Carbon footprint has become a popular measure of the efficiency and sustainability of food production, especially in the context of climate change. Cermaq measures and reports the direct carbon footprint for our fish feed and fish farming operations but also considers the carbon footprint for the entire value chain for farmed salmon.

CERMAD’S POSITION
- Farmed salmon stands out as a climate-friendly food choice, particularly when compared to alternative sources of protein such as beef and pork.
- We analyse the carbon footprint for our feed products along the supply chain in order to find opportunities to reduce our impact.
- Fish feed production contributes considerably to the carbon footprint for farmed salmon. Through our subsidiary feed company, EWOS, Cermaq has identified ways to reduce the carbon footprint for fish feed by diversifying the feed formulations and by increasing the efficiency of the feed.

BACKGROUND
Several studies, including studies by Tydemyers, SIK and SINTEF, have quantified the carbon footprint (kg CO₂ equivalents/kg of edible product) at wholesaler for many agricultural and seafood products. Assessment based upon the LCA (Life Cycle Analysis) methodology standardised by ISO allows for comparison of single aspects such as species, transport mode and distance and product form.

The SINTEF study showed that farmed salmon and wild cod have the same carbon footprints at the landing/slaughter site, lower than that of wild haddock. Mackerel and herring are, however, more carbon-friendly choices, with only about one sixth of the carbon footprint of salmon, cod and haddock.

WHAT MADE SALMON SO EFFICIENT?

Cold-blooded
Cold-blooded animals like salmon do not spend energy on maintaining body temperature like warm-blooded animals do.

Lives in water
As swimming requires less energy than walking, salmon can convert a larger share of its feed into growth than livestock can.

High fillet yield
Salmon has a fillet yield of about 60 per cent and close to all the by-products from salmon processing are put to use.

Salmon vs. livestock
Seafood production has a relatively low carbon footprint compared to land-based meat production. The carbon footprint of salmon production is only slightly higher than that of chicken, half of that of pork and one tenth of the carbon footprint of beef production. This includes the fact that seafood is transported over longer distances to market than meat.

These finding are not surprising considering the efficiency of salmon farming. Due to the fact that it is cold-blooded and lives in water, salmon uses less energy than warm-blooded livestock. This makes salmon more energy-efficient than livestock; more energy is used to grow, little energy is wasted on maintenance. Salmon also has a higher edible yield than livestock, as a relatively large share of the fish is used for food.
The carbon footprint of farmed salmon is comparable to that of chicken, and only one tenth of the footprint of beef. (Source: SINTEF)

Carbon footprint studies also have other interesting findings. For example, local seafood processing is favourable since by-products from processing are used to a larger extent and transport activity is lower. Also, the freezing or super cooling of seafood allows for more efficient transport as it does not require use of ice and a larger amount of fish can be loaded per pallet – it also keeps the fish fresh for longer so less is wasted due to spoilage. Transport mode and time are equally important as transport distance.

Feed production
Feed production contributes significantly to the carbon footprint for farmed salmon. There are several options for reducing this factor: reducing the amount of feed used to produce each unit of salmon, using less resource-demanding feed ingredients, and choosing the most efficient marine raw materials in the feed.

Since 2006, EWOS has been able to calculate the ecological footprint (including carbon footprint) of each of its operating companies. The results show a general downward trend in recent years. The amount and type of marine ingredients in the feed formulation largely explain this. Feed represents about 90 per cent of the ecological footprint of farmed salmon. Consequently, more efficient feed will lower the ecological footprint of the end product. EWOS also designs feed to promote rapid fish growth, which can result in increased fillet yields.

Energy use
Fish feed production is the most energy intensive part of Cermaq’s operations, accounting for approximately two thirds of the company’s total energy consumption. The energy consumption per tonne of fish feed produced by EWOS has been reduced annually. Electric power is the most important energy source and represented 39 per cent of the total energy consumption in 2011.

Measures to increase energy efficiency primarily focus on the processing of feed. Also, more successful processing leads to less re-work and lower energy use per tonne of finished product. Cermaq published detailed information on the group’s energy consumption as part of its reporting to the Carbon Disclosure Project.