Product

Every day, we seek to improve the feeds we sell. That includes enhancing the sustainability of our existing feed ingredients, as well as developing novel ingredients to unlock new possibilities. In all cases, we aim to deliver greater positive impact to our customers so they can improve fish health and performance while reducing negative environmental impact.

Boosting sustainability

Circularity is an important aspect of sustainability, and we seek to use ingredients derived from other food production sources, known as co-products. In 2023, a complicated year for sourcing raw materials, we held relatively steady on co-product ingredients in our feeds. For coldwater, 49.7% of raw materials were co-products. For warmwater, this was 68.2% — slightly below the prior year but still above the 64.5% we achieved in 2021. Year-over-year, we reduced coldwater fishmeal and fish oil inclusion by 1.5 percentage points. However, the share of trimmings in both fishmeal and fish oil declined, driven by challenges in coldwater. Still, 34.5% of all marine ingredients used in 2023 were trimmings.

These figures reinforce that we are striving to include co-products in our overall ingredient mix to a greater degree, and when our ingredients are from marine sources, we seek to draw on trimmings as much as possible. Both these efforts help reduce pressure on marine ecosystems and utilize a circular approach to sourcing as much as possible. Although there are limits to our inclusion rates of these ingredients based on both market availability and feed formulation requirements, we will continue to pioneer new ways to make as much progress as possible.

Sourcing from certified suppliers and Fishery Improvement Projects (FIPs) is a key contributor to our sustainability approach. Shortages in marine raw materials, due in part to the closure of the Peruvian anchoveta fishery, drove 2023 prices to all-time highs. However, our sourcing teams were prepared, and our overall share of certified or improving marine ingredients declined only slightly. We sourced significantly higher volumes of blue whiting — which was accepted into the MarinTrust Improver Program in late 2021 — and its share of our total forage fish sourcing for coldwater feeds more than doubled from 13.6% in 2022 to 30.6% in 2023.

Reducing materials

We are working to systematically reduce packaging materials and waste, while using recycled materials where possible to further cut our footprint. For instance, in Vietnam we have made significant reductions in plastic use by redesigning feed bags, shifting some products to bulk packaging, and using specialized ingredients in the bags to maintain their strength.

Often, we cannot directly collect and reuse packaging from customers because of the risk of biological contamination. However, we are exploring ways to reuse bags in some limited instances where we can be sure of protecting against biosecurity risks, and we are incorporating recycled materials that have been reprocessed from other sources.

700 metric tons

Reduction in annual plastics usage in Vietnam

A growing portfolio of novel ingredient options

Our aqua nutrition business has been at the forefront of discovering, commercializing, and scaling these types of ingredients with our partners, and this past year saw progress on several fronts. We lean on our innovation capabilities and knowledge of animal health and performance, as well as the broad reach of Cargill and our relationships across global food and agriculture. This makes us an ideal partner for our customers as they formulate the right feeds with the right results for their farming environments.

Algal oil: Two years ago, we committed to include omega-3 fatty acids from algal oil in all our Norwegian feeds. Now, we are working with supplier partners to see how this ingredient, which offers a nutritional cornerstone of aquaculture diets, can be scaled up and produced with a smaller footprint through techniques like fermentation.

Soy protein concentrate: Our multi-year partnership with U.S.-based Houdek helped the company scale up a soy protein concentrate called ME-PRO®, which has a higher protein content than other concentrates and a potentially lower environmental impact in feeds through reduced phosphorous emissions. It is ProTerra-certified and uses non-GM soy.

Single-cell proteins: What if you could pull proteins out of thin air? That's the promise of our research with partner **Gas 2 Feed** to develop fermentation processes where single-celled organisms like bacteria or yeasts consume CO_2 and hydrogen, converting them into proteins that are suitable for use in aquaculture.

Insect proteins: The rich protein content of insects and their resource-efficient production make them a competitive choice for fish feed formulations. We are continuing to scale up our partnership with insect ingredient pioneer Innovafeed, whose high-quality insect meal in aquafeed saves up to 16,000 metric tons of CO_2 for every 10,000 metric tons of insect protein.

Camelina oil: This promising ingredient can be grown as a winter cover crop, generating income for farmers while also providing ecosystem benefits as part of a crop rotation. The oil from camelina — which makes up more than one-third of the seed — is also high in omega-3 fatty acids. We are currently working with partners on field trials for camelina in the U.S.

People

People are at the center of everything we do. A safe, supportive working environment enables our workforce to deliver the quality goods and services our customers expect, while also helping us advance our sustainability goals. We are working to advance diversity, equity, and inclusion in our own business while safeguarding the rights of those in and around our supply chain.

Human rights

In 2023, we also reinforced our commitment to respecting human rights by conducting human rights assessments of high-risk supply chains. These helped us deepen our understanding of risks in our raw material supply chains for aqua nutrition and identify opportunities to collaborate with peers and other stakeholders to improve the aqua ingredients sector as a whole. One example is our work with the Global Roundtable on Marine Ingredients, which includes improving understanding of the social risks of marine ingredient production in Mauritania and using our collective leverage to realize advancements.

Stronger communities

Aquaculture is a vital industry for both nutrition and commerce in many communities, which is why we support small-scale tilapia producers in Honduras as part of Cargill's global partnership with CARE. In 2023, through market analysis and technical trainings, this project helped these farmers produce more fish for both selling and home consumption, while also enabling them to better access markets.

Planet

We seek to drive improvements across our operations and supply chains, while also providing a model for the aquaculture industry to reduce its impacts on climate and ecosystems. We strive every day within our business to reduce greenhouse gas (GHG) emissions, raise efficiency, and do more with less. In this way, our climate efforts and targets are aligned with Cargill's corporate targets (see page 12), as well as those of our customers, their customers, and our suppliers.

Frameworks for progress

We use common frameworks, best practices, and broad collaboration to be a catalyst for progress beyond the factors in our direct control. We work with partners to ensure a steady supply of more sustainable ingredients is available, which includes working on FIPs, certification programs, research initiatives, and more. Our standards, certifications, and assurances include:

- **ASC Farm Standards and the new ASC Feed Standard** based on customer demand
- **Best Aquaculture Practices (BAP), GlobalG.A.P., and organic standards** for industry-specific assurances
- **International Organization for Standardization (ISO)** for quality, environmental, and food safety management
- **Marine Stewardship Council (MSC) and MarinTrust** for marine ingredients
- **ProTerra, the Roundtable on Responsible Soy (RTRS), and organic standards** for terrestrial ingredients like palm and soy

Steady improvement

Our aqua nutrition business has been reporting on climate metrics and water usage since 2017. Our focus for energy use and emissions reductions has centered on our coldwater feed production, as the data, technology, and market dynamics of implementing changes are more conducive in this segment. Total energy use in coldwater feed production increased by 134,000 gigajoules from 2022 to 2023, reflecting an increase in total feed production. However, our efficiency continued to improve, and energy use per metric ton of production is now down 8.6% compared to 2017.

Meanwhile, after a few years of steady increases, we improved our water use performance in 2023. The efficiency of use — as measured by cubic meters used per metric ton of feed produced — improved for both coldwater and warmwater mills.

8.6%

decline in energy use per metric ton of production in our coldwater mills compared to 2017.

Programs and partnerships

Engaging stakeholders across the sector

With the world more connected and interdependent than ever, participants and stakeholders throughout entire value chains must work together to produce results with lasting global impact. That's why we partner with our suppliers and customers to design sustainability solutions and actively contribute to an ecosystem of initiatives gathering diverse stakeholders.

Our work ranges from commercial programs like our SeaFurther™ Sustainability initiative (see **page 61**) to targeted interventions like FIPs to broad industry coalitions like Seafood Business for Ocean Stewardship (SeaBOS) and the Global Roundtable on Marine Ingredients. We are proud of how this work unites so many different types of stakeholders that have a hand in delivering seafood to the world's plates.

These programs and partnerships reinforce our commitment to sustainable marine ingredients and help us achieve our goals. Our ambition is to use our leverage as one of the largest global feed producers to improve ocean health and to support the sustainable growth of the aquaculture industry. To do this, we are on a journey to source all our marine ingredients from sources that continually align with scientific understanding of what is sustainable.

Highlights of our marine ingredient sourcing in 2023:

34.5%

of total marine ingredients by volume were sourced from trimmings, which have less impact on fisheries than ingredients from forage fish

89.5%

of marine ingredients in our coldwater feeds were from certified or FIP sources

62.2%

of marine ingredients in our warmwater feeds were from certified or FIP sources

SeaFurther Sustainability

Picking up speed toward 2030

A key goal of our signature sustainable aquaculture program is to enable our customers to reduce the footprint of their farmed seafood by at least 30% by 2030.

Cargill's aqua nutrition business is well-positioned to help customers do this, with our scientific expertise on formulation and fish health, our access to the full breadth of Cargill for achieving scale in sustainable ingredients, and our close relationships with farmers and other ingredient suppliers. Feed is typically the largest component of farmed salmon's footprint and where we have directed the bulk of our focus. There are a number of ways we can help customers reduce the footprint associated with the salmon they deliver to consumers' plates, as outlined in the three pillars of SeaFurther.

This year, we worked with others in Cargill to significantly scale up the insets we source from our farmer partners (see next page). And we collaborated with SustainCERT and Soil Capital to produce **a white paper** that examines ways to monitor decarbonization in intricate agricultural systems — so we can ensure that the impact of investments in sustainability are fairly and credibly attributed along the value chain.

Reducing the footprint of farmed seafood by 30% or more is possible for customers, but it takes planning and extensive coordination up and down the supply chain – often with turnaround times of two years. We are working now with customers on supply chain actions for the next few years to get on a pathway to meet our goals together. And we have set an intermediate goal of 15% reduction across customers' feed footprint by 2026.

SeaFurther's three pillars

Source

We work with our suppliers to develop and design our feed to minimize its carbon footprint while delivering optimized nutrition.

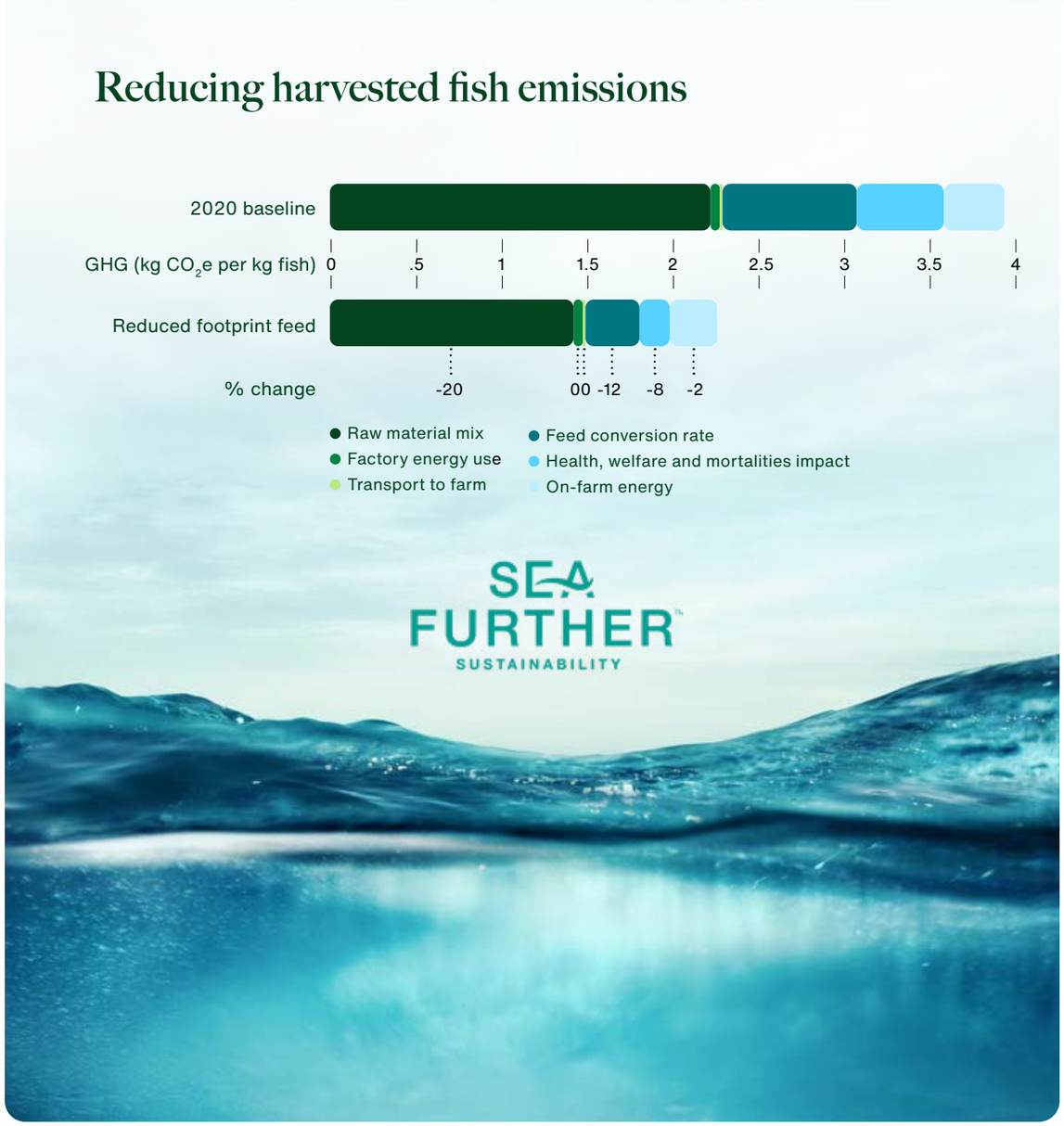
Optimize

We work with our customers to reduce energy use in feed production and farming, streamline transportation and logistics, and tailor our feeds to the fish and environments for which they are destined.

Care

We develop fish nutrition that promotes and enhances the health and welfare of farmed fish, keeping them healthier and growing more efficiently.

Reducing harvested fish emissions



SeaFurther Sustainability

Scaling up environmental benefits

Regenerative agriculture is a critical pathway to lower the carbon footprint and improve ecosystem services of terrestrial feed ingredients. Cargill is a market leader in this emerging space, working with farmers to help them implement regenerative practices like cover crops and reduced tillage. These provide environmental benefits like improved soil health, water quality and water use, and biodiversity, while also offering a new revenue stream to farmers.

After successful pilots in 2022, we scaled up SeaFurther's regenerative agriculture reach considerably in 2023 with farmer partners in the U.K. In 2024, we will build further on this and set our sights even higher. This will give our aquafeed customers even more options as we work together to reduce aquaculture's footprint.

Our customers value this partnership. For example, Norway-based Lerøy Seafood Group is one of the world's leading producers of salmon. It delivers 1.75 billion meals a year to the plates of consumers. Lerøy and Cargill work together through SeaFurther to reduce the carbon footprint of the fish Lerøy produces and help Lerøy meet its other goals around fish health, certified marine ingredients, and more.

In 2023, this work helped Lerøy shrink its carbon footprint from our feed by 3.5% using carbon insets, a reduction of 12,000 metric tons of CO_2 equivalents. We also shifted all the marine ingredients in the feed we supply to Lerøy to being either certified or sourced from a FIP, and we continued to include insect proteins and algal oil in that feed as well. Working together, we aim to reduce the carbon footprint of Lerøy's harvested fish by a bold 46%.

> "Lerøy is very happy with the change of pace in sustainability work on feed, and we are confident that the close collaboration with Cargill will ensure we reach our ambitions in an effective and holistic manner."
>
> **Jørgen Skeide**,
> Feed Manager for Lerøy Seafood Group

2023 highlights of our SeaFurther sourcing in the U.K.:

42
farms

5,000+
hectares

7,000
metric tons of CO_2e reductions

8,000
metric tons of CO_2e insets sourced from France

15,000
metric tons of CO_2e reduced in total for our customers

Our goal for metric tons of CO_2e savings in 2024:
45,000

A focus on Fishery Improvement Projects

With time-bound commitments to achieve third-party seafood certifications and mechanisms in place to verify progress along the way, FIPs are a vehicle for improvement on the water while also ensuring the fishery has the support needed to drive change. **World Wildlife Fund** (WWF) and **Sustainable Fisheries Partnership** (SFP) provide information on key elements of FIPs and how they are formed.

Cargill engages with fisheries that do not yet meet certification standards to transition toward more sustainable and responsible practices. By working with stakeholders across the sector, we support FIPs in key sourcing regions that advance ocean health and secure future supplies of more sustainable raw materials. **FisheryProgress** is the authoritative registry for FIPs and it informs our decisions on sourcing from and supporting FIPs.

FIP highlights in 2023

We saw continued progress across the FIPs we support around the globe.

In **Ecuador**, the fishery is now very close to completing the FIP, which will enable participating suppliers to become MarinTrust certified. Though completion of the FIP was expected in 2023, one species in the complex did not pass all requirements during the assessment. A formal request for a FIP extension was made and subsequently approved, and the revised FIP deadline is now October 2025. We will continue to monitor progress. In the meantime, we were pleased to see the Ecuador FIP hailed by **Premios Verdes** as an important conservation project in its annual global listing.

The **Northeast Atlantic** FIP saw continued dialogue among governments for the coastal nations surrounding this crucial fishery, although no details were agreed upon in terms of how catch quotas will be shared among them, and the nations deferred further negotiation. We are disappointed in this delay and continue to **strongly advocate for governments** to establish quota-sharing agreements through our membership in the **North Atlantic Pelagic Advocacy Group** (NAPA).

For the FIP off the coast of **Mauritania**, where seas are heavily fished, we have focused on provision of the European pilchard for fish oil, reserving other key species for direct human consumption in local and export markets. This will help ensure a balance between drawing on the fishery to support aquaculture around the globe and providing essential nutrition for local communities. We also worked through the **Global Roundtable on Marine Ingredients** to advocate for greater participation in this FIP as well as key progress in other areas like **human rights**.

Meanwhile, a FIP that we previously supported off the coast of **Panama** was completed and our suppliers **became certified under MarinTrust in late 2022**. The FIP focused mainly on Pacific anchovy and Pacific thread herring. Improvements included a new management plan, total allowable catches, and trainings for fishers to help protect vulnerable species. Panama is a vivid demonstration of how a credible FIP can make a tangible positive impact for key fishing resources.

Key Fishery Improvement Projects we support