



BY APPOINTMENT TO THE ROYAL DANISH COURT

Royal Greenland®

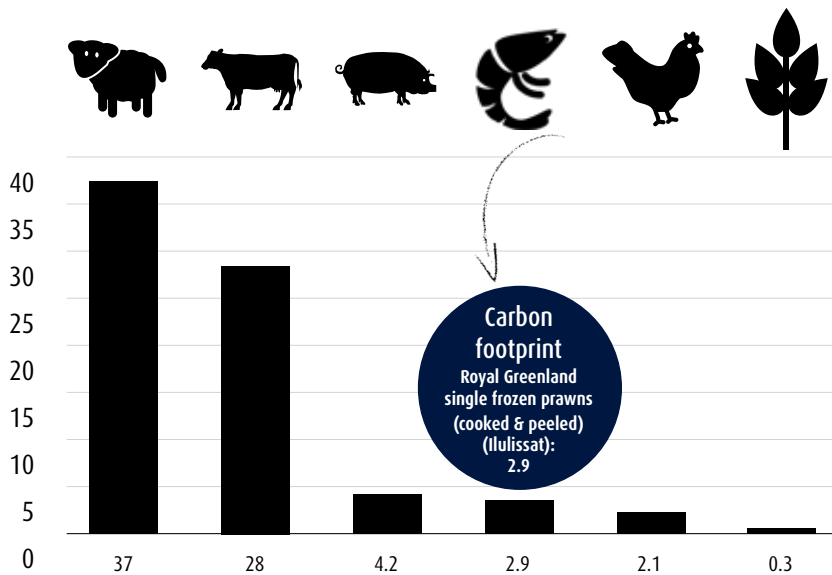
Carbon footprint from cold-water prawn production

Life cycle assessment (LCA) of Royal Greenland's prawns

Read more about
sustainability here:



**Carbon footprint (CO₂e emissions per kg edible product)



Why are Royal Greenland's cold-water prawns a good alternative to other proteins?

- Greenlandic fishing is energy-efficient**
 - **Relatively short sailing distances to many fishing areas** - with Royal Greenland's two prawn processing plants located close to the fishing areas.
 - **High density of prawns;** efficient fishing with fewer work processes. Where the cold but nutrient-rich waters around Greenland provide excellent living conditions for the prawns.
 - **New, modern fishing fleet** with a large storage capacity and optimal fuel utilisation - so the boats do not have to sail to ports as often with landings.
 - **MSC-certified fishing** is done in accordance with biological advice and monitored by independent supervisors.
- High utilization of the entire prawn**
 - When the prawns are peeled at Royal Greenland's processing plant in Ilulissat, Greenland, nothing goes to waste. The shells are dried, heat-treated and ground into fine meal. Prawn meal can be used as a natural colouring and flavouring in food.

Royal Greenland's prawn product is a good alternative to other protein products such as beef and lamb, measured by CO₂e emissions per kg of edible product.

The carbon footprint of Royal Greenland's frozen prawns** has been measured specifically for this product by RISE Research Institutes of Sweden. The other figures are general carbon footprints for the product type, also measured by RISE**.

In this comparison, Royal Greenland's prawns are cooked (which is an additional process), while the other products are raw/uncooked. The prawns are therefore slightly more climate-efficient than the number here show.

The life cycle assessment (LCA) of Royal Greenland's prawns was carried out in 2023 by RISE Research Institutes of Sweden, which independently carries out LCA assessments of food products based on a life cycle assessment of the products. The value chain has been analysed from catch to finished product, i.e. Royal Greenland's entire value chain from fishing until the product leaves Royal Greenland's processing plant in Germany (cooked and peeled prawns or brine prawns) or it arrives at a freezer warehouse in Denmark (shell-on prawns).

** RISE's LCA analysis of Royal Greenland's prawns is representative of Royal Greenland's production in 2021.

The study was conducted by RISE Research Institutes of Sweden and reviewed externally by Sepideh Jafarzadeh, Senior Research Scientist at SINTEF Ocean in Norway.

** ** The figures are from 'RISE Öppna listan, klimatdatabas för livsmedel SE v. 2.2 (2023)', and the products are per kg raw boneless meat/dried lentils.

The prawns are cooked, peeled, single frozen and packed, and are from RISE's LCA analysis for Royal Greenland.



Prawn meal from prawn shells

Used e.g. as a flavouring in foods

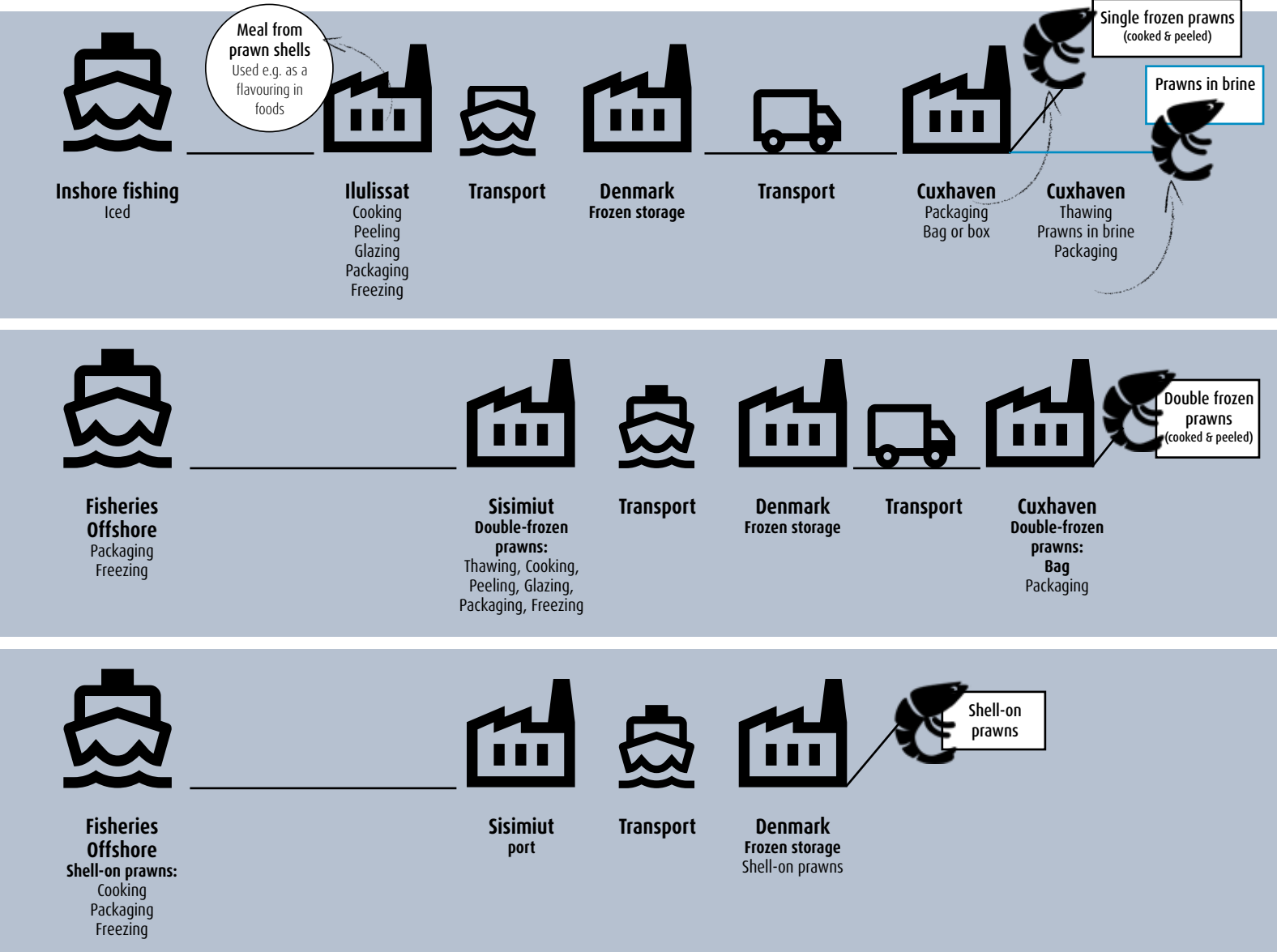
Good economics - use all of the prawn!

Use prawn shells for stock, soup or oils.

Prawn variants

Have different carbon footprints

CO2e emissions are measured for the prawn's value chain, from the prawn fishery until the final product leaves the processing plant/freezer warehouse – the life cycle assessment (LCA)



Why are there differences in the carbon footprint of different prawn products?

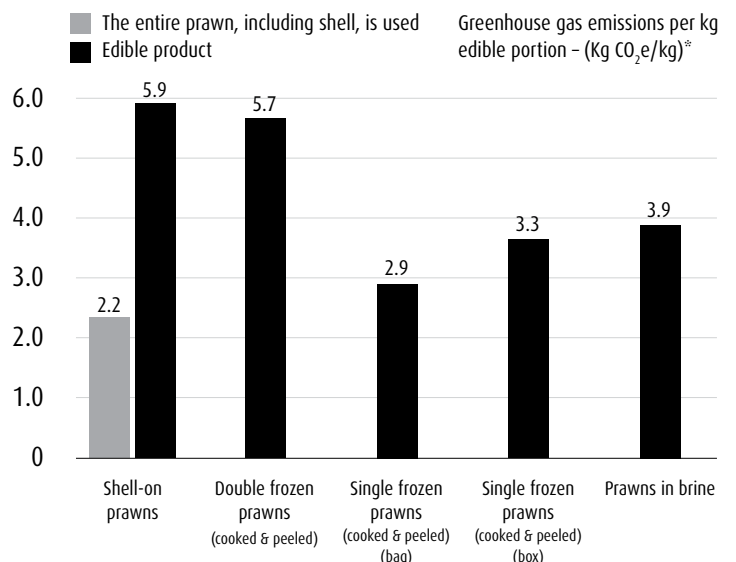
All Royal Greenland's cold-water prawns are wild-caught in relatively coastal waters in areas close to our local processing plants in Greenland and Canada. However, the processing on board and in the plants varies depending on the individual product variants.

Shell-on prawns are fished offshore by Royal Greenland's own fishing fleet. The shell-on prawns are sorted, cooked, quick-frozen and packed within three hours to ensure optimal freshness and quality. As the prawns are processed on board, the boat can remain at sea until fully loaded, thus optimising energy consumption. The carbon footprint is calculated per kg of "edible portion of the shell-on prawn". If you use the prawn shells, e.g. for stock/bisque in your kitchen, the carbon footprint of 2.2 is more accurate (grey column).

The single frozen prawn variants are caught by smaller fishing vessels close to the coast. Once caught, the prawns are stored on ice and landed at the nearest processing plant. In the plants, the prawns are cooked, peeled and frozen before being packaged. The prawn shells are also used, thereby contributing to a lower carbon footprint.

The double frozen prawns are sea-frozen, shell-on prawns from offshore fishing that are then brought to the processing plants on land. At the plant, the prawns are thawed and then undergo the same process as the single frozen ones. The name thus comes from the fact that both the raw material and the peeled finished product are frozen. Double frozen prawns have a higher carbon footprint than single frozen ones due to increased energy consumption during thawing and double freezing, in addition to being fished offshore.

Prawns in brine are based on the single frozen prawns, which are further processed in Cuxhaven, Germany. Here, they are placed in brine, making them ideal for quick serving.





CO₂e emissions
 is a way to measure emissions for a range of different greenhouse gases by converting them into CO₂ equivalents



“Royal Greenland prawn products have a significantly lower carbon footprint than previous, more general, prawn studies have shown”

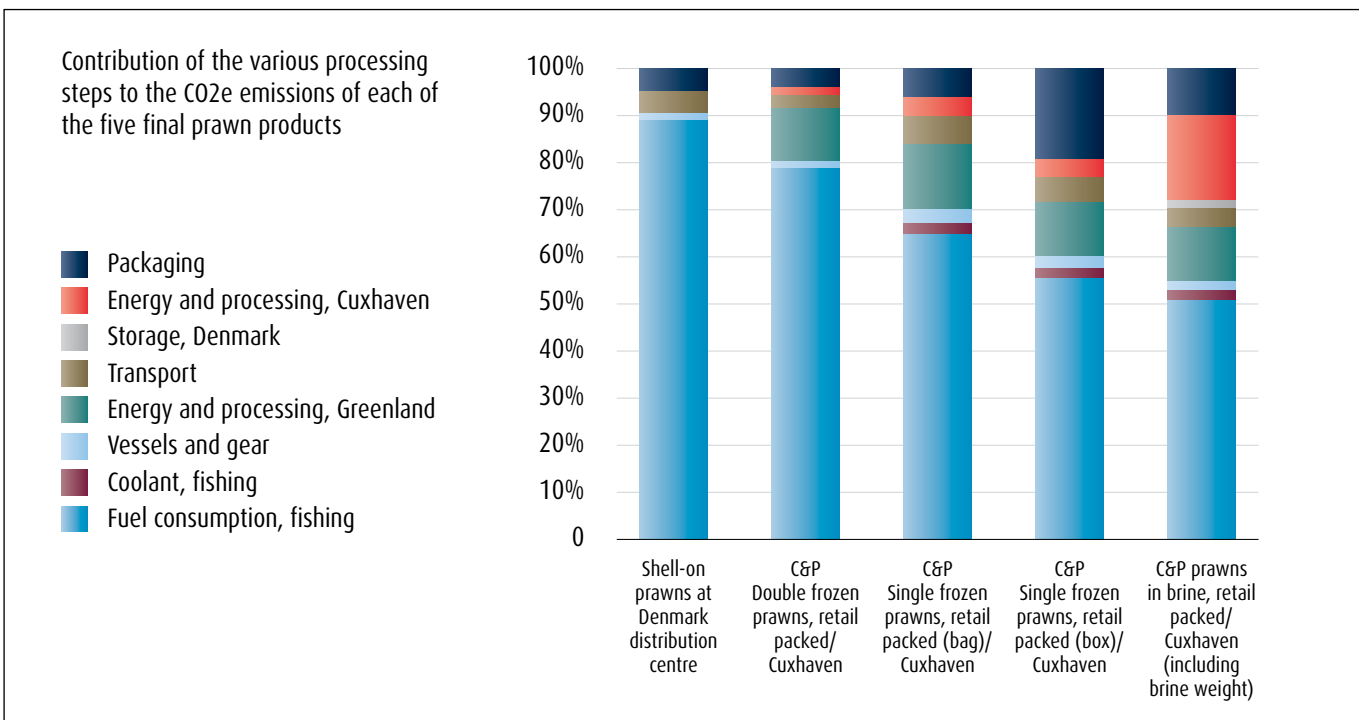
The largest climate impact from Royal Greenland’s finished prawn products comes from the fuel used for fishing.

RISE* concludes that Royal Greenland’s inshore and offshore fisheries are significantly more fuel-efficient than 'previous literature' about prawn fisheries has generally assumed. For shell-on prawns, climate impact comes primarily from fuel (90%), while for the other prawn variants, fuel consumption is also the largest factor for climate impact (from 55-80%).



At Royal Greenland, we have completed a full mapping of the Group’s CO₂e emissions.

This mapping will form the basis for a dedicated climate strategy.



Read more about our products at www.royalgreenland.com/