

Product Carbon Footprint

Impact statement

Økoskabet **mitigates** a climate mitigation effect by providing a **last mile solution for food deliveries** with **distributed pickup hubs** instead of **individual home deliveries**.



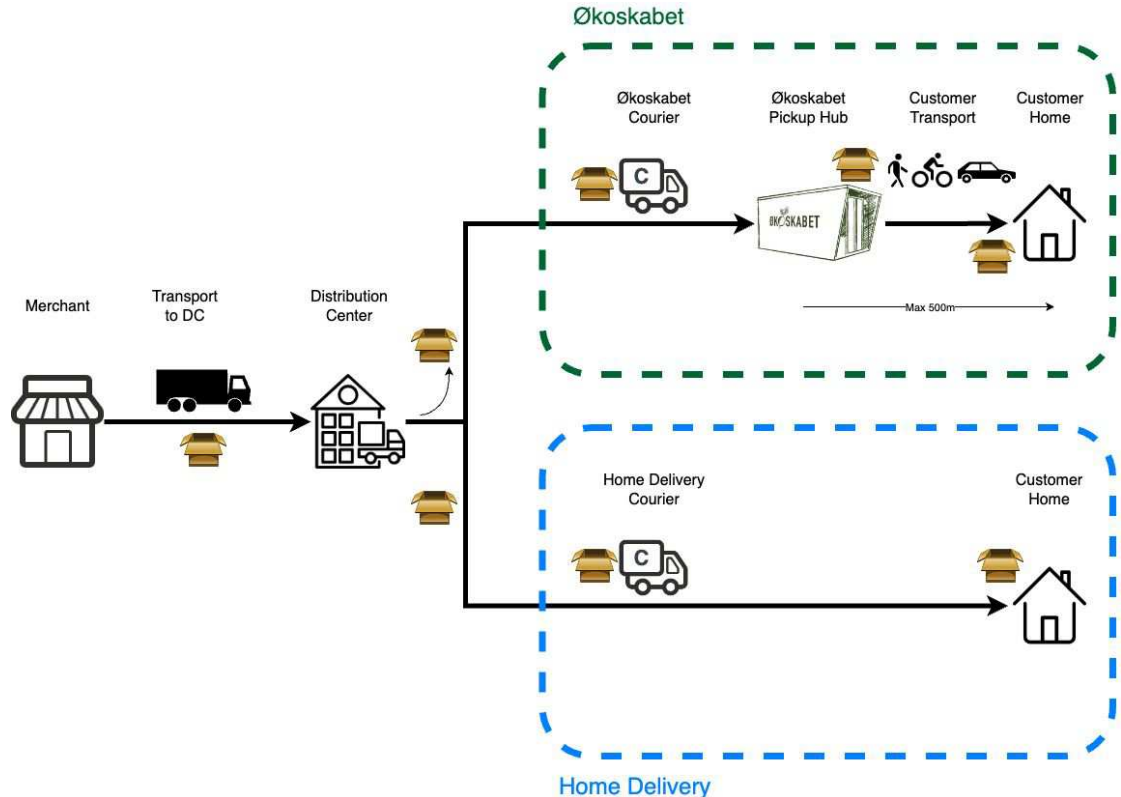
PCF Model

Product Carbon Footprint Model

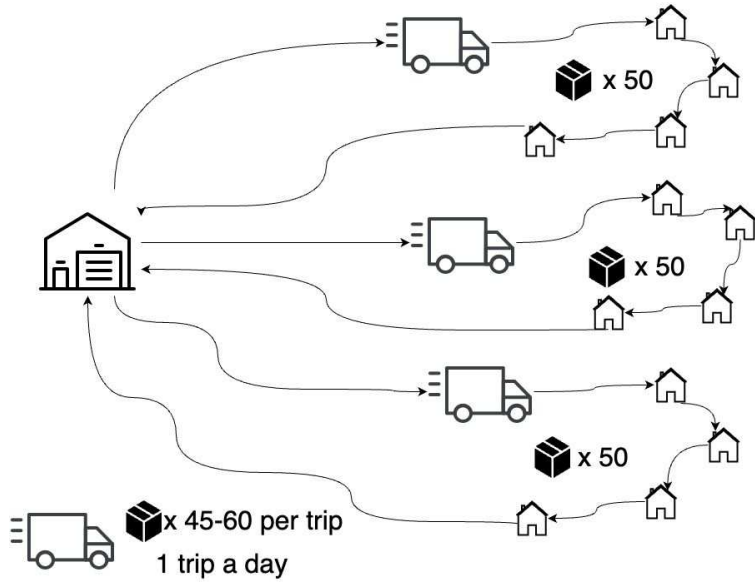
Deliveries through Økoskabet as opposed to Home Deliveries follow the same delivery path for first mile and line-hauls, but differ a lot in the last mile. Økoskabet today replaces last mile delivery, i.e. the transportation from the Distribution Center where the Merchant sends the shipments to, to the end consumer. The Product Carbon Forecast made by Økoskabet also includes the fact that some end consumers will pickup the shipments by car in Økoskabet. The model on the right shows the two paths and the boundaries of the CO2 emission calculations.

Functional unit

Emissions for **1 shipment** is used as a functional unit.

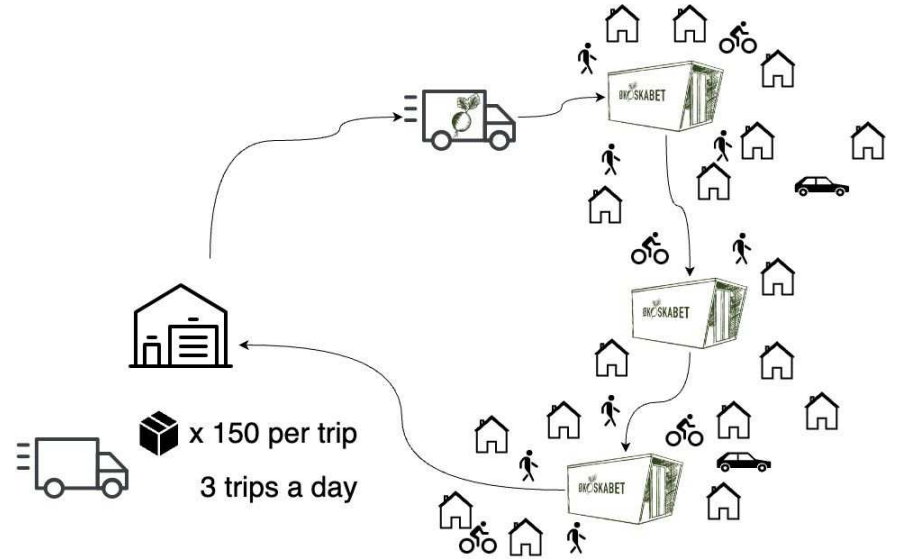


Home Delivery

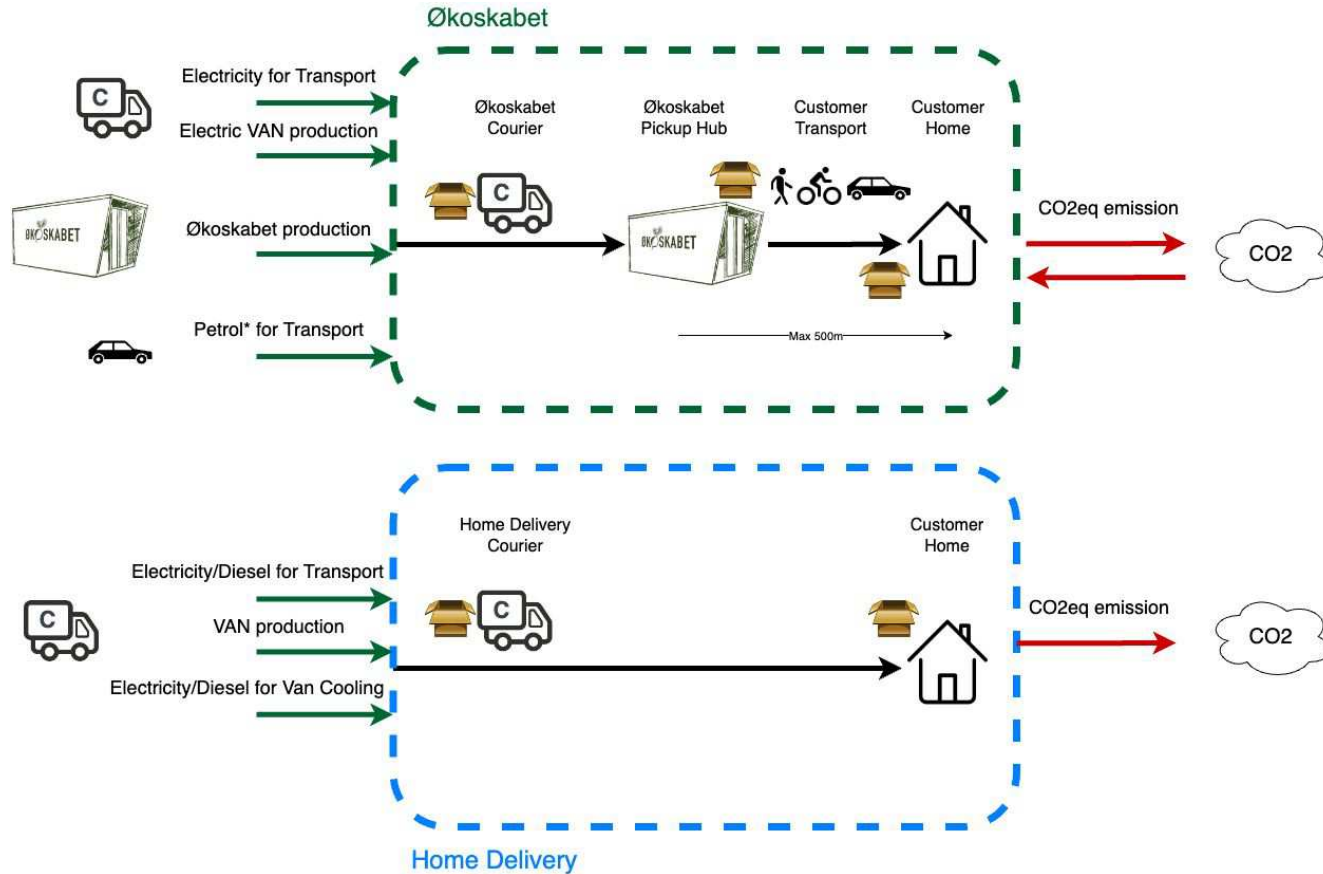


vs.

Økoskabet



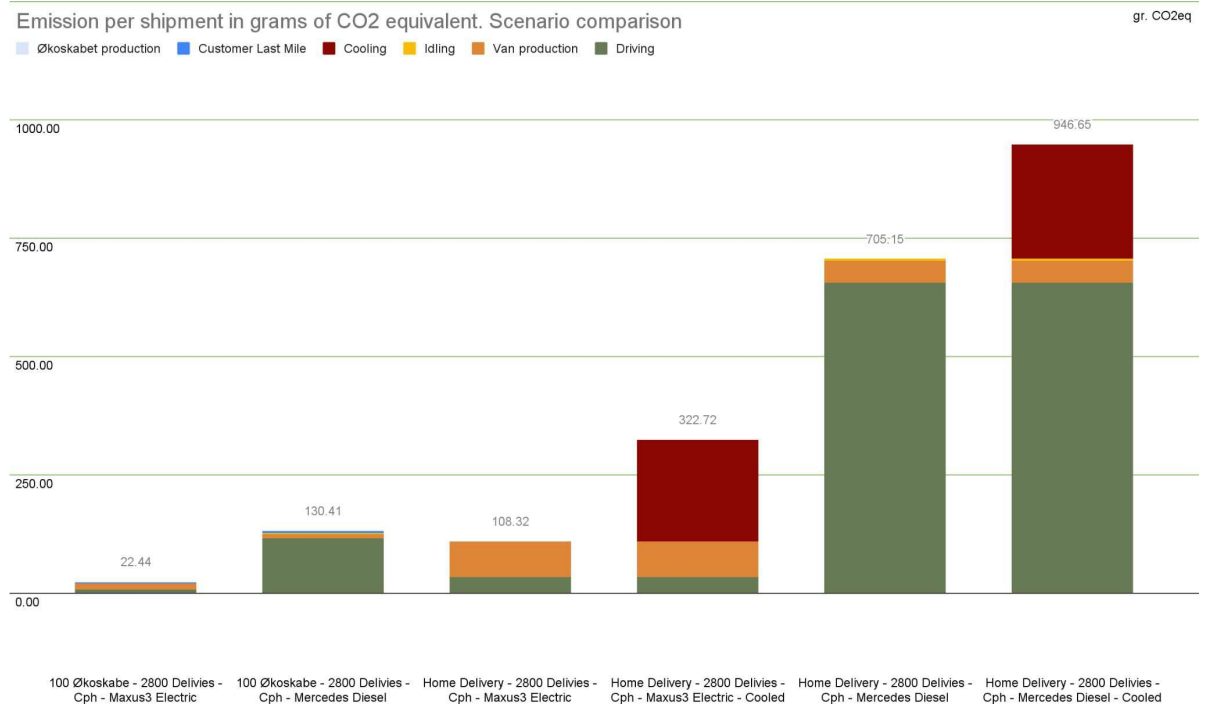
Resource Model



Scenario Comparison

Scenarios

Each bar in the graph represents one of the calculated scenarios. The value of each bar is the total last mile delivery emission for one shipment. The different colors show what contributes to the emission. The largest contributor (green) is fuel/electricity for driving. But the scenarios that involves a cooled van also shows a significant amount of energy spent on cooling the van. Økoskabet driving emission is so low that the van production actually contributes more than the driving per shipment



Emission Buildup Økoskabet

Emission Buildup of Økoskabet Scenario

The graph shows the buildup of the emission in the scenario where Økoskabet is used for delivery with electric vans. This is the left-most bar in the previous slide: Scenario Comparison.

The production of Økoskabet has a slight negative impact on the emission. This is because 5.5 tonnes of FSC100 wood is used to produce each Økoskab which contributes negatively to the emission by binding CO₂ in the wood. This relies on the Økoskabet being repurposed at the end of life. The contribution to the total emission however is only a few percent.

Emission Buildup For Økoskabet Delivery - Electric Van - Not Cooled



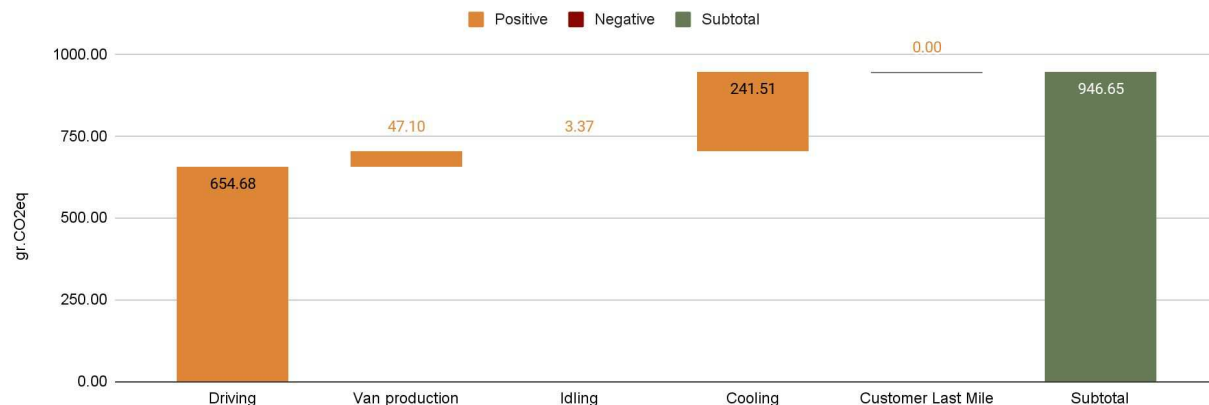
Emission Buildup Home Delivery

Emission Buildup of Home Delivery

This graph similarly shows the build-up of emission for a common scenario used today. Shipments are home delivered using a cooled Diesel van.

Cooling of the van is a large contributor to the large CO2 footprint of the home delivered shipments.

Emission Buildup For Home Delivery - Diesel Van - Cooled

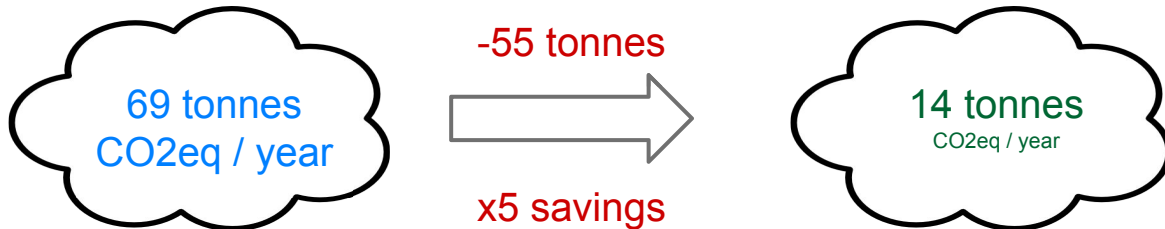


Potential total CO2 reduction for Copenhagen

Home Delivery using Cooled Diesel Vans → Økoskabet



Home Delivery → Økoskabet (Same vans)



The total reduction is based on a scenario where Økoskabet takes over 34% of the mealkit market in Copenhagen from current players resulting in ~75000 monthly deliveries. Most of those players are currently using Cooled Diesel vans for home deliveries. They are however (slowly) adapting electric vehicle. So the potential CO2 reduction is shown for both a shift from the current emissions to a future shift where most of the competitors also drive electric vehicles. The bottom number compares Home Delivery to Økoskabet using same non-cooled electric vans.

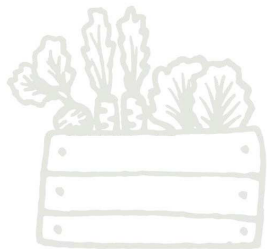
Other benefits

- Ability to collect from more than one producer
- Fewer vans means less congestion
- Health benefits from reduced pollution



Økoskabet enables local food producers

Økoskabet is committed to stay
open to all producers



PCF Model Assumptions

It is necessary to make assumptions in order to build a model around emissions. Økoskabets intention is to be as realistic as possible in the modelling and not blow up numbers or attempt to greenwash figures. We wish to be transparent about the assumptions put into the model in this presentation:

- The compared scenarios are made on a city comparable with **Copenhagen**. This requires around **100 Økoskabe** to cover and the scenario is built up around **2800 daily deliveries** with deliveries made 6 days a week (**75.600 per month**). This represents a scaled business, but is realistic given the mealkit market alone is estimated to be 220.000 monthly deliveries in Copenhagen alone.
- The model is based on the Maxus e-deliver van for electric deliveries and a Mercedes Sprinter for diesel deliveries.
- We assume that **30%** of the Økoskabet customers go by car to pickup the shipments and that **15%** of the customers take a detour to pick up their goods. The detour is **500m** in average. These numbers are estimated at the moment and will be followed up with actual customer input later.
- Økoskabet has an expected lifetime of **10 years** and Økoskabet will seek to find ways to use them in the afterlife. e.g. as **student housing or repurposed wood**.
- We estimate that the distance between home deliveries is **1.6km** based on [This study in Helsinki](#).
- We assume that the distribution center is located in the Køge/Greve region which is in average **25km away** from the delivery locations in Cph.
- [2022 Energinet Numbers](#) are used for electricity emission and [2022 DEFRA Numbers](#) are used for diesel emissions.
- DEFRA numbers are also used to estimate diesel emissions, which we feel is too conservative due to numbers being for long distance transport where the chilled area isn't opened many times a day. We use these numbers in lack of better numbers. Electric cooling is set to use 1.5kW throughout the day, but this is very dependent on many factors like ambient temperature, how loaded the truck is, door opens, temperature of goods with inserted in the truck, etc.
- All numbers shown are **CO2 equivalents** (i.e. including other greenhouse gases like methane, NOx, etc.)

A close-up photograph of a person's hand reaching over a tray filled with small green seedlings. The seedlings have heart-shaped leaves and are growing in a black plastic tray. The background is softly blurred, showing more of the same plants.

ØK**SKABET**