share of renewable fuels

Of Castellum's total carbon emissions, 6% can be directly influenced by oil, gas, and vehicles (service, company cars and carpool vehicles) (Scope 1); the remaining 94% – purchased energy such as district heating and electricity – can only be influenced indirectly (Scope 2).

To reduce emissions, work is under way to phase out fossil fuels; currently four oil furnaces are still in operation.

Approximately 13% of Castellum's customers are responsible for their own heating and 23% for electricity on the property. A total of 6,181 kW of solar cells have been installed on Castellum's properties, equivalent to a total of approximately 43,267 square metres of solar cells. Thirteen large solar cell installations were built in 2020.

Castellum's use of district heating means that its carbon emissions are dependent on the fuel mix used by the district heating facilities. At present, Castellum purchases from 29 district-heating facilities, which represent 93% of the Group's total emissions under scopes 1 and 2. Castellum is in dialogue with the district heating suppliers with the highest carbon emissions per kWh

in order to influence these suppliers to reduce emissions. The transfer to green district heating with renewable fuels is ongoing and currently amounts to 48% of district heating suppliers.

During 2020, scope 1 and 2 carbon emissions decreased by 34% per square metre; since 2007 they have decreased by 85% per square metre. The increase is largely due to an increase in emissions from district heating suppliers during the year. Of Castellum's total energy use, 95% is non-fossil fuel.

Since 2001, only green electricity has been used in the Group.

Reduced amount of waste

Castellum has long worked actively to reduce the amount of waste that goes to landfill by offering household waste sorting facilities. Monitoring the work is complicated by several sanitation companies being hired, only a few of which can report follow-up in terms of weights. In addition, tenant operations differ, which means their needs for waste management differ as well. Statistics are currently obtainable from 41% (27) of the sanitation companies and Castellum is working actively to increase the amount of available data. The statistics include waste from buildings managed by Castellum, but not waste from projects or construction contracts.

Water consumption

Castellum utilises water from the municipal water system, monitors consumption and takes measures to reduce it.

In 2017, Castellum adopted a target of reducing water use per square metre in the like-for-like portfolio by 1% per year up until 2030. Conservation in the like-for-like portfolio was 13% year-on-year.

Supplementary information

This section reports on the methods, assumptions and conversion factors used to produce Castellum's GRI disclosures. In addition, supplementary tables are presented, as well as information for the Annual Report and descriptions of omitted information.

Environmental and climate data

Efficient use of resources

Castellum's efforts to reduce the company's climate impact are ambitious, and are in progress throughout operations. The ambition of working efficiently to develop a more sustainable property portfolio has been a goal of the company since the mid-1990s. This work has yielded results, and Castellum is now among the most sustainable companies in the industry.

To future-proof Castellum's asset portfolio and promote the sustainable development goals established by the UN and prioritised by the company, several challenging goals have been set. Buildings must be more energy-efficient, natural resources must be more efficiently utilised, biodiversity in urban environments must be increased, renewable energy must be improved and changing weather conditions must be taken into account. Castellum is involved in the climate plans and policies of its customers and of government agencies. It supports international treaties such as the Paris Agreement, displays leadership and to the greatest extent possible influences the industry to reduce its climate impact. Castellum is the first property company in the Nordic region to have its climate targets approved by the Science Based Targets initiative (SBTi). Castellum's target is to achieve 100% climate neutrality in its operations by 2030, thereby supporting the UN's climate agreement and the national ambition for a fossil fuel-free Sweden. Despite the strong possibilities we see for adjusting emissions from property management (scopes 1 and 2), there are major challenges to achieving climate neutrality in Scope 3. At present, we are far from having all the solutions to becoming climate neutral by 2030. But we know that ambitious goals drive innovation.

Emissions, GRI 305-1, 305-2 and 305-3

Energy, GRI 302-1

Energy source	Absolute energy use, 2020	Renewable share
Building electricity	70,357	100%
Electricity, geothermal and cooling	1,586	100%
Electricity, direct	1,155	100%
Biogas	1,723	100%
Total fuel consumption from renewable fuels	74,821	100%
Natural gas	312	0%
Oil	1	0%
Total fuel consumption from non-renewable fuels	313	0%
District heating	189,382	94%
District cooling	14,903	95%
Total energy consumption	279,419	95%

All energy consumption is reported in megawatt-hours (MWh); to recalculate energy consumption from MWh to gigajoules (GJ), use a conversion factor of 3.6. Castellum uses no steam power.

Castellum monitors its greenhouse gas emissions annually in accordance with the Greenhouse Gas (GHG) Protocol. 2017 was chosen as the base year for Castellum's Science Based Target of net-zero CO₂ emissions by 2030. This is because it was the first year when a complete Scope 3 inventory could be carried out. For scopes 1 and 2, and for business travel, there is comparable data back to 2007.

The table on the next page reports on the activities, assumptions and conversion factors forming the basis for reporting Castellum's energy consumption and greenhouse gas emissions.

Waste by type and disposal method, GRI 306-2

Castellum does not fully break down waste information by type or management method, as the company currently does not have access to this information at a detailed level. The information will be developed over the next few years in pace with our having the possibility of obtaining more complete information from our suppliers.

COMPLETE INVENTORY OF GHG EMISSIONS

Absolute emissions are indicated in metric tons of CO₂eq, and intensity in kg per square metre

	2020		2019		2018		2017		Method for calculation ⁹⁾
	Absolute	Intensity	Absolute	Intensity	Absolute	Intensity	Absolute	Intensity	
Scope 1 Includes natural gas, oil, refrigerants and fuels for company cars									
Direct emissions	284	0.1	458	0.1	675	0.2	1,122	0.3	Fuel-based method
Biogenic emissions	339	0.1	535	0.1	664	0.2	924	0.2	Fuel-based method
Scope 2 Includes electricity, district heating and cooling									
Market-based method	3,991	0.9	5,764	1.4	4,362	1.0	6,133	1.3	Fuel-based method
Location-based method	18,128	4.1	37,222	8.8	47,818	11.3	48,560	11.0	Fuel-based method
Scope 1+2 (Market-based)	4,275	1.0	6,222	1.5	5,037	1.2	7,255	1.6	Fuel-based method
Scope 1+2 (Location-based)	18,412	4.2	37,680	8.9	48,493	11.5	49,682	11.3	Fuel-based method
Scope 3 Includes all other relevant indirect emissions ²⁾									
1. Purchased goods and services	274,307	61.8	266,860	62.8	273,279	64.6	322,279	73.6	Spend-based method
4. Upstream transportation and distribution	227	0.1	172	0.1	166	0.1	289	0.1	Spend-based method
5. Waste generated in operations	2,717	0.6	2,161	0.5	2,038	0.5	1,839	0.4	Spend-based method
6. Business travel	49	0.0	127	0.0	151	0.0	138	0.0	Distance-based method
7. Employee Commuting	160	0.0	166	0.0	158	0.0	156	0.0	Average-based method
8. Upstream leased assets	88	0.0	68	0.0	59	0.0	51	0.0	Spend-based method
13. Downstream leased assets ³⁾	12,627	2.9	54	0.0	54	0.0	54	0.0	Average-based method
Biogenic emissions	—	—	—	—	—	—	—	—	—
Scope 3	290,175	65.4	269,608	63.4	275,905	65.2	324,806	74.1	

2017 was chosen as the base year for Castellum's Science Based Target initiative, since it was the first year Castellum was able to take a full inventory of its Scope 3 GHG emissions. No exclusion of essential greenhouse gases has been made.

1. According to GHG Protocol Corporate Value Chain Standard
2. The following types of Scope 3 emissions are not relevant for Castellum (approved by the Science Based Target initiative): 2. *Capital goods*, 3. *Fuel and energy-related activities*, 9. *Downstream transportation & distribution*, 10. *Processing of sold products*, 11. *Use of sold products*, 12. *End-of-life treatment of sold products*, 14. *Franchises*, 15. *Investments*
3. The emission factor has been updated to each national residual mix emission factors from the Grexel database for 2020. Our opinion is that Grexel's individual residual emission factors better reflects the carbon emissions from electricity consumption instead of using the weighted Nordic residual emission factor by Energimarknadsinspektionen, used previous years. This does not significantly effect the full carbon footprint, less than 5%, therefore we do not update previous year or base year.

MULTI-YEAR OUTLOOK: ENERGY, CARBON EMISSIONS AND WATER, 2016-2020

Absolute energy in MWh and CO₂ in metric tons and intensity, respectively, given in kWh per square metre per year and CO₂ in kilogrammes per square metre

	2020		2019		2018		2017		2016	
	Absolute	Intensity	Absolute	Intensity	Absolute	Intensity	Absolute	Intensity	Absolute	Intensity
Total energy consumption	279,419	75	316,239	88	349,014	97	343,140	94	342,918	98
Total energy consumption, normalised	326,287	87	340,645	95	371,220	103	365,927	100	362,935	104
1. of which actual heating	193,718	50	223,576	60	238,494	64	244,060	64	244,529	69
2. of which normalised heating	240,586	62	247,983	67	260,700	70	266,847	70	264,546	75
3. of which electricity and cooling	85,701	25	92,662	28	110,520	33	99,080	30	98,389	29
Total CO₂ emissions for property management¹⁾	4,275	1.0	6,222	1.5	5,037	1.2	7,255	1.7	8,355	1.9
of which Scope 1	285	0.1	458	0.1	675	0.2	1,122	0.3	608	0.1
of which Scope 2 (market-based)	3,990	0.9	5,764	1.4	4,362	1.0	6,133	1.4	7,747	1.8
Total water consumption	874,785	0.25	995,345	0.29	969,783	0.3	1,008,457	0.3	1,044,503	0.2

1. This list includes all CO₂ emissions from property management (i.e. scopes 1 and 2). Total energy consumption is the sum of 1 and 2. Total normalised energy use is the sum of 2 and 3.

Scope	Activity	Activity data	Conversion factor
Scope 1	Oil consumption at properties where the tenant does not have separate metering or billing of actual consumption.	Internal collection of statistics relating to consumption at properties heated by oil.	Heating oil: 0.28 tonnes CO ₂ e/MWh Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 1	Natural gas consumption at properties where the tenant does not have separate metering or billing of actual consumption.	Internal collection of statistics relating to consumption at properties heated by natural gas.	Natural gas: 0.203 tonnes CO ₂ e/MWh Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 1	Business travel with company vehicles.	Travel with company vehicles is based on meter readings. Greenhouse gas emissions are based on distance covered and on combined-cycle fuel consumption for each vehicle.	Gasoline: 0.0002375 tonnes CO ₂ e/km Diesel: 0.0002798 tonnes CO ₂ e/km Biofuel: 0 tonnes CO ₂ e/km CNG: 0.0000505 tonnes CO ₂ e/km Electric hybrid: 0.00005 tonnes CO ₂ e/km Electric car: 0 tonnes CO ₂ e/km Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 1	Refrigerants	Refrigerant emission data is collected from the mandatory refrigerant report of each respective property.	Statistics from Svenska Kyl & Värmepumpsföreningen. The data is reported in connection with the Fluorinated Greenhouse Gas regulation, EU/517/2014, and appurtenant Swedish legislation, which is declared based on applicable practices.
Scope 2	Consumption of electricity in properties where the tenant does not have separate measurement or invoicing of actual consumption.	Internal collection of statistics for properties where Castellum is responsible for electricity use.	Origin-labelled renewable electricity: 0 g CO ₂ e/MWh Residual mix: Sweden: 0.05022 tonnes CO ₂ e/MWh Denmark 0.46521 tonnes CO ₂ e/MWh Finland 0.31013 tonnes CO ₂ e/MWh Source: Grexel
Scope 2	Consumption of district heating and district cooling in properties where the tenant does not have separate measurement or invoicing of actual consumption.	Internal collection of statistics for properties where Castellum is responsible for district heating and district cooling. District heating consumption is adjusted based on SMHI degree days and vacancy rate.	Statistics from respective district heating providers. ¹⁾
Scope 3	Business travel, taxi.	The majority of the data from suppliers and manual retrieval.	0.000147 tonnes CO ₂ e/km Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 3	Business travel, air.	The majority of the data from suppliers and manual retrieval.	Nordic region: 0.000171 tonnes CO ₂ e/km Europe: 0.000092 tonnes CO ₂ e/km World: 0.000083 tonnes CO ₂ e/km Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 3	Business travel, train.	The majority of the data from suppliers.	0.0000002 tonnes CO ₂ e/km Source: SJ
Scope 3	Business travel, private vehicles.	Internal monitoring of kilometres driven on business with private vehicles.	0.000147 tonnes CO ₂ e/km Source: GHG Protocol, GWP 2014 IPCC Fifth Assessment Report
Scope 3	Employee commutes.	Employee commutes in km are estimated based on data from Transport Analysis combined with emission factors from the Swedish Environmental Protection Agency.	Source: Swedish EPA and Transport Analysis
Scope 3	Assets leased downstream.	Calculated from a template of tenants' energy use.	Residual mix: Sweden: 0.05022 tonnes CO ₂ e/MWh Denmark 0.46521 tonnes CO ₂ e/MWh Finland 0.31013 tonnes CO ₂ e/MWh Source: BELOK, Grexel
Scope 3	Other GHG emissions.	The carbon footprint is calculated based on how much is spent on suppliers from various industry sectors (e.g. transportation, travel, consultants, etc.). Emissions are then calculated using sector data from the World Input Output Database (WIOD) in accordance with the recommendations of the Greenhouse Gas Protocol for a Scope 3 screening.	Source: World Input Output Database (WIOD) 2013

1. Since the district heating suppliers' conversion factor for the preceding year (2020) was only calculated in 2021, the conversion factor for 2019 is used for emissions linked to traditional district heating.