Climate Audit

Sto Denmark A/S

2019

Building with conscience.

In collaboration with:

TRICORONA
CLIMATE PARTNER

Sto Denmark A/S

Report Completed: 2020-05-12

TABLE OF CONTENTS

Methods

GHG Protocol

Tricorona Climate Partner AB (Tricorona) has on behalf of Sto Denmark A/S (Sto Denmark) calculated the greenhouse gas emissions related to the company's activities during 2019, stated in carbon dioxide equivalents (CO_2e). The calculation includes emissions from logistics, travel, facilities, office material and waste.

The GHG Protocol is the most widely used international accounting standard for carbon calculations, and it is used by governments, companies and organizations as a tool to understand, quantify and manage greenhouse gas emissions. A company's or an organization's operational boundaries are set by three scopes within the GHG protocol standard. Calculations are carried out in accordance with Tricorona's standard calculation method, which follows the GHG Protocol guidelines for reporting and covers the following principles:

- Relevance: Reporting should reflect the company's or organization's emissions in an adequate manner so that it can support decision making for users both internally and externally.
- Completeness: Reporting should cover all emissions within the specified system boundary. Any exceptions should be described and explained.
- Consistency: The method of calculation should be consistent so that comparisons can be made over time. Changes in the data, system boundaries, methods or similar, should be documented.
- Transparency: All activity data, methods, sources and assumptions should be documented.
- Accuracy: The calculated emissions should be as close as possible to the actual emissions.

The organizational boundaries, which determine the sources of emissions included in this climate audit, are based on Sto Denmark's organizational control. The greenhouse gas emissions from Sto Denmark's operations, including direct and indirect emissions are divided into three scopes according to the GHG Protocol: scope 1, direct emissions; scope 2, indirect emissions from purchased energy; and scope 3, indirect emissions.

Updates

Tricorona has updated the model for air travel calculations. The factor for air travel's climate impact at high altitudes is updated to 1.9 from the previous 2.7 and is based on a report from Chalmers University of Technology. According to updates from the Network for Transport and the Environment, NTM, regarding distance categories and standard aircraft model for respective distances, we have also chosen to update our data and calculation basis for these. Furthermore, the cabin factor weight per passenger has been updated. In practice, this means that a trip that was previously stated to have a certain climate impact will now show a slightly lower amount of CO_2e, which means that the result of the air travel's climate impact can be interpreted as the amount of travel reduced.

Scopes

Emissions included in the report are categorized as follows:

Scope 1: Emissions from travel by leased cars.

Scope 2: Emissions from district heating.

Scope 3: Indirect emissions caused by:

- Travel with private vehicles, airplanes and ferries
- Hotel stays
- Outsourced transportation – cost paid by Sto Denmark (logistics)
- Indirect emissions from energy production
- Waste disposal
- Consumption of office material

Results

Summary

The total emissions from Sto Denmark's operations during 2019 amount to 129 tonnes CO_2e. This represents a decrease of 53 tonnes CO_2e, or 29% compared to 2018. Two reporting categories dominate the climate impact: Logistics, which accounts for 42% and travel which accounts for 45%. The turnover decreased by 23% from the previous year, which may be an important explanation for the drop in emissions. Figure 1 and 2 summarize the climate impact and its development between 2018 and 2019.

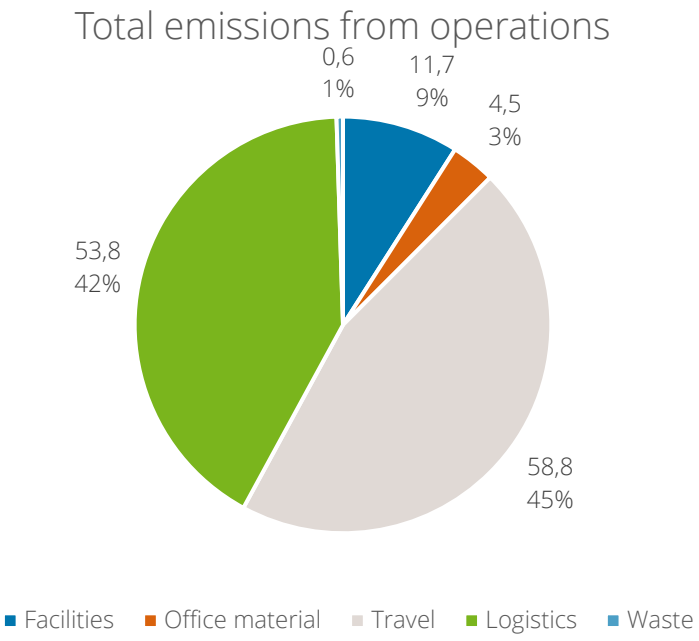

Figure 1. Emissions (tonnes CO_2e) per category 2019

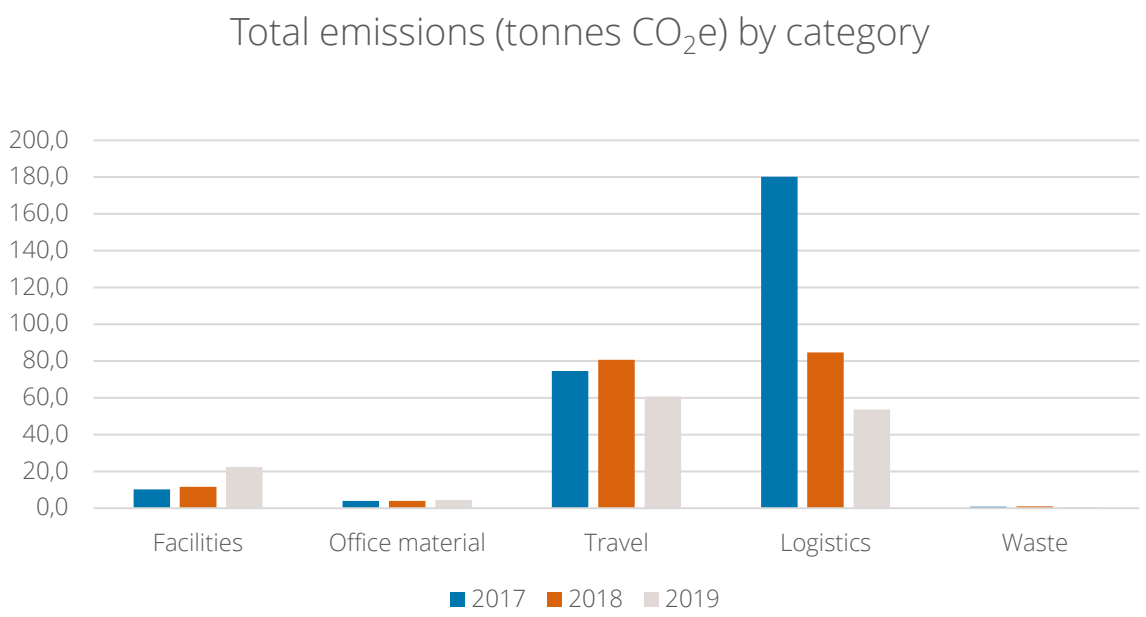

Figure 2. Emissions (tonnes CO_2e) per category, 2017-2019

Table 1. Emissions (tonnes CO_2e) per operations category

Total emissions from operations (tonnes CO_2e)	2017	2018	2019	Change 2018- 2019
Facilities	10,3	11,6	11,7	1%
Office material	4,0	4,0	4,5	12%
Travel	74,6	80,6	58,8	-27%
Logistics	180,3	84,7	53,8	-37%
Waste	0,9	0,9	0,6	-32%
Total	**270,0**	**181,9**	**129,4**	**-29%**

Emissions per scope

Figure 3 and Table 2 show Sto Denmark's emissions per scope. Scope 1 emissions account for 31% and are entirely caused by company cars. Scope 2 emissions (9%) are caused by the production of district heating used in facilities. 60% of emissions sort under scope 3, making it the largest category. These emissions include travel, office material, waste, life-cycle emissions for energy production and well-to-tank emissions from energy and company cars.

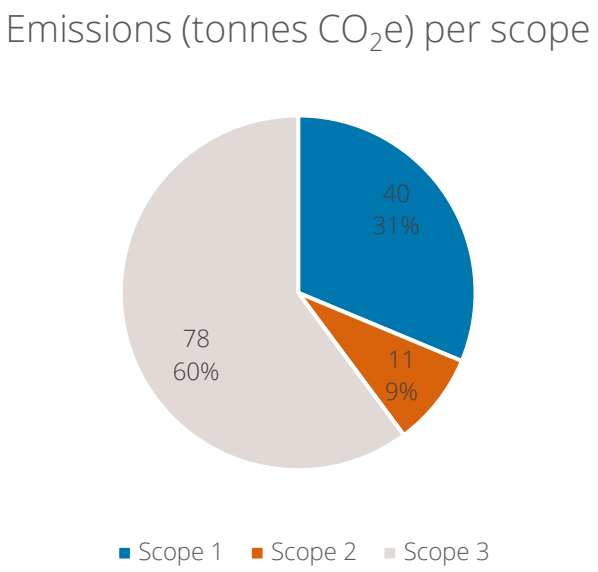

Figure 3. Emissions (tonnes CO_2e) per scope 2019

Table 2. Total emissions 2018 (tonnes CO_2e) divided by scope.

Emissions (tonnes CO_2e) per GHG-scope	2017	2018	2019	Change 2018-2019
Scope 1	45	53	40	-24%
Scope 2	10	11	11	0%
Scope 3	215	118	78	-34%
Total	**270**	**182**	**129**	**-29%**

KPIs

Table 3. KPIs: emissions per turnover and emissions per employee

KPIs	2017	2018	2019	Unit
Emissions per employee	13,5	9,1	6,5	Tonnes CO_2e
Emissions per MDKK	4,4	3,4	3,1	Tonnes CO_2e

Emissions from Sto Denmark's operations have decreased by 29% between 2018 and 2019. About 80% of the decrease is likely to be caused by the decrease in turnover. This means that Sto Denmark has become more carbon efficient during 2019. A long run strategy to reduce emissions should focus on reducing emissions in total as well as per unit of employees, facilities and turnover. This allows for emissions reductions to take place in the longer run, regardless of company growth. Based on this, Tricorona encourages Sto Denmark to focus reduction measures on the two main areas of emissions: logistics and travel. Logistics emissions can be reduced by choosing suppliers that have lower emissions per freighted unit. Emissions from travel can be reduced by choosing different means of transportation and alternative, greener fuels.

Facilities

Emissions from Sto Denmark's facilities amount to 12 tonnes of CO_2-equivalents, around 9% of total emissions. This is very similar to the previous year. Most of these emissions come from district heating. Because Sto Denmark uses electricity from wind power, the associated emissions are very low and caused mainly by construction and maintenance.

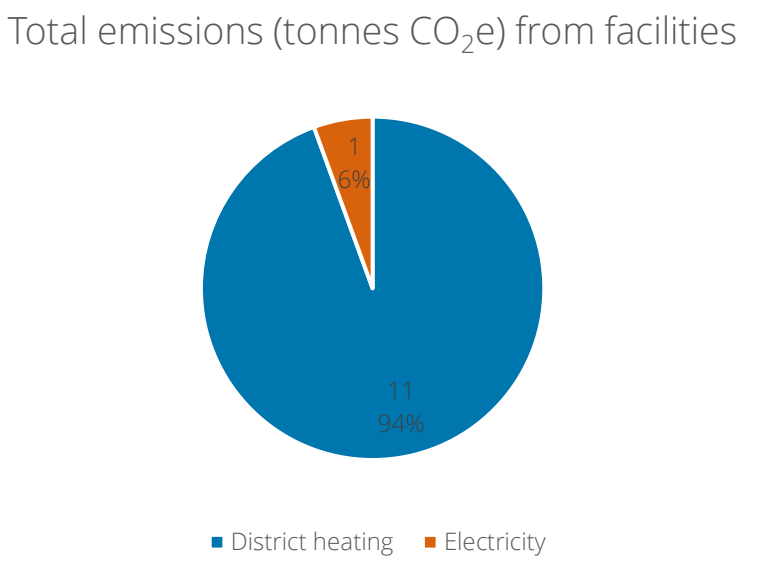

Figure 4. Emissions (tonnes CO_2e) from energy consumption

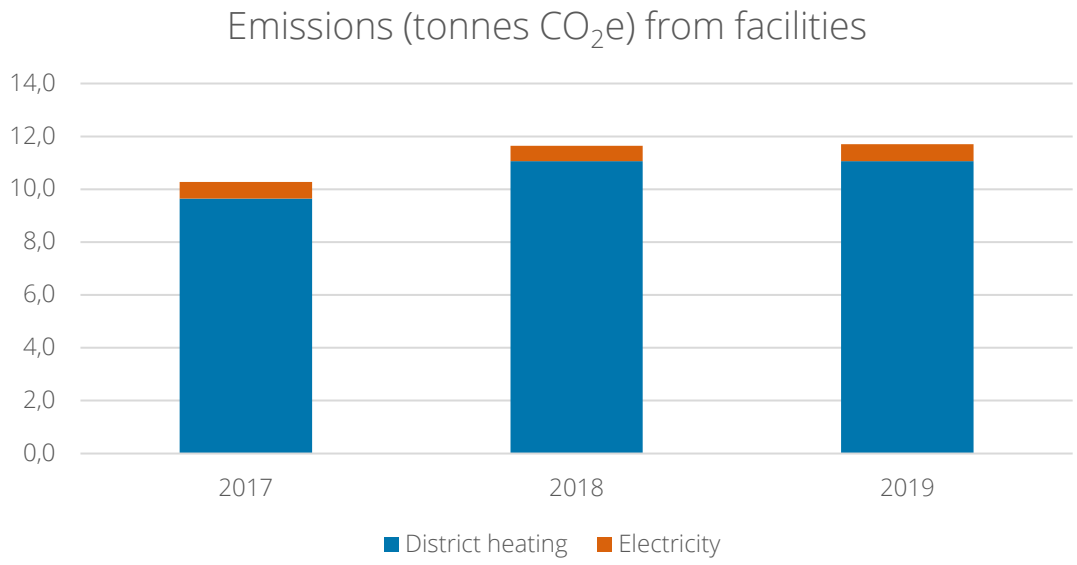

Figure 5. Emissions (tonnes CO_2e) from energy consumption

Table 4. Emissions per type of energy (tonnes CO_2e)

Type of energy	2017	2018	2019	Change 2018-2019
Electricity	0,6	0,6	0,7	11%
District heating	9,6	11,1	11,1	0%
Total	**10,3**	**11,6**	**11,7**	**1%**

The use of energy is relatively stable compared to the previous year but increased slightly for electricity.

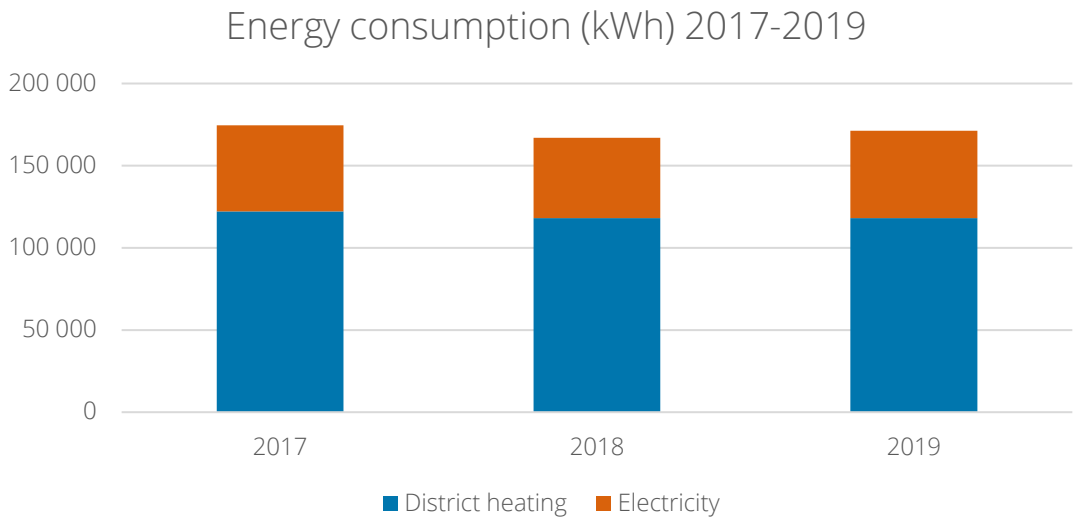

Figure 6. Energy consumption (kWh) per type of energy

Table 5. Energy consumption (kWh) per type of energy

Type of energy	2017	2018	2019	Change 2017-2018
Electricity	52 362	48 830	53 120	9%
District heating	122 135	118 145	118 145	0%
Total	**174 497**	**166 975**	**171 265**	**3%**

KPI's

Table 6. KPI's – emissions from facilities (CO_2e)

Emissions (tonnes CO_2e)	2017	2018	2019	Change 2018 – 2019
Per employee	0,51	0,58	0,59	1%
Per MDKK	0,17	0,22	0,28	30%

Table 7. KPI's – energy use in facilities (kWh)

Energy use (kWh)	2017	2018	2019	Change 2018 – 2019
Per employee	8 725	8 349	8 563	3%
Per MDKK	2 835	3 139	4 164	33%

Office material

Emissions from office material is calculated based on the estimated consumption per employee. The estimate is produced by Tricorona and is valid for office staff in the Nordic countries. It includes the yearly consumption of office material, coffee, fruit and waste. The emission figure for office consumption has been updated since 2018 and now includes IT. This results in a slightly higher figure per employee. This is the reason for the increase from the previous reported year.

Table 8. Emissions from use of office material

Emissions (tonnes CO_2e)	2017	2018	2019	Change 2018-2019
Office material	4,0	4,0	4,5	12%

The electricity provided to Sto Denmark has a relatively low climate impact, and consumption remained at a similar level between 2018 and 2019. Regarding the use of district heating, emissions can be lowered significantly still, but this is beyond the direct control of Sto Denmark. Tricorona therefore suggests Sto Denmark to work with this issue from a dual approach. The first part is to reduce the need for heating by examining the possibility for energy-saving measures such as insulation and more efficient use of indoors space. The second approach is to encourage the provider of district heating to use as little fossil fuels as possible in production and choose more climate-friendly options whenever possible.

Business travel

Business travel is the second most important emission category for Sto Denmark and accounts for 59 tonnes CO_2e and 46% of total emissions. This category of emissions has decreased by 22 tonnes, or 27% since last year. A breakdown of the category reveals that emissions are dominated by road travel (85%) followed by air travel (7%). Hotels account for 4% of travel emissions while the climate impact of sea travel is very low, due to very limited use of sea transportation.

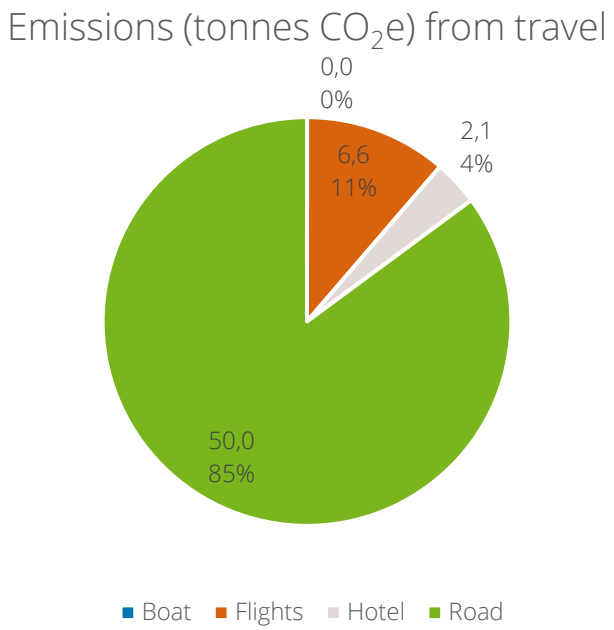

Figure 7. Emissions from business travel 2019 per category, tonnes CO_2e

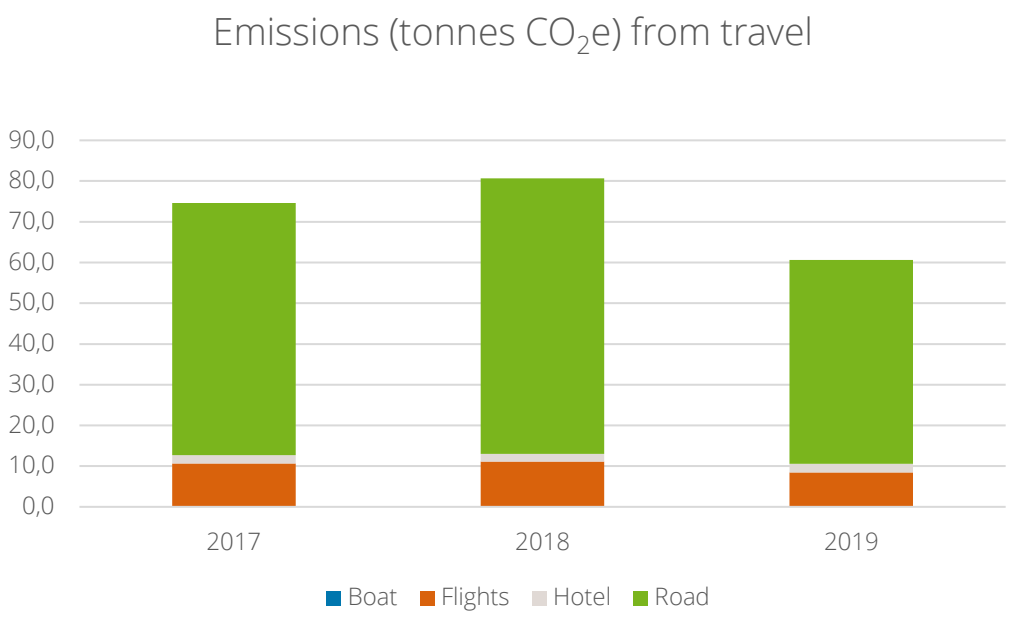

Figure 8. Emissions (tonnes CO_2e) from business travel 2017-2019 per type of travel.

Table 9. Emissions (CO_2e) per type of travel

Type of travel	2017	2018	2019	Change 2017-2018
Boat	0,005	0,007	0,007	0,0%
Flights	10,7	11,1	6,6	-40,2%
Hotel	2,0	1,9	2,1	9,9%
Road	61,9	67,6	50,0	-26,0%
Total	**74,6**	**80,6**	**58,8**	**-27,1%**

Road travel

Road travel accounts for 85% of travel emissions and 39% of total emissions. Emissions from road travel increased by nearly 18 tonnes CO_2e or 26% from last year. Emissions from leased cars are calculated with the assumption that 30% of the mileage is for private purposes which is therefore not included. Emissions from the use of private cars for duty is calculated using the reimbursement levels provided by Sto Denmark.

Table 10. Emissions per type of car, tonnes CO_2e

Type of car	2017	2018	2019	Change 2018- 2019
Company car	55	65	50	-24%
Private car on duty	7	2	-	-100%
Total	**62**	**67**	**50**	**-26%**

Air travel

Emissions from air travel accounts for 11% of emissions from travel and 5% of total emissions. Table 11 describes the air travel of Sto Denmark categorized by routes.

Table 11. Emissions from air travel by most frequently flown routes (tonnes CO_2e).

Route	No. flights	% of all flights	% of all emissions	Total emissions (kg CO_2e)
CPH-OSL	18	33,3%	33,0%	2 187
BGO-CPH	12	22,2%	27,4%	1 813
AAL-CPH	6	11,1%	6,9%	459
CPH-HEL	4	7,4%	11,3%	749
AAR-OSL	3	5,6%	4,8%	319
AAR-GOT	2	3,7%	2,0%	134
AAR-ARN	2	3,7%	4,0%	265
CPH-KRS	2	3,7%	3,1%	208
AES-OSL	2	3,7%	3,0%	200
ARN-CPH	1	1,9%	1,9%	129
Other	2	3,7%	2,5%	165
Total	**54**	**100,0%**	**100,0%**	**6 628**

In order to obtain the most accurate result possible, air travel is calculated based on each separate leg of every trip. This approach entails that a trip is the distance category 0-500 km may be a leg of a longer trip and not necessarily the total trip for the person travelling. This should be considered when interpreting the result.

Table 12. Air travel emissions with method update.

Emissions from air travel (tonnes CO_2e)	2017	2018	2019
RFI 2,7	10,7	11,1	8,5
RFI 1,9	-	-	6,6

KPIs: Travel

KPIs for travel are shown in Table 13 below.

Table 13. KPI's Travel

KPI Travel	2017	2018	2019	Change 2018-2019	Unit
Emissions per FTE	3,7	4,0	2,9	-27%	tonnes CO_2e
Flights per FTE	2,9	3,0	2,7	-10%	flights

Road travel accounts for most of Sto Denmark's traveling emissions. For all road travel, the reported fuels are diesel, which produce relatively high emissions. To reduce emissions from travelling overall, the first-hand option should be to take the train when possible, which emits very little in comparison. When trains are not an option, there is significant potential to reduce travel emissions by using other fuels for road travel. As a preferred option, Tricorona suggests Sto Denmark to opt for electric vehicles when leasing cars. As a second best, choosing fuels with a higher share of renewable fuel can have significant impact on the emission levels.

Logistics

Logistics cause 54 tonnes CO_2e or 41% of total emissions. Emissions from logistics have decreased by 37% in total.

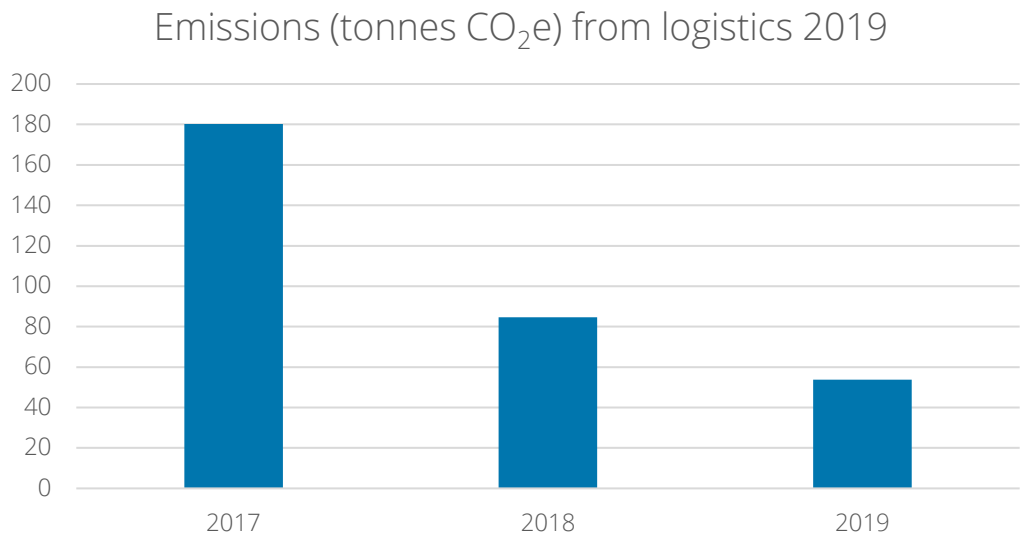

Figure 9. Emissions from logistics 2017-2019 (tonnes CO_2e)

Logistics	2017	2018	2019	Change 2018- 2019
Emissions	180	85	54	-37%

Table 14. Total emissions from logistics (tonnes CO_2e)

Logistics is the second biggest source of Sto Denmark's greenhouse gas emissions. However, since the calculations of the emissions from Sto Denmark's logistics are made by suppliers, it is difficult to form specific strategies to reduce these emissions without a dialogue with the transportation providers. Choosing suppliers that have their own climate strategies (such as transportation with a higher percentage biofuel) could reduce Sto Denmark's emissions.

Waste

Sto Denmark's emissions from waste accounts for approximately 0,65 tonnes CO_2e. 94% of the emissions caused by waste was from unsorted waste. Figure 10 shows emissions from waste per category.

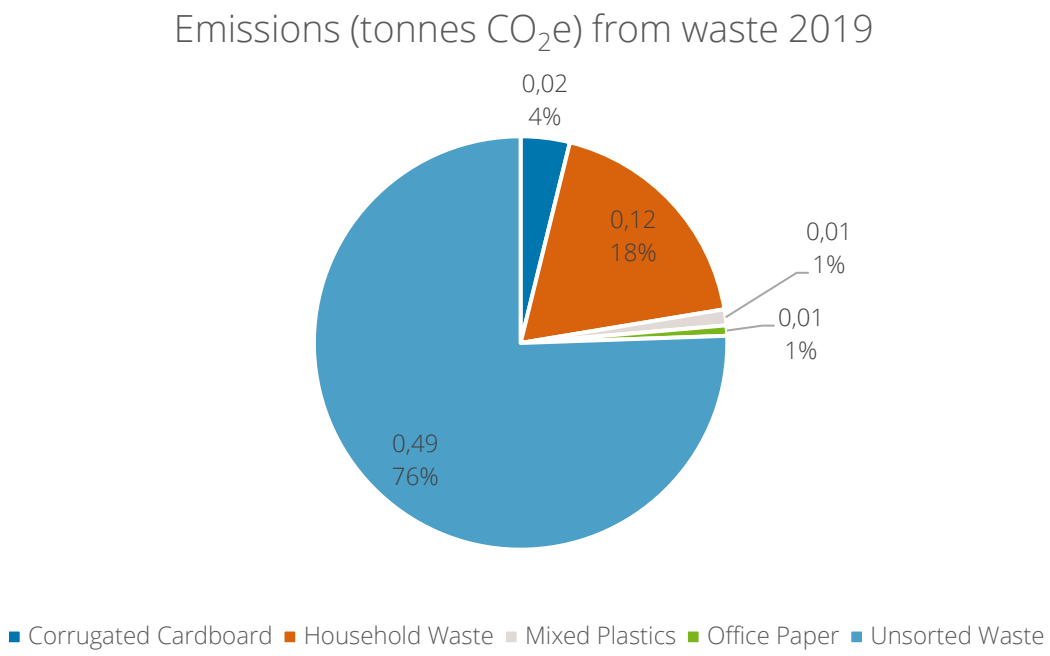

Figure 10. Emissions from Waste (tonnes CO_2e)

6% of Sto Denmark's waste was recycled in 2019, while 94% was incinerated, which is illustrated in Figure 11.

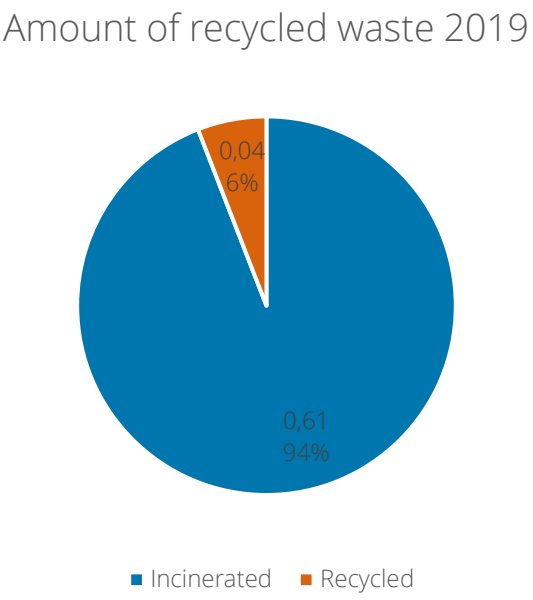

Figure 11. Recycled and Incinerated waste (kg)

Table 15. Emissions from waste (tonnes CO_2e)

Emission source	2017	2018	2019	Change 2018-2019	Processing type
Corrugated cardboard	0,02	0,02	0,02	15%	Recycled
Household waste	0,08	0,09	0,12	36%	Incinerated
Iron	0,0004	-	-	-	Recycled
LDPE foil	0,01	0,01	-	-100%	Recycled
Mixed paper	0,003	0,01		-100%	Recycled
Mixed plastics			0,01	-	Recycled
Office paper			0,01	-	Recycled
Unsorted Waste	0,77	0,80	0,49	-39%	Incinerated
Total	**0,88**	**0,93**	**0,65**	**-31%**	

Tricorona recommends Sto Denmark to increase the percentage of recycled waste by sorting more of the waste that so far has been unsorted.

Reliability analysis

Tricorona uses three categories (1, 2 and 3) for classification of the results based on the quality of the input data and the calculation values which the input data enables. The aim is to evaluate the input data and give feedback as to whether there is potential for improvement. The reliability classification is mainly based on the level of detail in the reported data (i.e. whether important details are missing) and specificity of reported data (i.e. to what extent input data is based on generalizations or estimations). In certain cases, classification may also be subject to Tricorona's judgement and the availability of specific emission and conversion factors used by Tricorona.

Data classified in category 1 are based on measured (rather than estimated) values. The input data is classified in category 2 when the input data is considered reliable, but some estimations, assumptions or averages have been used. Category 3 input data lacks multiple parameters and/or relies on multiple estimations, assumptions, or averages.

Most of the reported data have been classified as level 1. This is mainly because a few large emissions have high quality data – fuel to leased cars, logistics (partly) and flights. The level 3 data is made up only of district heating data for which the consumption of a previous year is used. This should be updated until next year. To increase the reliability of the logistics data, further information regarding distances, weights and fuels consumed is required. Moreover, data that is sufficient for emissions calculations is preferred to the results from suppliers' calculations in order to assure a consistent methodology. In the case that it is not possible, more comprehensive information about the methodology is desirable.

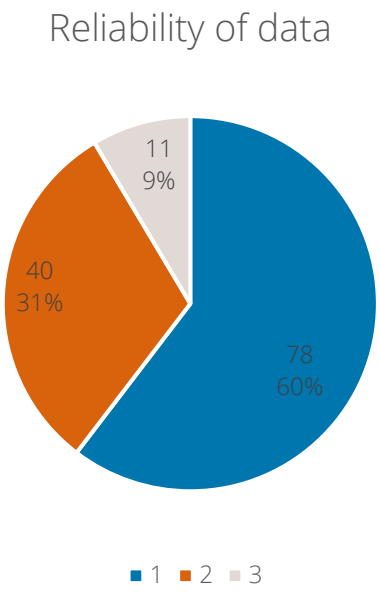

Figure 12. Confidence level of data, tonnes per category.

Data quality is generally good to acceptable. However, updated data on the use of district heating and more detailed logistics data should be provided for the coming reporting years.