



Aqua Nutrition

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This report chapter covers the operations of Cargill Aqua Nutrition's (CQN) 19 dedicated aquafeed mills in the calendar year 2021. Information herein is for those facilities during that time period, unless otherwise noted. Throughout this chapter, reference to coldwater and warmwater mills is common. This distinction reflects the species for which each mill produces feed: coldwater mills produce feed for salmonid species, while warmwater mills produce feed for shrimp, tilapia, and other species. This chapter has been prepared in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards: Core option. It also includes disclosures—labeled CQN—specific to our business. This chapter is an abridged version of the 2021 Cargill Aqua Nutrition Sustainability Report. The full report, as well as previous reports, can be accessed on our [website](#).

Cargill's mission is to nourish the world in a safe, responsible, and sustainable way. To deliver on this highly important purpose, we are constantly raising the bar to support good practices in aquaculture, protect the environment, and help farmers succeed.

As the world continues to face climate, economic, geopolitical, and COVID-19 uncertainties, it is fundamental to continue tracking our progress, ensuring we deliver tangible, measurable results and contribute to a positive transformation of the industry, year after year. That is the spirit of this chapter, highlighting how our aqua nutrition business is focusing on people, the planet, and our products, to make sustainable growth a reality.

The challenges ahead of us are significant: aquaculture accounts for over half of the seafood produced globally, and with a rapidly increasing global population, there will soon be even more demand on our industry to provide healthy nutrition for all. As one of the largest aquafeed businesses worldwide, producing feed for multiple species globally, like salmon

and shrimp, Cargill Aqua Nutrition has the scale and expertise to drive the necessary changes to meet this demand sustainably.

The good news is that we are not alone in this journey: in this chapter, you will see how Cargill continues to build partnerships and collaborations with scientists, NGOs, partners, and other stakeholders who share our values. You will learn how we accelerate sustainable ingredient sourcing, how we prioritize animal health and welfare, and how we innovate to help our customers do more with less. Sustainability challenges in aquaculture are complex, but as we demonstrate in this chapter, they are also possible to address. With the right vision and collaborative attitude, we will make it happen.

Thank you and best regards,



Helene Ziv-Douki
President and Group Leader
Cargill Aqua Nutrition

Business overview

Introduction

Cargill Aqua Nutrition (CQN) is the aquafeed business unit of Cargill, Incorporated. As one of the largest global producers of feed for aquaculture, we operate 19 dedicated aquafeed mills across 12 countries on four continents. A further 21 feed mills across 19 countries produce aquafeed for local customers, though they operate primarily as facilities for livestock feed and feed premixes; their

combined aquafeed production accounts for less than 5% of all aquafeed produced.

In addition to our commercial aquafeed production, CQN is a recognized global leader in innovation, investing heavily in research and development that advances the productivity and sustainability of the global aquaculture

industry. At our Cargill Innovation Centers in Chile, Norway, and the United States, our laboratory teams develop and test new products and technologies for the future of aquaculture. And across the globe, their outputs are tested in field trials at our Technology Application Centers (TACs) to ensure success and share knowledge with local farmers.

The KPIs reported below can be mapped to the GRI 102-7 and GRI 102-8 indicators.

Feed production

Total feed produced (t)

	Coldwater	Warmwater	Group total
2021	1,102,769	732,347	1,835,116
2020	1,152,637	667,831	1,820,468
2019	1,236,491	643,097	1,879,588
2018	1,030,842	560,729	1,603,156
2017	984,638	661,802	1,646,440
2016	930,774	532,496	1,520,347

Total feed sold (t)

2021	1,098,185	898,713	1,996,899
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Change from 2017 (%)

	+12.0	+10.6	+11.4
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Number of feed mills

2021	6	13	19
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Feed produced in 2021 exceeded

1.8 million tons

Feed delivered was nearly

2 million tons

Warmwater feed production grew more than

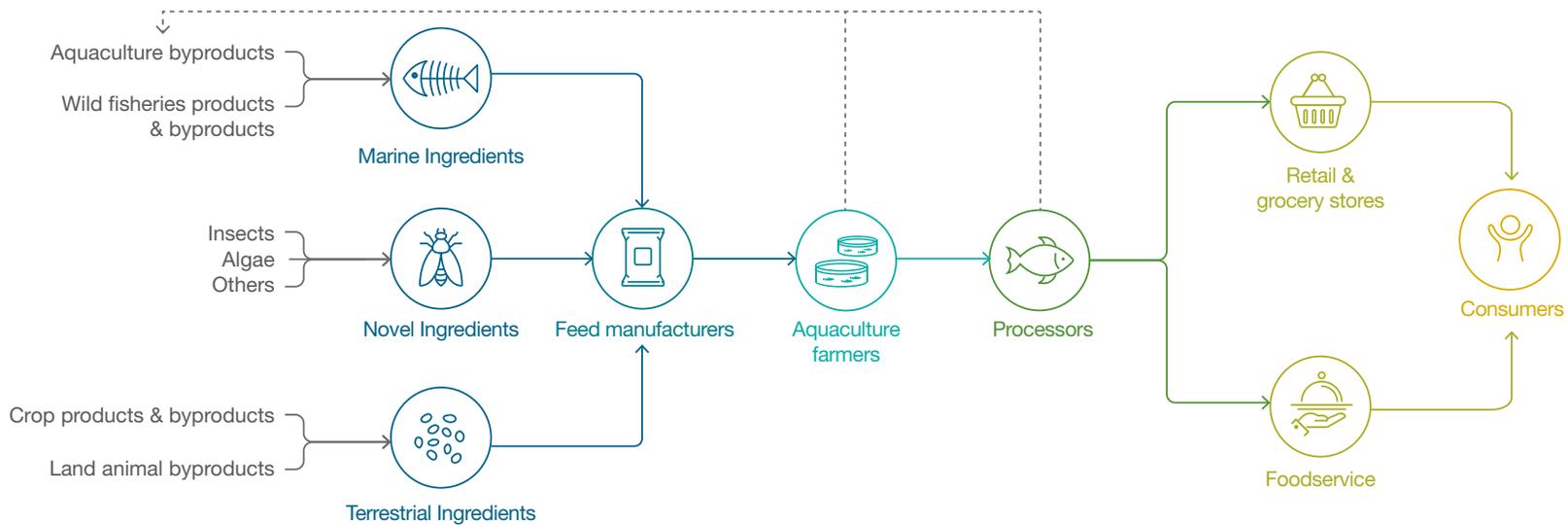
9.6% since 2020

Our place in the aquaculture value chain

CQN provides critical linkages in the seafood supply chain. For decades, we have taken upstream ingredients and transformed them into nutrient-rich feed for global aquaculture production, driving sustainability in wild capture fisheries, terrestrial agriculture, and the development of new and novel ingredients. By working

directly with our downstream farming partners, we have also helped them raise more seafood more sustainably by providing targeted nutritional solutions, on-farm support, and a growing range of digital tools. As we expand business activities across the seafood value chain, our expertise and the scale of our operations provide

us the opportunity and the responsibility of positively impacting the food system in all directions. We look forward to continue connecting farmers to consumers, and nourishing the world in a safe, responsible, and sustainable way.



The species we feed

We produce feed tailored to the specific nutritional needs of 12 species groups and all life stages for which they are under farmers' care. In many cases, we work with our farming customers to formulate feeds that are specific to their operations and the environments they farm in.

Feeds for salmon and shrimp account for three-quarters of our annual produced tonnage, but several species of importance to local and regional producers—and markets—complete our portfolio (listed to the right). This cross-industry expertise and capacity drives our reputation as a trusted partner in aquaculture markets around the world.



The brands we produce

Our brands are the face of our expertise. They represent the knowledge and experience we have built over many years across the Cargill, Purina, EWOS, Aquaxcel, and Livalife brands. As a trusted supplier to the international aquaculture industry, we provide producers with distinctive, proven products and services that promote productivity and sustainability, and support their brands, all with the goal of enhancing their business growth.

Cargill® offers a full range of animal nutrition and management solutions for producers, feed retailers, and feed manufacturers. Our global reach allows us to source the ingredients needed for high-quality aquafeed, and our feed formulation and mill management systems are recognized as the best in the industry.

EWOS® is a long-time leader in the aquaculture industry, with a well-earned reputation as a trusted feed supplier in all major salmon farming regions as well as in Vietnam, offering feed for tropical fish species.

The **Purina®** brand brings more than 100 years of experience to provide a full program of easily digestible, high-energy nutrition for shrimp and fish.

AQUAXCEL® starter feeds combine superior nutrition and modern extrusion technology to match the needs of individual species like shrimp, giving the young animals a great start to life and supporting farmer success.

Livalife®—engineered specifically for shrimp post-larvae—employs microencapsulation technology that keeps nutrients intact until consumed, increasing feed availability in the water, nutrient delivery to the shrimp, and reducing the impact on water quality.



Locations of feed mills

Classification	Country	Facility
Coldwater 	Canada	Surrey
	Chile	Coronel
	Norway	Bergneset Halsa Floro
	Scotland	Westfield

Classification	Country	Facility
Warmwater   	China	Yangjiang Zhenjiang
	Ecuador	Guayaquil
	India	Rajahmundry Vijayawada
	Indonesia	Serang
	Mexico	Guadalajara Obregon
	Thailand	Petchaburi
	United States of America	Franklinton
	Vietnam	DongThap
		Long An
		Tien Giang

Sustainability performance

We believe that sustainability should be measured—and reported—across all aspects of business. That is why we have developed this chapter to include disclosures related to Product, People, and Planet. In each section, data tables clearly demonstrate our performance on key indicators that are material to our business, along with supporting information to clarify our reporting boundaries, communicate our calculation assumptions, and provide context where needed. Sustainability is a journey, and we are pleased to share our progress.

Product

Feed production: material use and origins

The source and quantity of ingredients used in our feeds is important to us and of great interest to stakeholders. To meet these expectations, average feed composition data are given below. The relative split of ingredients varies greatly between salmonids and other species, so they are reported separately as has been done in prior reports.

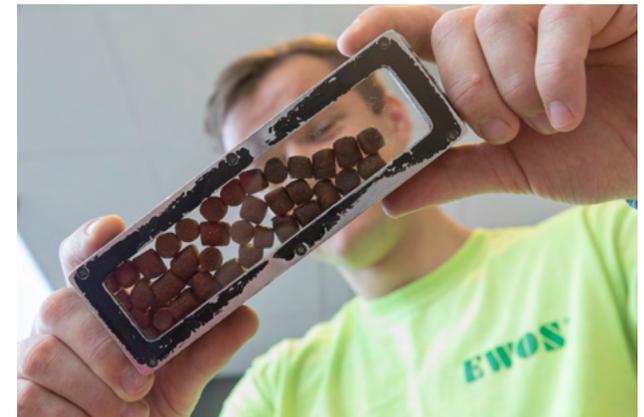
For the first time, our annual feed production—for both coldwater and warmwater species—surpassed the use of more than 50% co-product ingredients. For warmwater, these ingredients account for nearly 65% of feed tons produced. This demonstrates our continued commitment to closing waste loops and contributing to a more circular economy. In our coldwater feeds, we have reduced the inclusion of both fishmeal and fish oil compared to 2020, and we have increased the share of those ingredients that come from trimmings and other by-product sources. In our warmwater feeds, marine ingredient use is lower, but for the small inclusion of fish oil we have nearly doubled the contribution of byproducts to the total.

Cargill continued to meet commitments related to the source of ingredients. For example, blue whiting contributed less than 11.5% of our forage fishmeal in 2021, down from 30% in 2020; this reflects last year's pledge to not purchase from the fishery after it lost its MSC and MarinTrust certifications until an approved Fishery Improvement Project (FIP) was in place. As described later in this chapter, we joined the North Atlantic Pelagic Advisory Group (NAPA) and encouraged action. In October 2021, the blue whiting fishery was accepted into the MarinTrust Improver Programme as a recognized FIP.

Our sourcing of terrestrial-origin raw materials continues to emphasize local ingredients where possible but also relies on globally-traded commodities to meet supply needs and spread the risk of environmental and social issues, limiting reliance on any one supplier.

For our sourcing of marine-origin materials and our high-priority terrestrial origin materials, greater detail is reported in our full 2021 CQN sustainability report, accessed on our [website](#)[☞]. Since 2017, we have additionally reported our marine-origin materials data to the [Ocean Disclosure Project](#)[☞] and we pledge to continue that commitment to transparency.

The KPIs reported below can be mapped to the GRI 301-1 and CQN 3-90 indicators.

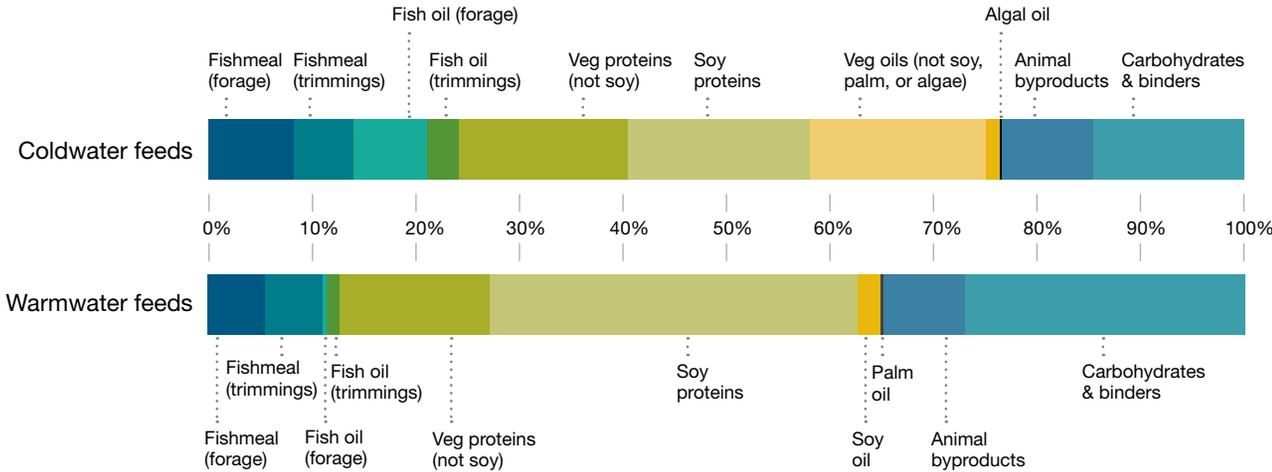


For the first time, our feeds contained more than

50%
co-product
ingredients

Our raw materials and their origins

Global feeds composition

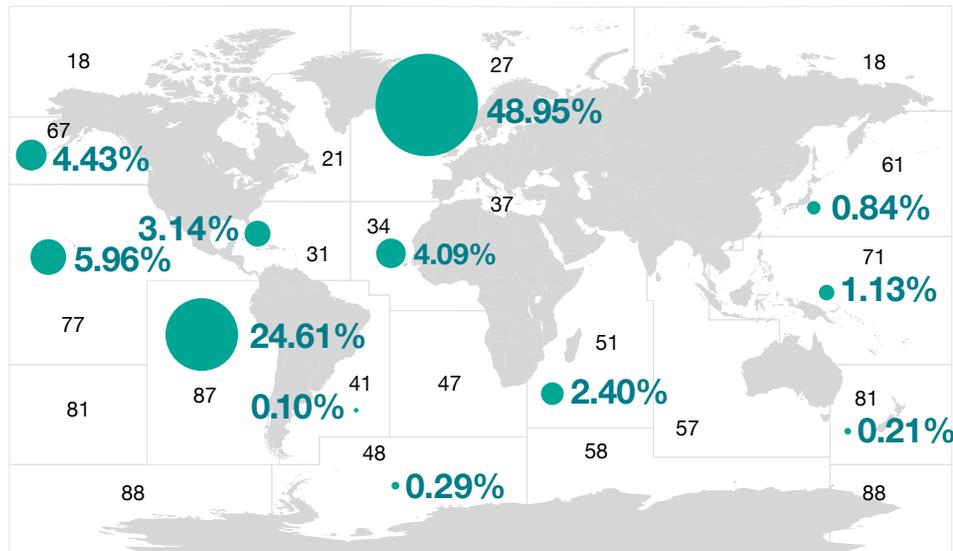


	Coldwater	Warmwater
Total co-products²¹	50.2%	64.5%
Total co-products excluding soybean meals	32.6%	29.0%
Total novel ingredients²²	4.3%	0.0%

²¹ Our designation of ingredients as co-products follows the guidance of the European Feed Manufacturers' Federation (https://tefac.eu/wp-content/uploads/2020/07/05362-co-products-brochure_003.pdf).

²² Novel ingredients are defined as ingredients introduced to the formulation from 2015 onwards.

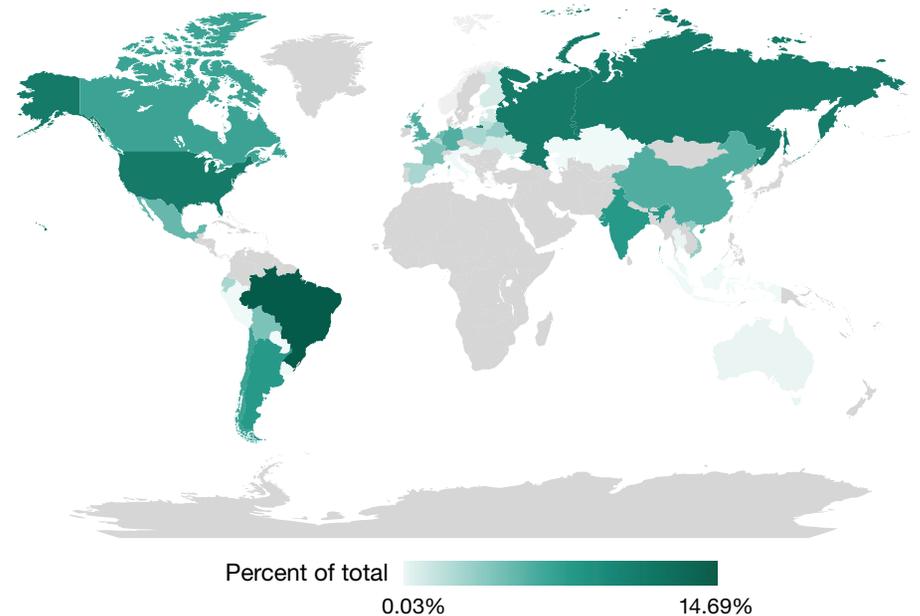
Origins of marine materials



Not definable²³ 3.85% **FAO Major Fishing Areas**

²³ Country of origin is known, but as many countries transgress multiple fishing areas, the Major Fishing Area is not always known.

Origins of terrestrial materials



Safeguarding animal health: Feeds to support fish health

Healthy farmed fish play a powerful role in the health of communities—and the environment. The feed that farmed fish and shrimp eat can be a vehicle for delivering not just the nutrients they need, but immune system boosters (functional feeds) and—when necessary—medicated treatments for disease. This centers Cargill's opportunity and responsibility of delivering feeds that support fish health and welfare. Our customers continue to rely on us to formulate the feeds that help them and their stocks thrive.

The KPIs reported below can be mapped to the CQN 3-87, CQN 3-88, and CQN 3-89 indicators.



We put the fish first in everything we do

Cargill delivers the best solutions for the aquaculture industry by focusing on the fish. In April 2021, we formalized that approach in our North Sea business with the creation of Fish First.

Our nutrition expertise and capabilities in R&D enable us to formulate feeds that equip fish with the tools they need for thriving growth through multiple production stages, changing environmental conditions, and occasional health challenges. By putting fish first

in both formulation and farming, good fish welfare and high productivity are ensured at the same time. Healthy fish convert feed more efficiently, requiring fewer resources and carrying a lower footprint. Furthermore, our knowledge of raw materials and our diverse supply chains make it possible to meet these varying needs in a sustainable way.

By always putting fish first, we create better results. For the fish. For the farmer. For the environment.

Feeds to support fish health

Percent sales of health or health and performance functional feeds

	Coldwater	Warmwater ²⁴	Group ²⁴
2021	20.6%	0.7%	13.0%

²⁴ No data from India and Vietnam

Percent sales of anti-parasitic feed sales for coldwater feeds

	Coldwater total	Canada	Chile	Norway	Scotland
2021	1.14%	1.23%	0.21%	0.93%	4.52%

Change from 2017 (%)

	-32.9%	-34.2%	-68.7%	-72.7%	+122.6
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Percent sales of antibiotic feed sales for coldwater feeds

	Coldwater total	Canada	Chile	Norway	Scotland
2021	1.52%	1.53%	6.84%	0.00%	0.00%

Change from 2017 (%)

	-76.3%	-27.5%	-28.2%	0.0%	-100.0%
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People

Our purpose begins with our people. Without a safe, supportive working environment, we could not achieve the material production we strive for or the services we faithfully deliver to our customers. Across Cargill, initiatives are underway to further the diversity, equity, and inclusion of our workplace, and their integration into CQN is in development.

This year, we identified 20 projects for deployment across regions of the business, including mother's rooms, showers/lockers, parking, bathrooms, quiet rooms, break rooms, and providing female employee uniforms at all factories. In Chile, our team published its third Community Relations Report, an important accountability and communications tool to disclose our progress in the priority areas of environment and community, education, and economic development.



Promoting gender parity and women's empowerment along our supply chain have always been top of mind. In 2016, Cargill signed onto the Paradigm for Parity Coalition, committing to achieving gender parity across all levels of corporate leadership by 2030. Reporting on progress towards that commitment is the anchor of this section. For CQN, the proportion of females in senior management positions fell since last year, but we have increased the proportion of females within our Global Leadership Team (GLT) by more than 10% since last year—now at 36%. We also significantly increased the percent of female contractors in 2021 across the business, especially in warmwater countries, going from 20% in 2020 to 33% in 2021. Across our entire workforce, the gender balance has a far greater proportion of males. This reflects the predominance of manual and factory-based work.

Outside of our own walls, we continue to support Latin American women shrimp farmers. In 2021, Cargill and the Edes Business School of the Universidad Técnica Particular de Loja (UTPL) in Ecuador signed an alliance to carry out a training program for female shrimp producers from Mexico, Central America, and Ecuador. The program is helping the women access technology and technical knowledge, eliminating obstacles to improve their sources of income and enrich the industry and their communities. More than 100 women have signed up, and as of October 2021, more than 70 have graduated.

Finally, our **Cargill Supplier Code of Conduct**² enlists our Supplier Partners in upholding Cargill's Guiding Principles, and makes clear our expectation that they stand with us in prioritizing the safety, well-being, and dignity of all individuals, whose talents and hard work help us deliver our products and services.

The KPIs reported below can be mapped to the GRI 102-8, GRI 202-2, GRI 205-2, and GRI 408-1 indicators.



We have increased the proportion of females within our Global Leadership Team (GLT) by more than

10%

since last year—now at 36%

We identified

20 projects

for deployment across the business to make our facilities more inclusive

More than

70 female shrimp farmers

have graduated from our new training program built specifically for women

Workforce

	Coldwater	Warmwater	Group total ²⁵
Total workforce	1,083	1,308	2,457
Employees—female proportion (%)	17.1%	17.0%	17.7%
Contractors—female proportion (%)	17.9%	33.3%	21.7%

²⁵ Group total is larger than the sum of coldwater and warmwater due to some personnel covering both groups.

Gender parity in management & leadership

	Coldwater	Warmwater	Group total
Management and administration employees	407	758	1,215
Proportion of females in management and administration (%)	34.6%	24.4%	28.4%
Senior management²⁶ employees	26	15	48
Proportion of females in senior management (%)	23.1%	13.3%	20.8%
Global Leadership Team²⁷ employees			11
Proportion of females in global leadership (%)			36.4%

²⁶ Senior management teams are the teams directly responsible for each country.

²⁷ Global Leadership Team is the central team responsible for the management of Cargill Aqua Nutrition as a group.



Females in global leadership

36.4%



Total workforce females in management and administration

28.4%



Total workforce female contractors

21.7%



Total workforce female employees

17.7%

Planet

Many components of our sustainability strategy are detailed in prior sections of this chapter, but considering them in a comprehensive and planetary context is key to understanding our business-wide sustainability performance. In this section, we report on the third-party assurances we seek to demonstrate our efforts and the climate-focused indicators that link those efforts to topics of global concern.

Sustainability and improvement assurances

We seek sustainability assurances at both the factory and the ingredient levels. We continue to leverage the cross-sector power of International Organization for Standardization (ISO) standards for quality management, environmental management, and food safety management, as well as Best Aquaculture Practices (BAP), Global G.A.P., and organic standards for industry-specific assurances.

In addition to holding the certifications outlined below, we have been supplying our customers with feed that complies with the ASC Farm Standards since their launch for salmon, shrimp, and yellowtail. With the impending implementation of the ASC Feed Standard—expected in January 2023—our factory and sourcing teams are ensuring we are ready for audits as soon as they can occur. We will start with our coldwater factories, and our warmwater factories will follow according to customer demand.

At the ingredient level, we continue to use the Marine Stewardship Council (MSC) and MarinTrust certifications

for marine ingredients and the ProTerra, the Roundtable for Responsible Soy, and organic certifications for soy and palm ingredients. We also continue to report on our sourcing of marine materials from recognized fishery improvement programs (FIPs), emphasizing the importance of working with our supply chains to become more sustainable over time.

Our use of certified and improving marine ingredients for coldwater feeds continues to be strong, with 95% of last year's total tonnage meeting those benchmarks. One notable shift occurred in 2021: due to the blue whiting fishery's loss of MSC certification in 2020 and subsequent work to enroll in the MarinTrust Improver Programme (IP), there was a decline in forage fish that was MSC certified and an increase in forage fish in the MarinTrust IP. Progress has been achieved for more

sustainable sourcing of marine ingredients in warmwater feeds, but with 41% of last year's use not certified or in a recognized FIP, there is room for improvement. A challenge, particularly in Asia, is access to local material engaged in FIPs or certified. Our work with the Global Marine Ingredients Roundtable seeks to address this and encourage more initiatives in that region.

We have maintained our use of certified soy and palm products for coldwater feed production, mitigating the risk of deforestation and other sustainability issues.

The KPIs reported below can be mapped to the GRI 301-01, CQN 1-80, and CQN 3-90 indicators.

Sustainability assurances

Factory certifications

Standards to which our factories are certified to, by location

Standards	Region	Country	ISO 9001	ISO 14001	ISO 22000	OHSAS 18001	Global GAP	BAP	Organic
Americas		Canada	•		•	•	•	•	•
		Chile	•	•	•	•	•	•	
		Ecuador					•	•	
		Mexico							
		USA					•	•	
Asia		China			•			•	
		India			•			•	
		Indonesia			•			•	
		Thailand			•			•	
		Vietnam	•	•	•	•	•	•	•
Europe		Norway	•	•	•	•	•		•
		Scotland	•	•	•	•	• ²⁹	•	•
Total plants certified²⁸			9	7	10	7	9	12	4

²⁸ Some countries have more than one mill and not all mills are certified to the same level within a country.

²⁹ Scotland is certified by UFAS, which is recognized as equivalent to Global GAP.

Sustainability assurances *continued*

Ingredient certifications

Standards to which our marine ingredients are certified to

	None	MarinTrust IP	MarinTrust	Comprehensive FIP	MSC ³⁰
Coldwater feeds					
Forage fish	5.6%	11.3%	83.1%	3.2%	49.9%
Trimmings	4.9%	0.0%	95.1%	0.0%	56.6%
Total	5.4%	7.2%	87.4%	2.0%	52.3%
Warmwater feeds					
Forage fish	19.7%	2.0%	78.3%	0.0%	11.3%
Trimmings	59.8%	7.8%	32.4%	0.1%	8.4%
Total	41.0%	5.1%	53.9%	0.1%	9.7%
Group total					
Forage fish	7.9%	9.8%	82.3%	2.7%	43.5%
Trimmings	20.8%	2.2%	77.0%	0.0%	42.6%
Total	13.0%	6.8%	80.2%	1.6%	43.1%

³⁰ MSC certified fishery shows that the fish were caught from a fishery that has been certified by MSC, but not necessarily by certified boats.

Standards to which our soy and palm ingredients are certified to: coldwater feeds

		Canada	Chile	Norway	Scotland	Coldwater total
Soy products	Certifications	n/a ³¹	RTRS	ProTerra, USSEC - SSAP ³²	ProTerra, Organic	
	% certified	n/a	100%	100%	100%	100%
	Origins	n/a	Argentina, Brazil, Chile, USA	Brazil, Finland, Russia, USA	Belgium, Brazil, China, India, Spain	
Palm oil	Certifications	n/a ³¹	n/a ³¹	n/a ³¹	RSPO	
	% certified	n/a	n/a	n/a	100%	100%
	Origins	n/a	n/a	n/a	Indonesia	

³¹ No material was purchased in 2021, so "n/a" indicates not applicable for that reason rather than indicating we purchased uncertified material.

³² US Soy Export Council—US Soy Sustainability Assurance Protocol. SSAP is recognized according to FEAC's soy-sourcing guidelines to have equivalence to ProTerra and RTRS (and therefore also accepted by Cargill).

Climate-related footprints

Most sustainability metrics we collect and report on are specific to the aquafeed, aquaculture, or broader seafood industries, but measuring and understanding global sustainability performance—of all actors and industries together, and each one in context to the others—has become more important than ever. It is required, then, to have common currencies of measurement and reporting, and the use of energy and the emission of greenhouse gases (GHGs) are two of the most globally important and widely used. Since 2017, CQN has been reporting on these metrics—as well as the global warming potential (GWP) of the feeds we produce and the water consumption it takes to do so—in an effort to integrate our sustainability performance into the global dialogue. Cargill has set a corporate reduction target for Scope 1 and 2 GHG emissions of 10% by 2025 relative to a 2017 baseline, so this report uses 2017 as a benchmark.

The total amount of energy used to produce coldwater feeds has slowly reduced over time since 2013, with

some fluctuations. As feed production has increased, total energy use has marginally increased, but efficiency gains have been made, as seen with decreased energy use per ton. In Norway, our Bergneset factory has undergone extensive energy-savings investment, as well as switching almost entirely from natural gas to electricity which enabled the installation of state-of-the-art electric feed dryers. These steps set the Bergneset factory on track to be a zero-emission facility in the coming year, as we are purchasing hydroelectricity from the local supplier. Scotland is using renewable direct energy (which is derived from wood chips), and Chile switched the majority of direct energy source from fuel oil in 2018 to LPG in 2019 and continued purchasing renewable electricity throughout 2021.

In warmwater feed production, Vietnam and India use renewable fuels to provide some direct energy, but much of the rest comes from fuel oils, LPG, or natural gas. Electricity provides almost half of the total energy used and many countries still have fossil fuel-reliant electricity generation, so the GHG footprint can be high. There

continues to be a rapid increase in the use of energy in the warmwater feed production. There were some efficiency gains from 2020 to 2021, as the increase in total energy use was greater than the increase in energy use per ton of feed production, but both metrics represent significant need for attention. We are working to understand the cause and find solutions for reduction.

The KPIs reported below can be mapped to the GRI 302-01/302-3 and CQN 3-83 indicators.

Our Bergneset factory in Norway is on track to be zero emission — the first of its kind in the world

Global warming potential (Scope 3 emissions) of feeds produced

Global warming potential: Coldwater feed raw materials delivered to the factory

	GWP E_LUC		GWP I_LUC	
	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e/t)
2021	1,663,025	1.36	2,535,792	2.07
2020	1,575,112	1.37	3,001,619	2.60
2017	1,380,306	1.40	2,497,984	2.54

Global warming potential: Coldwater finished feeds ready to leave the factory (not including packaging)

	GWP E_LUC		GWP I_LUC	
	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e)	Raw materials (tCO ₂ e/t)
2021	1,740,669	1.42	2,613,436	2.14
2020	1,645,701	1.43	3,072,261	2.67
2017	1,446,325	1.47	2,564,062	2.61

Focus areas



www.cargill.com/seafurther

Our launch goal: To help fish farmers chart a path to net-zero emissions, with a program aiming to reduce their carbon emissions by at least 30% by 2030.

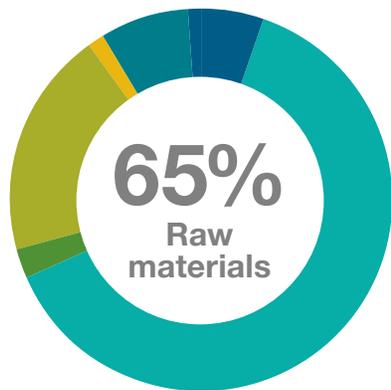
With a growing global demand for seafood and the need for aquaculture to support it, there is an unprecedented demand on the sector to do more with less. Emerging research, such as the **Blue Food Assessment** of 2021, highlights how important aquaculture is for human nutrition—but aquaculture production must grow sustainably. Farmed seafood can be a low-carbon source of protein and micronutrients that supports human nutrition worldwide, but we still have a role to play in meeting the carbon reduction goals that will stabilize our planet’s climate. As a global leader in aquaculture feed and animal nutrition, we support the production of seafood the world needs while minimizing its impact on the planet. And now we’re stepping up to do more—with less.

In 2021, we launched SeaFurther™ Sustainability, our signature program to help farmers chart a path to net-zero emissions, with a goal of reducing their carbon footprint by 30% by 2030.

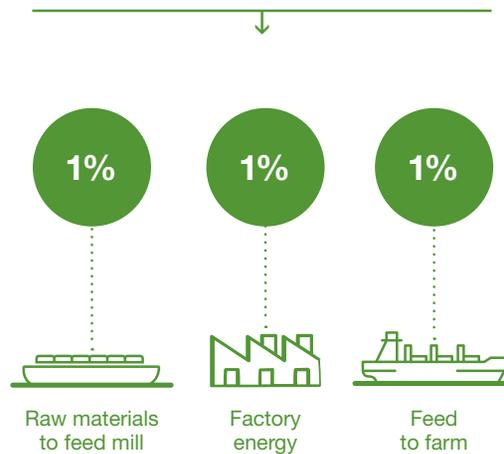
This commitment requires a systematic approach. We are working throughout the aquaculture value chain—from our suppliers to our customers—to calculate, reduce, and track the GHG emissions per kilogram of our customers’ harvested seafood and managing the role our feed plays in that reduction. Credibility and innovation are key and will underpin everything we do. To keep us on track, we’ve set a target of a 15% reduction in GHG emissions by 2026.

Feed and its use can represent up to 90% of the GHG footprint of farmed fed seafood—depending on the other inputs. The raw materials used and the amount of feed required to grow 1 ton of seafood to harvest (the FCR) are key factors determining the overall footprint of the seafood. We have identified three key areas for us to work on towards our ambitious target: transforming raw materials, optimizing production, and safeguarding animal health.

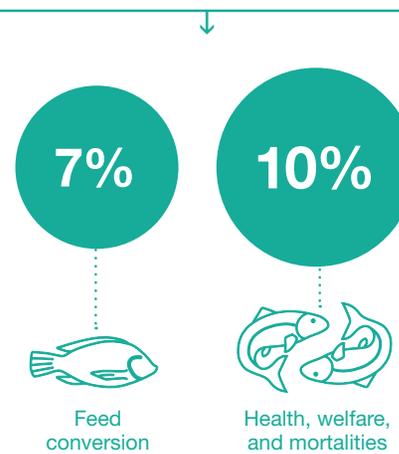
- Marine proteins
- Vegetable oils
- Vegetable proteins
- Carbohydrates & binders
- Marine oils
- Micro ingredients



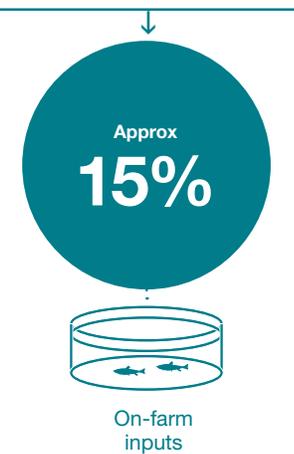
Raw material properties and distance to feed mill affect energy use for logistics and feed production.



Optimizing feeds for best conversion and safeguarding fish health and welfare through nutrition.



Reducing the need for farm inputs, such as treatments and on-farm energy.



Source: transforming raw materials

Our feed is designed to help minimize the environmental footprint of aquaculture. That's why we work closely with our suppliers to develop ways to grow planet-friendly ingredients and find ways to reuse byproducts, like fish trimmings that would normally be discarded, whenever we can. Together, we strive to identify and source novel ingredients that create even more sustainable feed, helping our customers and partners achieve our shared sustainability goals.

Optimize: optimizing production

By seeking to put fish nutrition first, we are harnessing the power of nature and science to do more with less environmental footprint. We focus on ways to increase fish efficiency, getting the most out of production while using fewer resources and reducing our impact on the ocean and the climate. Through SeaFurther™, we will work with our customers to identify the GHG hotspots in their production—from raw materials and feed, through to fish production. We can then work with the customers to identify interventions to address the opportunities for reducing the emissions strategically.

Care: safeguarding animal health

Healthy farmed fish play a powerful role in the health of communities—and the environment. So, we take time and care to develop fish nutrition that promotes and enhances the health and welfare of farmed fish. We are committed to working with our customers to make sure the fish in their care are managed to the highest standards. Providing optimal nutrition for the fish we feed will keep them healthier. Healthy fish grow more efficiently, so more fish can be grown using fewer resources—with fewer GHG emissions.

First year's results

In the first year, we developed the approach that we will use to account, report, and mitigate GHG emissions in SeaFurther™. This has been documented for us by Quantis, demonstrating that our approach is grounded in current best practice, such as the Product Environmental Footprint Category Rules for Feed, the GHG Protocol, and the Science Based Targets initiative. We recognize that the landscape for these activities is changing and will continue to change, so we will update our documentation and make it public for scrutiny as part of our commitment to credibility.

A central database of LCA data for each of our raw material suppliers for the feed mills engaged in SeaFurther™ has been established. These data are then shared with the local businesses, so that they can create reports on the footprints of feed provided to the customers. We have worked with our suppliers to obtain data from their activities and will continue on this, to more and more accurately reflect the emissions from their processes and their initiatives to reduce emissions. This will be a continuous process going forward.

We have piloted the approach with two customers, finding solutions which can enable a reduction of the fish footprint up to 20%. It is clear that different customers have different opportunities, depending on their farming conditions and their appetite for change. We are building a system which can enable us to support individual customer solutions, in a credible and verifiable manner, that delivers value to the whole supply chain.

The raw materials provide the nutrients required for the feed and here we can look at how to find lower

footprint sources of the nutrients, find alternative suppliers of the same raw materials, or work with current suppliers to reduce their GHG emissions. With the FCR, we can work to ensure that the nutrition is optimized for the seafood being fed and work with our customers to identify health, welfare, and environmental issues that can be addressed to ensure better survival and thriving growth to harvest. Through working with our current suppliers to reduce their emissions and with our customers to reduce their FCR, we are working to reduce GHG emissions to the atmosphere, not just avoiding hotspots and leaving them unaddressed.

The production and processing of agricultural crops is critical to feed, but can add a significant quantity of emissions. Pilot projects with crop farmers to reduce the emissions of wheat and rapeseed through regenerative agriculture practices for the 2022 harvest were established, enabling us to start GHG footprint reduction pathways for our feeds.

Together, these actions will enable us to increase our customer base in the next year and also make us broaden our supplier approaches so that we have more capacity to help our customers reduce their footprints year on year to 2030.

“We are proud to lead the way for reducing emissions from the trout industry through this partnership with Cargill. However, carbon efficiency resulting in reduced emissions will only be fully achieved if we work together across the whole supply chain, so it's fantastic that this initiative and open communication is happening rapidly and at scale.”

Neil Manchester
Managing Director, Kames Fish Farming Ltd. (Scotland)

Sustainability in action

Through Cargill's long history, we have seen agriculture be part of the solution to the world's most urgent challenges. We have been working on issues material to our business, which includes the interests and priorities of our suppliers and our customers. We take a value chain approach to drive sustainability throughout the seafood sector, focusing on the raw materials we source, how we formulate and deliver them, and how they are used on farms around the world.

Historically, we have focused on sustainability in marine ingredients like fishmeal and fish oil, terrestrial ingredients like soy and palm, waste in our feed mills, and delivering high quality, nutritious feeds so our farmers increase their feed efficiency. While these priorities have not changed, the scope of impacts that we measure and work to improve has grown. Today, we consider responsible

fisheries management to include not just science-based quotas, but also safeguards for human and labor rights. We consider best practice in our own operations to include accounting for all materials we use and ensuring we have a team of people dedicated to managing sustainability across the business. We are working to improve our feed's efficiency not just because it is good

for the farmer, but because we know the impact it has on our own—and our global—GHG emissions. Our work to ensure and improve sustainability looks inward and outward—we dive deep into our own facilities and operations and extend out into those of our supply chains. This section relays much of those efforts.

Sustainability management

The structure of Cargill's sustainability teams and CQN enables local and global management of topics and impacts and demonstrates our commitment to being a leader in sustainably nourishing the world. Corporate management of sustainability is led by the Chief Sustainability Officer, who reports to the Chief Executive Officer and oversees the development of global commitments and policies and programs to deliver them. Our CQN sustainability approach is aligned with the enterprise and [corporate strategies](#) but the materiality and details of the aqua nutrition industry require dedicated sustainability management. This is achieved by embedding sustainability personnel within CQN and the Cargill Global Impact Team. Cargill's Executive Team reviews progress on a quarterly basis for each enterprise and the businesses within them. Cargill reports externally on material topics through our annual report, and businesses produce supply chain reports annually and/or biannually. These reports, our supply chain grievance dashboards, and other public information can be found on our Reporting Hub.

CQN is part of Cargill's animal nutrition and health enterprise and is led by the group president, who is supported by the Group Leadership Team (GLT). This team is comprised of regional managing directors and global directors of finance, risk management and sourcing, strategic marketing and technology, operations, information technology, and human resources. They are each supported by regional and local teams which contain sustainability managers.

The global impact team works alongside Cargill enterprises and contains sustainability leadership for animal nutrition & health and protein & salt. A dedicated CQN sustainability lead and a sustainability program lead support the enterprise leadership and act to centralize sustainability management by working with regional and local sustainability managers and the aforementioned directors and their teams.

Functionally, this structure allows sustainability topics and their management to be both locally-relevant and

globally-focused. Customer and stakeholder engagement, market conditions, raw material availability, and other relevant topics are addressed by leveraging the power of local and central expertise. We are continuing to build capacity throughout the business and the global impact team, further advancing our capabilities to reliably deliver on our quality and our sustainability goals.



Sustainability in our supply chains: working upstream and downstream

Institutionalizing sustainability

Cargill's ambition is to have the most sustainable food supply chains in the world. CQN has developed a precautionary approach to managing sustainability as topics have developed. To create far-reaching sustainability strategies and drive them through the seafood industry, we deploy a variety of tactics. One of our primary tools is our Supplier Policy, which requires those who sell raw materials to us to abide by our sustainability principles and have environmental and social risk management procedures in place. The Policy sets out our expectations of our suppliers within good practice expected of them on environmental and social performance, aligned with third party standards where applicable. Each year, we also conduct audits of various suppliers to ensure they are meeting expectations.

We also leverage the power of certifications—on our products and on our suppliers. By meeting the requirements of standards—and having external parties verify our performance—we ensure that we are not the only ones who think we are doing a good job. Nearly all our feed mills are certified to the Best Aquaculture Practices (BAP) Feed Mill Standard and GlobalG.A.P. Compound Feed Manufacturing Standard, and as described elsewhere in this chapter, we preferentially source marine and non-marine raw materials that are certified to various sustainability-focused standards. This approach sets clear and consistent expectations both internally, for our sourcing teams, and externally, for our suppliers.

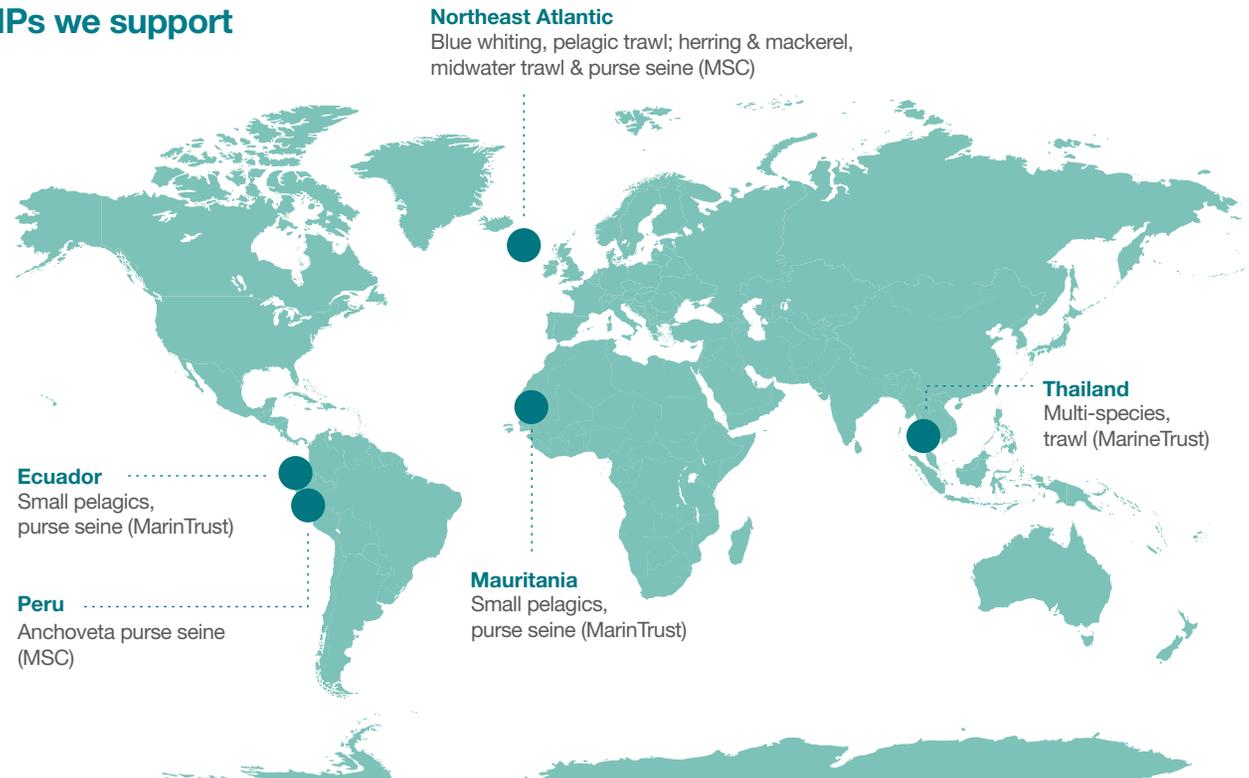
Finally, we have embraced the concept of an ESG-led approach, ensuring that our definition and action on sustainability encompass the pillars of environment, social, and governance. This has allowed us to broaden our risk assessments and deepen our due diligence, especially for human rights as we work towards demonstrating compliance with emerging legislation such as the UK Modern Slavery Act (2015) and in preparation for the Norwegian Transparency Act.

Marine ingredients

We have long placed emphasis on sourcing our fishmeal and fish oil from fisheries that are already managed responsibly. This effort is reflected in the increasing share of our marine ingredients that are certified by MSC and/or MarineTrust.

But purchasing material that already meets sustainability expectations is only part of our strategy. We also believe that our engagement with fisheries which have room for improvement is a tool to deliver those changes, reduce the risk of illegal, unregulated and unreported (IUU) fishing, and develop science-based management strategies. By working with the fishing sector and with standards holders, we play a key role in the development and support of Fishery Improvement Projects (FIPs). With time-bound commitments to achieve sustainability certifications and mechanisms in place to verify progress along the way, approved FIPs are a vehicle for improvement on the water while also ensuring the fishery has the resources to implement changes. We're proud financial contributors to FIPs working towards MarineTrust and/or MSC certification in the Northeast Atlantic, Mauritania, Peru, Ecuador, and Thailand.

FIPs we support



Terrestrial ingredients

Cargill is part of a globally integrated food system that plays an important role in food security across multiple food value chains. This gives us a unique perspective on how to build lasting solutions to sustainability and development challenges, balancing multiple and varied interests while also protecting the environment.

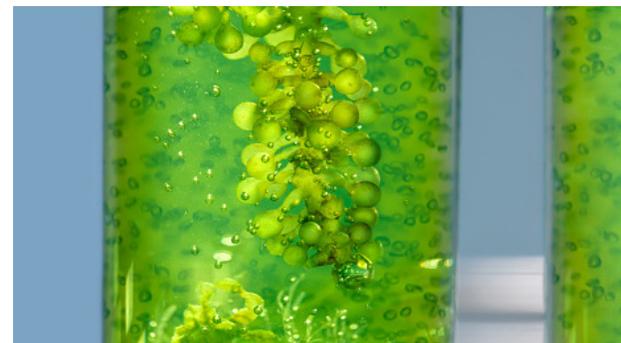
Cargill is committed to deforestation-free sourcing across our agricultural supply chains—including those serving CQN—and we are already showing it can be done. All soy ingredients incorporated into coldwater feeds, for example, remain deforestation- and conversion-free (DCF). We rely on—and engage with—certifications like those from ProTerra Foundation, Roundtable for Responsible Soy, and organic schemes to help us deliver feeds to our customers which highly prioritize land conservation. In Norway, we have continued the pre-competitive collaboration with other salmon feed producers, the ProTerra Foundation, and the soy protein concentrate suppliers Caramuru, CJ Selecta, and Imcopa to advance DCF beyond just the soybeans that end up in our supply chains. Under the name the Aquaculture Dialogue for Sustainable Soy in Brazil, this group has developed and implemented greater transparency and traceability of the soy supplies and committed to 100% DCF of the entire supply base with a cut-off date of August 2020. In 2021, an initial monitoring, reporting, and verification (MRV) audit for the three supplier companies confirmed that they all were 100% DCF for all their soy sourcing—not just the portion of their business with ProTerra certified beans, (which have a DCF cut-off date of 2008 under that standard). We are now working with the Dialogue stakeholders in 2022 to improve and strengthen the MRV process going forward.

More broadly, Cargill is also developing innovative, collaborative programs like the Land Innovation Fund for Sustainable Livelihoods. Launched in 2021 after more than a year and a half of research, stakeholder

engagement, and preparation, Cargill has pledged to contribute \$30 million to accelerate the development and implementation of innovative and economically viable options for farmers in South America. We are rolling out a series of initiatives that focus on the protection of undisturbed lands, better management of lands that have already been converted for agriculture, and the restoration of degraded lands into carbon-capturing areas. In combination, these efforts will provide farmers alternatives to converting biologically significant forests and other native vegetation in the Amazon, Cerrado, and Gran Chaco biomes, advancing the DCF and climate-related goals of ourselves and our customers.

Novel ingredients

To meet the continually growing demand for farmed seafood, traditional marine ingredients will need to be supplemented with those derived from other sources. Scaling up use of so-called novel ingredients requires commitment throughout the value chain. To date, insect meals and algal oils have been the products commercially implemented through our novel ingredient strategy, and in 2021, we helped launch the Millennial Salmon project to build on this. A collaboration with Norwegian research institutes Nofima and SINTEF Ocean, novel ingredient producers InnovaFeed and Corbion, and grocery retailer Auchan, the project will advance the commercialization of insect meal and algal oil as salmon feed ingredients. Alongside this effort, our relationship with InnovaFeed to produce insect meal for salmon feeds continues, and through it, we have been able to add more of this



product to specific feeds. Our long-term commitment to this has enabled InnovaFeed to invest and scale up their production, which will further enable us to incorporate even greater volumes going forward. For algal oils, we work with the major suppliers to the aquaculture sector and our customers to find ways to include these supplies of long chain omega-3 fatty acids in our aquafeeds, helping to reduce the reliance on fish oil and increasing the omega-3 content in harvested farmed fish. In early 2022, we committed to incorporating algal oil in all Norwegian feeds effective almost immediately. We are working with our customers and their customers to build the market signal for greater novel ingredient use, encouraging increased production and expanding availability.

100%

of soy ingredients in coldwater feeds are certified to sustainability-focused standards

We have increased our inclusion of insect meal in our feeds and our partnership with its leading producer



Sustainability in what we do: working within our teams

The greatest impact of the feeds we make are upstream—related to the origin of the raw materials we use—and downstream—how they perform on our customers' farms. To make improvements in these areas, we work in close collaboration with both our suppliers and our customers. However, it is essential that we also address sustainability in our own operations—where we have the greatest control. Cargill's supply chain teams are working hard to package and transport raw and finished materials to our plants and to our customers while simultaneously reducing the impact of those activities on the environment.

Efficiency in material use

Across Latin America, we are collecting and reusing our pallets, even if they require repair. In Chile, we are even buying our customers' pallets and working with suppliers to standardize pallet size for a broad range of uses. Currently, up to 70% of pallets in our Chilean operations are reused after repair and disinfection. We're doing the same for feed bags, with the aim to use 65% of bags three times before sending to the recycling facility.

In our Norwegian Florø plant, a \$6.7 million investment in new bulk loading infrastructure will eliminate more than 160,000 plastic feed bags per year.

Our Latin American teams have reduced the use of plastic by making feed bags thinner and reduced the use of cardboard by reimagining how materials are packed for transport from our facilities to those of our customers.

Efficiency in transport

Our FjordFrende logistics collaboration with Skretting continued in 2021. Instead of using separate ships for Cargill's EWOS feed and Skretting feed, feed from both



companies is shipped by the same vessels coordinated by an independent third party, thus limiting shipping traffic and reducing GHG emissions. By 2021, this collaboration has reduced the carbon footprint per ton of feed delivered by 25% compared to 2017. In North America, similar efforts are underway.

“It is very gratifying that Cargill and Skretting’s collaboration, ‘Friends of the fjord,’ has had an immediate impact, reducing CO2 emissions 25% in Norway. In addition, the shipping company that handles transport has improved on coordination of deliveries to further reduce fuel consumption and emissions.”

Fredrik Witte
Managing Director, CQN North Sea

Across our Mexico and Ecuador supply chains, we are working with our own teams and our customer teams to better plan and schedule transport and delivery of raw and finished materials. This results in fuller trucks, fewer trips, and fewer miles driven—all resulting in fewer GHG emissions.

Efficiency in operations

Our North American operations are upgrading plant equipment and machinery to increase the use of electricity as an energy source, much of which is generated by hydro, reducing reliance on carbon-based fuels and reducing GHG emissions.

In North America and Chile, the construction of more on-site capacity to store raw and finished materials reduces the number of deliveries to and from our facilities, saving the GHG emissions that would be emitted from more frequent transport trips.

In Chile, the use of an oleoduct to move oil by pipe from the supplier facility to our facility will eliminate the need for transport trucks to make the trip, removing 600 trucks from the road. In addition to preventing the emission of transport-related GHGs, fewer truck trips and vehicles on the road increases safety for our team and the community.

Continuous improvement

One of our facilities piloted a fuel additive technology that aims to improve the efficiency of engine combustion, and our expectation was to reduce diesel use in our feed delivery trucks by 10%. Unfortunately, our research showed a slight increase—0.7%—in diesel use by the trucks tested. We do not view this as a failure, but as one more action we have explored to continue reducing our impact. We will continue to keep innovating, researching, and testing technologies and strategies to do just that.

Our investment in bulk loading infrastructure will eliminate

160,000+

plastic feed bags per year

Partnerships and stakeholder engagement

Collaborative work across the value chain

Despite our efforts within our own business and supply chains, we know that maximum global impact is achieved through collaboration. That is why we work so hard to join hands with other stakeholders—and often with our competitors—to keep moving the needle. We are proud of our membership and participation in initiatives that bring together NGOs, governments, academic researchers, standards holders, and other industry members. Below is a sample of the work we engaged in 2021.

Full membership



Global
Roundtable
on marine
ingredients

Global Roundtable on Marine Ingredients

marineingredientsroundtable.org



NORTH
ATLANTIC
PELAGIC
ADVOCACY
GROUP

North Atlantic Pelagic Advocacy Group

<https://buff.ly/2Rk3QbU>



Seafood Task Force

seafoodtaskforce.global

Committees we sit on



SeaBOS Task Force I

seabos.org/task-forces/task-force-i



SeaBOS Task Force III

seabos.org/task-forces/task-force-iii



ASC Feed Standard Steering Committee

asc-aqua.org/what-we-do/our-standards/feed-standard

Committees we sit on *continued*



MarinTrust Social and Ethical Committee

marin-trust.com/about-us/our-governance/social-and-ethical-committee [↗]



MarinTrust Governing Body Committee

marin-trust.com/about-us/our-governance/governing-body-committee [↗]



BAP Vanguard—Feed and GHG working groups

bapcertification.org [↗]



ProTerra Foundation Stakeholders Council

proterrafoundation.org/about-us [↗]



FEFAC Sustainability Committee

fefac.eu/wp-content/uploads/2021/06/FEFAC-Feed-Sustainability-Charter-Report-2021-1.pdf [↗]

Associate membership and general partnership and participation



Global Salmon Initiative (GSI)

globalsalmoninitiative.org [↗]



Global Dialogue on Seafood Traceability (GDST)

traceability-dialogue.org [↗]



World Wildlife Fund (WWF)

seafoodsustainability.org [↗]



Sustainable Fisheries Partnership (SFP)

<https://sustainablefish.org> [↗]



United Nations Global Compact (UNGC)

unglobalcompact.org [↗]



Millennial Salmon project

nofima.no/prosjekt/millennial-salmon [↗]

References

The following tables provide an index to GRI disclosures and customized reporting topics and impacts that we have identified as material in our operations. The full GRI Standards can be accessed at <https://www.globalreporting.org/standards/>.

GRI Standard number	GRI Standard title
GRI 102	General Disclosures
GRI 103	Management Approach
GRI 202	Market Presence
GRI 301	Material Topics

CQN customized disclosures

CQN Disclosure number	CQN Disclosure title	Topic boundary
CQN 1-80	Management standards	Internal
CQN 3-83	Global warming potential of raw materials and feeds	Upstream & Internal
CQN 3-87	Health feed sales	Downstream
CQN 3-88	Anti-parasitic feed sales	Downstream
CQN 3-89	Antibiotic feed sales	Downstream
CQN 3-90	Plant index	Upstream
CQN 3-90	Plant index	Upstream
CQN 3-91	Packaging for finished goods	Internal