



AARSTIDERNE

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# CO<sub>2</sub> accounts for Aarstiderne's box scheme business

2016 - 2021





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# Introduction

## 1.1 Why a CO<sub>2</sub>-report?

At Aarstiderne, the quarterly and yearly CO<sub>2</sub> accounts are very important management tools allowing the company to work focused on bringing down the CO<sub>2</sub> emissions through ever better practices. This is the 2021 report, and it shows the development of the CO<sub>2</sub> emissions from 2016 to 2021. The CO<sub>2</sub> emissions in tonnes increases (8%) over the years due to higher revenue, but in terms of CO<sub>2</sub> emissions per DKK'000 of revenue, it decreases (11%).

## 1.2 Sources of CO<sub>2</sub> emissions

- Inbound freight (from supplier to our packing facility in Barritskov)
- Intermediate transport (from Barritskov to local terminals)
- Distribution (from local terminal to customers)
- Energy (electricity, agro diesel and oil, gas and coolant)
- Packaging (styrene, in-liner, plastic cups, flow-pack plastic, absorber etc.)
- Paper (newsletters, recipes, copying paper, activation campaigns etc.)
- Commuting (cars or public transportation)
- Company travels (cars (private or company), train, plane, and overnight stay).

The CO<sub>2</sub> footprint accounted includes issues from picking up goods at a supplier and all the way to the meal boxes arrives at the doorstep of the customers. The CO<sub>2</sub> emissions from the actual production, i.e., in the field, the stable, the greenhouse, the dairy, the vegetable packing room, the mill etc. is not included. Packaging of products done by Aarstiderne is included, but not packaging used by suppliers.

Transport of goods is the heaviest factor in the CO<sub>2</sub> accounts. Combined, inbound freight, intermediate transport and distribution make up 54% of the total emission. If the transport of people, i.e., company travels, and commuting are added, the number is 61% - two thirds of the total emissions. Consumption of energy such as electricity, gas, diesel, oil and refrigerants make up 20%, packaging 17% and paper 2% of the total CO<sub>2</sub> emissions.

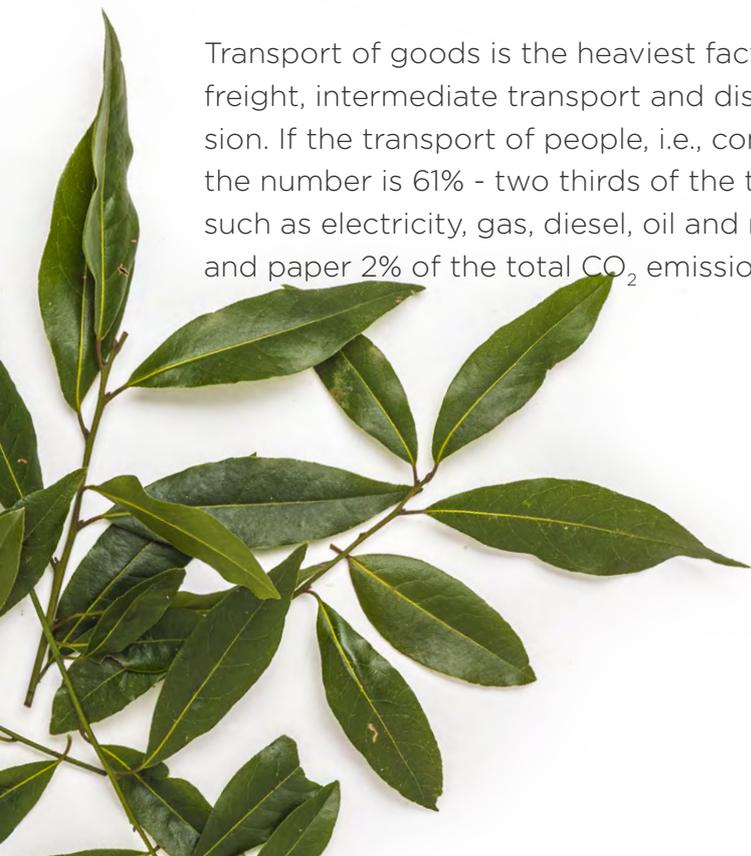
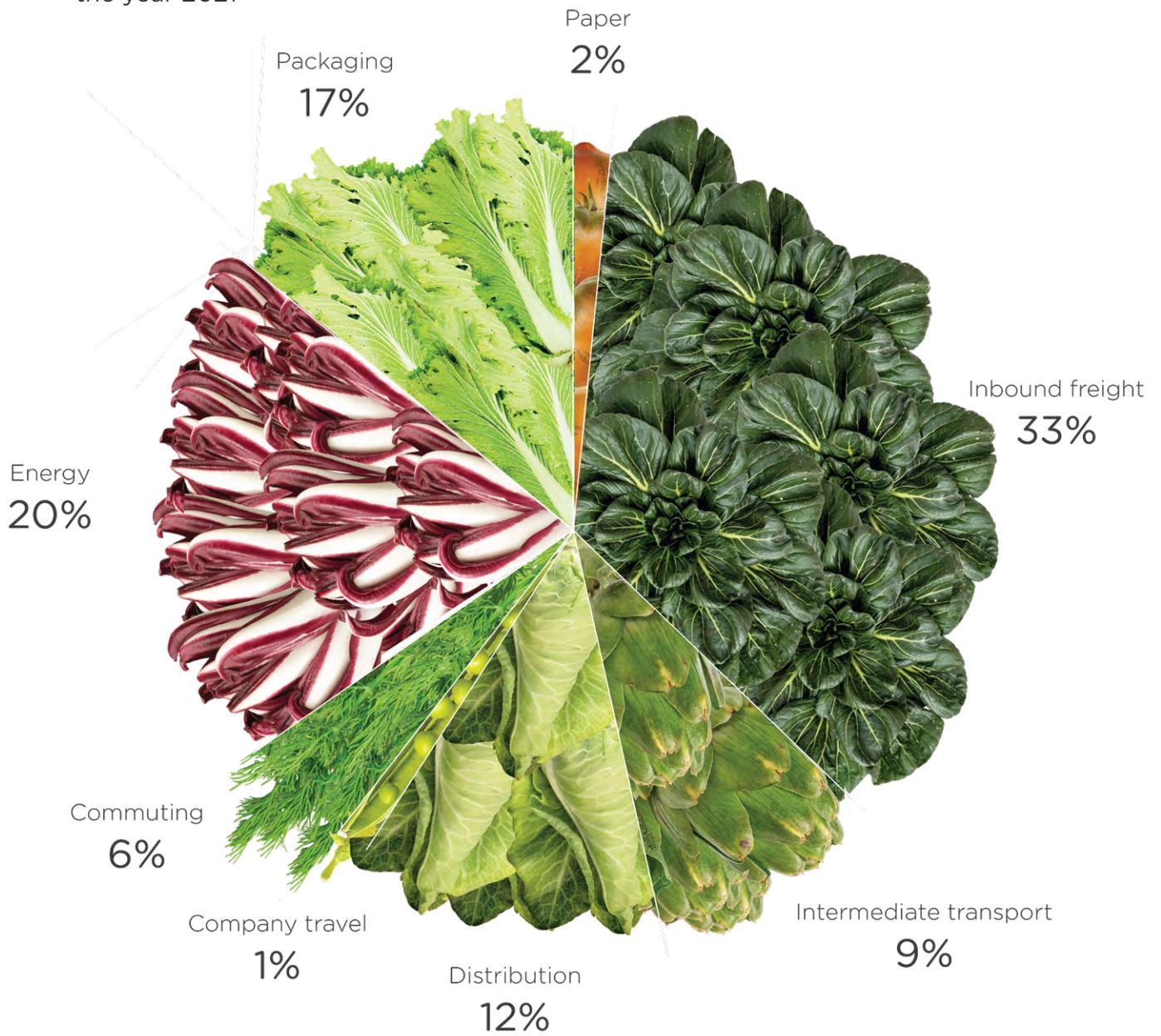




Figure 1: Per cent distribution of the CO<sub>2</sub> emissions for the different categories in the year 2021





## Global warming and CO<sub>2</sub> equivalents

### FACT BOX

CO<sub>2</sub> plays a lead role in global warming. The presence of CO<sub>2</sub> in our atmosphere means that the atmosphere “con blocks Earth’s heat dissipation. Instead, a part of the heat is returned to the surface of the earth and this is the essence of the greenhouse effect. Too high a concentration of CO<sub>2</sub> in our atmosphere makes the temperature rise excessively and the result is global warming.

But CO<sub>2</sub> is not the only contributing factor to global warming. Other greenhouse gasses such as methane, nitrous oxide and freon are also contributing factors. They do not, however, contribute with equal weight and therefore each

of the gasses’ contributing factor is calculated in so-called CO<sub>2</sub> equivalents (CO<sub>2</sub>e). For example, the emissions of 1 kg methane have the same impact as 25 kg CO<sub>2</sub>. Hence, 1 kg methane equals 25 kg CO<sub>2</sub> equivalents, while freon is as high as 1,300 CO<sub>2</sub> equivalents. Using the CO<sub>2</sub> equivalents as measuring unit makes it possible to compare the pollution of the different gasses.

In this report, all calculations are based on CO<sub>2</sub> equivalents (CO<sub>2</sub>e) as provided from the think tank CONCITO (see appendix C). The calculation of CO<sub>2</sub>e emissions are estimated for a 6-year period (2016-2021).



# Key figures

Table 1 shows the development of CO<sub>2</sub> emissions in kilos from the various sources in the years 2016-2021 as well as the distribution of these.

The table indicates a relative stable percent distribution with only a few fluctuations. In 2021 the share of inbound freight decreased compared to 2020, while Packaging has increased. Company travels and commuting have increased due to less COVID-19 restrictions and less working at home.

The total kg CO<sub>2</sub> emissions have increased steadily over the years but have decreased the past 2 years. 2020 and partly 2021 has been especially influenced by the COVID-19-situation - this is described more detailed below.

## 2.1 Decrease in total CO<sub>2</sub> emissions during growth

As revenue increases the total CO<sub>2</sub> emissions increase; More boxes produced, more employees, more km on deliveries, more packaging, more cooling etc. This pattern seems to change now. From 2019 to 2021 the numbers show a small decrease in CO<sub>2</sub> despite a significant increase in revenue.

Many initiatives have been taken to reduce the CO<sub>2</sub> emissions while growing the business. They are described throughout this report.

When measuring our CO<sub>2</sub> emissions in this report, four factors repeat themselves in our methods of measuring:

- Total kg CO<sub>2</sub> emissions
- Per cent share of the total CO<sub>2</sub> emissions
- CO<sub>2</sub> emissions per delivery
- CO<sub>2</sub> emissions per DKK'000 of revenue.

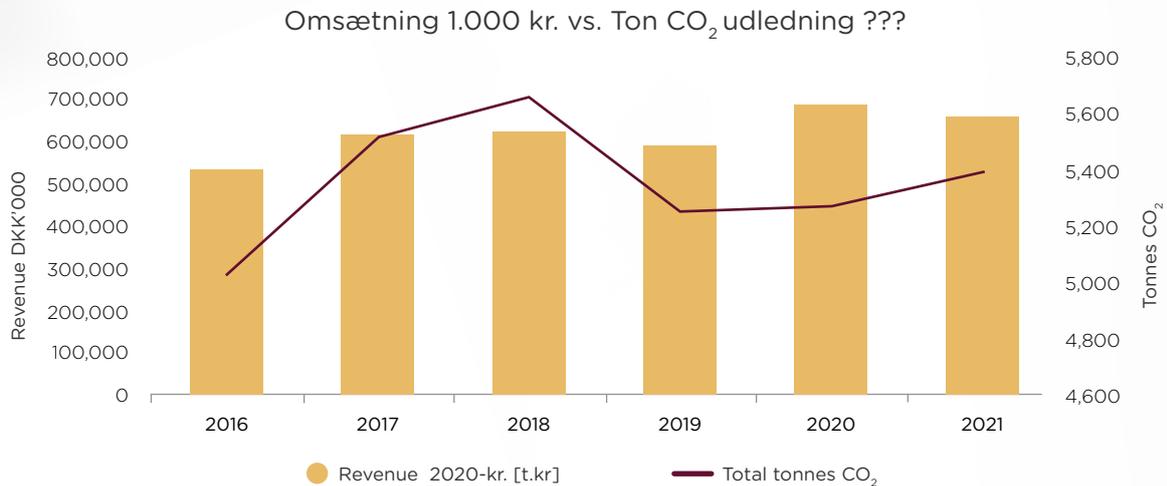
Table 1: The contribution of transport of goods, transport of people, energy, packaging and paper to CO<sub>2</sub> in kilos for the years 2016-2021 and per cent share for each category

2016-2021	2016		2017		2018		2019		2020		2021	
	Kg CO <sub>2</sub>	%										
<b>Inbound Freight</b>	1.794.514	35,6%	1.958.370	35,4%	2.186.653	38,5%	1.785.561	33,9%	1.972.257	37,4%	1.787.560	33,0%
<b>Intermediate Distribution</b>	371.905	7,4%	486.989	8,8%	503.306	8,9%	436.713	8,3%	456.447	8,6%	505.741	9,3%
<b>Distribution</b>	907.193	18,0%	1.033.559	18,7%	737.317	13,0%	683.838	13,0%	670.157	12,7%	666.346	12,3%
<b>Company Travels</b>	143.262	2,8%	186.657	3,4%	172.194	3,0%	151.833	2,9%	63.299	1,2%	70.567	1,3%
<b>Commuting</b>	249.521	4,9%	296.523	5,4%	353.082	6,2%	379.290	7,2%	244.684	4,6%	320.357	5,9%
<b>Energy</b>	1.061.455	21,0%	985.426	17,8%	1.071.072	18,9%	1.016.110	19,3%	1.102.352	20,9%	1.087.266	20,1%
<b>Packaging</b>	451.713	9,0%	508.922	9,2%	572.529	10,1%	730.666	13,9%	692.822	13,1%	895.806	16,6%
<b>Paper</b>	64.141	1,3%	83.276	1,5%	83.424	1,5%	87.604	1,7%	78.052	1,5%	76.660	1,4%
<b>Total</b>	<b>5.043.705</b>	<b>100,0%</b>	<b>5.539.722</b>	<b>100,0%</b>	<b>5.679.577</b>	<b>100,0%</b>	<b>5.271.614</b>	<b>100,0%</b>	<b>5.280.070</b>	<b>100,0%</b>	<b>5.410.303</b>	<b>100,0%</b>



## 2. Key figures - continued

Figure 2: Revenue DKK'000 compared to total kg CO<sub>2</sub> emissions



### 2.2 Decrease in emissions per DK'000 of revenue

Figure 1 and table 1 show the distribution of our total CO<sub>2</sub> emissions. Table 2 shows the remaining factors - i.e., total tonnes CO<sub>2</sub>, kg CO<sub>2</sub> per delivery and per DKK'000 of revenue (measured in 2016 index).

Sales grew 21% over the past six years while CO<sub>2</sub> emissions increased with 7%. This shows that there is an important scale of economy on the CO<sub>2</sub> emissions in Aarstiderne, when using the production and distribution facilities optimally. Table 2 shows relatively stable CO<sub>2</sub> emissions per delivery over the years 2016 - 2019, whilst there is a markedly lower level in the COVID-19 year 2020 follow by a slightly higher level in 2021.

When looking at kg CO<sub>2</sub> per DK'000 of revenue the emissions in 2016 were 9.23 kg CO<sub>2</sub> per Dkk'1000 and in 2021 this number was 8,18 kg CO<sub>2</sub> i.e., 11% lower.

### 2.3 Distribution of CO<sub>2</sub> emissions per delivery and per DKK'000 in revenue

Looking apart from Company travels and Commuting, which were especially influenced by COVID-19, figure 3 shows Inbound Freight and Distribution to have fallen to a lower level through the years, while Packaging has risen in the period.



## 2. Key figures - continued

Table 2: List of sales figures measured in 2016 index, total tonnes CO<sub>2</sub> emissions, kg CO<sub>2</sub> per delivery as well as kg CO<sub>2</sub> per DKK'000 revenue from 2016-2021 plus an index showing the relative development

Revenue and CO <sub>2</sub> outlet	2016	2017	2018	2019	2020	2021
Revenue per DKK'000	546,415	634,718	636,207	599,204	704,387	661,073
<b>Index</b>	<b>100</b>	<b>116</b>	<b>116</b>	<b>110</b>	<b>129</b>	<b>121</b>
Total tonnes CO <sub>2</sub>	5,044	5,540	5,680	5,272	5,280	5,410
<b>Index</b>	<b>100</b>	<b>110</b>	<b>113</b>	<b>105</b>	<b>105</b>	<b>107</b>
Kg CO <sub>2</sub> per delivery	3,38	3,26	3,30	3,30	2,86	2,96
<b>Index</b>	<b>100</b>	<b>96</b>	<b>97</b>	<b>98</b>	<b>85</b>	<b>87</b>
Kg CO <sub>2</sub> pr. DKK'000	9,23	8,73	8,93	8,80	7,50	8,18
<b>Index</b>	<b>100</b>	<b>95</b>	<b>97</b>	<b>95</b>	<b>81</b>	<b>89</b>

Figure 3: The emissions of different sources per delivery

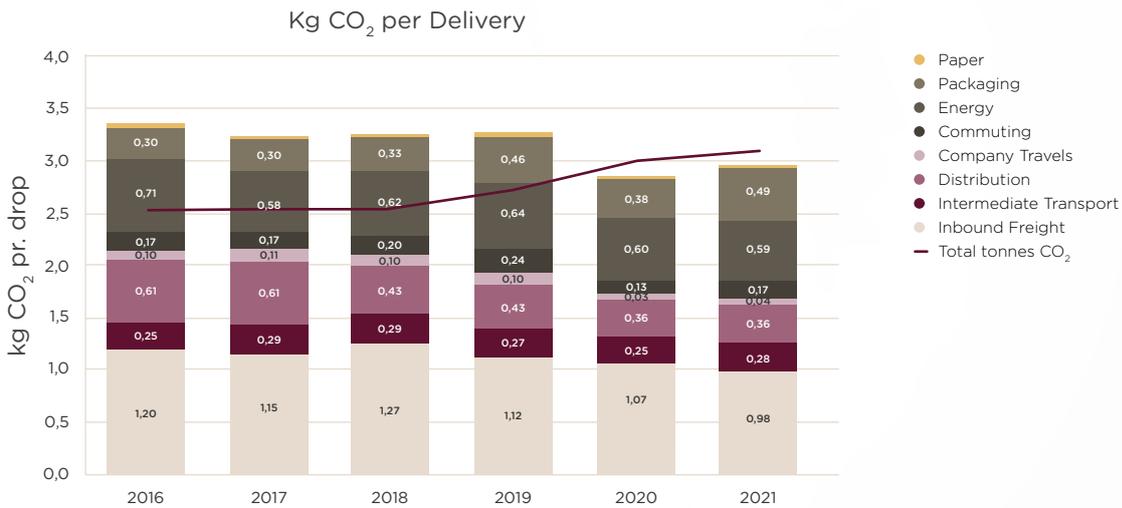
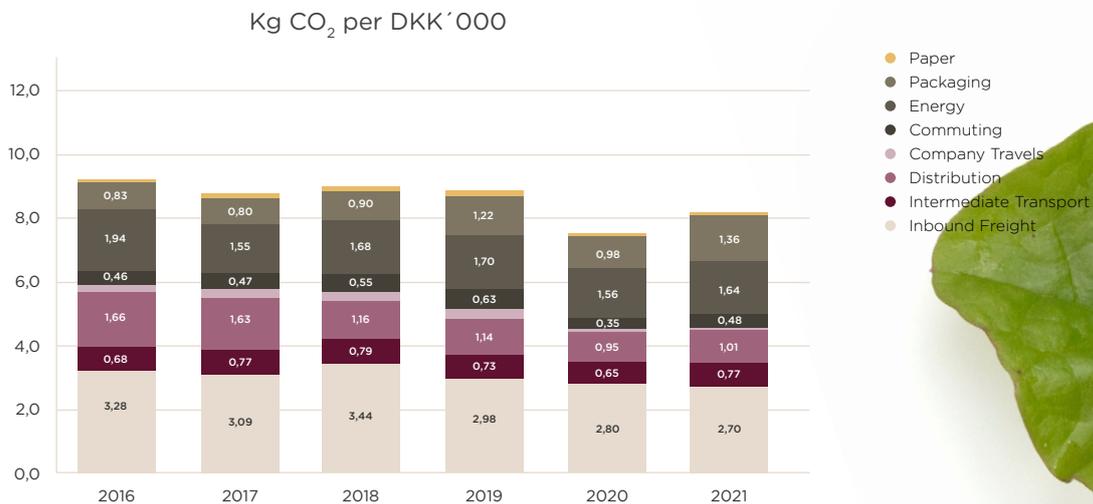


Figure 4: The emissions of different sources per DKK'000





### 3. Transport of goods

Transport by truck emits 0.107 kg CO<sub>2</sub> per ton\*km, whereas transport by ship only emits 0.00243 kg CO<sub>2</sub> per ton\*km. It may therefore be CO<sub>2</sub> reducing to pick up goods that were produced close to port areas in the Dominican Republic or Argentina as opposed to transporting them with a truck from e.g., southern Italy (ship transport from Argentine represents close to the same emission as truck transport from Nantes in France - see appendix B about types of transport). The relatively low emission from ship transport is evident in figure 5, which also explains why exotic fruits in our boxes are far from the largest climate culprit.

The transport from Italy can be done by freight train, when possible, considering timeliness and freshness of the products. Due to major construction work on this route, it has not been possible to do this for several years, but from 2019 the route has been reopened though not visible in the accounting yet. The CO<sub>2</sub> emissions from freight per DKK´000 revenue in 2020 are at the lowest level in five years measured in DKK´000. Figure 5 describes inbound freight only. Figure 6 shows the fluctuations in inbound freight, intermediate transport, and distribution throughout the years.

Our logistic partner have in 2021 invested in Lorries driven by LNG-gas (Liquefied Natural Gas) and have driven 40% of the transportation of goods from Spain this way. Transportation by LNG-gas is fossil free and have a slightly lower CO<sub>2</sub>-outlet than diesel driven transports.

The inbound freight contribution to CO<sub>2</sub> emissions has decreased in 2019 and further in 2020-21. Intermediate transport and emissions from distribution have also decreased.

The road carriers monitor their driving patterns for specified periods of time, which allows to calculate the number of kilometres driven for each customer. The numbers show a reduction in the number of kilometres driven between deliveries with about 40% since 2015 due to more customers, route optimisation, driving in less traffic at night-time and the use of alternative fuels for parts of the distribution.

In December 2019 Aarstiderne acquired a small electrical truck. The truck runs in Copenhagen greater area, delivering company fruit, goods to the farm shops etc. Also, a small part of the company fruit is handled by Chainge – a last mile electrical bike company. Furthermore, one hauler (Nordic Transport and Logistics) has invested in two electrical vans running routes since Autumn 2020. These alternatives have been used through the whole year 2021, and it now shows when looking at the outlet coming from Distribution in 2021.



### 3. Transport of goods - continued

## Transport of goods

### FACT BOX

In this report, we distinguish between transport of goods and transport of people. Transport of goods comprises inbound freight, intermediate transport, and distribution. The transport of people, which comprises company travels and commuting, represents a much smaller share.

When we transport the goods from our suppliers in Denmark and abroad to our packing facilities in Barritskov, we do it by truck, ship, or train.

Figure 5: Inbound freight by truck, ship and train - kg CO<sub>2</sub> emissions per DKK'000 of revenue

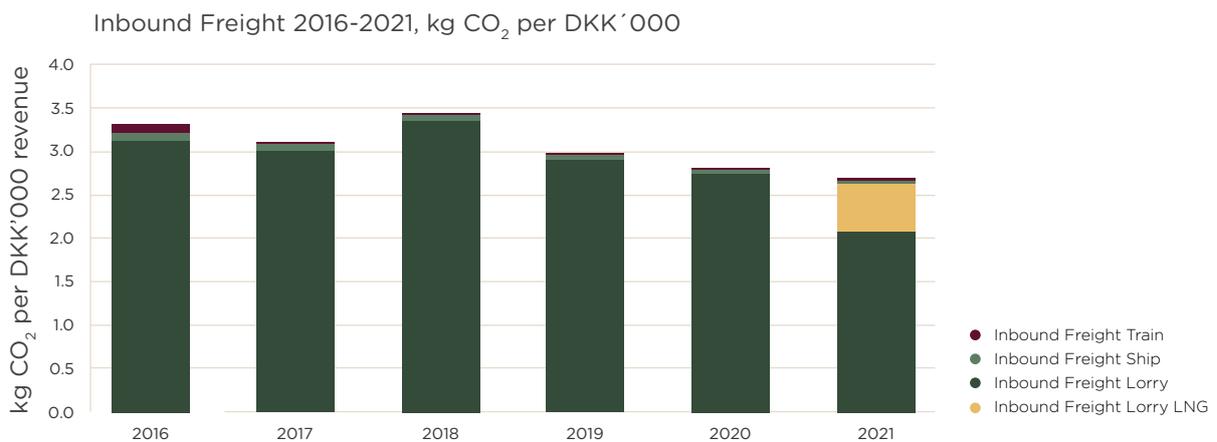
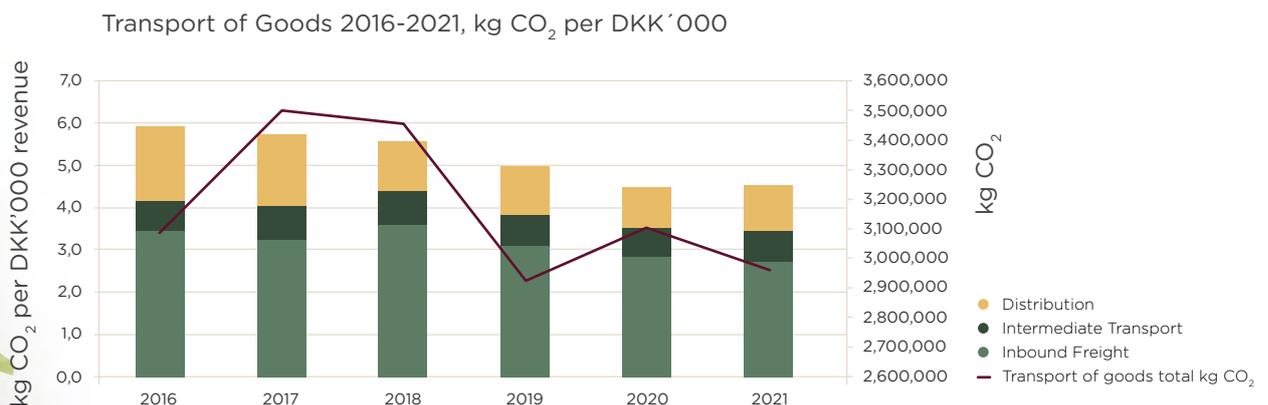


Figure 6: Development in kg CO<sub>2</sub> from transport of goods per DKK'000 of revenue (2020 index)





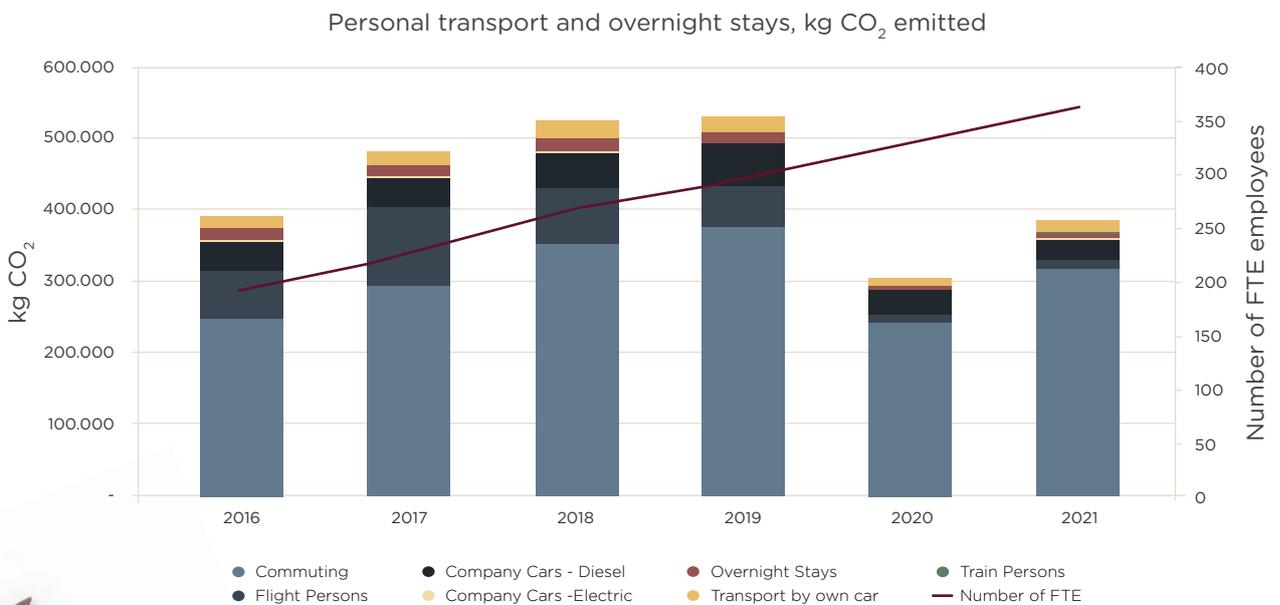
## 4. Transport of people

In 2020-21 nothing has been “as usual” due to the COVID-19 pandemic. All employees with jobs that could be carried out from at home have been asked to do so a majority of the time both years. The amount of commuting has therefore been estimated to be 40% from normal in 2020 and app. 60% from normal in 2021. Likewise, the use of company cars has been estimated to be at a lower level.

From 2020 all new company cars will be either hybride or fully electric. 2 hybride cars came in as company cars the first year. 2021 they were followed by 3 electric cars, so 5 out of 11 company cars are now on alternative fuels. The hybride cars are estimated to have CO<sub>2</sub> emissions at a level 15% lower than a diesel car, though this is highly influenced by the actual driving pattern. For electric cars the emissions are estimated to be 38% lower.

Due to the unusual COVID-19-situation the emissions from personal transport and company travels are still significantly lower in 2021. The learning from holding many more meetings online and working from home will probably be used more in the future leading to lower emissions in this part.

Figure 7: kg CO<sub>2</sub> emissions from transport of people and overnight stays





## 4. Transport of people - continued

### Transport of people

#### FACT BOX

Transport of people includes, for example, commuting, the daily trip to and from work. In 2015 and again in 2018, employees were asked how far they must go for work and how they get to work (by diesel car, petrol car, car-pooling, public transport or bicycle or on foot). The number of employees was multiplied with the average transport pattern. Therefore, the CO<sub>2</sub> emissions from commuting rises proportionally with the number of employees.

Transport of people also covers any travelling by air and train plus overnight stays that employees need in connection with work trips and meetings. Any work-related driving in private cars or company cars in addition to daily commuting is also included.



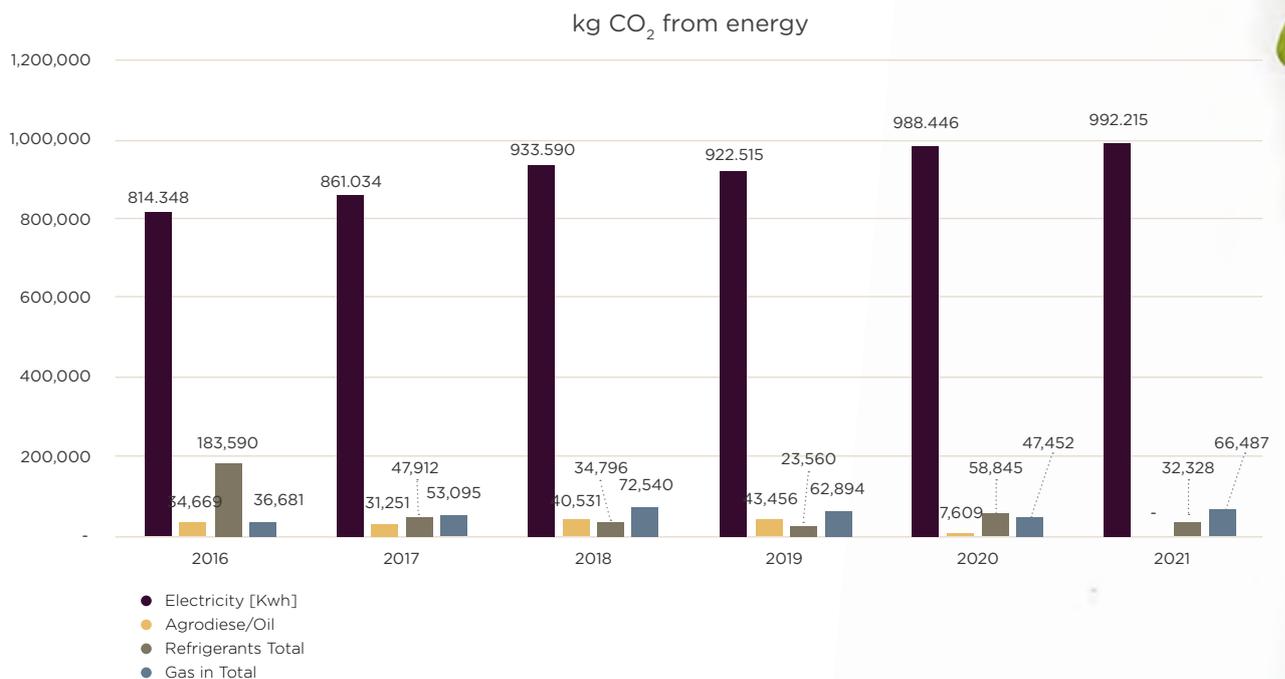
# 5. Energy

Consumption of electricity is by far the biggest of the energy sources due to the cooling facilities needed in both pack house and terminals; figure 8.

Looking at the CO<sub>2</sub> emissions from energy per DKK'000 in revenue the economy of scale is visible (figure 9). On emissions from energy and refrigerants there is a downward trend with a slight increase from 2017 - 2019. 2020 shows a drop in the emissions due to a lower level of electricity used per DKK'000, followed by a slight increase again in 2021.

From 2020 certified sustainable electricity corresponding to our use of electricity is used.

Figure 8: kg CO<sub>2</sub> emissions from energy



## Energy

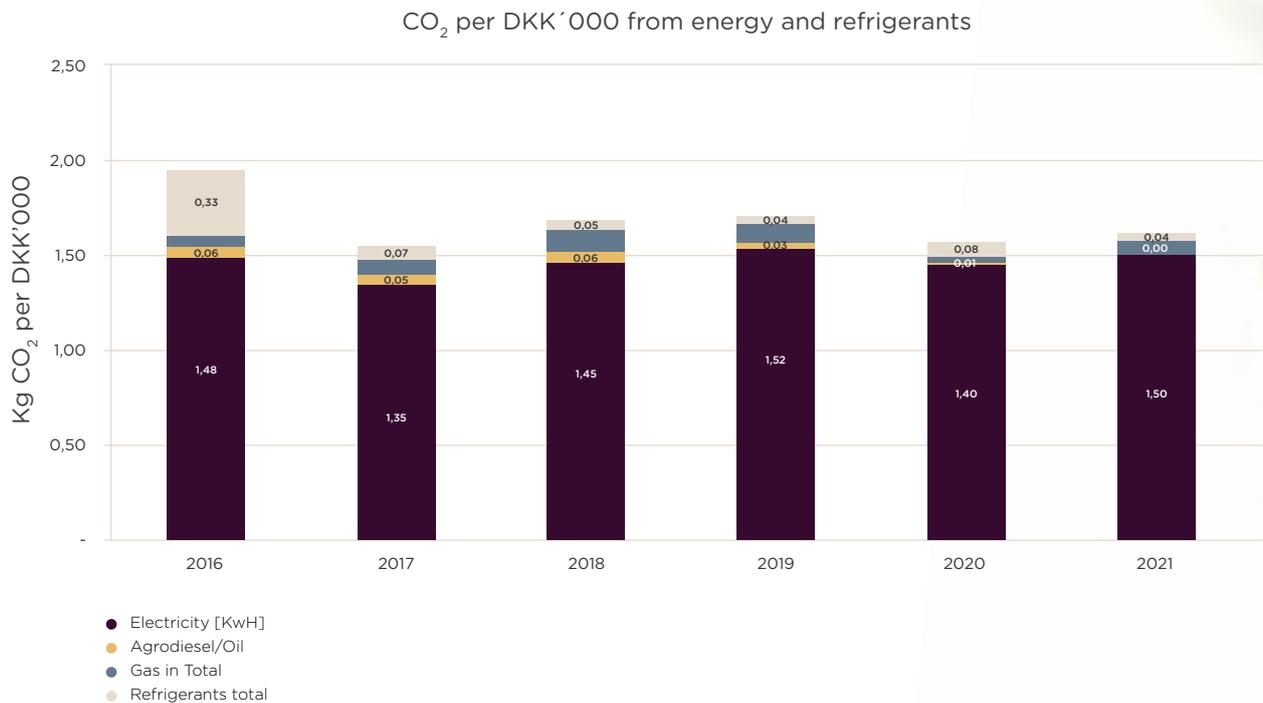
### FACT BOX

Energy includes the consumption of electricity at our different locations, agro diesel (for agricultural machines) and oil for an oil burner that takes over if the woodchip fired installation is out of order. Energy also covers coolants for the cooling facility as well as natural and bottled gas used for heating, forklifts, and kitchens.



## 5. Energy - continued

Figure 9: kg CO<sub>2</sub> per DKK'000 of revenue from electricity, agro-diesel, oil, gas and refrigerants



### CO<sub>2</sub> as coolant

#### FACT BOX

CO<sub>2</sub> is one of the original coolants widely used, but it was phased out with the arrival of synthetic coolants around Second World War. As it became clear that the CFC coolants had a catastrophic effect on the ozone layer and that the substitutes HCFC and HFC coolants contributed to global warming, there was a renewed interest in CO<sub>2</sub> as a coolant.

The CO<sub>2</sub> emissions from coolants depends highly on the need to fill the facilities with coolants. In 2016 a new cooling facility at Barritskov was filled with coolants hence the high level. Earlier the cooling facilities mainly used freon, but since the emission factor is high on freon (see appendix C - emissions factors), the coolant was changed to CO<sub>2</sub> at the end of 2017 and beginning of 2018.



## 6. Packaging

Only packaging used at Aarstiderne is included in this report, and not the packaging used by suppliers.

The total CO<sub>2</sub> emissions on packaging have increased from 2016 to 2019 due to increasing revenue (figure 10). From 2020 the consumption has decreased despite the higher revenue.

On one hand the following factors increases the emissions:

- Bigger part of the boxes are packed for one- and two-persons households, increasing the amount of packaging
- More products, such as herbs, beans, spinach etc. are bought in bulk to reduce the use of plastic and to manage shelf life better.
- The emissions increases with higher volume packed in-house
- The packaging of products from The Green Workshop also means more packaging in the Aarstiderne accounts.

On the other hand, several initiatives have been done to minimise the amount of packaging:

- When packing in batches (e.g., rice, bulgur, or pea sprouts) the bag used is smallest possible and reduce the use of plastic with 50%.
- When possible, herbs are bought in bulk with a band instead of a plastic bag.
- Weekly reporting keeps track of the batches of vegetables, fruit and berries packed in plastic and keeps focus on reducing the use of packaging.
- A new half size foam box has been introduced to be used in the smaller meal boxes.

Following thorough research on shelf life, plastic has been removed from among other, broccoli, cucumbers, and tomatoes by the suppliers. Plastic can however still be found on these items in cases where a supplier cannot deliver, and the product must be exchanged. These are not initiatives that are registered in the CO<sub>2</sub> accounts since only own packaging is.

All together it seems that the focus on minimising packaging is leading to a reduction of the CO<sub>2</sub> emissions. It will though be difficult to continue the reduction as more and more processing and packaging of products in the Green Workshop is insourced to gain higher and unique quality.



## 6. Packaging - continued

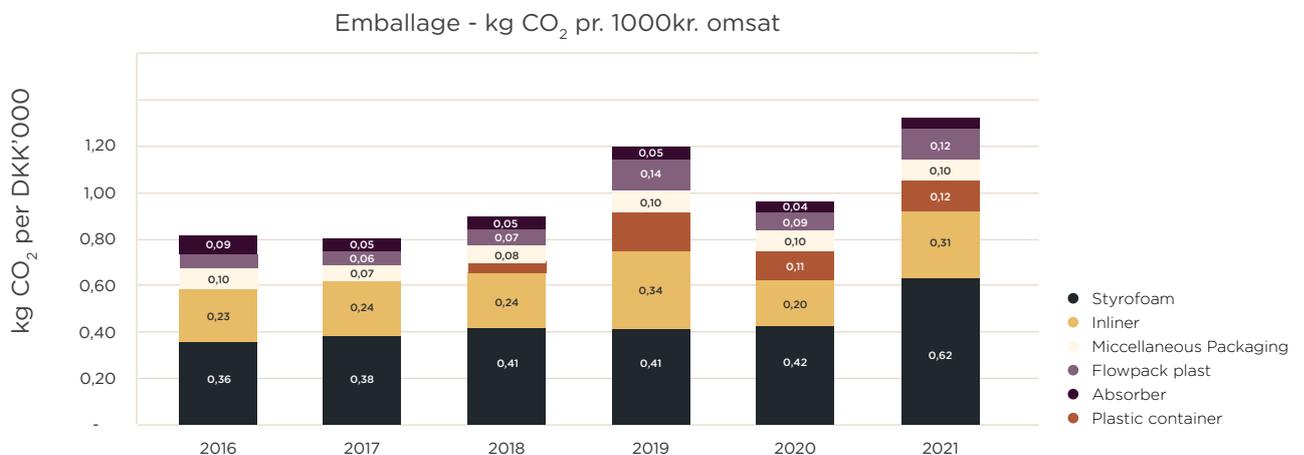
### Types of packaging

#### FACT BOX

The wooded boxes contain a so-called inliner, a large plastic bag that keeps the items in the mealboxes together and keeps the moisture inside and the sunlight and bugs out. For meat and dairy products, a styrene box is used. Flow-pack bags are transparent plastic bags, used for products like couscous, rice, and nuts, etc. The plastic containers refer to the packaging used in The Green Workshop for items like chopped mixed greens.

Part of the fruits and greens are delivered in large boxes and are repacked in the so-called lettuce bags that go under the category of miscellaneous packaging. This category also comprises the brown paper bags used for end delivery of e.g., a bag of fruit or other items in addition to the mealbox as well as the cardboard boxes used for items like tomatoes, made of recycled pulp.

Figure 10: Kg CO<sub>2</sub> from packaging



### Re-use of boxes

#### FACT BOX

The styrene box is used for products in need of cooling where they are packed with ice to keep the correct temperature until the customer unpacks the box. The styrene boxes are returned from the customers and are cleaned with UV-light and then used again. When worn out they are sent for recycling.

The iconic wooden boxes are not included in the above figures as wood is a renewable resource. When the wooden boxes are worn out, they are chopped up and used in the wood chip heater at Barritskov to heat the buildings.

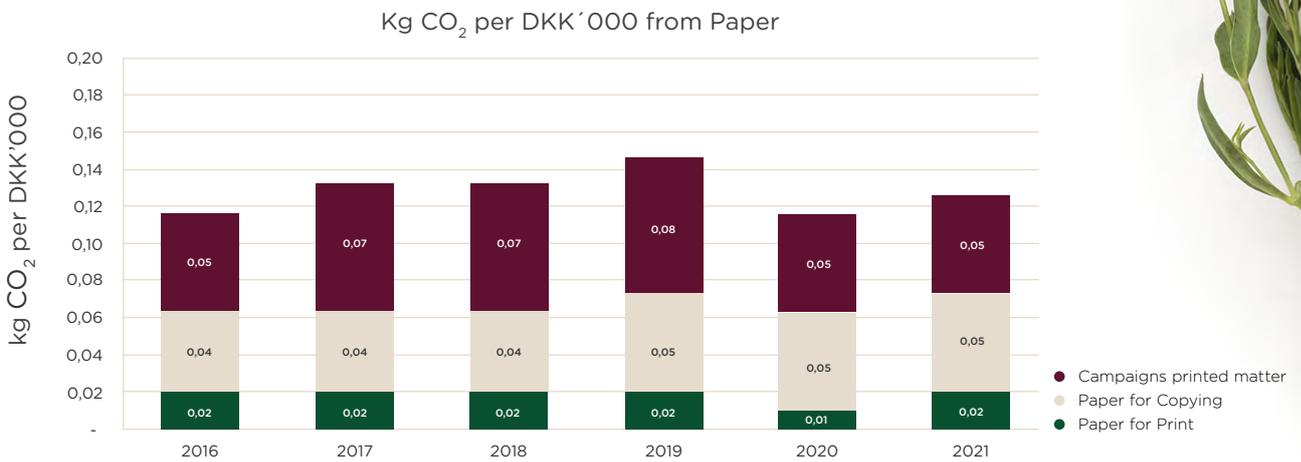


# 7. Paper

Figure 11 shows the development in the total CO<sub>2</sub> emissions from consumption of paper. The total emissions from paper have increased since 2016 but decreases in 2020. The use of copy paper has grown, with more customers, but the use of flyers and campaign material have decreased.

Figure 12 shows the kg CO<sub>2</sub> emissions from paper consumption per DKK'000 of revenue. The emissions have been a little higher in 2019 but for 2020 and 21 the emissions are substandard from earlier years. Less digital campaigning shows in a lower use of paper for that use the last 2 years. The use of paper does not influence the emissions a lot being 0.11 kilograms per DKK'000.

Figure 11: kg CO<sub>2</sub> per DKK'000 of revenue from paper



## Paper and certifications

### FACT BOX

The meal boxes contains a newsletter (paper - printed matter) and recipes (copy paper) and paper is used for activation campaigns, for example as inserts in daily papers. This all requires different kinds of paper and includes printing costs.



The FSC label (Forest Stewardship Council) is a certification of a sustainable choice of paper from FSC labelled forest, where only the amount of wood that the forest can reproduce is cut down. Animals and plant life enjoy protection and education, safety gear and a proper pay is secured for the people working in the forest.



Cradle to Cradle is one of the world's most ambitious environmental certifications with high demands for the entire life cycle of a product. Paper and printing ink are produced without the use of harmful chemistry, heavy metals or hormone disrupting substances. This means that all printed matter in principle can be composted and used as fertilizer.

Only FSC certified paper is used for newsletters, recipes, copying paper and activation campaigns etc. In addition, our printing house, KLS Pure Print, is Cradle to



## 8. Summary

Table 4 below shows the development of the different sources of CO<sub>2</sub> based on a comparison of the total kg CO<sub>2</sub> emissions in 2020 and 2021 respectively.

2021 has given a small raise in CO<sub>2</sub>-outlet despite a small decrease in revenue. In 2021 we came back to more normal working conditions with less home work and more travelling.

Concerning transportation several fossil free solution is now used. Inbound Freight from Spain is 40% of the time made by LNG-driven lorries. Distribution have introduced an electric lorry, 2 electric vans and electric bicycles doing th last mile to some of the customers. 5 out of 11 company cars are converted to electric or hybrid cars.

More goods are packed inhouse and more types of packaging are included in the CO<sub>2</sub> account. Higher activity in Jordens Bedste Købmand gives higher ratios of packaging, while the goods from there uses more packaging.

It takes many different and continued initiatives to reduce the CO<sub>2</sub> emissions and an ongoing focus on how to do better always.



## 8. Summary - continued

Table 4: Comparison of the total kg CO<sub>2</sub> emissions from different sources in 2019 and 2020

Revenue	2020: 704,387 DKK`000	2021: 661,073 DKK`000	6% decrease	
Source of- CO <sub>2</sub> -emissions:	Total kg CO <sub>2</sub> 2020	Total kg CO <sub>2</sub> 2021	Development 2019-2020	Why this development?
Inbound freight	1.972.257	1.787.560	- 10%	More produce sourced closer to Bar-ritskov and 40% transports from Spain driven with LNG-driven lorries
Intermediate transport	456.447	505.741	+11%	More return transports is included now
Distribution	670.157	666.346	-0,6%	Route optimization, shorter distances between customers. Introduction of electrical truck, van and bicycles
Company travels	63.299	70.567	+11%	Less COVID-19 restrictions have given more travelling activities
Commuting	244.684	320.357	+31%	2021 with less COVID-19 restrictions gave less home work
Energy	1.102.352	1.087.266	-1,4%	Growing stock facilities, that needs cooling and extra electricity used for reconstruction of Pack House
Packaging	692.822	895.806	+29%	More packaging used inhouse (the Green Workshop a.o.) but often with none or less packaging. 2021 more types of packaging is calculated in.
Paper	78.058	76.660	-2%	Lower consumption on campaigns
<b>Total</b>	<b>5.280.070</b>	<b>5.410.303</b>	<b>+2%</b>	



## 9. Initiatives to reduce CO<sub>2</sub> emissions

At the end of 2019 Aarstiderne promised to have a CO<sub>2</sub> account in balance from 2020 and onwards.

An agreement has therefore been made with National Capital Partners to buy 16,000 tonnes of VCS's (verified carbon standard) CO<sub>2</sub> credits, in order to offset the CO<sub>2</sub> footprint for the next 3 - 4 years in projects in East Africa, Chile and Colombia. The VCS credits are of the highest standards available. Besides the compensation for the emissions through offsetting it is of course apparent that the focus on reducing the emissions should have the highest focus and likewise the possibility to inset in Aarstidernes own supply chain.

The following are initiatives going forward.

- On the **transport** area focus is on filling up the vans and optimizing the routes to save energy. For this reason, it is not possible for a customer to choose the time of arrival on their purchase.
- Using **alternative propellants** such as electricity or gas. The aim is to follow up on the successful introduction of both electrical vans and bikes but is challenged by the lack of technological development.
- From 2019 to Christmas of 2020, a trial on **growing vegetables** in a nonheated and nonlighted glass house in Køge has taken place. The trial has challenged how many Danish leaf vegetable types can be grown in the cold part of the year. The experiences shows that the Danish growing season can be prolonged with up to 6 - 8 weeks. With an otherwise average 20-week growing period this is substantial. In the coming year this knowledge will be used to hopefully increase the share of Danish produce in the assortment and at the same time lower the need for inbound freight hence a lot less kilometers driven by truck.
- Regarding **transport of people**, an intranet app is used to secure that cars are filled up. Since 2020 it is required that all new company cars are either hybride or fully electric. So far two hybrid cars have been acquired and three ectrical cars in 2021. Business travels by flight are minimized, but occasionally there is a need to go overseas to check suppliers etc.
- Regarding the **energy consumption** several issues on heating have been addressed over the past years. In 2022 it is the plan to install heat pumps to use of the surplus heat from cooling the cold storages.



## 9. Initiatives to reduce CO<sub>2</sub> emissions

- continued

- **Packaging** has been described as one of the areas with great focus on improving in order to reduce size and thickness of the packaging materials.
- This report solely looked at Aarstidernes own CO<sub>2</sub> emissions, from collecting the products at the suppliers to the box arrives at the doorstep of the customers. The CO<sub>2</sub> emissions from the production of the item in case is not included. This means that as more **production** is insourced the level of CO<sub>2</sub> emissions will increase at Aarstiderne. The alternative is to have more produced and packed at the suppliers which in total would most likely result in a higher total of CO<sub>2</sub> emission.
- The meal boxes contains substantially less meat than an average Danish meal. The chefs in Aarstiderne strive to design meals based on the **80/20** principles, where 20% of the energy is animal based 80% is plant based. In 2019 method has been developed to measure the kcal combination of the boxes. A regular Danish evening meal typically consists of 60% energy from plants and 40% energy from animals. On average the meals in our meal boxes in 2021 was 75% plant-based and 25% animal-based. Customers claim to be eating greener after having used the meal boxes. This work of inspiring our customers to eat greener is one of the biggest impacts Aarstiderne has on the climate.



## 9. Initiatives to reduce CO<sub>2</sub> emissions

- continued

### Our Supply Chain

#### FACT BOX

Food production and delivery does have a CO<sub>2</sub> footprint and Aarstiderne lower this through the supply chain as follows:

- The Aarstiderne supply chain is very short. The time from harvest in the field to the customer only takes a few days.
- There are not many products in the storage waiting to get to a store to be sold.
- Most customers are subscribers, making it possible to forecast the sales in detail.
- In cooperation with selected farmers, yearly and quarterly planning for parts of the products is done. The farmer forecasts the amount of produce expected, and an agreement a minimum demand from Aarstiderne is made. This way a long-term relationship is built with the suppliers.
- The customers trusts the chefs in Aarstiderne to decide what to put on the plate – not everything is available at all times hereby minimizing the risk of food waste.
- The recipes are created from what is available and planned around the seasons.
- A small cauliflower fits the box for 2 people and the bigger ones the box for 5 people = less waste
- Defined portion sizes are also a mean of lowering the food waste. If only one leaf is necessary for a dish this is what the customer gets and not a whole bundle.

This way of organizing the business minimizes the total emissions on the food delivered and is a step on the way to a shorter and more direct supply chain aiming to significantly lower the CO<sub>2</sub> footprint on food.

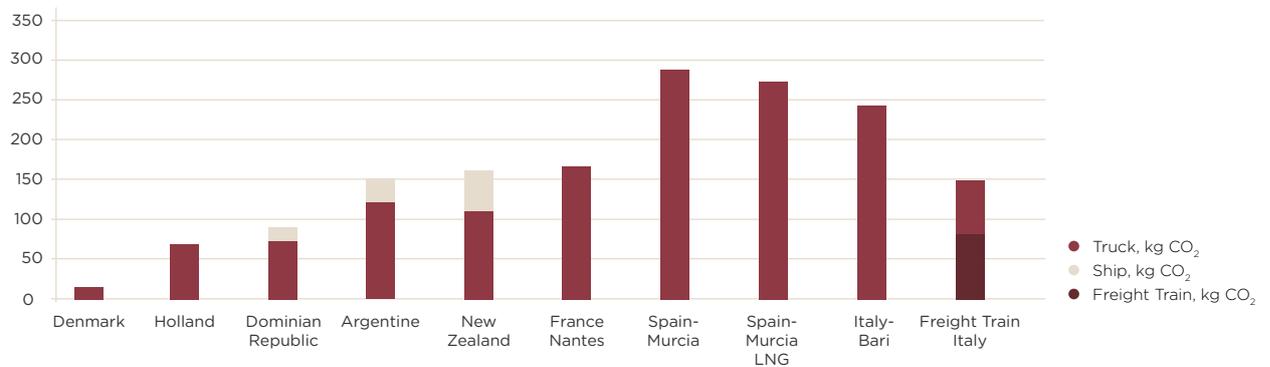


# 10. Appendices

Appendix A: The Danish and Danish/Swedish/German share of bread/flour, fish, fruit, vegetables, groceries, meat, dairy products and eggs for the years 2016-2021

Danish share	2016	2017	2018	2019	2020		2021	
	DK %	DK+SE+DE%	DK %	DK+SE+DE%				
<b>Bread/Flour</b>	-	-	-	-	62,4	69,7	52,6	62,4
<b>Fish</b>	-	-	-	-	95,2	95,2	92,7	92,7
<b>Fruit</b>	7,8	6,2	6,8	2,2	8,6	13,1	7,1	15,8
<b>Vegetables</b>	34,5	38,9	33,7	35,0	35,9	36,3	35,0	35,4
<b>Groceries</b>	-	-	-	-	31,3	32,0	26,9	27,7
<b>Meat</b>	65,5	60,3	49,1	69,0	65,9	79,7	67,0	82,4
<b>Dairy</b>	-	-	-	-	94,1	94,1	90,8	91,3
<b>Eggs</b>	-	-	-	-	92,0	100,0	92,1	100,0
<b>Total</b>					35,6	38,0	33,4	37,0

Appendix B: Kg CO<sub>2</sub> for inbound freight per ton of goods from selected countries with different means of transport.





## 10. Appendices - continued

Appendix C: Emission factors from Concito applied for the calculation of emission expressed in CO<sub>2</sub> equivalents (CO<sub>2</sub>e).

Emission factors (from CONCITO)			
<b>Inbound Freight:</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Inbound Freight Lorry	0,107	Lorry > 32 ton	TonKm
Inbound Freight Lorry LNG	0,102	Lorry > 32 ton	TonKm
Inbound Freight by ship	0,00243	Ship transport	TonKm
Inbound Freight by train	0,05	Train	TonKM
<b>Intermediate Transport:</b>	0,107	Delivery van > 32 ton	TonKm
<b>Distribution:</b>	0,28	Delivery van	Km
<b>Company Travels::</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Company cars - Diesel	0,13	Car	Km
Company cars - Electricity	0,08	Car	Km
Company cars - Hybride	0,11	Car	Km
Flight persons	250	Fight	per time
Overnight stays	60	Hotel	Stk
Train persons	0,05	Train	Km
Driving in own car	0,14	Car	km
<b>Commuting::</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Commuting - Gasoline	0,15	Car	Km
Commuting - Diesel	0,13	Car	Km
Commuting - Train	0,05	Train	Km
<b>Energy:</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Electricity	0,5	Administration and production	Kwh
Oil/Agrodiesel	2,8	Oil for heating	L
Gas for Heating	2,2	Bottled gas	M3
Gas for Cooking	2,9	Bottled gas	Kg
Gas for Forklifts	2,9	Bottled gas	Kg
Refrigerant	1774	HFC	Kg
Refrigerant	1300	Freon	Kg
Refrigerant	3922	R404A/R744	Kg
Refrigerant	1	CO <sub>2</sub>	Kg
<b>Packaging:</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Foam boxes	3,5	Polystyren	Kwh
Plastic container	4,4	Polypropylen	L
Inliner, flowpack, labels	3,07	HDPE (high density polyethylen)	M3
Cellophane and transfer foil	2,5	LLDPE (Polyethylen)	Kg
Strapex	4,2	Polypropylen	Kg
Transferfolie	3,07	HDPE (high density polyethylen)	Kg
Carrying tray + bag with handle	3,07	HDPE (high density polyethylen)	Kg
Absorber	3,07	HDPE (high density polyethylen)	Kg
	2,5	LLDPE (Polyethylen)	
	0,3	Recycle pulp	
	0,3	Brun kraft	
	2,01	30% Polypropylen and 30% polyethylen. The rest does not emit CO <sub>2</sub>	Kg
<b>Paper:</b>	kg CO <sub>2</sub> /unit:	Unit/Description:	Unit
Paper for printing	1,3	Navision	Kg
Paper for copying	0,82	Navision	Kg