



Skretting Sustainability Report

2021



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From our CEO

Welcome to our Sustainability Report 2021. In this document we're not sharing stories about how great we are; we're also not saying that everything we do is perfect or that we have solved all the challenges we face as a company and as an industry, because that's simply not the case.

Instead, we're providing details of how we're working to address our dilemmas; we are highlighting the opportunities that we intend to embrace; and we're showing where there's clear room for improvement.

Most importantly, we're emphasising the power of collaboration, and emphasising that if we want to drive transformational changes for our industry we must work closer with our customers, suppliers, NGOs, certification bodies, and all the other relevant stakeholders that we interact with in the value chain.

As such, our sustainability story cannot be written from only our own perspective. That's why for this report we invited a group of key stakeholders to share their views on a wide number of important topics, including transparency, marine ingredients and soy sourcing, certification, and environmental, social and governance risks.

We're proud of what we have achieved so far, but rapidly changing developments in the industry and in the wider world, with COVID-19 still impacting us all alongside logistics issues, rising inflation and the war in Ukraine, as well as increasing demands from consumers with regards to knowing more about the food that they're eating, we're fully aware that we need to keep learning and do more – better and faster.

Our company-wide purpose of 'Feeding the Future' is something that we take very seriously. Together with our customers, suppliers and other stakeholders, our feed contributes to the production of more than 21 million seafood meals per day globally. This is a huge responsibility and we are determined to be accountable for everything that we do.

The content and stories of this report are the result of the collective work and endeavours of my 3,200-plus Skretting colleagues throughout the world. Every single one of us is committed to establishing an even more sustainable aquaculture industry.



A handwritten signature in blue ink that reads "Therese Log Bergjord". The signature is fluid and cursive.

Therese Log Bergjord, Skretting CEO

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About this report

Our approach



Skretting has a longstanding commitment to reporting progress on our sustainability journey. We have been issuing sustainability reports since 1999. Our first reports were compiled by Skretting Norway, and since 2013, we have also been reporting on our global business activities. Our sustainability initiatives are closely linked to our business operations and priorities.

Reporting structure



This global Skretting sustainability report focuses on who we are and our main sustainability achievements in 2021. It is available to our stakeholders and the public on our website. Our focus is to make it easier for readers to find the information that matters most to them. Local Skretting companies can also choose to publish their own sustainability reports to go more in depth on local challenges and achievements.

Scope of this report



The quantitative data reported here covers the calendar year from January 1 to December 31, 2021 unless otherwise stated. The report covers all companies that are part of Skretting, which represents the aquaculture nutrition and service activities of Nutreco. Nutreco is owned by private company SHV, and all public financial information is reported through SHV. This report provides only limited financial information.

Reporting framework



We prepared our report in accordance with the GRI Standards: core option. This report also aligns with the United Nations Sustainable Development Goals (SDGs), and throughout we have highlighted how our own goals are aligned and support SDGs.

Assuring our disclosures



Skretting does not have external verification of the disclosures made in the report. However, Nutreco has worked with an external company to verify specific information disclosed in the Nutreco Sustainability Report. If information disclosed in the current report has been verified during this process, it will be mentioned.

Links with Nutreco Sustainability Report



As part of Nutreco, some of the content disclosed on this report and more details can also be found on Nutreco's Sustainability Report 2021. Throughout this document we have shared links that allow the reader to deepen on how we address specific areas at a corporate level that also apply to Skretting.

Verification



As part of the verification for the Nutreco Sustainability Report, the external verification party performed virtual audits to three Skretting locations to assess sustainability data quality and assessed a selected number of sustainability indicators at Nutreco level. Please refer to the Nutreco Sustainability Report and the external report on sustainability data quality for more information.

External links



Throughout this report, we have included links to a number of external websites to make it easier for the reader to learn more about our projects, partners and goals. These links are for reference only.

Collaboration with stakeholders



Skretting invited different stakeholders to contribute with their own views to relevant topics addressed on this report.

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Food systems and planetary challenges

In order to be sustainable, food systems need need to be developed in ways that generate positive, simultaneous value along the economic, social and environmental dimensions. Therefore, food systems around the world are expected to deliver on the “triple challenge”.

The first challenge is to ensure food security and nutrition for all considering it’s expected the world population will reach almost 10 billion people by 2050, which means that we need to produce 60% more food than we do today.

The second is to achieve this while ensuring environmental sustainability, which is determined by ensuring that the impacts of food system activities on the surrounding natural environment are neutral or positive, especially considering that food systems account for some 21-37% of global GHG emissions.

The third is to provide livelihoods to farmers and promote rural development. A food system is considered sustainable when there’s equity in the distribution of the economic added value, taking into account vulnerable groups categorised by gender, age, race etc. Of fundamental importance, food system activities need to contribute to the advancement of relevant socio-cultural outcomes, such as nutrition and health, traditions, labour conditions, and animal welfare.

Our approach

One of the hottest industry topics today relates to environmental impacts. This is an aspect in which feed plays a key role given it can represent up to 80% of aquaculture’s carbon emissions. Currently, one of the main implications of this is that several stakeholders evaluate the sustainability of specific feeds and ingredients by their carbon footprint, thereby falling into the trap of “carbon tunnel vision”. However, sustainability is multi-dimensional, and we need to look at the different trade-offs that ingredients bring, as well as other environmental and social impacts beyond carbon footprints.

To help readers of this report better understand how we approach our impacts, we explain in detail the core lifecycle stages of fish/shrimp feeds with a description, our core challenges and feed examples.

We urge you to read this document and to collaborate with us; help us to improve and join us on our vision of driving the journey towards an even more sustainable aquaculture industry.

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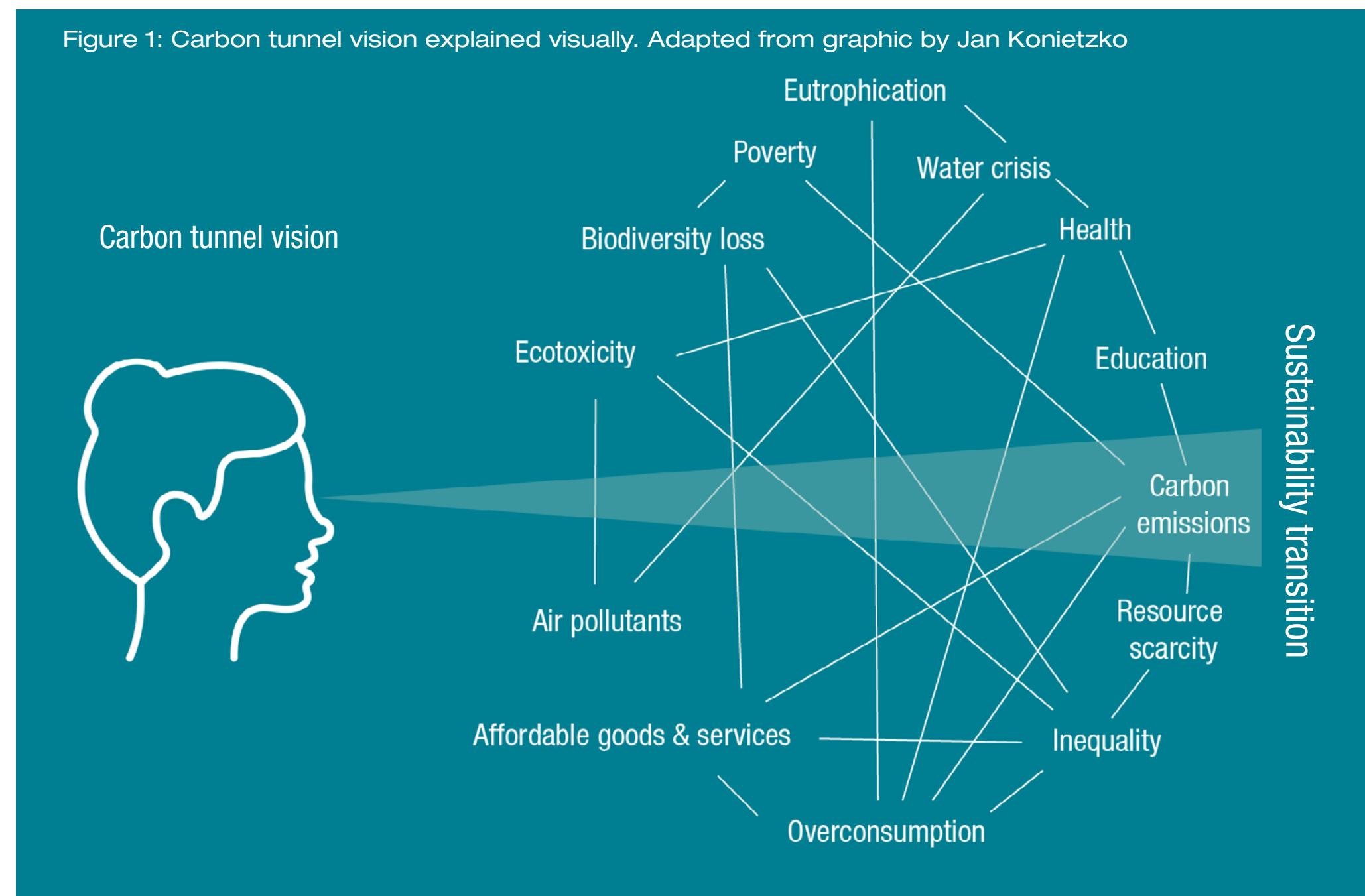
“By 2050 we need to produce 60% more food than we do today.”

Jorge Díaz

Sustainability Manager



Figure 1: Carbon tunnel vision explained visually. Adapted from graphic by Jan Konietzko



The role of blue foods

On a global scale, blue foods – the diversity of aquatic species and products sourced from oceans and fresh water – have a central part to play in ending human malnutrition and building a healthy, sustainable and resilient food system. As well as providing food and nutritional security for billions of people and being a vital provider of livelihoods, economies and cultures for many coastal states, many blue foods are produced in ways that are more environmentally sustainable than terrestrial foods. This includes producing less greenhouse gases, using fewer natural resources, and having less impact on adjacent ecosystems and communities.

In the same regard, it's also a very positive development that a higher proportion of fish production today goes directly to human consumption (which in turn is lowering meat intake), and that the higher demand for blue foods resulting from rising incomes and increased urbanisation is being met by increased yields and improvements in post-harvest methods and distribution channels.

The [Blue Food Assessment \(BFA\)](#) is an international joint initiative that brought together over 100 scientists from more than 25 institutions. The Stockholm Resilience Centre at Stockholm University and Stanford University are lead science partners and EAT is the lead impact partner. This interdisciplinary team supports decision-makers in evaluating trade-offs and implementing solutions to build healthy, equitable and sustainable food systems by focusing on two goals: increase our understanding of the role of aquatic foods in global food systems now and in the future, and to provide this new information to decision-makers whose policies and actions can steer the food system in a more sustainable direction.

The global community has committed to ending world hunger, and our ability to achieve this most significant of goals largely depends on how successful we are in utilising natural resources in a sustainable way. The improved and increasingly innovative processing of wild-caught marine raw materials will yield more food and higher value products for supply chains, but if the oceans are to be an essential part of the broader solution, then the onus is on aquaculture to meet the world's soaring appetite for healthy, nutritious and affordable seafood.

While the farming of fish and shrimp is already providing over half of the seafood that we consume today, there is plenty of expert analysis to suggest that if done in the right way, the sector can supply a great deal more. Aligned with this, Skretting has long maintained that when it comes to the challenge of providing a population in 2050 of approximately 10 billion people with a healthy diet that is produced within planetary boundaries, aquaculture is uniquely placed to be one of the most productive and sustainable food systems for people and planet.

At Skretting we know that ocean health is integral to these ambitions. As a signatory to the United Nations Global Compact Sustainable Ocean Principles, we recognise that all stakeholders must act responsibly and proactively to safeguard the long-term well-being of all water systems. To this end and across our entire business, we will work even closer across the value chain to ensure best-practice everywhere.

In 2021, Skretting produced 2.6 million tonnes of feed resulting in more than 21 million seafood meals per day.



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Connecting our strategy with the United Nations Sustainable Development Goals (SDGs)

Our purpose is 'Feeding the Future', which inspires us and makes us proud to help solve one of humanity's biggest challenges.

[The Sustainable Development Goals \(SDGs\)](#), launched by the United Nations in 2015, are an excellent vehicle to work towards our vision. They represent an action plan for the planet and society to thrive by 2030. For the goals to be reached, everyone has a part to play. The food industry in particular has the possibility to make an impact to achieve critical progress on all 17 SDGs, but not all of them are equally addressed by companies, as highlighted in our [2020 report](#).

The SDGs have been developed for public governance, and we have worked hard to translate the high level goals into our company practices. In 2021 Nutreco and Skretting focused on identifying areas of impact to bridge this gap and instigate measurable targets to demonstrate progress. With our Sustainability Roadmap closely aligned, we have further identified the following key SDG for our company:

OUR PURPOSE
*Feeding
the Future*



Table 1: SDG linked with our RoadMap 2025.

SDG	Link with RoadMap
SDG 2 (Zero hunger)	<ul style="list-style-type: none"> Develop a local supply of raw materials for production in areas where it does not yet exist (Africa and Asia). Expand community development and community engagement initiatives to touch the lives of 12,000 people in the communities where we operate. This can be through direct development with small farmers at or near economic poverty levels (e.g., earning less than €1.90 / day) that helps raise their incomes above poverty levels or direct engagement with local communities in projects that raise awareness of sustainability, educational initiatives and community improvements.
SDG 3 (Good health and well-being)	<ul style="list-style-type: none"> Ensure no use of prophylactic antibiotics employed in feed, forage or water. Ensure absolutely no use of any antibiotic that are listed on the World Health Organization's list of "Critically Important for Human Health." Ensure the use of antibiotic medication can only be applied to feed and water with a valid clinical diagnostic result demonstrating bacterial infection and under direct and approved medical supervision by a qualified veterinarian.
SDG 5 (Gender Equality)	<ul style="list-style-type: none"> One out of three hires is female (starting in 2020). We target having 30% women in senior leadership by 2025. We implement the "Taking the Stage" program, beginning in 2020, to help facilitate this transition.
SDG 7 (Affordable and clean energy)	<ul style="list-style-type: none"> Commitment to Science Based Targets. Reduce our carbon footprint linked with fuel and coal to zero. Increase our share of renewable energy. Explore possibilities to enter Virtual Power purchasing agreement.
SDG 13 (Climate action)	<ul style="list-style-type: none"> Commitment to Science Based Targets. The innovation stage gate process includes a sustainability filter (qualitative and quantitative) to ensure no environmental impact trade-offs and encourage the most significant environmental impact. Source 100% of marine ingredients from sources audited and certified by MarinTrust or MSC.
SDG 14 (Life below water)	<ul style="list-style-type: none"> Ensure that where MarinTrust or MSC certified marine ingredients are not available, all non-certified ingredients will be engaged in a Fishery Improvement Project (FIP). That FIP will publicly report developments annually.
SDG 15 (Life on Land)	<ul style="list-style-type: none"> Conduct an analysis to understand the risks of deforestation and conversion in our supply chain, focusing on our highest volume plant ingredients and ingredients known to have global risks (i.e., soy and palm oil).
SDG 17 (Partnerships for the goals)	<ul style="list-style-type: none"> Engage with local, regional and national governments to encourage and promote regulatory reform for the responsible use of antibiotics. This includes public speaking, blogs, articles, letters to political representatives and industry workshops to transfer technology that should be adopted to ensure responsible usage.

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Transparency and trust

In [last year's report](#) we explained the process that led us to define Transparency and Trust as a new pillar for Skretting. We have seen how the market is increasingly demanding more transparency with the aim of identifying and preventing environmental, social and governance risks connected to our operations.

The complexity of our value chain brings several challenges and opportunities that we need to address at different levels. To shed more light on our approach, in this chapter we reflect on Traceability; Identifying and Mitigating Environmental, Social and Governance Risks; and Transparency measured by The Seafood Stewardship Index.

Traceability

Aquaculture feeds contain many different ingredients. Some are sourced locally, and others travel thousands of kilometres to reach our factories, changing hands multiple times during this journey. Even though it is important that we can source the best ingredients from all over the world, this does come with challenges that we, as an industry, must face over the coming years.

The inherently long and complicated commodity supply chains do not always allow accurate traceability to the region of primary production (RoPP), which is the region where an ingredient is harvested. This complicates sustainability risk assessments as sustainability risks often originate from far back in the supply chain and are mostly related to the RoPP. For example, many LCA parameters can differ significantly between regions and social sustainability issues are more prevalent in one region compared to another. It is therefore extremely important to increase traceability on the origins of our ingredients. The new ASC Feed Standard brings the opportunity to step up on this challenge by asking us, for instance, to trace all vegetable ingredients back to the RoPP by 2025. It is not an easy task, but we are fully committed to work with our suppliers and the rest of the industry to reach this target.

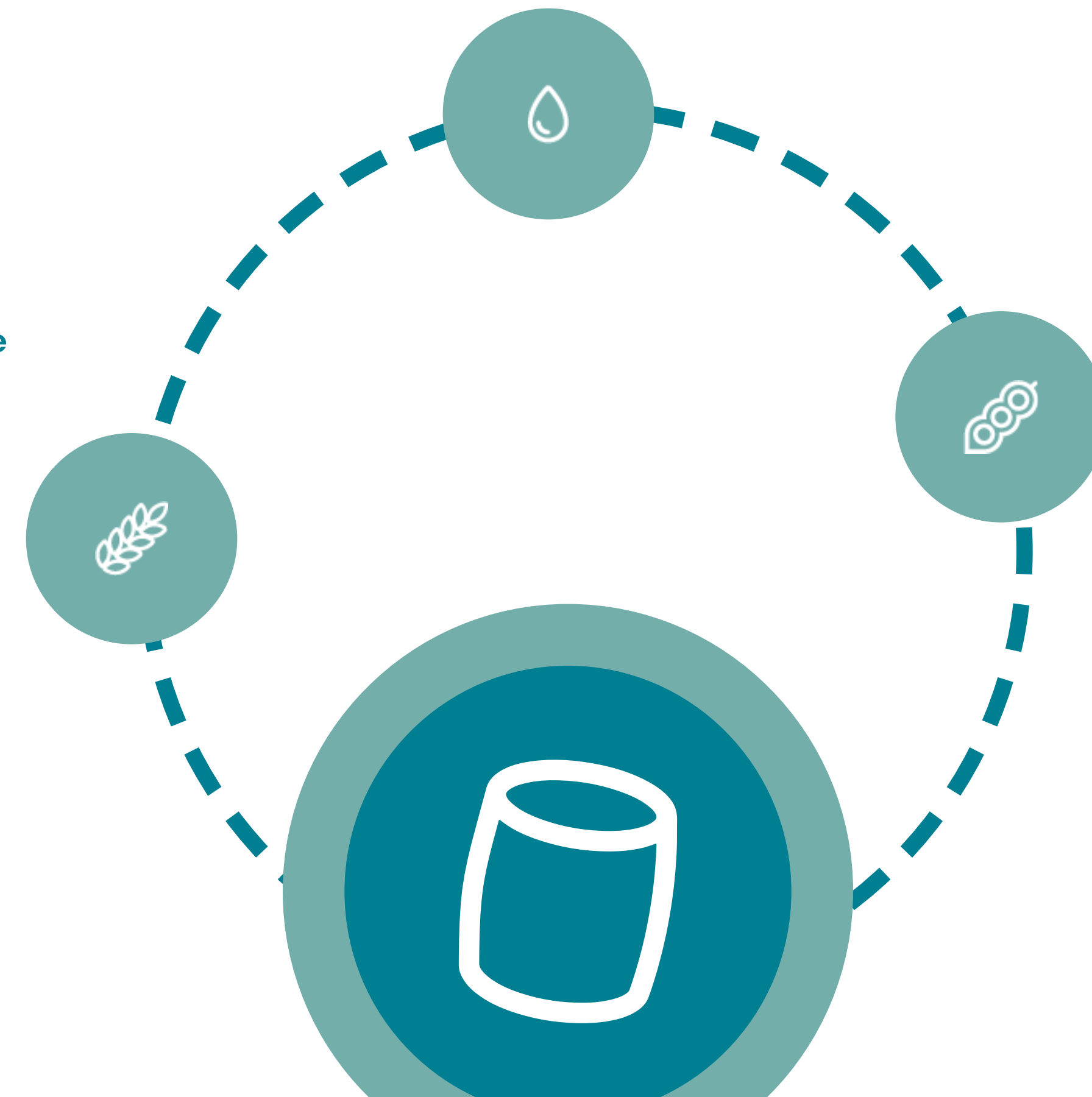
Through our soy and oil palm sourcing policy, we are heavily invested in getting accurate RoPP data for these two ingredients with a high risk of deforestation. Soy and oil palm ingredients are often traded in bulk and can be mixed by several parties along the supply chain. Tracing is often possible with mass balance calculations where a supplier provides origin data valid for large volumes sold over a large period. It is often impossible to say exactly where the soy and oil palm ingredients that is received at a feed factory is cultivated, unless segregated supply chains are set in place.

Fortunately, there are initiatives in play to improve traceability of ingredients. A good example is our soy protein concentrate suppliers, who provide the salmon feed business with certified deforestation-free material through segregated supply chains. This grants very accurate traceability on the origins of the soy used in our soy protein concentrate. We celebrate these initiatives and are actively looking for parties to cooperate with to increase ingredient traceability.

During 2022 we will work to update the sustainability assessments for the ingredients that we use in our feeds.

The developments in the market have also helped us to widen our perspective and put more focus on what is relevant for customers and consumers, beyond the quality of the raw materials that we use in our feeds. The agenda of the environmental and social areas keeps evolving, which has led us to adapt and to work with our suppliers to bring them into this journey.

During 2022 we will work to update the sustainability assessments for the ingredients that we use in our feeds, in line with the developments of the market and the needs of our customers. At the same time, we will work to strengthen the sustainability checklist implemented during our supplier audits, but also to implement specific audits based on sustainability criteria rather than only on quality, which will help us to put more focus into regions, ingredients and suppliers that have a higher sustainability risk.



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Seafood Stewardship Index (SSI)

The [SSI](#), published by the World Benchmarking Alliance, ranks the sustainability efforts of the 30 most influential seafood companies globally. Skretting moved from the 7th place in 2019 to the 5th in 2021, which positioned us as the highest ranked feed supplier. Although the progress indicates that we're heading to the right direction, we acknowledge that there's still room for us to do more, better and faster.

We invited the World Benchmarking Alliance to share their reflections on the relevance of public disclosure and transparency in our Sustainability Report.

“Transparency is not only about accountability. It is also about trust. This is true for all social relationships, including the one between companies and their stakeholders.”



Transparency measured by the Seafood Stewardship Index

Leading seafood companies can potentially deliver a significant, unique and actionable contribution to the United Nation SDGs. One way to encourage companies to become better stewards and transition to a more sustainable and responsible seafood industry is to benchmark their sustainability performance. The benefits of benchmarking are realised in two ways. First, a benchmark can be used by companies to understand how their activities are in line with the broader environmental and social agenda set by the SDGs and thus identify where there are gaps. Second, when made public, a benchmark can be used by any stakeholder (civil society organisations, financial institutions, policy makers and the broader public) to hold companies accountable for their impacts on the environment and society.

The World Benchmarking Alliance's Seafood Stewardship Index benchmarks the social and environmental performance of the 30 most influential (or keystone) seafood companies on their contribution to the SDGs. More precisely, the index uses publicly available information to measure company performance across four broad topics: governance & strategy, ecosystems, social responsibility and traceability.

Disclosure and transparency are essential elements to robust accountability and thus trust between companies and their stakeholders. This is why the index has integrated disclosure and transparency expectation across all of its 48 indicators. However, as we know, not all disclosures are created equal. For disclosure to be credible and robust, it must be science-based, verified and cover all operations, products and supply chains, not just a subset. This is a real challenge for companies, especially large ones that have numerous, complex and global supply chains. Indeed, the 2021 Seafood Stewardship Index showed that even though corporate transparency has been steadily increasing in the seafood sector, many gaps remain with regards to disclosure on the provenance of products and their associated impacts. The good news is that many solutions already exist and are being implemented in some parts of the sector. For example, traceability and data management software can help companies gather this information in a consistent and

comprehensive manner. There are also many experts, pre-competitive initiatives and civil society organisations that can support companies on this journey such as the Global Dialogue for Seafood Traceability (GDST), SeaBOS, GSI, Ocean Disclosure Project and FishWise to name a few.

Transparency is not only about accountability. It is also about trust. This is true for all social relationships, including the one between companies and their stakeholders. Even though trust is an intangible capital that can be hard to measure in dollar terms, it is at the core of any business. As stakeholders are increasing their expectations towards companies not only to deliver safe but also environmentally and socially responsible products, transparent disclosure on all aspects of a business operations will become essential to maintain trust and thus stay in business. Transparency ie, sharing the good and the bad, is not easy. This is why we, companies and their stakeholders, must work together to reward transparency, whatever the performance. Because transparency is the first step for acknowledging the problem and to start looking for solutions in partnership with others.

Helen Packer

Lead Seafood Stewardship Index
World Benchmarking Alliance



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Identifying and mitigating environmental, social and governance risks

The global intensification of aquaculture is rapidly increasing its environmental and social footprint, and therefore identifying and mitigating environmental, social and governance (ESG) risks is now on the top of the agenda for investors and the whole value chain.

According to FAIRR’s report [‘Shallow returns? ESG risks and opportunities in aquaculture’](#), reviewing ESG risks in aquaculture is challenging due to the sector’s maturity and the limited availability of information on certain topics and regions. In addition, the severity and magnitude of impact of each of these ESG risks depends on the species, production system, geography and consumer preferences. The report identifies ten risks that aquaculture faces throughout the value chain. Later on, in 2021 FAIRR launched [‘The Collier FAIRR Protein Producer Index 2021 – Aquaculture, Outlook for the Salmon Sector’](#), which assessed aquaculture producers on a set of specific issues that account for the environmental and welfare risks unique to farmed fish.

Throughout this report, Skretting recognises and addresses these risks to different extents. We also acknowledge that transparency and collaboration with our value chain are two key drivers that will help us to keep finding solutions that allow us to mitigate the risks of our operations.

Table 2: Aquaculture specific indicators in the Index. Source: Collier FAIRR Protein Producer Index

Deforestation & biodiversity

- Ecosystem impacts
- Certification
- Disease management
- Feed ingredients and conversion ratios

Animal Welfare

- Aquatic animal welfare



Animal welfare

Concerns about the physical and mental wellbeing of fish in aquaculture puts the industry at odds with shifting consumers support towards high-welfare products.



Effluents

Sewage and waste water discharged from fish farms is associated with the risk of toxic algal blooms and drinking water pollution. In 2016, algal blooms caused around \$800 million of damage to the Chilean salmon industry.



Working conditions

The wider seafood sector, especially in Asia, has been associated with several instances of labour and human rights infringements, exposing it to a regulatory and public backlash.



GHG emissions

The sector is exposed to the effects of a warming climate with production in the key producing region of Southeast Asia expected to drop between 10%-30% by 2050 due to climate impacts such as rising sea temperatures and ocean acidification.



Food fraud

The sector is vulnerable to food mislabelling that can lead to costly product recalls and legal battles. One conservation group estimated that a third of seafood sold in the US is mislabelled. An academic study focused on Canadian seafood observed similar findings.



Community resistance

Local communities increasingly object to new aquaculture projects. In 2018, the Washington state senate voted to phase out non-native fish culture across the entire state by 2025 after protests from local communities.



Fish feed supply

Salmon and shrimp diets include fishmeal and fish oil, making the industry dependent on rapidly-depleting wild fish stocks. If the aquaculture sector is to continue long-term expansion, the sector must find a sustainable and scalable supply of alternative feed ingredients.



Disease

Outbreaks cost the sector around \$6 billion per annum according to the World Bank. All salmon-producing regions are battling sea lice, but the solutions available bring additional sustainability impacts.



Antibiotic use

Hotspots of antibiotic use in aquaculture accelerate development of antimicrobial resistance (AMR) and increase export risks. In January 2019, the US Food and Drug Administration (FDA) denied entry to 26 shipments of Indian shrimp due to detection of banned antibiotics.



Habitat destruction

Millions of fish escape from fish farms every year and mix with native marine populations. It is a major issue that risks regulatory costs and reputational damage to the companies involved. In July 2018, Mowi (formerly Marine Harvest) lost \$3,4 million and over 690,000 salmon when a storm severely damaged ten net pens.

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UN Global Compact Sustainable Ocean Principles

Skretting, through Nutreco, is a member of the [United Nations Global Compact](#), which supports companies seeking to conduct their business responsibly through the alignment of their strategies and operations with its Ten Principles on human rights, labour, environment and anti-corruption. The UN Global Compact also encourages companies to take strategic actions to advance broader societal goals, such as the SDGs, with an emphasis on collaboration and innovation.

The UN Global Compact has a [Sustainable Ocean Stewardship Coalition](#) that convenes leading actors from business, academia and government institutions to determine how ocean industries can advance progress towards the Sustainable Development Goals (SDGs). The Coalition has, in consultation with more than 300 stakeholders worldwide, developed the Sustainable Ocean Principles to emphasise the responsibility of businesses to take necessary actions to secure a healthy and productive ocean.

As signatory of these principles, Skretting recognises the urgency and global importance of healthy oceans and a sustainable aquaculture industry, and will take action to promote the well-being of the ocean for current and future generations. The Sustainable Ocean Principles provide a framework for responsible business practices across ocean sectors and geographies, serving as a common reference point on ocean sustainability. They build upon and supplement the Ten Principles of the UN Global Compact, covering ocean health and productivity, governance and engagement, and data and transparency.

The ocean is vital to the well-being and prosperity of humankind. To achieve the world community's ambitions as laid out in the Sustainable Development Goals, there is a need to expand our use of the ocean to produce food, energy, raw materials and transportation. Carrying out these activities in a sustainable manner will contribute to reducing global warming and environmental degradation, while also ensuring a healthy ocean that can provide significant opportunities for business and global economic growth.

As described in Sustainable Development Goal 14: Life Below Water, there is an urgent need to protect and restore the health of the ocean, which is rapidly deteriorating due to increasing temperatures, acidification, the depletion of natural resources, and pollution from land and sea. Businesses have a shared responsibility, alongside government and civil society, to take necessary actions to secure a healthy ocean.

Skretting recognises the urgency and global importance of healthy oceans and a sustainable aquaculture industry, and will take action to promote the well-being of the ocean for current and future generations.



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SeaBOS – Promotion of the foundations purpose

The work of [SeaBOS](#) in 2021 continued with six individual task forces, which are led by company members, and supported by the Stockholm Resilience Centre (SRC) at Stockholm University (in collaboration with the Beijer Institute and the GEDB program of the Royal Swedish Academy of Sciences). The scientific work to date has resulted in the establishment of strong collaborative partnerships between the Stockholm-based organisations, with Lancaster University and the Stanford Center for Ocean Solutions, among others.

Members from Nutreco and Skretting are key partners in the work of SeaBOS, with Skretting CEO Therese Log Bergjord the current Chair of the SeaBOS Association and Board Director on the SeaBOS Fundraising Foundation. In addition, leadership of two of the Task Forces comes from Nutreco with José Villalon (Task Force I on IUU fishing, forced labour, and endangered species) and Skretting with Sophie Noonan (Task Force II on communications as co-chair with Sturle Hauge Simonsen from SRC).

In October 2021, company members reported on significant progress from the initiative including:

- Confirmation that they have no IUU fishing products or modern slavery in their own seafood operations.
- Recognising that IUU fishing and modern slavery are endemic in the global seafood industry reaffirmed that they will act swiftly and transparently on any evidence that those activities exist within their supply chains and/or own operations.
- Implemented an [Endangered Species Strategy](#) with initial focus on elasmobranchs (sharks and rays) and seabirds.
- Established a [Communications Strategy](#) for SeaBOS with key elements for both internal (SeaBOS members, and subsidiaries) and external communications towards encouraging transformation to sustainable seafood production and healthy ocean, across the broader seafood sector.
- Advanced an [Antibiotics Stewardship Roadmap](#) to guide development of a code of conduct and strategy for reduction of antibiotics use in seafood production;
- Agreed to increase company financial contributions to the SeaBOS Fundraising Foundation and supported retention of the model as summarised in the [SeaBOS institutions and collaborations infographic](#).
- Participated in global clean-up of plastics pollution, while also progressing initiatives to benchmark their own plastics footprint, and identify mechanisms to reduce this over time, for reporting in October 2023.
- Most companies formally established greenhouse gas emission reduction goals in line with Paris targets, with all companies agreeing to do so by May 2022.

SeaBOS continued to link with global initiatives to harness and enhance their reach, and to accelerate outcomes towards improvements across the spectrum of the Ocean and seafood sustainability. This included continued membership of the [Global Ghost Gear Initiative](#) to help remove and reduce abandoned, discarded, or lost fishing gear from our Ocean, and participation with the [International Coastal Cleanup](#) by members (although global COVID-19 restrictions limited the number of participants and programs which could be undertaken in 2021). The Foundation continued collaboration for traceability in seafood supply chains (with the [Global Dialogue on Seafood Traceability](#)) and support for the United Nations Global Compact Initiative on sustainable ocean business action platform, which renamed itself to the [UN Global Compact Ocean Stewardship Coalition](#) in recognition at least in part, of the role of stewardship as promoted by SeaBOS.

SeaBOS also shared its purpose through collaborations and communications with other expert groups in sustainable seafood production and ocean health, including presentations and (virtual) participation at numerous international meetings.

There was an extensive array of peer-reviewed scientific papers published in 2021.

Martin Exel
Managing Director
SeaBOS



“SeaBOS continues to link with global initiatives to harness and enhance their reach, and to accelerate outcomes towards improvements across the spectrum of the Ocean and seafood sustainability.”

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Global Salmon Initiative – Achieving goals through industry partnership

If there is one thing everyone can agree on, it is that significant change is needed across global food systems to ensure they can meet growing demand, conserve the world’s resources, and provide nutritious food. It is widely acknowledged aquaculture can help deliver on this need, but change is needed.

This is where the [Global Salmon Initiative \(GSI\)](#) comes in. GSI is a leadership initiative established by leading farmed salmon CEOs from around the world who share a vision of providing a healthy and sustainable source of protein to feed a growing population, while minimising their environmental footprint. Our goal is to connect members of the industry alongside core supply chain actors to motivate and drive industry wide sustainability improvements at speed and scale.

This is achieved by the facilitation of a unique pre-competitive knowledge-sharing platform to assess and update best-practices, enhance industry transparency through annual reporting, and driving innovations along the supply chain to strengthen environmental performance and farm salmon that’s raised to be better for oceans, climate, and communities.

In 2021, GSI’s efforts focused on:

- Climate impact – working in partnership with World Wildlife Fund (WWF), GSI members have developed an aligned accounting framework to measure greenhouse gas emissions which they will begin reporting on in 2022, and collecting data to inform and enhance mitigation strategies .

- ASC certification – GSI members are committed to reach 100% ASC-certification, and at the end of 2021 we saw 60% of GSI member production certified. In addition, company progress can be tracked via our online sustainability report.
- Fish health and welfare – our technical working group continued to work together to address welfare challenges and promote continuous improvement in best-practices to better mitigate and prevent disease outbreaks, and optimise fish welfare.
- Sustainable sourcing of feed – from improving feed efficiencies, assessing role of novel ingredients, supporting development of new ASC Feed Standard, and engaging in crucial dialogue on the sustainable use of soy our network is continually looking for ways to optimise fish nutrition while minimising environmental cost of our resources.
- Responsible plastic use – this year we established a new working group to look at the use of plastics both within our operations, but also how as a sector we can help address the issue of ocean plastics.

As we rapidly approach 2030, and the deadline for achieving the sustainable Development Goals, we know there is a lot more to be done. Through collective action we aim to use the GSI framework to drive the change needed, at the speed it is required.

Sophie Ryan
Chief Executive Officer
Global Salmon Initiative



“If there is one thing everyone can agree on, it is that significant change is needed across global food systems to ensure they can meet growing demand, conserve the world’s resources, and provide nutritious food.”

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Global Roundtable on Marine Ingredients – Achieving goals through industry partnership

Led by IFFO, The Marine Ingredients Organisation, and Sustainable Fisheries Partnership (SFP), the Global Marine Ingredients Roundtable gathers companies from the entire marine ingredients value chain to drive environmental and social improvements in key fisheries globally.

Based around the framework of the UN Sustainable Development Goals, the Roundtable is also established to provide a single value chain contact point to contribute to existing platforms aimed at ensuring sustainable management of fisheries providing marine ingredients. It also considers food security both in terms of quantity and nutritional properties and encompasses waste reduction. The work includes resource management, the wider environmental impact as well as socio-economic concerns.

The Roundtable will foster and support precompetitive efforts by members to:

- Identify and agree on ways to further improve the availability of sustainable marine ingredient materials.
- Investigate the potential of new raw material sources, such as mesopelagic species and others.
- Catalyse and support existing and new fisheries improvement projects.
- Understand and address urgent social issues and enhance social responsibility in key fisheries and regions.
- Maintain a global overview of the state of the resources and industry.

The first priority for the Roundtable is West Africa, where production of marine ingredients (both direct and through by-products) has grown dramatically over the last decade, and a number of economic and social challenges have been identified. Southeast Asia is another geographic priority, where multispecies fisheries pose unique management challenges and some fisheries are tainted by human rights and labour abuses. The Roundtable will also address other important topics such as life cycle assessments and potential new raw material sources.

“Nutreco and Skretting have been an active founding member of the Global Roundtable on Marine Ingredients. This platform gives rise to lively and constructive discussions where a fact-based picture of the activities and expectations of the industry’s value chain is given. Our collective work includes resource management, wider environmental impacts as well as socio-economic concerns. A multi-stakeholder approach is critical if we want to drive environmental and social improvements in key fisheries globally and ensure food security. This is why, being one of the world’s leading feed producers, Skretting’s participation is so important.”

Árni M. Mathiesen is the independent Chair of the Global Roundtable on Marine Ingredients, Senior Advisor at the Icelandic Ocean Cluster and former Assistant Director-General of the Fisheries and Aquaculture Department at the FAO.



“A multi-stakeholder approach is critical if we want to drive environmental and social improvements in key fisheries globally and ensure food security.”

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RoadMap 2025


Our [Sustainability RoadMap 2025](#) was approved by Nutreco's Management Board (formerly Nutreco Executive Leadership Team) in June 2020. It consists of three principal pillars: Health & Welfare; Climate & Circularity; and Good Citizenship.

After the RoadMap was adopted, we focused on developing processes and systems to help us accurately measure our progress in 2021 so that we could fully report on the goals and targets it outlines. Those goals and targets are measurably defined to be the basis for this and future reports.

During the fourth quarter of 2020 and first quarter of 2021, we worked to raise awareness – both internally and externally – around the RoadMap and sustainability.

For each of our RoadMap 2025 goals and targets, we have aligned an SDG sub-target to measurably address relevant issues. We referenced the "[Business reporting on the SDG, interpretation for business](#)" of the SDG to assist us in addressing the issue.

Table 3: RoadMap focus and themes.



Theme	Health & welfare	Climate & circularity	Good citizenship
Focus	Anti-microbial resistance	Greenhouse Gas (GHG) emission reductions	Diversity & inclusion
We do this by...	Innovating new products and services that will reduce dependency on antibiotic usage in animal husbandry and adopting five-step targets that will significantly reduce antibiotic usage by creating business opportunities for clients.	Utilising science-based targets to set targets for reducing emissions through energy efficiency programs and sustainable ingredient sourcing, incorporating life-cycle assessment methodologies, as well as utilizing new ingredients. Addressing responsible use of natural resources, biodiversity and ecosystems in compound feed ingredients.	Addressing diversity and inclusion in staff. Empowering local communities with best practices and technology to raise themselves out of extreme poverty through farming sustainability.
Soft targets	Animal welfare	Packaging / Water / Waste	Stakeholder engagement

*Soft targets are measurable targets that are relevant for our businesses in geographies or markets where there is demand for addressing the respective topic.

Topics handled by other departments:

- Employee development
- Occupational health and safety
- Human and labour rights
- Products Quality Assurance

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RoadMap 2025 progress assessment tool

At the end of 2020, the Nutreco Sustainability Platform launched the new online RoadMap 2025 progress assessment tool to be used to monitor progress made on our RoadMap 2025 targets over the next four years.

On an annual basis, the General Managers of our businesses and division Functional Directors are asked to respond to specific questions related to the completion or partial completion of the targets and goals reflected in RoadMap 2025.

The RoadMap 2025 progress assessment tool has been developed to:

- Track the progress of our businesses and business lines towards reaching the RoadMap 2025 sustainability targets.
- Be a tool for our general managers to prioritise efforts and resources for the next period to improve progress towards reaching our RoadMap 2025 targets.

We created a dashboard that gives local managers insight into their score and allows them to compare themselves to the internal benchmark on various RoadMap 2025 targets.

In 2020, Nutreco conducted a trial execution of this progress assessment tool. We identified areas of improvement and baseline data to mark our starting point towards our targets. In 2021, we revised and strengthened the progress assessment questionnaire, allowing us to track our progress relative to 2020. The results per pillar are weighted according to the number of targets and relative importance.

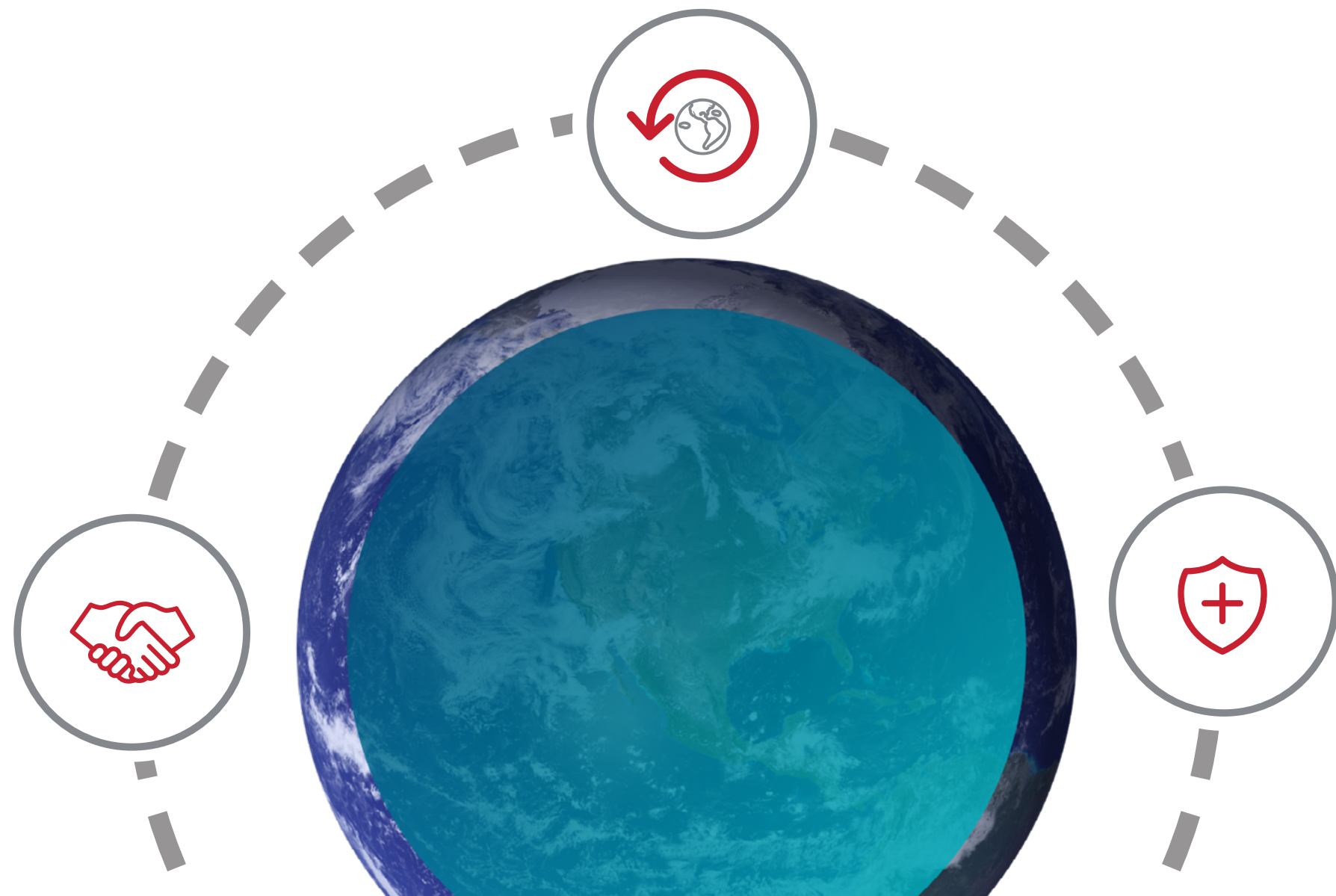
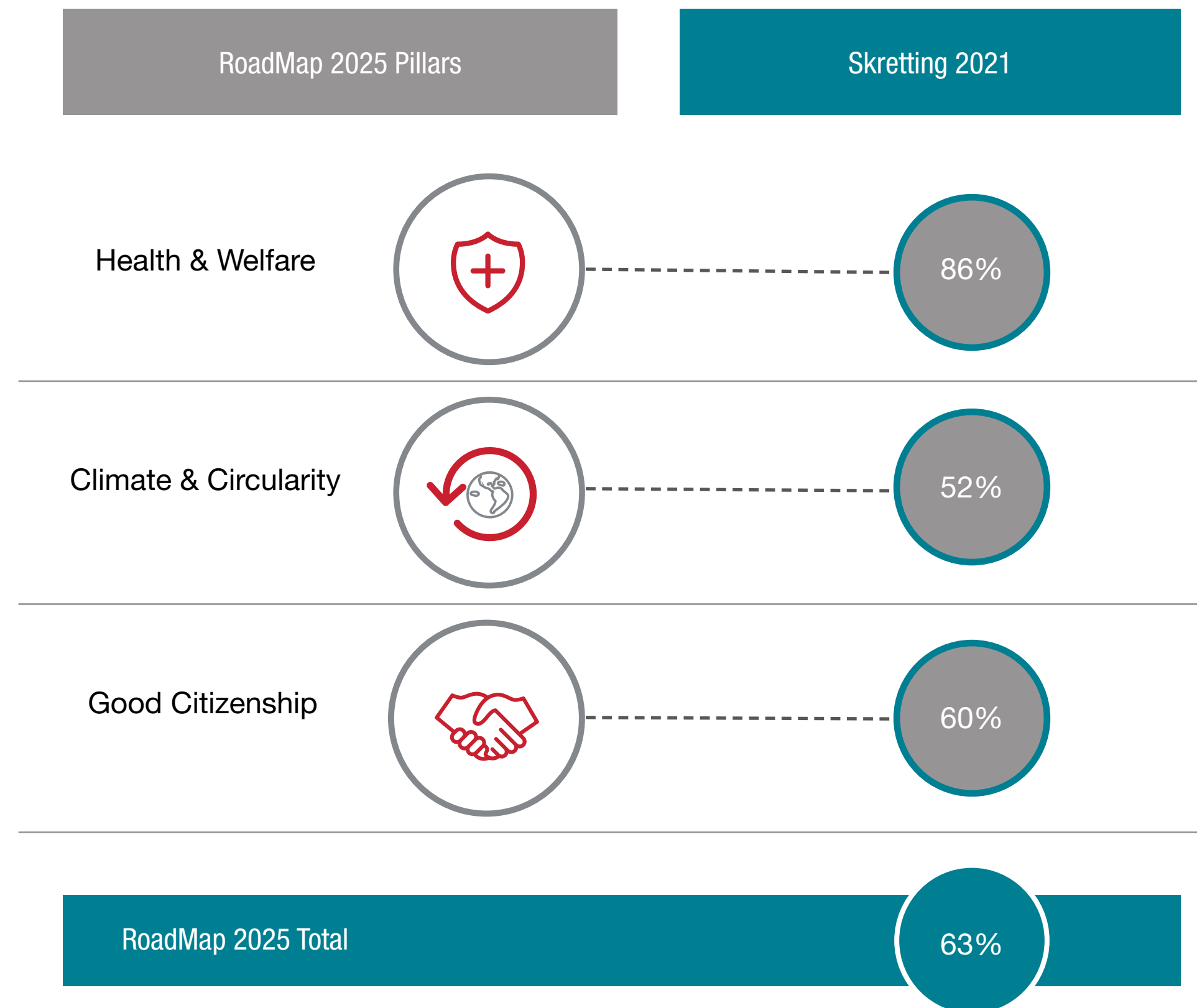


Table 4: RoadMap 2025 pillars and progress in 2021.



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Pillar 1: Health & welfare

Our Health & Welfare pillar is focused on addressing the risk of antimicrobial resistance (AMR) through strategic reduction of antibiotic use and eliminating the use of specific groups of antibiotics. In this RoadMap 2025 pillar, we identify five specific targets (see right).

Our approach

Health and welfare are fundamental pillars for aquaculture sustainability, and farming companies maximise them through effective health management practices. Generally, these practices are included in an integrated and holistic approach that focus on health risks mitigation and disease prevention.

This approach should include best management and husbandry practices, continuous surveillance and early and accurate diagnosis - essential for an early intervention when a challenge occurs - implementation of biosecurity and disinfection procedures in the production sites, responsible use of medicines when treatment is needed and systematic vaccination.

Health and welfare are areas where Skretting can have a significant impact in partnership with our customers. Helping to make sure that fish and shrimp are raised with optimal nutrition and good welfare is essential for Feeding the Future and can have a significant impact on human health.

At Skretting, we offer nutritional solutions and functional diets, to support fish and shrimp resistance and resilience, that are an important part of integrated preventative practices. Our specialised diets provide optimal nutrient formulation and include functional ingredients with the aim to mitigate the impact of the diseases and nutritionally support the animal during challenging conditions.

Addressing Antimicrobial Resistance (AMR)

While Skretting recommends a holistic approach to fish and shrimp health, whereby prevention through farming best-practices is better than cure, it's important to highlight that despite all the preventative measures aimed at reducing disease risks, aquatic species still face various health challenges. In these instances, medicated feeds remain the least invasive method of administering antibiotics, facilitating an effective treatment of these animals in a controlled, safe, and welfare-friendly manner.



All our medicated feed sales are based on a veterinary prescription with a valid clinical diagnostic, and are produced under controlled, high-quality conditions in separate production lines to avoid the risk of contaminating standard feed. The use of medicines in aquaculture is subject to specific laws and regulation, which Skretting strictly follows.

Table 5: RoadMap 2025 targets in Pillar 1 and their connection to SDG sub-targets.

Our RoadMap 2025 targets		Specific SDG sub-targets addressed
Ensure no prophylactic usage of antibiotics employed in feed, forage or water. Our progress: No use.	●	Initially there was no explicit mention of AMR in the SDG sub-targets. Through various advocacy measures over the years, AMR was recognised as a threat to people's livelihoods, lives and environment. In March 2020, a new SDG sub-target was created to address AMR (see below).
Ensure no use of antibiotics and/or coccidiostats for effect of growth promotion.	●	SDG sub-target 3d2: "Percentage of bloodstream infections due to the presence of selected antimicrobial resistant organisms."
Ensure the use of antibiotic medication can only be applied to feed and water with a valid clinical diagnostic result demonstrating bacterial infection and under direct and approved medical supervision by a qualified veterinarian. Our progress: No use.	●	
Ensure no use of any antibiotic or related medications that are listed in the World Health Organisation's overview of Critically important antimicrobials for human medicine (CIA) (6th revision) Our progress: In 2021 Skretting produced used 2,137 kg of CIA active ingredient. All of the feeds sold were prescription based.	●	



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Reflection on progress

Our focus in 2021 was to continue with our mapping and understanding of the use of antibiotics listed as CIA as a part of our Roadmap 2025 goals. As part of the outcome we identified that the main use is generated from:

- Erythromycin - Gram positive bacteria (Lactococcosis, Bacterial Kidney Disease). Generally vaccines don't work well and/or warmer weather increases the incidence of certain diseases.
- Oxolinic acid and Flumequine – Pasteurelosis, Vibriosis, Furunculosis. Small volumes – mainly used in few cases with disease outbreaks.

Factors that drive the use:

- Vaccination failure (poor/no availability, poor efficacy, deficient vaccination programs).
- Environmental conditions.

In Skretting we don't limit our work to only reduce our sales of CIA. We want to be transparent and are open to engage and collaborate with external stakeholders to find new alternatives that reduce the dependency on any antibiotics.

As a global player producing feed with antibiotics, we acknowledge that there are several dilemmas we continuously consider when using antibiotics:

- The animals' right to get treatment if they are sick.
- To provide CIA or not when there are no alternatives after 2025.
- There are few antibiotic options registered for aquatic animals.
- Generally, Skretting does not choose the antibiotic, as we supply the medicated feed based on a prescription. The veterinarians prescribe and select the antibiotic after investigating and diagnosing the disease. Through our technical team we work closely with our customers to share knowledge and discuss alternative treatments or vaccines. However, in some cases a CIA is the only antibiotic that works and/or is available to treat specific diseases.
- Production of medicated feed in best manufacturing practice conditions compared to farmers mixing themselves. Skretting could stop producing feed containing antibiotics, but by doing so we risk pushing antibiotic usage further down the production chain to topdressing feed on-farm. A move that would effectively be useless in the challenge of reducing antibiotic resistance. To the contrary, Skretting produces in safe environment where our workers are protected, the final dose are controlled, and the production is done with high quality standards.

Our customers care about their animals, and in close collaboration with them, several initiatives have been started in our OpCos to ensure best-practice and reduce the antibiotic dependency. Some examples are listed below:

- Testing diseases prevention programs to reduce antibiotic treatments in areas where we identify challenges.
- Development of technical customer support in bacteriology including antibiotic sensitivity assessment (antibiograms) in countries where that has not been standard procedure.
- Awareness campaigns to support farmers to use antibiotics in a responsible way including an app to calculate the dose fast and accurately.
- Continuous health education of farmers including vaccination.

As a component of our focus, Nutreco developed an AMR working committee consisting of experts from Trouw Nutrition and Skretting. For more details, please read our corporate sustainability report.

Table 6. Use of antibiotics on Skretting's feeds.

2021	% of total feed sales
Medicated feed with antibiotics	1.6
Medicated feed with CIA	0.02



Ana Hesby Nessa, Global Product Manager Health & Carlos Zarza, Principal Researcher.

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Skretting Vietnam – Farmers are “changing to SUCCESS”

Vietnamese shrimp farmers are becoming increasingly aware of the harmful effects of improper antibiotic use and AMR consequences for the aquaculture industry on animals, the environment and on human health.

Mr. Trieu, from Bac Lieu, is a Skretting customer who wanted to stop using antibiotics under the Aquaculture Stewardship Council (ASC) standard, to affirm product quality and commit to providing safe products to consumers. To enhance efficiency, he replaced the old farming processes with Skretting Vietnam’s SUCCESS program. He has seen the effectiveness of applying the SUCCESS program with a set of recommendations including biosecurity, input water treatment, pond management process (feed, environment and shrimp health) and output waste treatment process during the production cycle.

“The SUCCESS protocol helped me to build the perfect barrier around the farm to protect shrimp from pathogens that I have encountered in previous seasons,” he said. “For the first time in my life, I have been able to produce shrimp without the use of antibiotics.” He also mentioned the effectiveness of the feed quality when switching to Skretting products. “My shrimp after 93 days are growing faster, are healthier and are harvested in a shorter period of time with a successful result.”

Skretting Vietnam continues to support shrimp farmers with nutritional solutions, technical services, and trainings on responsible use of antibiotics and innovations to feeding an antibiotic-free future.



The search for tools to support animal health

In our search for tools to support animal health, Skretting entered a joint collaboration with a company focusing on bacteriophages called Proteon Pharmaceuticals.

Bacteriophages, commonly known as phages, are micro-organisms naturally present in the environment. Bacteriophages have a highly specific mode of action and as such they are safe for humans and animals. They are considered an effective tool for fine tuning the microbiome and limit the proliferation of antimicrobial resistant bacteria. In conclusion, these are a tangible and sustainable solution for health management and can safeguard animal health whilst promoting the farm’s productivity.

Proteon Pharmaceuticals has worked with bacteriophage technology for over 15 years, and has developed products to help most animal production industries. Their mission is to reduce the unnecessary use of antibiotics, promote animal health and minimise economical losses for farmers.

Proteon developed a phage product that Skretting is currently distributing in India aiming to support health management of farmed fish.

This product has promising potential in our market and can be used on a wide variety of freshwater and seawater fish species.

In addition, Skretting and Proteon together are co-developing a product to support health management in shrimp. Shrimp face numerous health challenges caused by viruses, parasites and bacteria. For the latter, they’re usually found naturally in the environment and can cause health issues in some specific situations. The health issues translate to a loss in the shrimp farming industry of billions of USD dollars yearly. Hence, we put this high on the agenda in our R/D efforts going forward.

By developing tools to support animal health, we want to contribute first-hand to the fight against AMR and envision a sustainable future for the aquaculture production industry.



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Skretting Ecuador – 100% antibiotic-free

Skretting Latin America, as part of the food chain, has a solid mandate to produce non-medicated aquaculture feed, supporting the requirement of global seafood markets from our customers. To deliver on this end goal, we highlight the proper way of feeding, using best practices, ensuring the highest level of sanitary conditions in ponds, shrimp welfare, and high quality of feeds in terms of physical aspects and nutritional values. One of Skretting’s customers, Omarsa, is focused on a sustainable future.

“It’s important that all people around the world are conscious of the use of medications in feed and food production, where the discriminated use of the medications can generate the reproduction of super bacteria which are more difficult to eradicate, mainly in the shrimp aquaculture system, affecting the industrial sustainability, environment and consumer health. In Omarsa (Operadora y Procesadora de Mariscos) the main purpose is guaranteeing the sustainable food to millions of families, ensuring the whole production chain to sell shrimp medication free,” says Sandra Pardo, Financial Manager at Omarsa.



Skretting Norway - Innovating with blood sampling

Handling fish is something most farmers need to do several times during the production, due to delousing, sorting, changing site, etc. In 2019 Skretting Norway launched a blood sampling kit for Atlantic salmon through our service team in ATLA.

Through our research at commercial farms, and in controlled field trials, we gained knowledge about blood markers in salmon. The blood-markers that we have identified provide insights on stress levels, antioxidant status or if there are any indicators of disease. Sometimes the samples can indicate what kind of disease the fish has.

Despite the additional information blood samples provide, we know that the blood samples alone are not enough. Together with other available tools at Skretting Aquaculture Innovation (AI), like genetic analysis and PCR combined with production data from farming sites, we can gain targeted information about the fish.



The collaboration with our customers has been crucial in starting up this service. Our health monitoring service has continued to expand to include more tools.

During 2021 gene expression analysis started to be often conducted in addition to blood analysis. Through genetic analysis of heart tissue, we can measure how specific genes involved in disease development are up- or down-regulated. Using this technique, we have been able to predict disease outbreak a month before it actually started. This is epoch-making and can help the farmer to take action that can minimise the consequences of a disease.

It is important to emphasize that this area is still far from being fully developed. We are sure this will further develop as we go along and collaborate together in-house and with customers, finding new markers and have a better understanding of fish health.

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According to the [Intergovernmental Panel on Climate Change \(IPCC\)](#), the global food system contributes between 21-37% of all GHG emissions. Many studies have been published that measure the footprint of animal protein production, and have made it clear that the volume of emissions from our value chain is significant.

Our ambition is to be the leading partner in driving the journey towards an even more sustainable aquaculture industry. 2021 was a year unlike any other due to complex supply chain issues. Despite these disruptions, increasing ingredient prices and transportation challenges, we never strayed from sourcing responsibly and maintained a clear focus on using sustainable ingredients.

Climate and Footprinting

Our approach

Natural resources are physically limited as well as the capacity of nature to cope with anthropogenic emissions. In this respect, the global community needs to find a way to not only limit but also actively reduce its environmental footprint in order to guarantee a future worth living for the generations to come. This is nowadays widely accepted and internationally agreed. With the Paris Agreement, for example, the world governments committed to limit global temperature rise to well-below 2°C above pre-industrial levels and pursuing efforts to limit global warming to 1.5°C. In 2021, however, global temperature was already 1.2°C above this baseline, showing that there is not much room left. The message is clear: We need to act now!



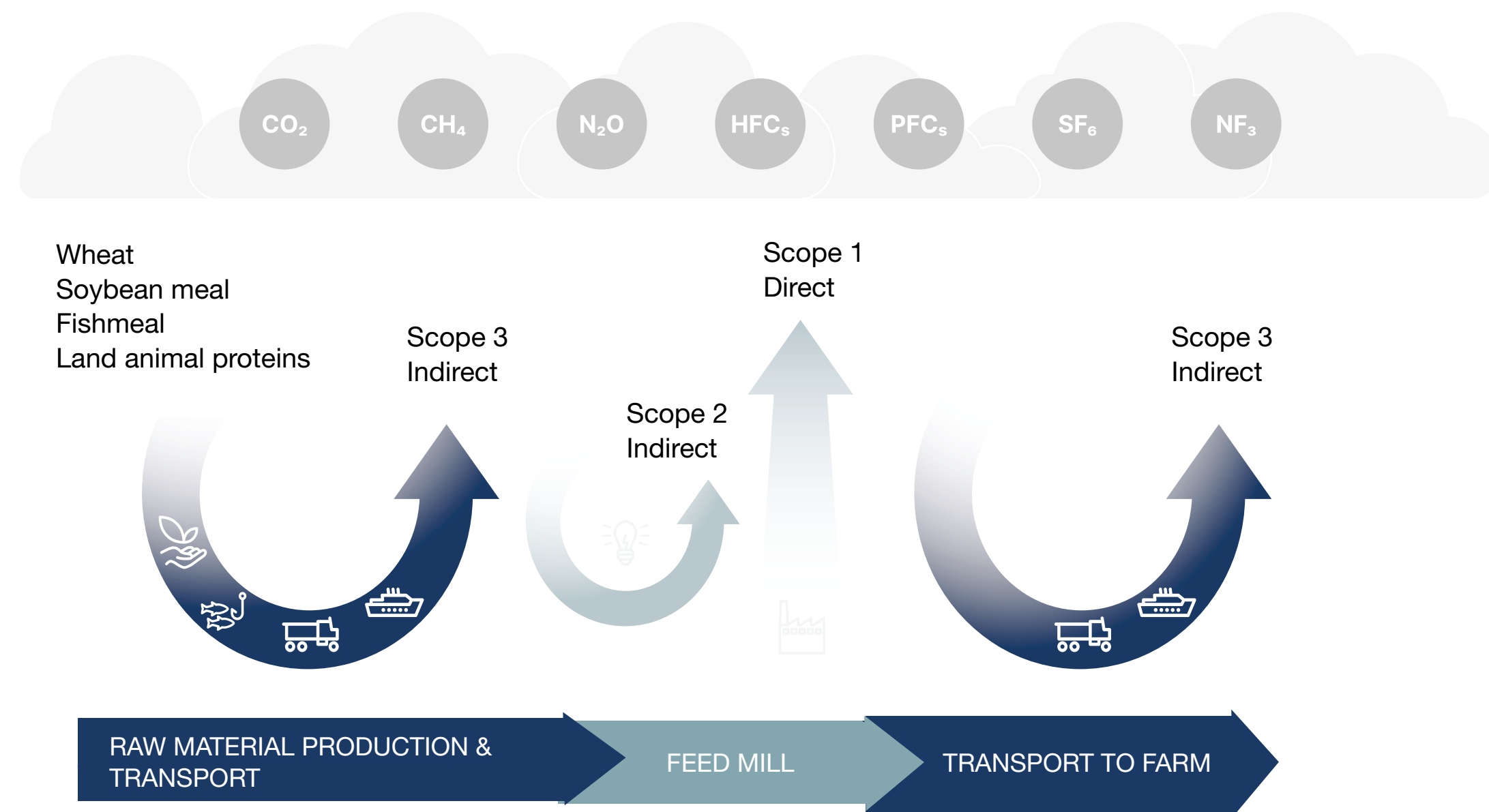
Table 7: RoadMap 2025 targets in Pillar 2 and their connection to SDG sub-targets.

Our RoadMap 2025 targets: Climate and Footprinting & Energy		Specific SDG sub-targets addressed
<p>Target: Commit to Science-Based Targets.</p> <p>Our Progress: We have committed to the Science Based Targets initiative (SBTi) that we will reduce 30% of our scope 1 & 2 emissions and 58% of our scope 3 emissions.</p>	●	<p>SDG sub-target 13.1/Business interpretation – Setting science-based GHG reduction targets in line with the goals of the Paris Agreement.</p> <p>SDG sub-target 7.3:/Business interpretation – Reducing energy consumption in own operations, including through using heating and cooling technology, efficient lighting, efficient electrical appliances and fuel-efficient vehicles.</p>
<p>Target: Implement LCA footprinting in feed formulations, in the innovation stage-gate process, and in procurement (as part of Scope 3 for Science-Based Targets).</p> <p>Our Progress: We have implemented LCA footprinting in our feed formulation software and create a dashboard to monitor our scope 3 emissions.</p>	●	<p>SDG sub-target 13.1/Business interpretation – Working with suppliers to improve supplier sustainability management and prevent supply chain interruptions or delays due to climate change.</p> <p>SDG sub-target 12.2/Business interpretation – Investing in environmental performance improvements and training programmes in core business strategies, operations, and throughout the supply chain.</p>
<p>Target: Develop footprinting capacity in our farm and formulation models to help customers measure and reduce their emissions.</p> <p>Our progress: Skretting Italy launched CarbonBalance and we are working to develop a global model that allows us to measure the footprint of the feed and farm.</p>	●	<p>SDG sub-target 12.2:/Business interpretation – Raising consumer awareness and promoting consumer education to improve their willingness to engage in sustainable consumption.</p>
<p>Exploring different mechanisms to be supplied with renewable energy or promote renewable sources by, for example, signing contractual agreements to buy energy generated by a renewable asset (Power Purchase Agreement – PPA).</p> <p>Our progress: 40% of Skretting’s scope 2 energy is renewable.</p>	●	<p>SDG sub-target 7.2/Business interpretation – investing in and promoting initiatives on renewable energy and integrating these into business strategy.</p> <p>Monitoring and reporting on the amount of energy produced, purchased and consumed, according to source.</p>

Nutreco acknowledges UN Principle 15 approach in applying a precautionary principle when considering the physical impact of a changing climate; where there are threats of serious or irreversible damage, including severe weather events, rising sea levels and shifting temperature zones, a lack of full scientific certainty will not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

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Figure 2: Emissions related to each scope throughout the process between production and transport of feed. Adapted from GHG Protocol.

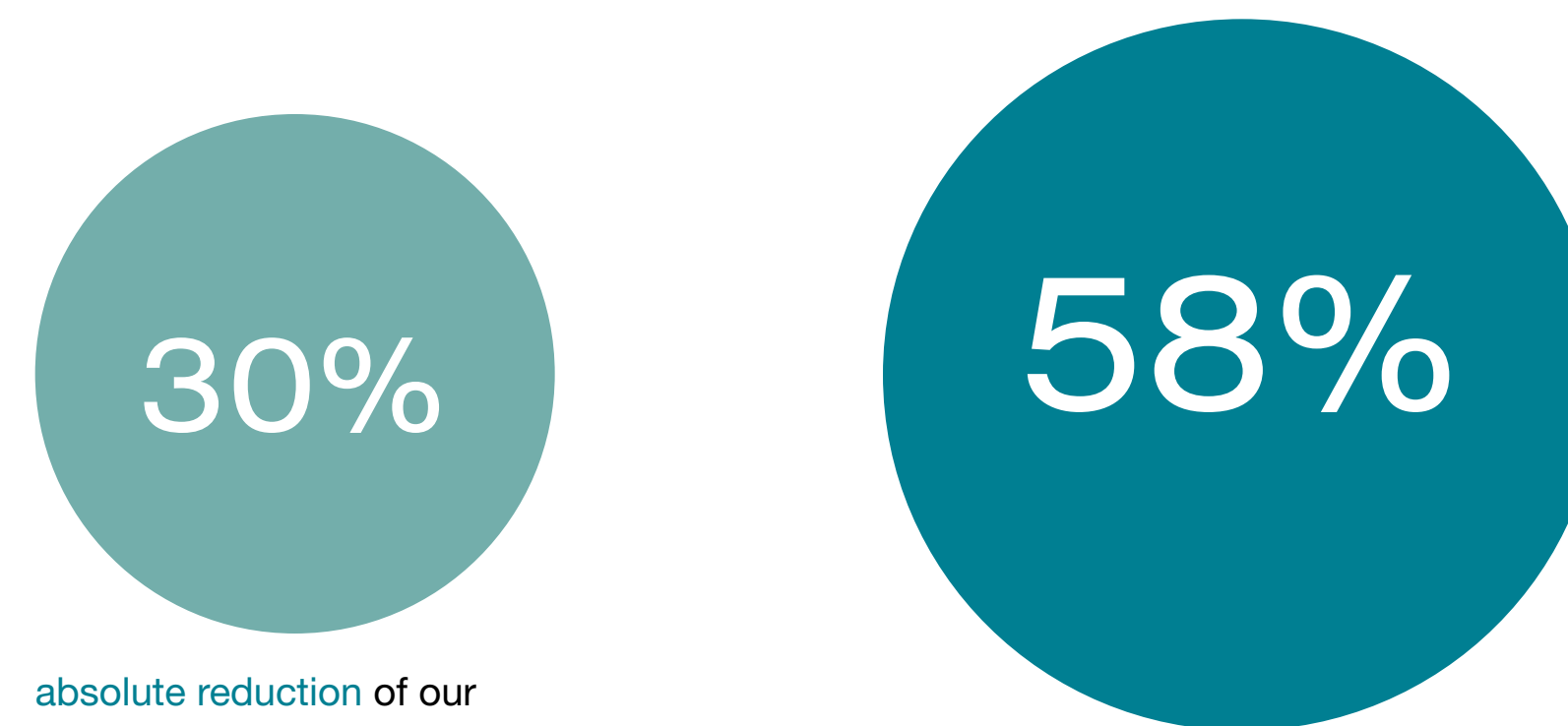


Aligned with the Paris Agreement, Nutreco has committed to science-based targets over all three scopes, and we are at a phase of creating a deep understanding of our carbon footprint and the drivers behind it to develop efficient reduction strategies. We are also further improving our data to reduce uncertainties while setting up processes to monitor and validate potential reduction scenarios. It is already clear that this is a challenging task and that there will be no silver bullet to reach our targets. We thus have to focus on different solutions in parallel. The main identified focus areas are the following:

1. Introducing Life Cycle Assessment (LCA) based metrics into our procurement and formulation systems to quantify, understand and monitor our environmental impact and the drivers behind it.
2. Engage with our suppliers to drive down our footprint together.
3. Source deforestation-free to reduce the land use change related footprint.
4. Identify lower footprint alternatives among novel or circular ingredients.

The introduction of LCA-based metrics in particular helps us to support this overall journey and is a core requirement for all the other points. That is why we want to focus on our past achievements, current challenges and future plans related to LCA in the following section. But first, let's consider what LCA actually means.

Our emissions reduction commitment by 2030 (SBTi):



absolute reduction of our scope 1 & 2 emissions from a baseline year of 2018.

economic intensity reduction of our Scope 3 emissions.

(According to SBTi methodology, Scope 3 targets are for 67% of a company's suppliers. Nutreco's published target is a 58% reduction for 67 % of our Scope 3 suppliers, resulting in 39% for all suppliers (ie, 58% x 67% = 39%).

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Life Cycle Assessment – the most comprehensive method to quantify the environmental impacts of raw materials, products and organisations

As one commitment by Nutreco's Roadmap 2025, Skretting stepped up in developing and implementing Life Cycle Assessment (LCA) based metrics. The internationally standardised method LCA is acknowledged and increasingly applied as the most comprehensive and robust environmental accounting method to assess the environmental footprint of products or organisations. There are two core principles underlying an LCA:

1. The Life Cycle Thinking principle.
2. The multi-impact approach.

Life Cycle Thinking means that all stages of a product life cycle are considered in the assessment, ie not only direct emissions or resource extraction happening on site, but also indirect environmental impacts further upstream or downstream one's own gates.

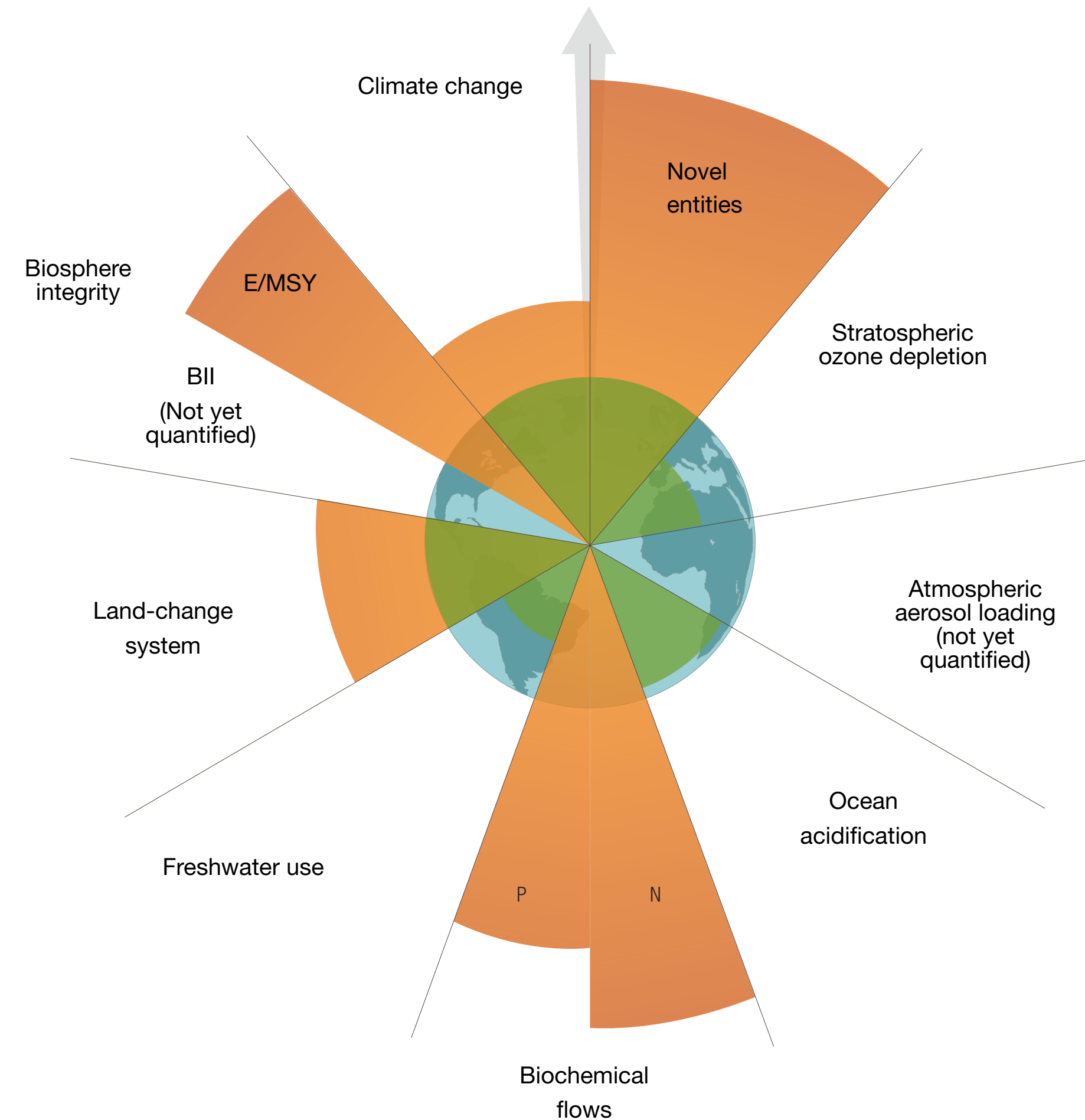
In many cases, the highest environmental impacts of a product are linked to its raw materials or its use phase and thus are occurring upstream or downstream the production gates. Not considering them would thus underestimate the real footprint but also would not allow to see if the implementation of impact reduction strategies, for example by the producers, would actually reduce the total footprint of the product, or if the burden is only shifted towards other life cycle stages.

The second principle, multi-impact approach, means to quantify all relevant potential environmental impacts caused by a study object. Nowadays the focus is on climate impacts as an urgent environmental problem to solve. However, there are also other environmental impacts that can be quantified with the LCA method, such as a water footprint or the eutrophication potential (ie the over-fertilisation of aquatic or terrestrial systems).

Besides climate change especially eutrophication, the loss of biodiversity or land transformation are urgent environmental topics to address too, as we are already overshooting these boundaries on a global scale which increases the "risk of large-scale abrupt or irreversible environmental changes" (SRI, 2022). This enables to address potential burden shifts which can easily be overseen when only focusing on, for example, the carbon footprint.

At Skretting we acknowledge these planetary boundaries. Carbon footprinting is the main, also politically most urgent topic over the coming years and thus, we're also focusing on this impact category. Still, we are trying to consider also other environmental impacts when thinking of carbon reduction strategies (Figure 3). The implementation of LCA-based metrics into our systems helps us on this learning journey.

Figure 3: Planetary boundaries concept as presented by the Stockholm Resilience Centre, based on analysis in Persson et al. 2022 and Steffen et al. 2015.



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General progress in implementing LCA metrics in Skretting

In 2021, we finalised a Nutreco wide footprint database which maps all our purchased ingredients with LCA metrics, mostly derived from quality approved databases. We found it very important to have such a consistent source of footprint information specified to our ingredients and aligned across all Nutreco. This gives a quality-assurance and guarantees that we are calculating footprints consistently.

The database has been developed by internal LCA experts together with external consultants and is managed centrally by LCA professionals to keep it updated according to the latest developments. The selection of data closely followed the requirements of the European Product Environmental Footprint (PEF) standard, specifically the [PEF Category Rules Feed for Food Producing Animals \(2018\)](#). Related to this, the Global Feed Life Cycle Initiative (GFLI) database, which is the most comprehensive and accepted LCA database for feed ingredients, is the main source of data. Remaining data gaps are filled with data derived from other quality-assured LCA databases, such as Ecoinvent or Agri-footprint.

The Nutreco database is already linked to our procurement system, which helps us to automatically track the scope 3 footprint of Skretting Global and our OpCos via an online dashboard. It further gives us the opportunity to identify and understand the footprint hotspots of our procurement worldwide, which is a core requirement to develop applicable reduction strategies on the way to reach our science-based targets until 2030.

In addition, we also implemented the footprint data into our formulation systems which helps us:

1. Calculate feed footprints automatically.
2. Understand how different formulation choices impact this footprint on product level.
3. Actively formulate products to a lower footprint and determine the resulting impact on ingredient composition and price.

Overall, this solution helps us tremendously to eco-design our feed in future.

The key challenges we are currently facing and going to address throughout 2022 and in the future is that information on sourcing countries is currently not automatically tracked in our procurement system. Especially for vegetable ingredients, the footprints may be significantly different depending on the regions they are sourced from. Hence, implementing this information into the procurement systems will increase the accuracy of the footprint dashboard greatly as it will allow us to calculate with country- or region-specific LCA metrics, which we already have available for many ingredients in our internal database. Another challenge is the dependency on mostly secondary data, as quality-assured primary data from producers is still rare (see next section on how we are planning to address this).

This shows that accurate footprint values can be limited by either (LCA) data availability and quality on the one side, but also by supply chain transparency and information on the other. Implementing LCA has already helped us to improve both.



Marcel Görmer
Project Manager Ingredient Sustainability

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The footprint of our products over their life cycle

We decided to implement the LCA method to quantify in a robust and standardised way the environmental impacts of our products and organisation. Following the life cycle thinking principle, we also account for the emissions upstream and downstream our own gates. In the following sections, we will have a closer look at the core life cycle stages of our main products from a footprint perspective: fish/shrimp feed. Our products principally go through the following main life cycle stages, which we will explain deeper.

For the main Life Cycle Stages coming up next, we will provide general information, highlight some core challenges we face and explain what is behind the carbon footprint number based on feed examples.

Based on the calculated carbon footprints of two exemplary feeds, a salmon feed produced in Norway and a shrimp feed produced in Ecuador (see Figure 5), we will also explain the core drivers behind the carbon footprints over the different life cycle stages for these specific cases and what causes differences.

Figure 4: Life cycle of our products.

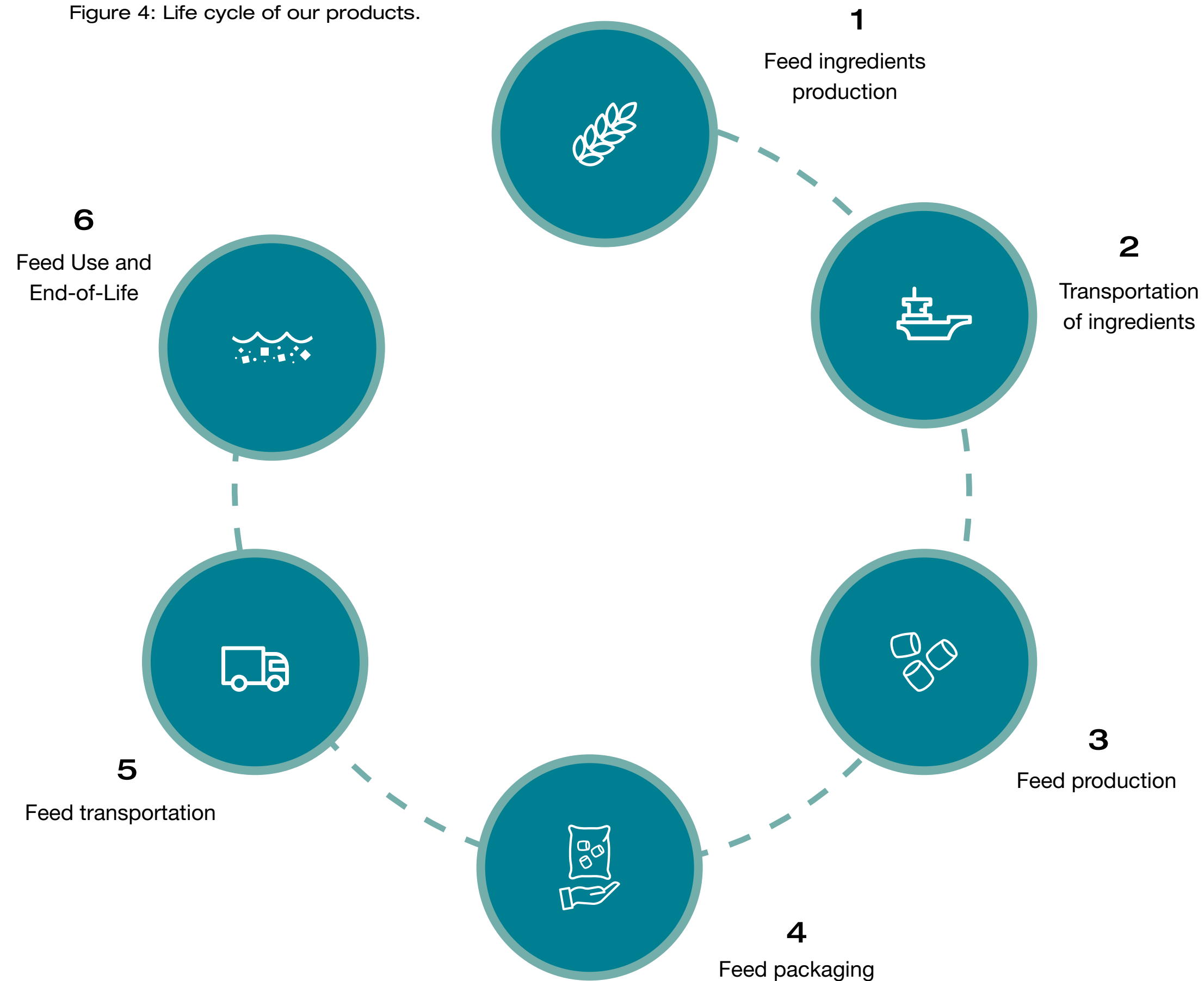
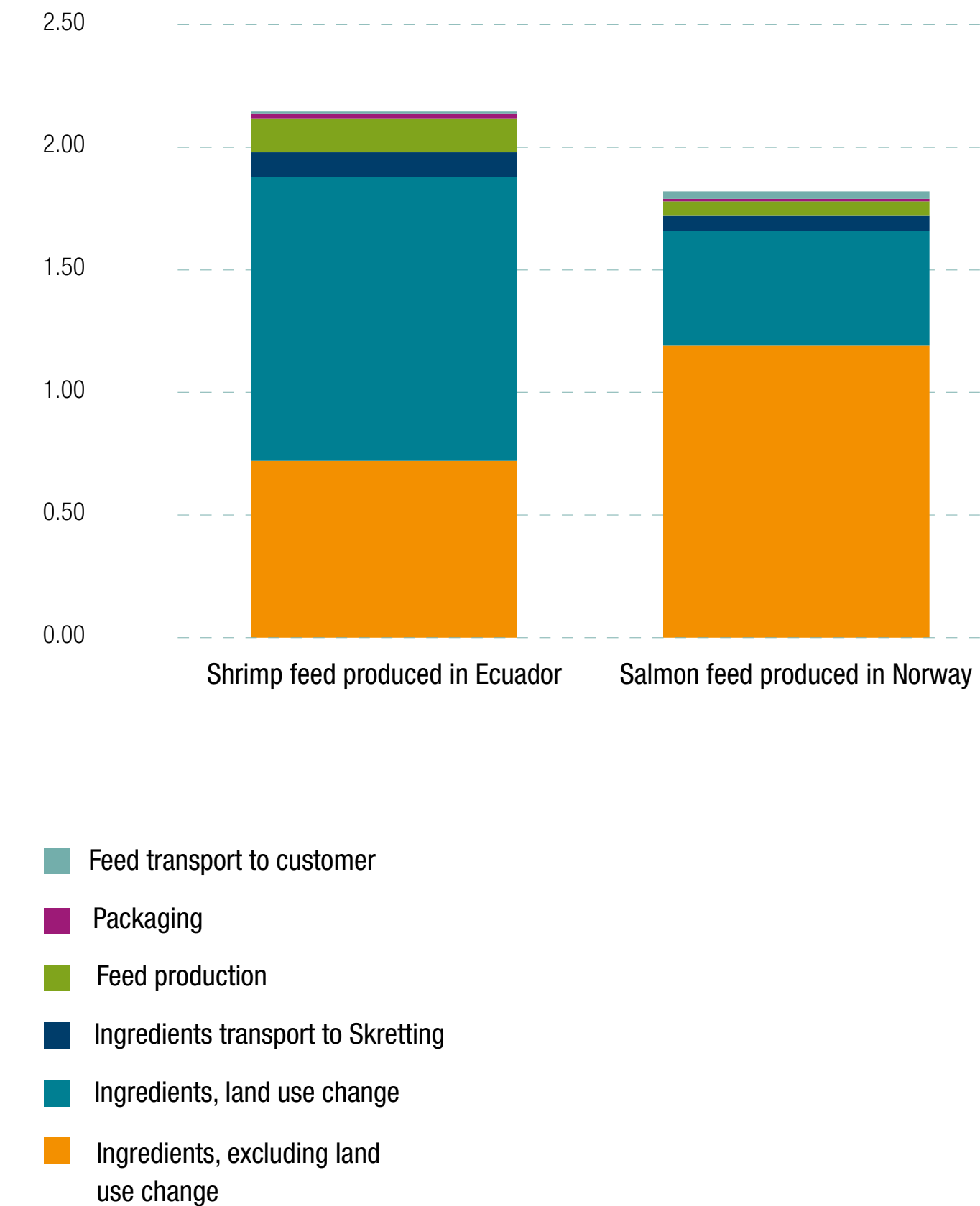


Figure 5: Carbon footprint of exemplary shrimp and salmon feed in kg CO₂e/kg feed.



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Life Cycle Stage I: Feed Ingredients

General description

The largest share of the feed footprint is linked to the feed ingredients. For Skretting in total but also for most of our products, more than 90% of the footprint is caused upstream of our gates. This is a challenge because we only have indirect influence on this part. For example, we cannot directly determine which energy source our suppliers shall use or how farmers even further up the value chain cultivate their fields.

However, at the same time, we see this as an opportunity. Knowing about this hotspot allows us to focus more energy on our procurement, integrating environmental metrics in procurement systems and, based on this, define clear sustainability targets for our purchasing teams. With this, we have a great chance to significantly drive the reduction of the footprint of the whole feed and fish/shrimp value chain.

Quantifying and understanding the ingredient's footprint is not easy though, as there is a high diversity of feed ingredients, an even higher range of production processes and thus, potential environmental impacts linked to them. Next to this, as we do not have direct influence over these processes and access to primary data is currently limited, we need to rely mainly on average secondary data. This comes with uncertainties that need to be known and understood to improve data quality but also to not draw wrong (and probably expensive) conclusions based on weak data.

Based on carbon footprint analyses we did on the organisational level and for different feeds over the past year, we learned that the ingredient's footprint is mainly driven by vegetable ingredients. This is mainly, but not only, due to land use change effects.

Despite reducing the land use change part, we are also exploring lower footprint ingredients across all categories. Even without land use change, vegetable ingredients, same as others, come with a footprint attached to them. Based on our database we are already identifying lower carbon ingredients per and across categories.

Total carbon footprint:

- 73% Vegetables
- 10% Marine
- 7% LAP
- 4% Functional
- 4% Packaging
- 2% Operations

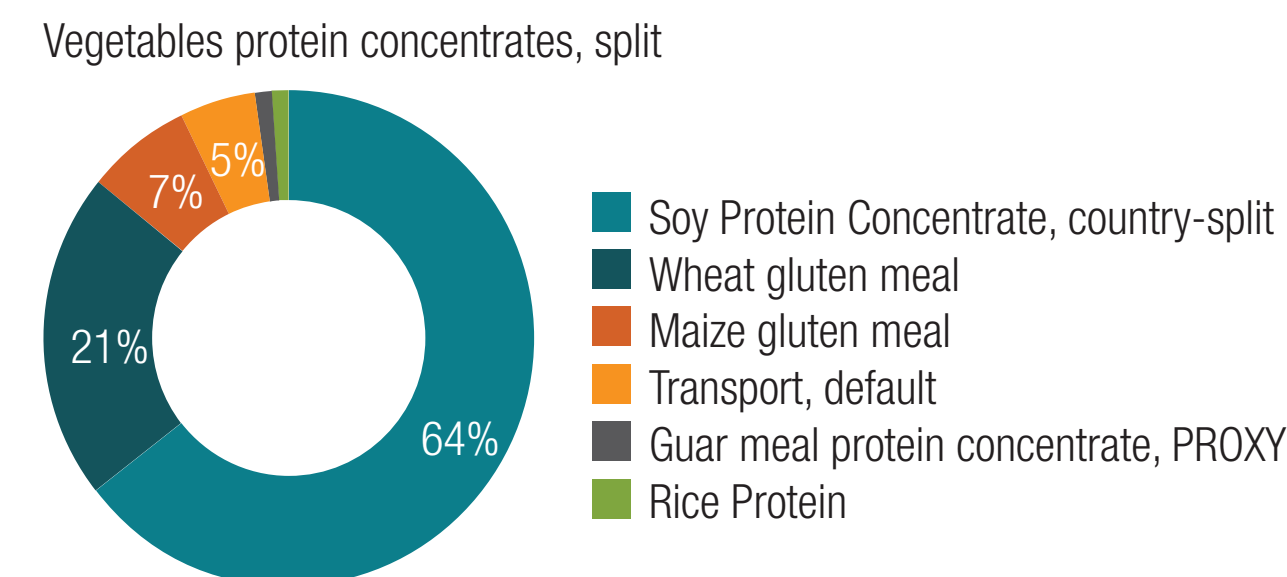
94%
of total

We will focus more on by-product ingredients, for example in the land-animal or marine ingredient categories. We also validate different novel ingredients regarding their footprints, availabilities and which conventional ingredients they might be able to replace within the different ingredient categories. Based on this information we will calculate realistic footprint reduction scenarios. It is not to forget that also novel ingredients have a footprint attached to them and that they have to be carefully validated to not move into a wrong direction.

Figure 6: Relative contributions to the carbon footprint of our purchased vegetable ingredients.



Figure 7: Relative contributions to the carbon footprint of our purchased vegetable protein concentrates



Within Vegetable Protein Concentrates, there is...

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Our core challenges

One of our current main challenges is, that despite making good progress on buying only certified ingredients if they are coming from high-risk countries, as most certification schemes can only guarantee deforestation-free since for example 2008 or 2009, we still have to count in the whole land use change related footprint due to the 20-year cut-off date required by footprint standards. Hence, the footprint of certified deforestation-free crops is as high as the ones from uncertified crops, despite the clear environmental benefit of buying certified. To address this challenge, we are specifically engaging certification bodies to provide more primary data aligned with the international footprint standards. Additionally, we are engaging in working groups to discuss this topic on a higher level, as we are not the only company that is facing this challenge.

Next to this, we are mainly forced to calculate with secondary data, while this can only reflect supplier specific footprints to a limited extent and thus adds significant uncertainty. Using secondary data for scope 3 is allowed by the footprint standards, but limits decision making for procurement and feed formulation. On the other hand, for most novel ingredients, due to being novel, there is yet no good and quality-approved secondary LCA data available. We have thus already requested primary footprint data from over 20 novel ingredient producers. To understand these footprints and validate their quality and consistency is an ongoing task. We already see that most of the presented values are not comparable due to different choices made in the calculations. We are thus now requiring novel ingredient suppliers to calculate according to consistent rules as given by the PEFCR Feed standard. In a next step we want to actively calculate reduction potentials via different scenarios for replacing specific conventional ingredients gradually with novel ingredients or other lower carbon alternatives.

Feed example

For both feeds presented on page 26, the highest carbon footprint share is related to the feed ingredients. The highest impacts come from the vegetables, for example due to agricultural practices such as tilling of the soil or fertilisation. In addition, further processing steps, for example drying of the crops or protein/oil extraction contribute to the footprint.

As can be further seen in the charts, land use change related emissions make a big part of the overall feed carbon footprint. This is mainly linked to vegetable, especially soy ingredients sourced from countries with high risk for deforestation. For our OpCo in Norway and others, we already achieved to source soy only from low-risk countries or Class A deforestation-free certified. Still there is a significant land use change footprint attached to the Norwegian Salmon feed. This is due to the 20-years cut-off date defined by footprinting standards while most current certification schemes only guarantee deforestation-free for up to 14 years. With our [deforestation-free soy and palm oil sourcing policy](#) we directly address the reduction of the land use change footprint but still need to count in land use change effects until the 20-years cut-off date is reached.

Despite vegetable ingredients, also other feed ingredients add to the footprint, for example marine ingredients or land animal-based proteins due to different kinds of production and processing steps. Marine ingredients and ingredients from by-products have a rather low specific carbon footprint, so that feeds with high inclusion levels of these ingredients have a generally lower absolute carbon footprint.



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Life Cycle Stage II & V: Ingredients and feed transportation (inbound and outbound logistics)

General description

The carbon footprint caused by transportation (either the transportation of the ingredients to our plants or the feed from our plants to our customers) has a rather low share in the overall feed carbon footprint. Despite the general assumption of high impacts caused by transportation over long distances, it often is more sustainable to source lower footprint ingredients from overseas than sourcing local ingredients with less sustainable techniques to produce them (for example, due to other land management practices, lower yields, higher fertiliser use etc.). The best case of course, however, would be to source low footprint ingredients locally, but this sometimes is limited by cost or availability. The footprint of transportation is mainly influenced by transportation distance, the mode of transport, fuel type and consumption, and the load factor. Due to high freight capacities and load factors, container transport via ship generally comes with a significantly lower carbon footprint per ton-kilometre compared to a transport via truck.

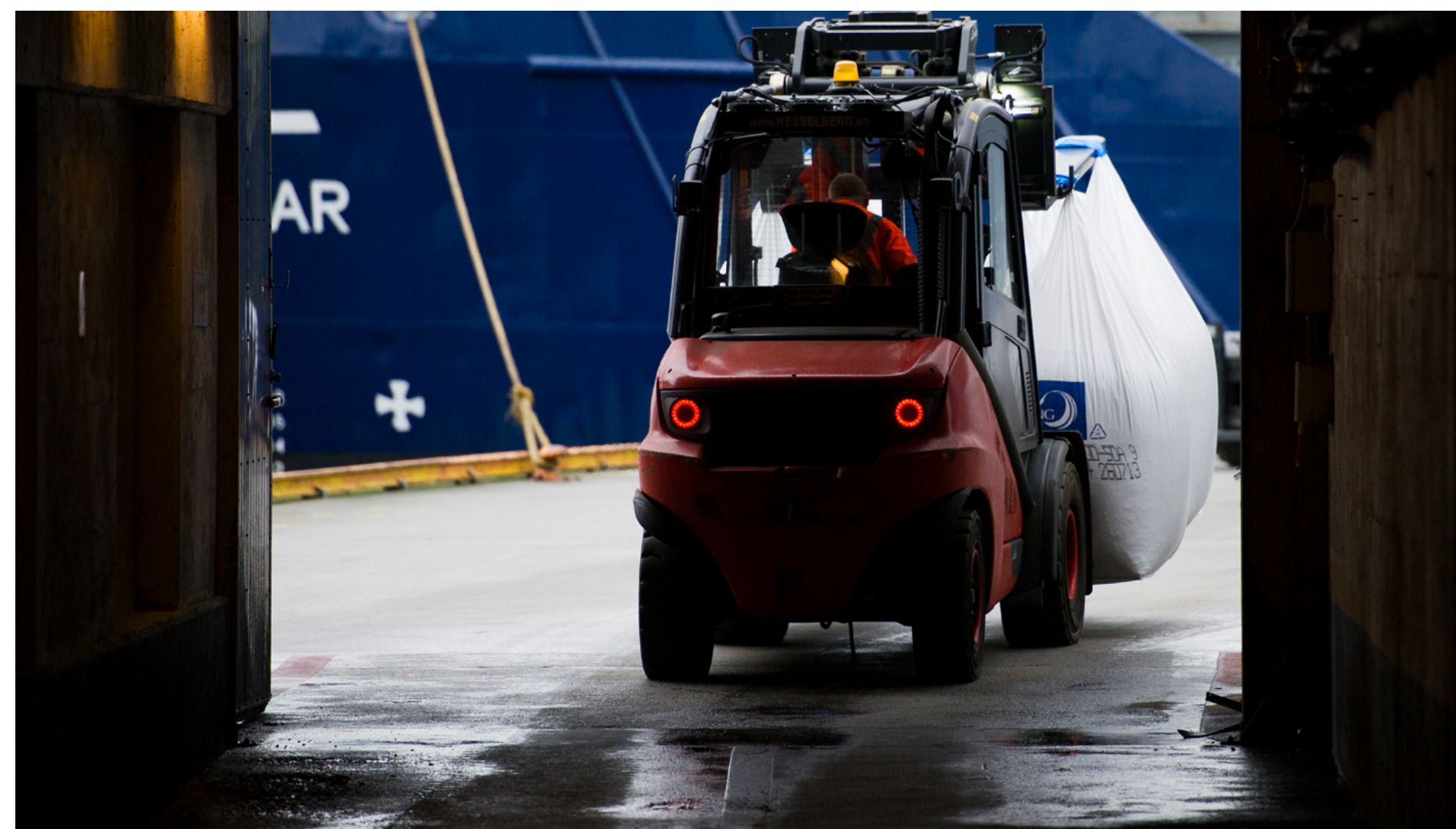
Even though the impact on the overall feed footprint is low, Skretting still looks for opportunities to lower the footprint of transportation. One aspect is to focus on more local sourcing, in case of ingredients with similar or lower carbon footprint values. Another one is collaborations for increasing the loading factor/efficiency of transport of our feed to farms, where possible (read story about Fjordfrende in our [2019 Sustainability Report](#)).

Our core challenges

For calculating more specific and automated the inbound transport impact, information on sourcing regions needs to become available in our different systems. This challenge was already mentioned for the feed ingredients, and it will be one main focus area for the year to come as it also helps us to more accurately calculate the impact of inbound logistics. Until now, aligned with the PEF standard, we are mostly calculating with default factors for intra- and intercontinental transport. Same relates to tracking information regarding mode of transport and loading factors for all the ingredients that arrive at our factory gates.

Feed example

For the feed examples one can see a slightly higher impact for inbound transport for the shrimp feed compared to the salmon feed. This is because more ingredients with high inclusion levels are sourced from a different continent by the Ecuador plant (for example, wheat and soybean meal from USA) compared to the Norwegian plant, which causes longer transportation distances and often requires multi-modal transport. Overall, the transportation impact is low compared to the ingredient footprint but still needs to be addressed, for example by sourcing more ingredients locally or selecting less impactful transportation modes.



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Life Cycle Stage III: Feed production

General description

Feed production demands electrical energy to run all motors in our factories or fuel combustion for steam generation, heating air for drying, or simply to accelerate the forklifts in our warehouses. Depending on the energy efficiency, fuel type or the electricity source, the footprint linked to feed manufacturing can be higher or lower between the mills. Other than the footprint attached to the feed ingredients, this is something under our direct control and that is why we also have best quality (primary) data available to calculate the footprint from our operations and to implement strategies to reduce it.

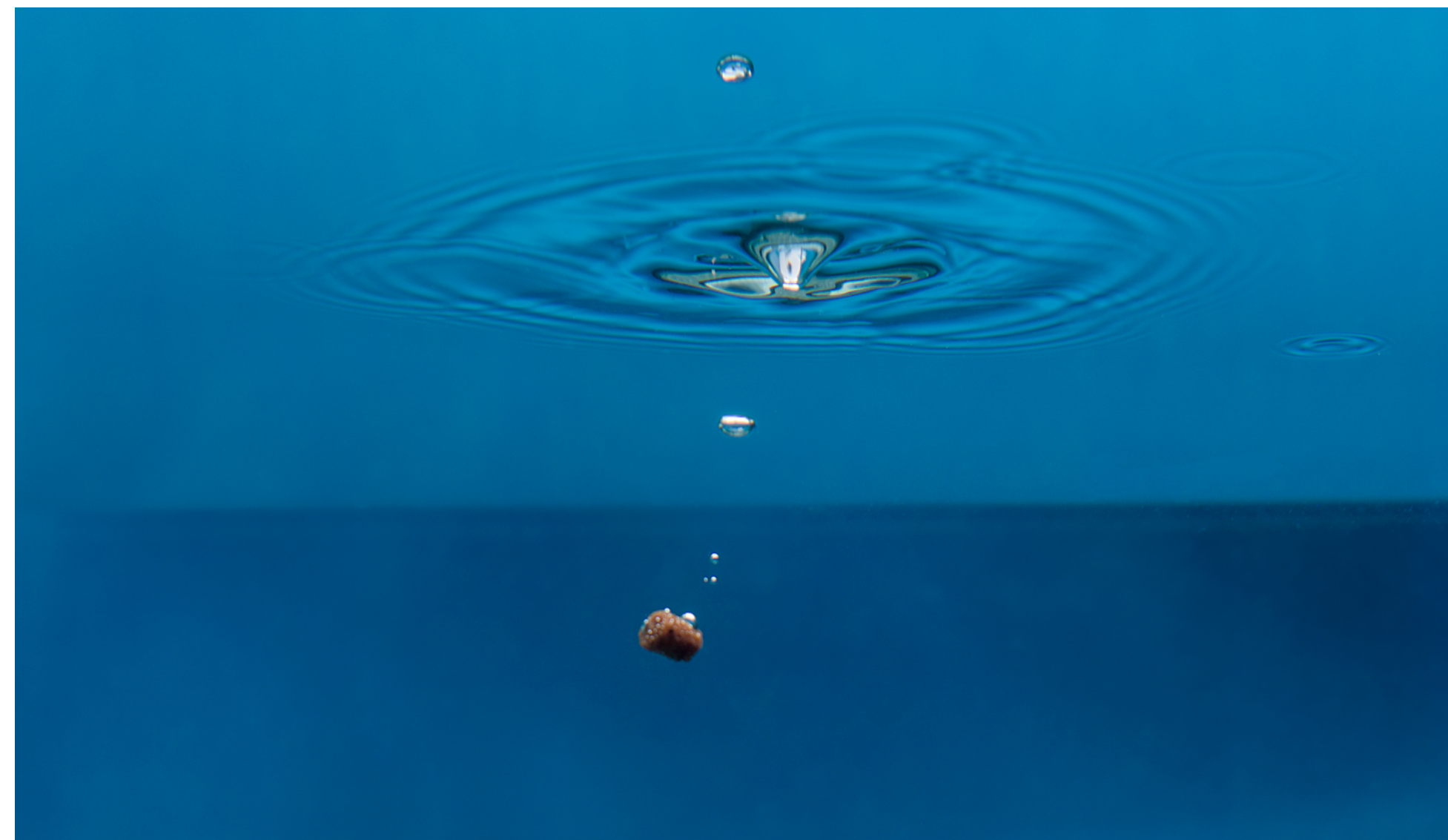
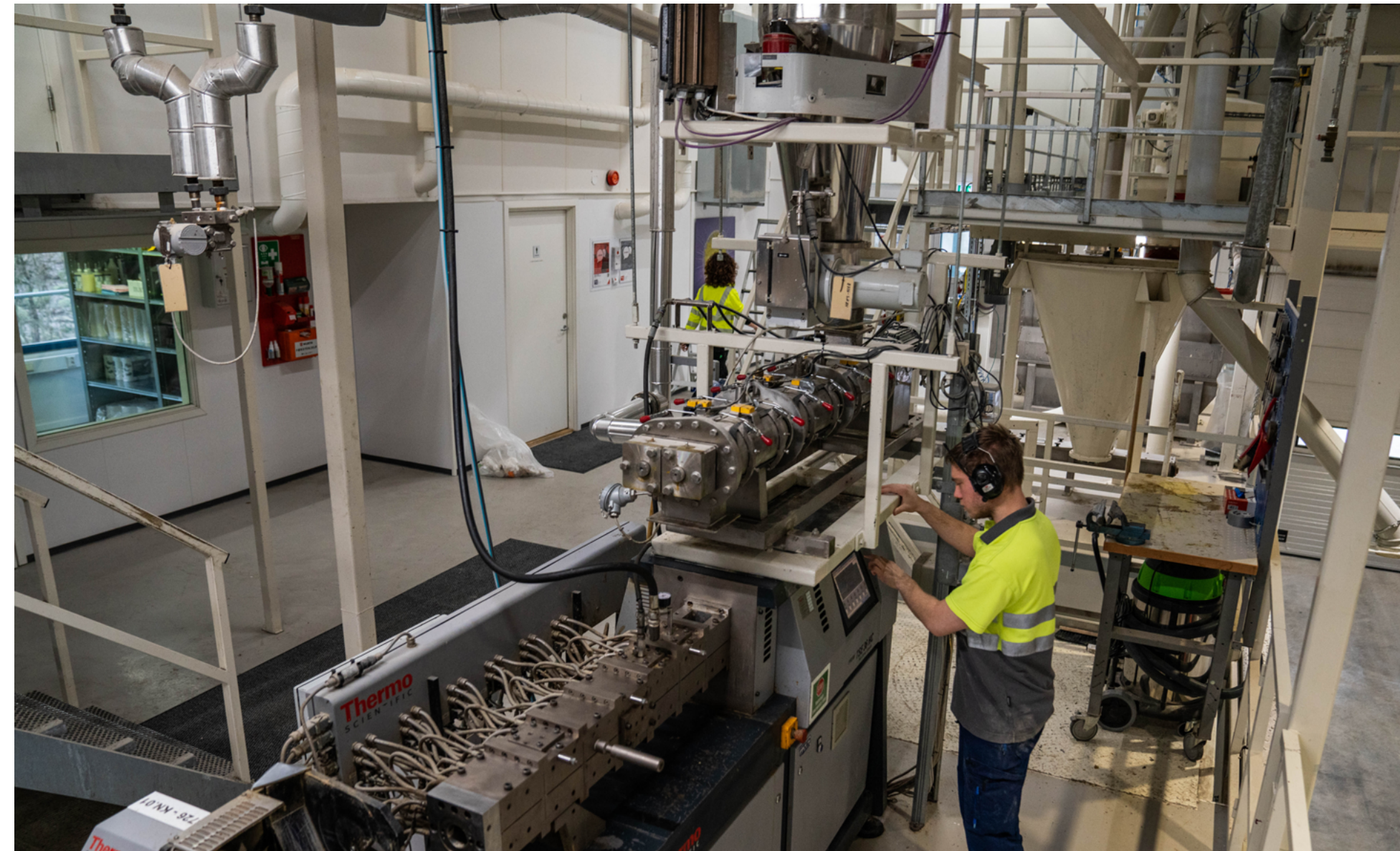
The focus of Skretting is to reduce specific energy consumption (kWh/t of feed) and consequently reduce the emissions and production costs. This topic has been on our agenda in 2021, where most of our plants reduced kWh/t, and it is in the highest focus for 2022. More about activities within operations can be seen on page 33 (Improving our own operations).

Our core challenges

Availability and stability of supply of green(er) fuels and electricity in some regions are the key challenges for achieving a significant drop in emissions. For example, in Ecuador we have already switched to completely green electricity. However, replacing heavy fuel oil used in boilers is way more difficult to do, because the gas supply is not stable, and the electrical system is not robust enough to support converting our dryers and boilers into electrical ones. The Ecuadorian team has already presented a plan for gradual replacement of heavy fuel oil that will be completely removed from our operations latest by 2030.

Feed example

As can be seen in the footprint example, compared to the ingredient footprint, the share linked to manufacturing is low, but still can be significant. The shrimp feed produced in Ecuador has a higher production footprint than the salmon feed produced in Norway. This is related to the energy mix, which in Norway comes with a significant higher share of renewable energy, and thus a lower carbon footprint per kWh. Another reason is the difference in amount of energy needed to produce a ton of salmon versus ton of shrimp feed. Shrimp feed production process is more energy intensive than salmon feed production due to finer grinding and higher feed density that makes it more difficult to dry.



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Life Cycle Stage IV: Feed packaging

General description

Feed packaging also has a generally low contribution to the overall feed footprint. Still sustainable packaging is an important topic to address as it can have a significant impact on the environment in the bigger picture (same as transportation).

For the main packaging types used within Nutreco, we have calculated the footprint metrics and introduced them into our database. This allows us to calculate the footprint of the feed packaging and optimise them having the footprint in mind also more specifically.

We are principally following the good waste management hierarchy and look for solutions to:

1. Reduce packaging (for example, by using bulk transport or big bags instead of smaller packaging sizes),
2. Increase the recyclability of packaging and recycled content of packaging materials and,
3. If packaging needs to become waste, we committed to send zero waste to landfills.

Read more examples in page [61](#) and [62](#).

Our core challenges

Material reduction and design for circularity are the main challenges we are facing. To achieve the first goal we are looking at the most material efficient solution in our portfolio for each situation. This can be done by packing more efficiently or reducing the thickness of our bags. The challenge is to find a balance between functionality and ideal packaging weight. We are reviewing our portfolio to find the optimal bag for every situation.

The second challenge is the use of multi-material packaging. This type of packaging provides specific functionality, but it limits recyclability. The challenge is the move towards mono-material packaging wherever possible. Food and feed safety restrictions prevents us from using recycled materials as a direct feed contact material. However, the packaging material we put on the recycling market can increasingly be used in non-food applications.

Feed example

The footprint of the shrimp packaging in the example is slightly higher than the footprint of the salmon feed packaging. In the example case, the shrimp feed is packed in 25 kg woven PP bags, while the salmon feed is packed in big bags that carry approximately 750 kg feed. Mainly due to the higher carrying capacity, the footprint per kg feed is lower for the big bag, or in other words packaging is avoided via using larger bags. It depends on the ability of our customers to accept this larger packaging. The footprint of packaging can be further reduced by using more recycled material or increasing recyclability of packaging whenever the situation permits.



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Life Cycle Stage VI: Feed Use and End-of-Life

General description

With our current tools we are mostly able to calculate the footprint per kg feed from cradle to gate. However, this reflects only a part of the feed life cycle. The function of fish/shrimp feed is to feed the animals. The more efficient the feed can be taken up and digested by the fish and shrimp, the lower are the feed related impacts in the whole value chain. As well, feed can improve fish/shrimp health and thus lowering mortality. These aspects need to be considered, following a life cycle perspective, as even higher per kg feed footprints might result in lower overall fish/shrimp footprints.

At the moment, we focused our efforts on setting up LCA metrics and calculations for cradle-to-gate assessments, as this is what is mainly requested by our customers and guided by recent industry standards. This also helped us to get started on our LCA journey before focusing on the whole complexity of the full value chain. However, on this basis, we now want to step up and extend our calculations and systems gradually to also include downstream impacts. For this, we are looking for collaborations with our customers as this demands joint efforts and robust calculations require the share of primary data between both sites. The new PEFCR for Marine Fish can provide a great opportunity to further align LCA calculations, as it also ties in with the PEFCR Feed.

Feed example

This life cycle stage is not considered in the presented footprint calculations of the exemplary feeds, as these are generally cradle-to-gate assessments as demanded by for example the PEFCR Feed standard. Together with our customers we are aiming to gradually extend calculations to get the full picture, ie including feed related impacts happening at the fish/shrimp farm.



The function of fish/shrimp feed is to feed fish. The more efficient the feed can be taken up and digested by the fish, the lower are the feed related impacts in the whole fish value chain.



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Is it enough to just focus on reducing the footprint of the feed?

The main focus over the next years will be on the carbon footprint as climate change is the most urgent environmental challenge high on the political agenda. However, we have also started to implement other impact metrics into our database and systems which allows us to identify potential burden shifts of any carbon reduction measures.

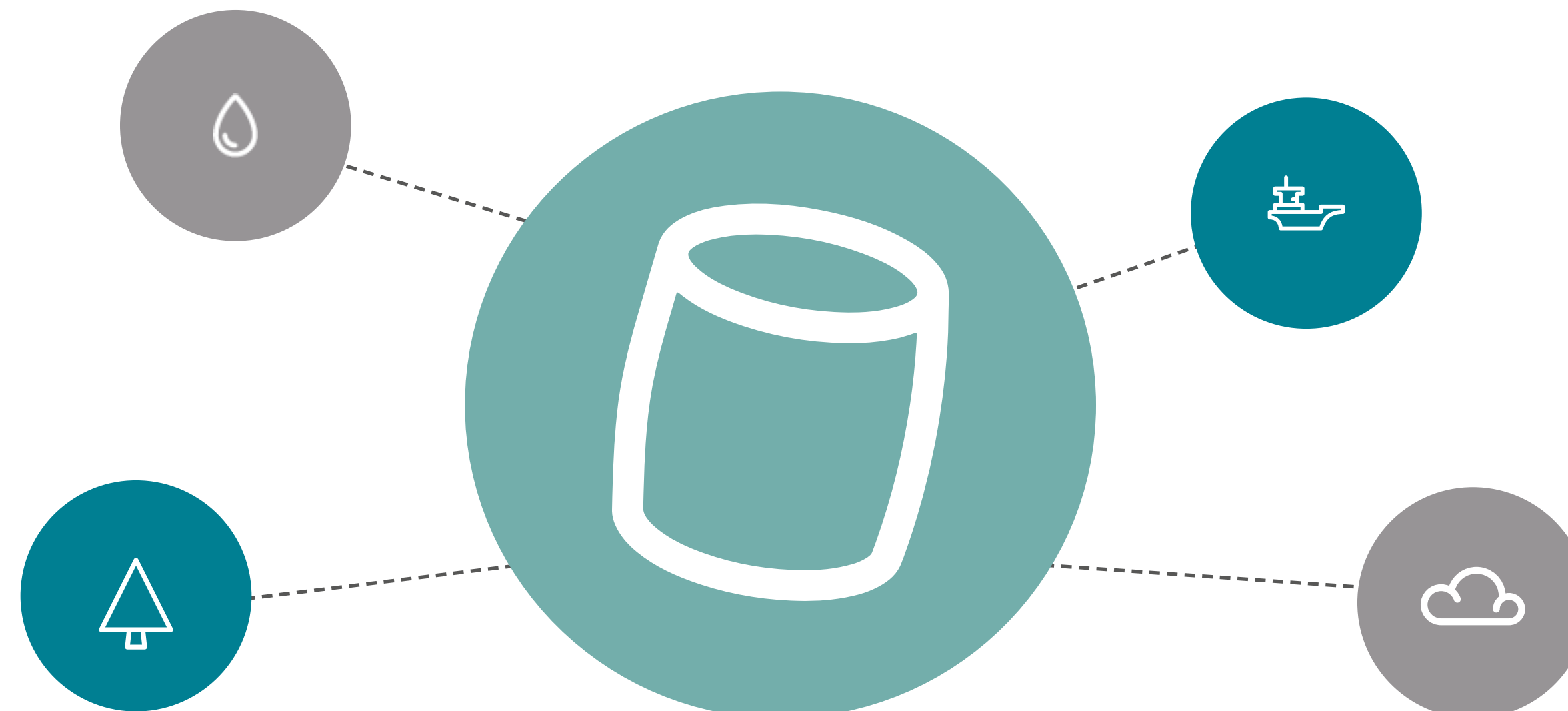
Following the multi-impact approach LCA, we want to avoid that any long-term strategies, for example our procurement, lowers the carbon footprint at the cost of other environmental impacts such as significantly increasing the water footprint or eutrophication impacts. This is not an easy balance, as sometimes difficult decisions based on value choices need to be carefully made, which cannot be solved by science (for example, if it is better to accept such a higher water footprint for a significantly lower carbon footprint and to what extent). We gladly address these challenges and value choices on a pre-competitive level with our suppliers, competitors and customers, as this is nothing we can solve alone.

Although we have made good progress in implementing LCA and learning about our hotspots, we also face another challenge following the life cycle thinking principle. At the moment, we are primarily asked about our product footprint, and we are asking our suppliers about their product footprints. Our calculations thus mostly focus on a cradle-to-gate level and not on the full life cycle including feed-related impacts on-farm. Sometimes a higher footprint of the feed can even lead to a lower overall footprint of the fish/shrimp, for example when the quality of the feed is significantly improved and lowers the mortality or FCR.

An indicative example is shown in the table here which compares two Skretting salmon feeds. While one comes with a significantly higher carbon footprint at the product level, due to a lower feed conversion ratio and better effects on fish health, the overall feed related impact related to the fish biomass for sale is the same. Selecting the feed only based on the product footprint thus might lead to wrong conclusions.

Table 8: Comparison of carbon footprint between Express salmon feed vs Nutra salmon feed

	Express, kg CO ₂ e/kg feed	Nutra, kg CO ₂ e/kg feed
Source	Q3 2021	Q3 2021
Feed, excluding land use change	1.23	1.09
Feed, land use change	0.35	0.17
Inbound transport	0.05	0.07
Mill operation**	0.06	0.06
Packaging**	0.01	0.01
Outbound logistics**	0.02	0.02
Total kg CO₂e/kg feed	1.72	1.42
Biological FCR	1.3	1.5
Mortality rate	0.05	0.1
Fish loss	0.1	0.1
Total feed related kg CO₂e/kg total fish biomass	2.24	2.13



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Scopes 1 & 2 - Improving our own operations

To achieve our Science Based Targets commitment, and grow at the same time, Skretting needs to take every single opportunity for CO₂e reduction – improving energy efficiency, switching to alternative, less polluting fuel sources, and purchasing renewable electricity wherever is possible.

Year of consolidation and the first results

2021 was a year of consolidation of our systems and practices, and a year of the first results. From the global point of view, we improved our data analytics, developed several dashboards which allow us to address, measure and monitor progress during this sustainability journey. In collaboration with an external company we mapped the energy savings potential of our sites and identified actions that need to be done. All Skretting operating companies had high focus on energy efficiency in 2021. Plants were busy in execution of energy efficiency projects, achieving their specific energy reduction targets and lifting the sustainability awareness among all employees. We are proud to share that 70% of our sites reduced kWh/t compared to 2020. This result is a good progress considering how tough 2021 was for production, when it comes to raw material quality, pandemic, energy crisis and delays in supply chain.

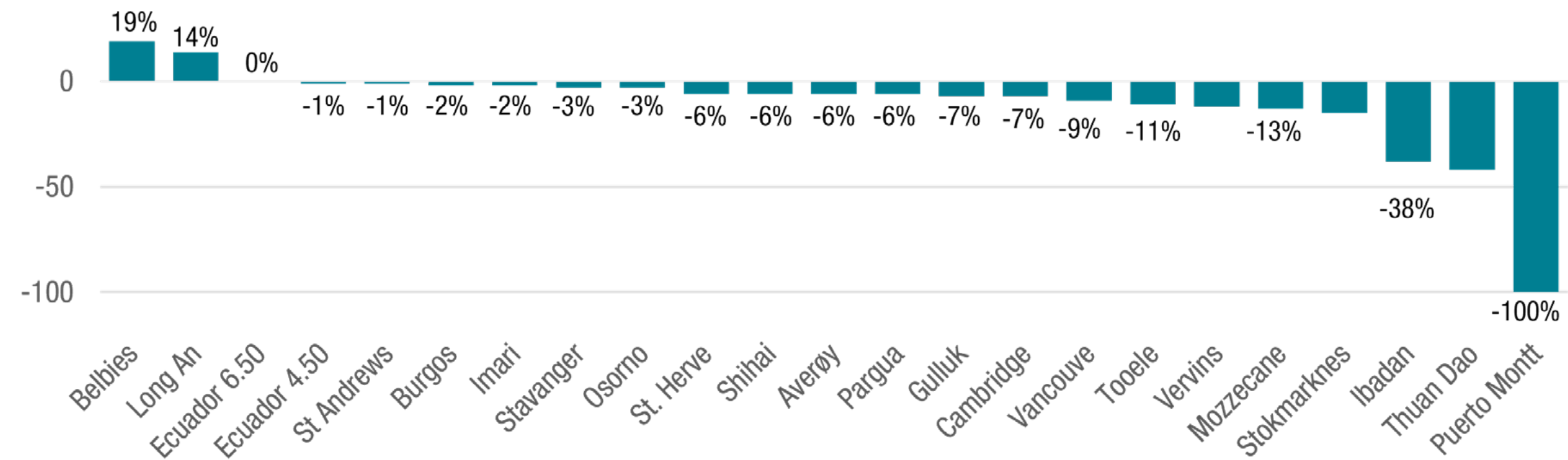
As a result of continuous work on energy savings and switching to green energy sources 87% of Skretting plants reduced kg CO₂e/t.

Drying is the most energy intensive part of fish/shrimp feed production accounting for almost 50% of energy used. That's why all improvements in the drying process bring huge benefits. In 2021 Skretting Vancouver had high focus on dryer improvements. This focus and the actions taken led to a more efficient dryer which translates directly to a large cost savings and sustainability gains (5% of specific energy consumption reduction and 9% reduction of CO₂e/t of feed).

Replacing two grinders with one in France, increased grinding throughput and contributed to the reduction of energy consumption of the plant (4% of specific energy consumption reduction and 9% reduction of CO₂e/t of feed).

Skretting Spain covered its warehouse roof with solar panels that will provide energy for the base load demand of the plant.

Figure 8: Specific CO₂e change - 2021 compared to 2020 (%).



“From the global point of view, we improved our data analytics, developed several dashboards which allow us to address, measure and monitor progress during this sustainability journey.”

Nevena Misljenovic
Global Operations Engineer



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Challenge with absolute reduction

Despite all efforts, we had a significant increase of absolute CO₂e in Scope 1 & 2 in 2021. This was a wakeup call and helped us to understand how difficult the task in front of us will be. The increase mainly came from the huge growth that we have had in some regions where we have poor availability of renewable energy sources. We are committed to our purpose of Feeding the Future and growth of high-quality protein food is a part of it. This means that our volumes will keep growing as well as our energy consumption. We will use green(er) fuel sources where available, but there are still regions where we don't have stable or available green alternatives. In years to come we will evaluate if any technological advancement will help us to achieve our targets.

Until then, we are set on our path of improving our own operations and reducing CO₂e by conventional methods: improving energy efficiency, using renewables, setting Power Purchase Agreements (PPAs) and buying Energy Attribute Certificates (EACs).

In 2022 our main focus is on improving energy efficiency of all our sites, which means producing the same, high-quality feed, with less energy and reducing energy waste to a minimum. All plants have a list of improvement projects like steam line insulation, drying optimisation, change of operational regime, improving boiler efficiency and so on. As these energy efficiency projects are completed, we expect to achieve significant energy reductions, which will consequently reduce emissions.

Skretting Global Operations team will continue supporting our OpCos on how to improve their energy management systems, implement best practices and increase the level of knowledge in the energy efficiency domain.

We are committed to our purpose of Feeding the Future and growth of high-quality protein food is a part of it.

Skretting Chile's journey towards reduced CO₂ emissions

Skretting Chile accomplished several milestones in terms of sustainability and energy efficiency, in line with the [Nutreco's Sustainability RoadMap 2025](#) and requirements for ISO 50001 certification at the national level. Highly competent and motivated colleagues from Chile have built an impressive culture of continuous improvement and sustainability.

Skretting Chile made a leap towards less CO₂e emission by establishing a green electricity supply agreement from Statkraft, with zero negative impact on the environment in both plants. The agreement has started in 2021 and covers the electricity demand of Chilean operations until 2024,

guaranteeing a significant drop in the CO₂e. Improvement in energy management systems and energy monitoring is a prerequisite for ISO 50001 certification. Mapping of energy consumption of all areas of production will enable the Chilean team to closely monitor consumption and measure improvements. Also, during the last year, a series of modernisation and changes were made in machines and

motors used in the plants, replacing them with high energy efficiency motors. Diverse initiatives to lower energy consumption were completed, like installation of steam traps, insulation of steam valves, adjustment of fans speed, air compressor improvement, dryer optimisation, installation of photocells to control light intensity in the plant, etc.

Álvaro Cifuentes, Supply Chain Manager at Skretting Chile, points out: "Sustainability is essential, both in our plants and throughout entire supply chain. For us it is unthinkable to have operations that do not consider sustainability. The myth that it is more expensive to produce sustainably has also been demolished. Being efficient, means less cost and less pollution. This is a new norm that is already incorporated in our culture. Sustainability is no longer a slogan or a marketing action, but it is the minimum standard".

Sustainability is essential, both in our plants and throughout entire supply chain.

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Operational excellence

Operational excellence (OE) is the Nutreco wide program launched during 2021, with the ultimate goal to build a culture of continuous improvement in all our factories. OE provides a system to identify, reduce and eliminate losses permanently, through the active participation of all employees of the organisation. The Nutreco OE program will be introduced in waves, so not every location at the same time, but eventually all sites will be covered.

Three Skretting OpCos were pioneers in the first wave of the OE program. A broad range of projects have been initiated in Skretting plants in Chile, Ecuador and Vancouver, to lift the performance of our factories when it comes to productivity, energy efficiency and autonomous maintenance. The main focus last year was on training our people by external experts in this field, as well as internal knowledge sharing among those participating in the program. Project teams were introduced and trained to use a wide range of problem solving methodologies such as PCDA (Plan, Check, Do, Act), 5W+2H (5 Whys and 2 Hows), 5S, etc. The idea was to get all employees equipped with a set of skills and tools to identify and implement improvement opportunities in our processes on a day-to-day basis. This will eventually establish a structured way to problem solve and eliminate losses in our processes. It can be challenging to engage already busy production workers into OE activities but by empowering production workers, they can eventually save time and make their working life better and safer. Global teams will provide support to help our colleagues to adapt to this new way of working.

Last but not least, excellency in our operations will help Skretting to improve efficiency while still operating in a safe, sustainable and socially responsible manner.

In 2022, four more Skretting sites will join the OE program.

Production KPIs

Specific energy consumption - kWh/t: + 1.6 %

Even though most of our plants reduced the amount of energy used per ton of feed compared to 2020, overall average of Skretting increased by 1.6%. We are happy to see the improvement compared to last year where we had a 6% increase. We will continue energy efficiency projects and try to reverse the trend in 2022.

GHG emissions kg CO₂e/t: + 1.6%

Last year we observed an increase in GHG emissions. A few changes that will contribute to a reduction were implemented towards the end of the year and were not accounted in 2021 results. Those changes, together with the new green initiatives in Skretting will be reflected in 2022 result.

Water l/t: -2.7%

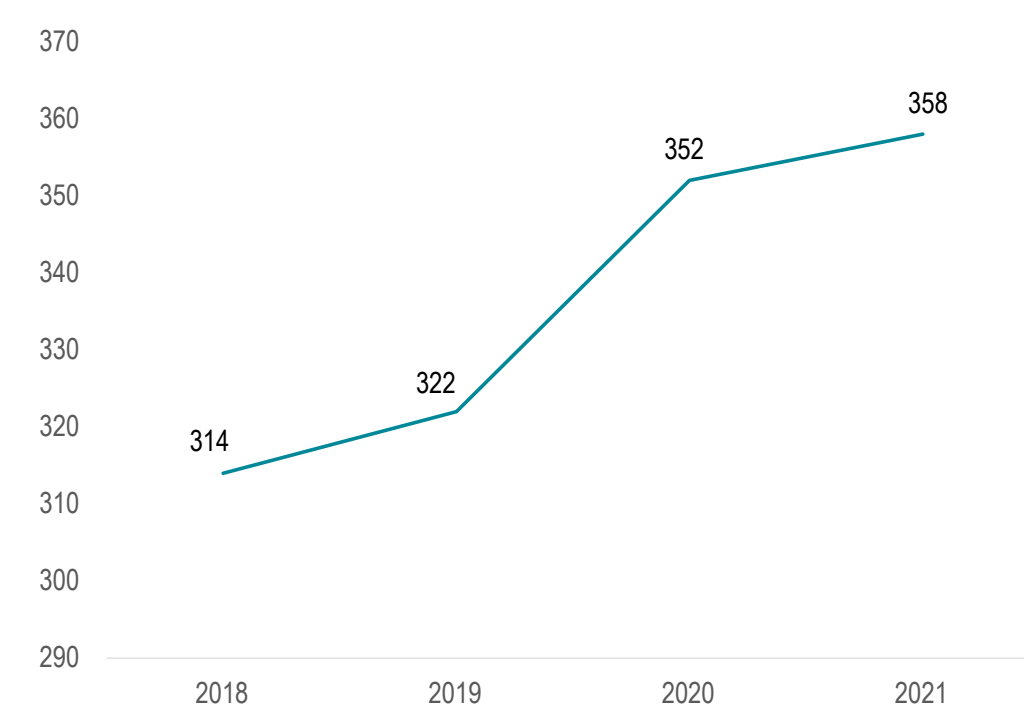
In 2021 we registered a decrease in water withdrawal of 2.7%. Overall, we see that plants are focused on reduction of process water consumption, which will at the same time reduce energy needed for drying. This year, some plants also improved their measurement systems which helps us to get a better picture of our water consumption.

Waste kg/t: -33.6%

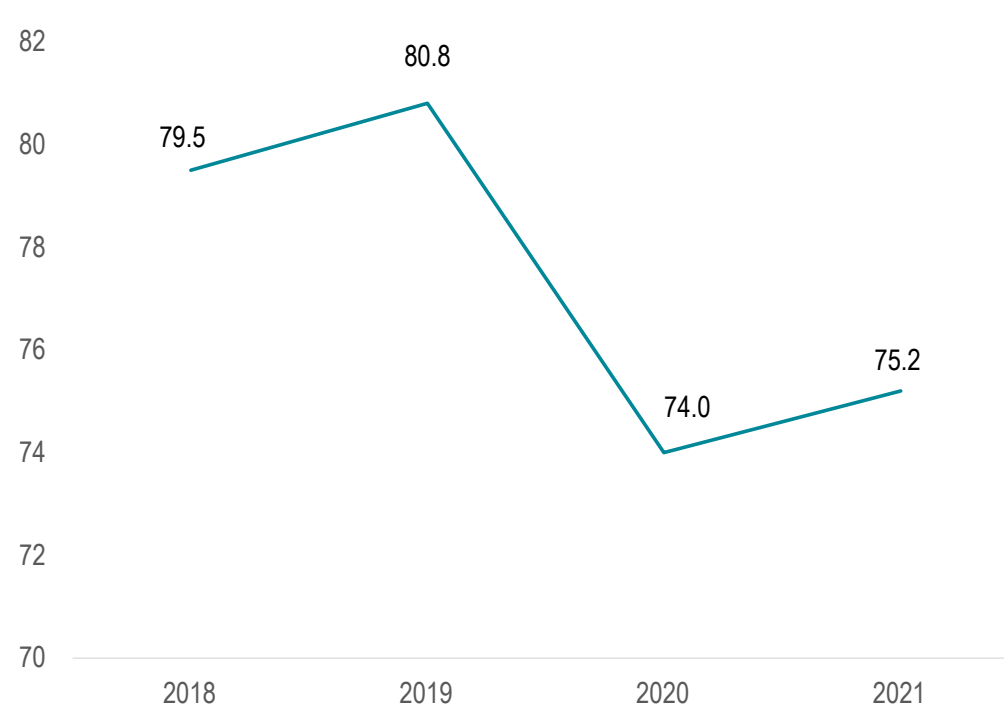
Waste amount varies a lot from year to year because it depends on many factors like construction projects, cleaning activities, change of raw material delivery from small bags to bulk and so on. Last year Skretting disposed 33 % less waste than in 2020.

Figure 9: Production KPIs.

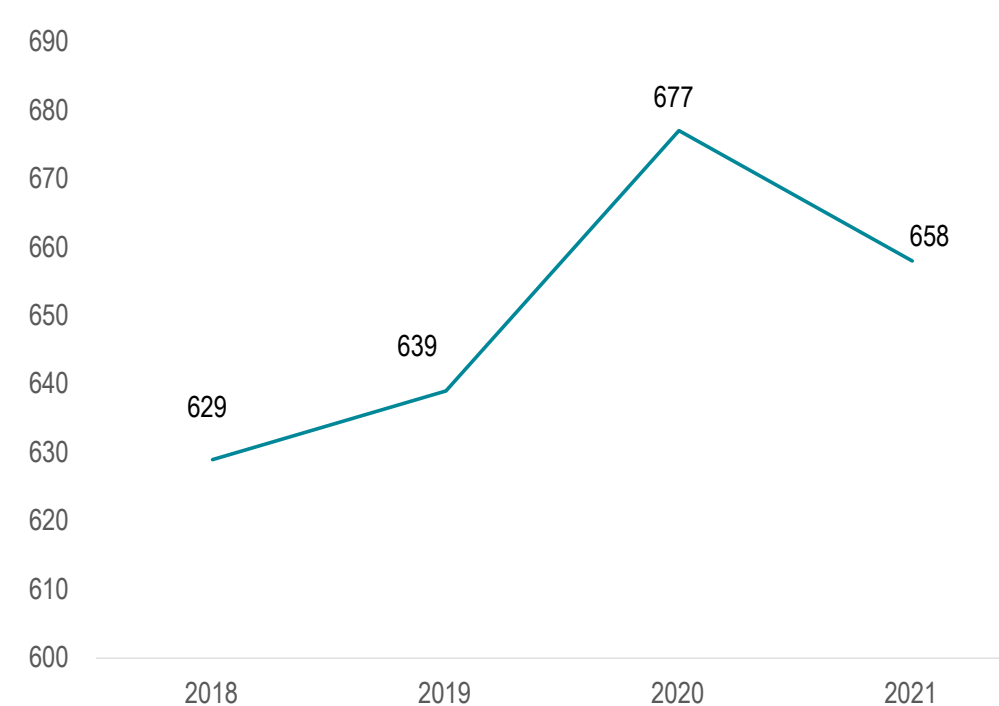
Specific energy, kWh/t



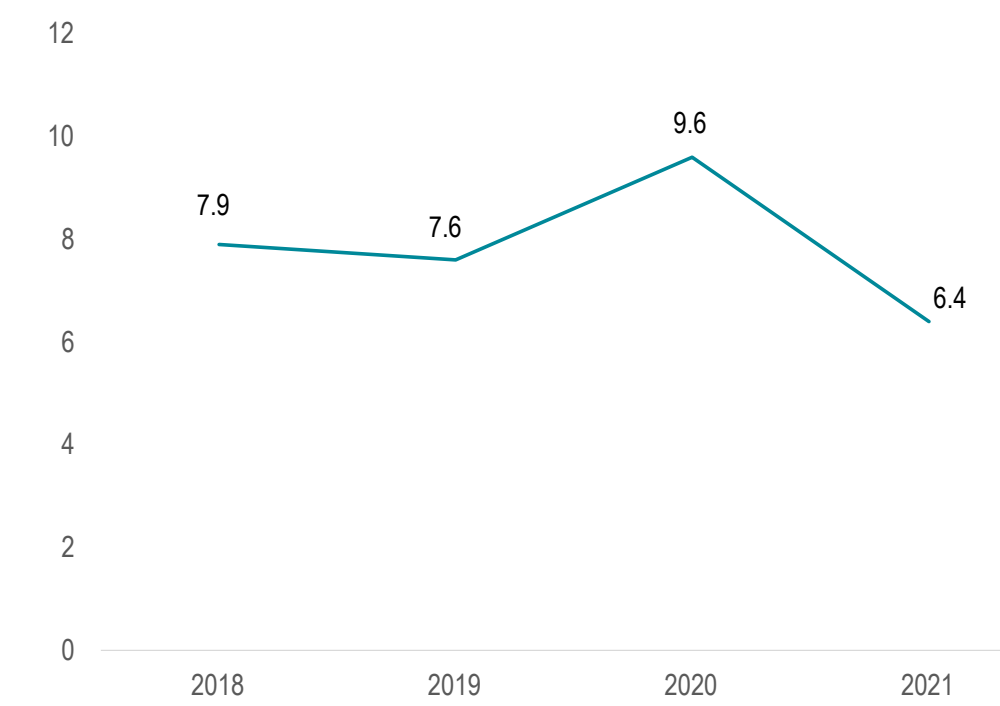
Specific CO₂e, kg/t



Specific water, l/t



Specific waste, kg/t



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Scope 3 – Addressing the emissions beyond our operations

Comparability by reduced flexibility - The need for following the standards.

LCA is a method that can basically be applied within every sector and for every existing product. The general ISO standards for LCA define the general steps of the method and basic requirements for communication and comparison, but do not guide specifically on calculation rules for specific sectors or products. This allows for a rather high degree of freedom when performing LCA's according to only the general ISO 14040/44 standards, for example regarding which secondary data to choose, what to exclude from the system boundary, or how to allocate the environmental impacts between products and by-products.

This given flexibility reduces the comparability of footprint values as even for the same products from the same producers significantly different footprints may be calculated depending on the methodological choices made by the LCA practitioner. This is shown in the example below, where only the specific choices for two (out of many) methodological aspects of an LCA results in four quite significantly different carbon footprint values for the same products (in this case a salmon feed produced in Norway and a different Salmon feed produced in Canada).

With footprint metrics becoming increasingly important, for example as additional procurement criteria, following the same calculation rules/ standards is crucial to create a fair competition.

The European Product Environmental Footprint (PEF) initiative tries to address in particular this topic and aims for “increasing comparability by reduced flexibility” of LCA calculations. Under this framework, specific so called PEF Category Rules were and still are developed, defining core calculation principles for specific product groups.

Such PEF Category Rules are existing for Feed for food producing animals. Skretting welcomes this industry specific standard as it gives more clarity to us but also to our customers on how the footprint of feed has to be calculated. That is why we are generally following the guidance given by this standard. Coming back to the example, the PEF standard for example highlights that economic allocation is mandatory for feed ingredients. It also requires direct land use change to be taken into account and reported separately.

Figure 10: Different footprint results calculated based on different choices of two important methodological aspects and results calculated aligned with PEF standard.



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Farmer’s perspective: Cermaq, climate change, and feed

Cermaq Group AS is a leading global producer of aquaculture salmonids. With a headquarters in Oslo, Norway, Cermaq has operations in Chile, Canada and Norway and sales around the world.

With the continuing increased importance of combatting climate change and mitigating risks associated with higher temperatures, rising sea levels, and increasing extreme weather, Cermaq has identified UN Sustainable Development Goal 13: Climate Action as being a key part of our sustainability strategy.

One of Cermaq’s key actions against climate change is a reduction of the carbon dioxide emissions from its own operations and from its value chain. Cermaq has set a goal to reduce 35% of overall emissions versus a base year of 2019 by 2030 in line with requirements published by the Science Based Targets Initiative based on the Greenhouse Gas Protocol.

In order to set our Science-Based Climate Targets, Cermaq created an inventory of all climate gas emissions in its own operations and its value chain using methodology published by the Greenhouse Gas Protocol. For Cermaq, the emissions from feed ingredients and production are the highest source of emissions in our value chain. Therefore, understanding of the emissions from our feed is crucial both to setting a climate emissions target and to achieving that climate target. In particular, tracking and reporting the emissions from feed producers on an annual basis is a key part of Cermaq’s climate reporting, and reducing the emissions from feed will be a primary driver of Cermaq’s overall emissions reductions.

It is also important that feed suppliers use transparent and standardised reporting methods in order to allow companies purchasing feed to be able to compare the carbon emissions footprints of different suppliers of feed. Nowadays, there are some challenges connected to the emission calculations and for this reason, we believe it is vital to work hand in hand with the feed suppliers to understand the data and set strategies to mitigate the Carbon footprint levels from cradle to farm. Cermaq is happy that we are able to collaborate with our feed suppliers to build clearer and more responsive climate reporting systems that will allow transition of both aquaculture companies and their suppliers to a low-carbon future.

Daniel Pescatore
Sustainability Analyst
Cermaq Group



“One of Cermaq’s key actions against climate change is a reduction of the carbon dioxide emissions from its own operations and from its value chain.”

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The use of primary versus secondary data

Even when following the PEF standard, there is still room for flexibility, and we experience that this still can lead to non-comparable footprint values. One challenge is the use of supplier specific footprint data as there are vastly missing guidelines on to be applied quality criteria for these. More supplier specific data is urgently needed as secondary datasets are averages and thus do not allow to identify supplier specific processes and limit ability to engage with specific suppliers or to identify those with lower footprints.

We started to actively engage our core suppliers to provide more specific footprint data, starting with the ones we have gaps in the LCA databases and the ingredients driving most our footprints (for example, soy). However, before we are taking any supplier value into our calculations, we check these values on their quality and alignment with the basic requirements according to the PEFCR Feed standard for consistency reasons.

Currently, we do not receive many supplier specific footprint data aligned with these calculation rules. We also see difficulties for our suppliers calculating according to these feed specific requirements when they are also delivering the same products to other industry sectors with different calculation requirements or when they still don't have experience in footprint calculations. We want to bring these topics onto the discussion tables of the pre-competitive working groups we are in, as we think it is a topic to be addressed by the industry in general and it cannot be solved by single companies. At the same time we need to define clear and transparent rules when it comes to primary data, in order to further increase comparability.

The value of suppliers contributing with primary data: ProTerra's case

In Europe data on carbon footprint and LCA is becoming more relevant for feed production, in certain countries it is already obligatory to deliver this data.



Life Cycle Assessment (LCA) based methods are widely used to deliver accurate, quantified clear information on environmental, social or economic impacts of products helping in the decision-making process. In Europe, a big initiative took place in 2013, called Product Environmental Footprint (PEF) with the goal to create a "Single Market for Green Products" offering a standard for impact assessment of products and organizations, creating and testing rules recommended set of methods from among the huge number of available options, thus enhancing transparency and fair competition.

More and more transparency about Environmental, Social and Governance (ESG) aspects of companies and value chains are required. Good practices such as Life Cycle Management (LCM) have a great potential to reduce risks and increase competitiveness. In the environmental pillar, climate change adaptation and mitigation are part of a global agenda guided by Paris Agreement commitments defined by governments.

The challenge

Environmental indicators are not collected in a structured way, and this can lead to confusion and even differing results for the same products depending on the applied methodology.

The current system is unfair towards organisations that invest in sustainably produced and land conversion free raw materials, because the twenty years period cannot be proven in most cases (due to cut-off dates, low resolution, costs or non-existing data).

The ProTerra standard is a deforestation free standard with a cut-off date of 2008. That means we cannot guarantee **LUC free areas for 20 years** and primary data is required to be able to show that the crops produced under the standard have better figures than non-certified crops (mainly soy and sugarcane).

Over the years, the ProTerra Foundation has made many improvements to meet these new environmental impact requirements for agricultural raw materials, including the inclusion of traceable data, starting with the carbon footprint indicator of soy-derived products.

The ProTerra Foundation, in partnership with external experts, developed a tool to calculate GHG emissions, comprising methods to estimate land use change (LUC) and the resulting GHG rates.

The main objective of this project is to differentiate from non-certified products by providing buyers with ProTerra-specific data for the

calculation of GHG. The results of this project can be found [here](#).

Before ProTerra implementation of the Carbon Footprint calculator, members have been forced to calculate CF using default data, which, in most cases, creates a disadvantage for them. Now, certified organisations that invest in sustainably produced are able to inform specific data, but still face big challenges for producing evidence on land transition pathways in a 20-year period.

ProTerra updated the results in 2021 with the aim to analyse the environmental footprint of the ProTerra Standard certified soybean and soybean meal and oil. The environmental impact categories in scope were carbon footprint, water consumption and land use. The environmental footprint included the following life cycle stages: soybean cultivation, transport from farm to crusher, soybean crushing and transport to the European market.

Conclusion

It's known that results may vary depending on real sourcing data of a specific crusher and the region of origin. While ProTerra is working on collecting and systematizing data, some small adjustments can be done in the presented calibration results in order to create an average profile for ProTerra. From the analysis it can be concluded that the availability of more high-quality (primary) data is crucial to make more accurate calculations. In order to be able to make claims, company-specific data should be used instead of secondary data from LCA databases.

Based on market demand, we will continue to establish and improve such projects every year and work together with organisations such as GFLI to unify the used databases and improve LCA calculations.

Emese van Maanen
Managing Director
ProTerra Foundation



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Skretting Latin America - Comparing the use of Skretting 360+ and shrimp extruded feed between 2020 and 2021

Over the years, shrimp feeding methods have evolved according to newly available technologies, and focusing on efficiency and precision farming. For effective shrimp feeding the use of automatic feeders is recommended, because the feed can be regularly and effectively dispensed in measured quantities above the water to cover a larger area, ensuring the shrimp receive the right amount of food at the right time.

Comparing with manual feeding, using automatic feeders has shown direct benefits, such as better feed conversion ratio (FCR), specific growth rate (SGR), reduced dependence on labour, continuous operation, uniform growth in the ponds and achieving an improved balance with the surrounding environment due to reduced nutrient losses.

We strive to include several tools and strategies that help to further reduce the footprint of fish and not only for the feed.

Due to the optimisation and improvement using automatic feeders, the following practical example highlights again the importance of considering the whole life cycle when making choices based on footprints, while other tools can also help to reduce the overall footprint. For a customer

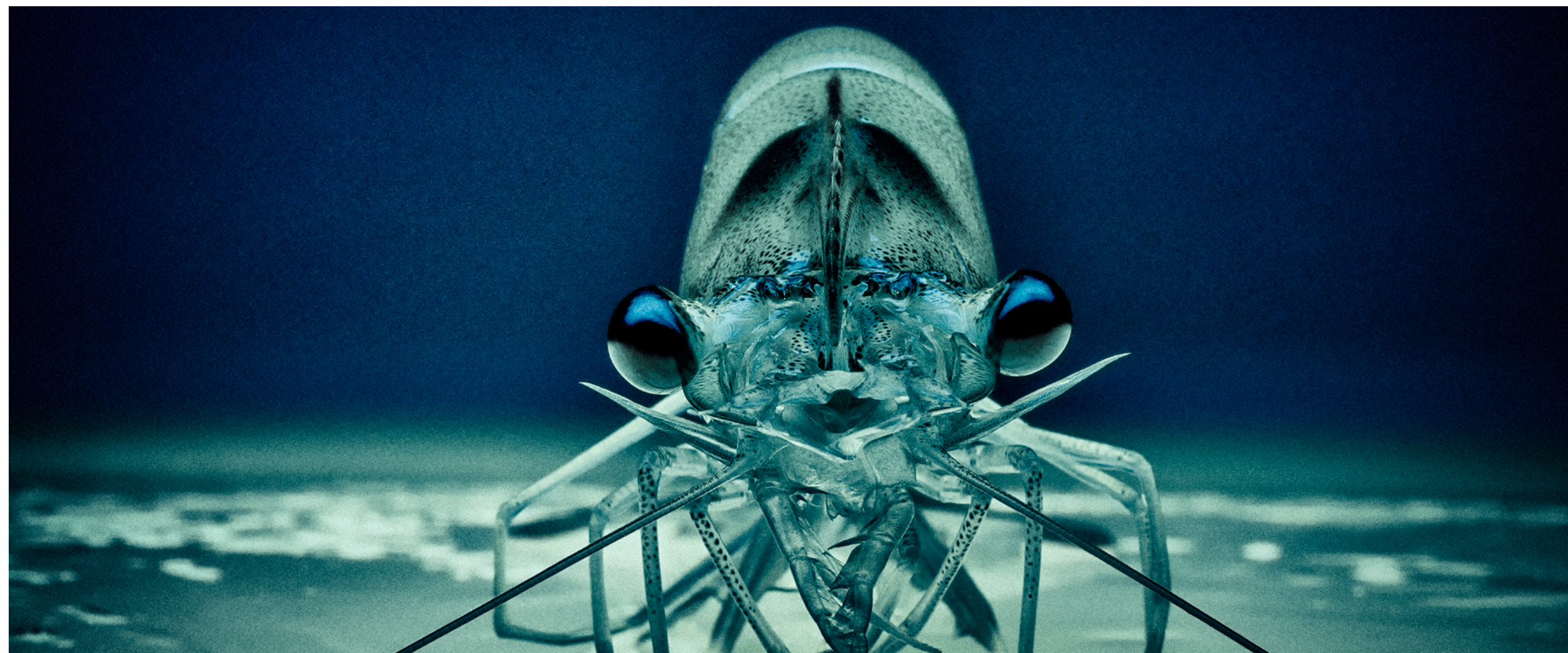
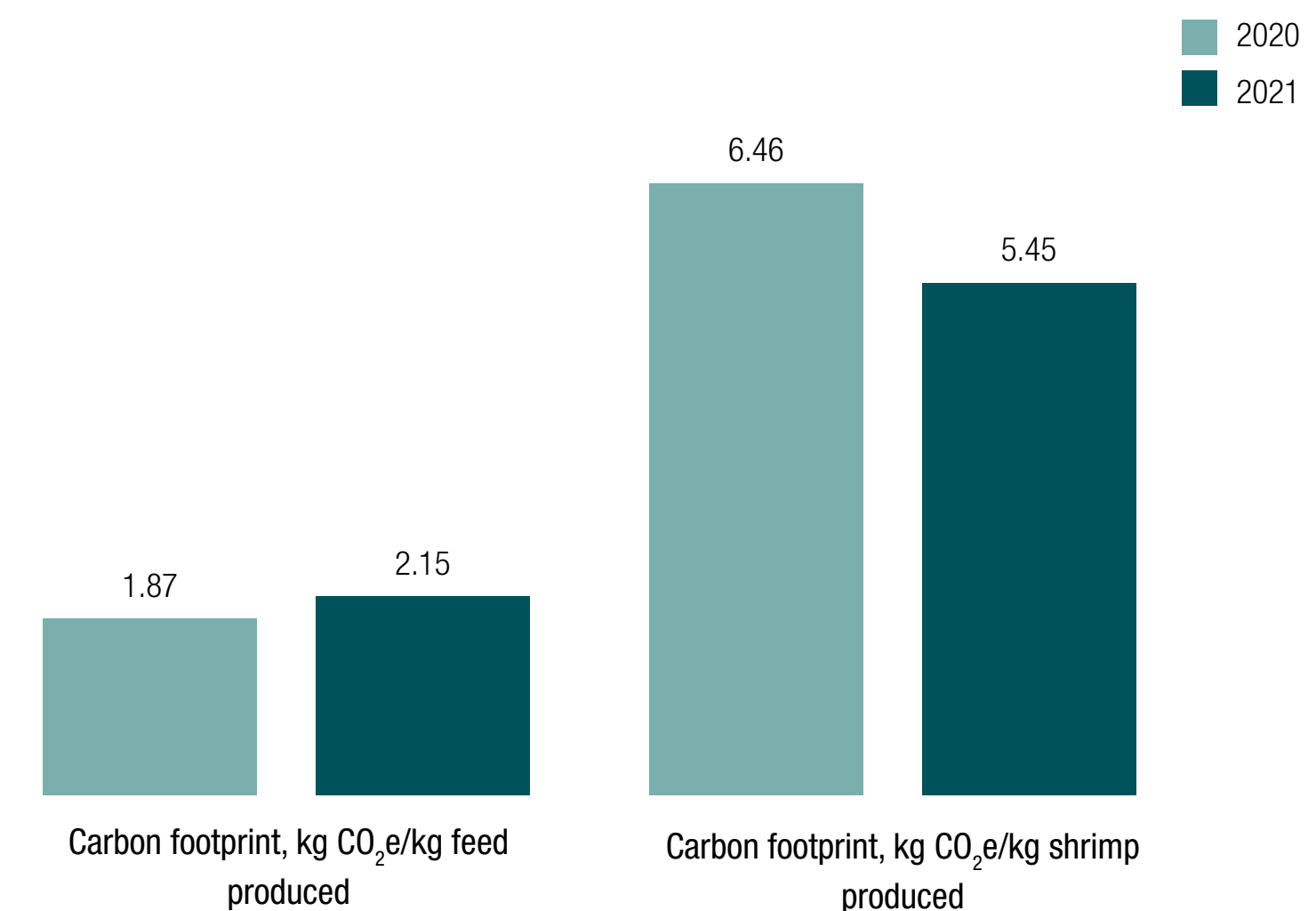
in Ecuador, we have calculated the carbon footprint of a shrimp feed produced in 2020 and again in 2021. At the same time, the Skretting 360+ programme was implemented on the farm, which is a multi-faceted tool for precision farming aiming at improving especially the feeding efficiency.

The calculated shrimp feed carbon footprint in 2021 was higher compared to 2020. The main cause has been that more soybean meal from South America was included in 2021, which is linked to a general high average carbon footprint related to land use change (despite being certified, as explained in section above). The calculated higher feed footprint is likely a calculation artefact impacted by not having more precise primary data and thus the need to fall back on average secondary data.

However, despite this higher feed footprint, the shrimp related footprint per kg shrimp produced was around 16% lower than in 2020. This is due to lower fish mortality and FCR, both related to the implementation of Skretting 360+.

The example demonstrates that several tools and strategies can help to reduce the footprint across the fish/shrimp value chain. As there is no single golden way, we strive to include several tools and strategies that help to further reduce the footprint of fish/shrimp and not only for the feed. Having established a good foundation for cradle-to-gate assessments, we want to further collaborate with our customers to develop and implement footprint tools that allow for dynamic calculations over the whole life cycle. We believe that understanding the footprint drivers of the whole value chain and their interaction is the basis to identify the most efficient strategies collaboratively. This will help our customers, us and finally the consumers to drive real sustainable solutions.

Figure 11: Carbon footprint per shrimp feed and feed-related carbon footprint per kg shrimp produced before and after introducing Skretting 360+.



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Table 9: SDG targets regarding natural resources.

Our targets: Natural resources	
<p>Target: Source 100% of marine ingredients from sources audited and certified by MarinTrust or MSC.</p> <p>Ensure that where MarinTrust or MSC-certified marine ingredients are not available, all non-certified ingredients will be engaged in a Fishery Improvement Project (FIP). FIPs will publicly report developments annually.</p> <p>Ensure that all marine ingredients produced from species caught for the sole purpose of producing a feed ingredient will, as of 2022, come from MarinTrust certified sources of whole fish or from fisheries that participate in a recognised programme to improve in order to become certified.</p> <p>Our progress: 80% of our whole fish and by-products are certified by MarinTrust or MSC, or on a MarinTrust-FIP.</p>	<p>SDG sub-target 14.2/Business interpretation – Building traceability to assure and verify sustainability claims and ensure sustainable practices in the supply chain.</p> <p>Obtaining aquaculture certifications for marine and animal health and welfare, food safety, and environmental protection or ensuring that suppliers obtain such certifications.</p>
<p>Target: All purchased soy and palm will be deforestation-free by 2025.</p> <p>Our progress: 60% of our Soy ingredients are deforestation free or from countries with low risk of deforestation according to our Soy & Palm Oil Ingredients Sourcing Policy.</p>	<p>SDG sub-target 15.2/Business interpretation – Contributing to sustainable management of forests through rehabilitating lands destroyed by business operations, and committing to reduce or remove deforestation and forest degradation from direct operations and the supply chain.</p>
<p>Ensure that by 2022, all agricultural vegetable products are traced back to the country where they were cultivated, to use in a risk filter and for footprinting requirements.</p> <p>Our progress: In 2021 we have conducted a feasibility assessment of including country of cultivation in our procurement system.</p>	<p>SDG sub-target 2.3/Business interpretation – Use business influences to ensure the above aspects are applied throughout the supply chain.</p> <p>Implementing traceability, including reviewing the demographics of existing or new supply chains, and investing in supporting the livelihoods and sustainability of suppliers from marginalised/ underrepresented groups.</p> <p>Reviewing procurement policies to remove barriers to entry for small-scale food producers involved in the supply chain.</p>

SDG sub-target 15.2 and 14.2: Contribute to sustainable forest management and obtaining aquaculture certifications.



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Responsible sourcing

Sourcing raw materials in a feed company is the result of joint efforts from the innovation, formulation and operations teams to define the nutritional requirements and physical characteristics required by the fish or shrimp. When these parameters are defined, the procurement team undertakes availability and cost analysis based on the characteristics certain ingredients provide.

Sustainability parameters as a sourcing requirement are largely determined by the markets in which we operate. As a global company, we see that while sustainability may be a starting point for procurement in some markets, while in others it may be desired, but a secondary consideration due to the market reality. While in certain markets our customers, the fish and shrimp farmers (and thereby their customers, the retailers and thereby their customers – all of us!) demand us to source deforestation-free, 100% certified and with the lowest carbon footprint possible, other markets have less or no demands at all. As Skretting we aim to set a high standard for all markets, while this might be not ambitious enough for some markets, for other markets it is a real stretch – nevertheless we do it.

It is clear that sustainability has the full attention of top management in feed companies and in the broader feed value chain. This is definitely a positive change from 2-5 years ago and many encouraging developments have happened since then, but change is still demanded without paying a premium. Doing more for the same (or less) is an uphill battle that requires time and perseverance.

From the supply side come other complexities in sourcing in the most sustainable way. When it comes to deforestation and marine certification, many certifications exist (all with slightly different criteria) and traceability is rarely 100% solid. So even where there is a clear demand to source sustainably, it is not always possible as the supply could simply not be there. In addition, in commodity markets since April 2020 at times there is simply not the luxury of choice. In reality, 100% sustainable sourcing requires the value chain accepting a premium and a broader market request on the demand side.

To deal with these challenges, we have developed policies on our sourcing of soy and oil palm and marine ingredients to simplify our sourcing and emphasise our ambitions. These policies ensure decision-making is a simplified process when it comes to procurement.

With clear ambitions on sustainability, clear roadmaps in the form of the policies, Skretting is aiming to improve every year to make sourcing more sustainable. Despite the challenges that COVID-19 has brought, we have been making good steps and are developing ourselves as an organisation that is doing the right things and is able to drive developments and discussion with customers, suppliers and stakeholder groups. In that organisation, procurement is still looking for the best deals, but always with some strong sustainability requirements to go with that.

Robert van den Breemer

Procurement Director Macro Ingredients

“With clear ambitions on sustainability, clear roadmaps in the form of the policies, Skretting is aiming to improve every year to make sourcing more sustainable.”



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Our position on deforestation

With the launch of our Sustainability Roadmap, it was a natural transition to create a [policy specific to soy and oil palm ingredients](#), aligning our sourcing of these to our targets. The impact on sourcing has been varied, from developing new supply-chains from regions with low deforestation-risk, to working with existing partners to change their sourcing policies along with ongoing research into new ingredients as alternatives to soy and oil palm. By the end of 2025, our ambition is to source soy and oil palm ingredients that are free of both legal and illegal deforestation, with the purpose of limiting our impact on biodiversity and climate change.

Following many years of research, tremendous progress has been made to create flexibility in the raw materials we use. Even after all this research into alternative feed ingredients, soy continues to play a role in aqua feeds, in traditional product forms such as meal, oil and concentrate. More recently due to developments in technology, newly derived soy materials are being introduced to the market, providing additional benefits such as lower anti-nutritional factors.

We anticipate soy ingredients will remain an important source of protein and oil for the animal feed sector in the future. But as applies for all our raw materials, we must be responsible with our sourcing and where improvements are needed, use our influence within the value-chain to support positive change. The deforestation issues with soy and oil palm ingredients are complex and Skretting is focused on minimising any negative impact we have through our sourcing of feed materials.

We are proud of our position but do not underestimate the challenges to achieve our ultimate ambitions. Dialogue throughout the value-chain involving all stakeholders is crucial and only through collaboration with like-minded partners can we inspire a change to halt deforestation. This undertaking is part of our everyday discussions in the markets, promoting only deforestation-free ingredients for use in animal feeds.

We appreciate not everyone is working to the same timescale or indeed not everyone has the same aspirations, but becoming deforestation-free in our supply-chains is exceptionally important to Nutreco and Skretting and failure to meet our ambition is not a consideration. We believe it should be a priority for every stakeholder within animal feed production and we will continue to advocate for these changes.

Skretting is focused on minimising any negative impact we have through our sourcing of feed materials.



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The origin of our soy ingredients

Our Soy & Oil Palm Sourcing Policy, released in 2020, classifies soy and oil palm ingredients into four classes based on the country where the crop was cultivated and which relevant sustainability certificates it comes with. These classes support our purchase team on the road to sourcing deforestation-free soy and oil palm ingredients by the end of 2025 and allows for clear targets to minimise our impact on the world's forests in the years to come.

When it comes to the country of cultivation, we are dependent on correct information flows within the supply chain, and we are aware that these information flows are not always as detailed as we would like. By engaging with our suppliers over the past years, we have managed to get a better picture of our soy supply chains than ever before.

Over the past year, new insights have led us to retroactively adjust the volumes reported per class for 2020. This means we are reporting a change in class distribution for the 2020 soy classes when comparing our Sustainability Report 2020 and 2021. The table 6 (below) shows the distribution of 2020 soy classes as reported in both 2020 and 2021 Sustainability Report, where the data as reported in this report is most accurate.

In 2021 we have identified 60% of our soy as either certified deforestation-free or coming from countries with a low risk for deforestation (Class A). Unfortunately, this is a decrease compared to 2020, mainly driven by increased volumes from countries with a high risk for deforestation. Positively, we do see a larger proportion of our soy from high-risk countries purchased with mass-balance or credit schemes (Class B). This means that even though the soy originates from regions with a high risk for deforestation, we support responsible soy farming for more than three quarters of our high-risk soy.

The amount of soy from high-risk countries without any sustainability certificates decreased from 13% in 2020 to 8% in 2021 and is expected to be 0% for the coming year. This is due to our aim to responsibly source 100% of our volume from 2022 onwards, which means in 2022 no Class D volumes should be bought.

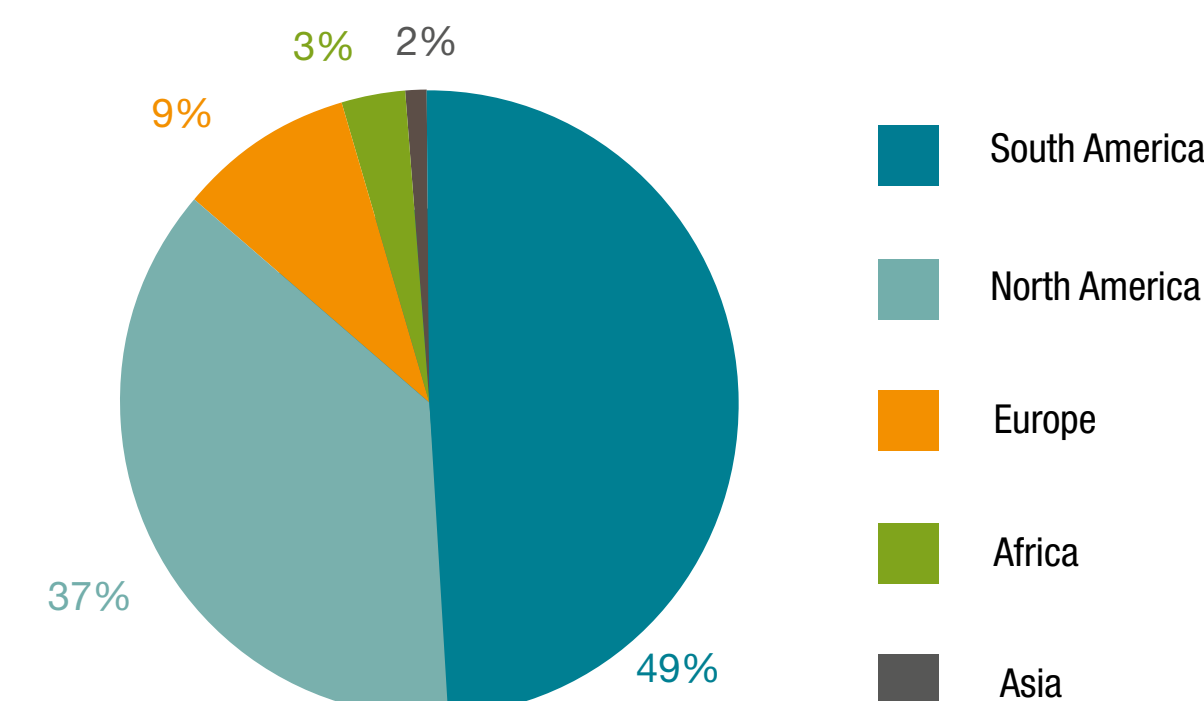
Table 10: Distribution of soy classes reported in 2020 and amended in 2021.

Class	Soy data 2020		Soy data 2021
	as reported in Sustainability Report 2020	as amended in Sustainability Report 2021	
A	79%	68%	60%
B	10%	18%	32%
C	0%	0%	0%
D	10%	13%	8%
Unclassified	1%	1%	0%

Table 11: Soy classes reported and sustainability claims.

Class	Sustainability claim
Class A	
The soy or palm oil ingredient is traceable back to a country or region with a low risk of deforestation or is from a region with a high risk of deforestation but purchased through a certification scheme which verifies no deforestation occurred.	Skretting's soy and oil palm ingredients are deforestation-free.
Class B	
The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation. For Class B, it must be purchased through a certification scheme with a defined cut-off date, using either mass-balance or credits.	Skretting supports the production of deforestation-free feed ingredients from soy.
Class C	
The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation and must be purchased through a certification scheme that verifies no illegal deforestation occurred.	The soy ingredient meets the FEAC soy sourcing guidelines, eg no illegal deforestation has occurred.
Class D	
The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation but purchased without any certification related to deforestation.	The soy ingredient(s) can be traced back to their country of cultivation.
Unknown origin	
It was not possible to trace the soy or palm oil ingredient to the country it was cultivated in.	

Figure 12: Skretting's purchases of soy ingredients according to region of cultivation.



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Salmon farming shows that deforestation-free is possible

“Stop Brazilian deforestation” is a strong demand from consumers and retailers. 2020 was the first full year of 100% deforestation and conversion-free supply chain for the Brazilian soy suppliers to European salmon. An independent report stated that this goal was accomplished for the supplier’s entire soybean business, also outside the salmon value chain. A move described by the Rainforest Foundation as a historic commitment and a game changer in Brazil.

“Hats off for this achievement! What sticks out for us as sellers and retailers of sustainable seafood is that this demonstrates that we can do more to protect the environment by working with partners, than walking away and just boycotting soy”, says Andrew Davie on behalf of Aquascot and Waitrose.

Modern satellite techniques to prevent cheating

The international certification foundation ProTerra established a monitoring and verification method to verify that no farmer that had removed any forest would be allowed to sell soy to the suppliers. Using satellite techniques and embargo lists an independent audit confirmed that the soy supply chain had become deforestation and conversion-free. The audit report also checked that the farmers did not have any work related to slavery or illegal labour and that there was no agriculture overlaps with indigenous lands.

The Rainforest Foundation says the European salmon industry sets an important example.

“It is great news that Brazilian soy producers for the very first time are confirmed to be fully deforestation and conversion-free in all their operations”, says Nils Hermann Ranum, head of Drivers of deforestation program at Rainforest Foundation Norway.

“Demanding that suppliers are fully deforestation-free is necessary to stop ongoing deforestation in Brazil. Private sector companies have a responsibility to avoid contributing to deforestation and environmental damage, and the salmon industry and their suppliers set an important example that other food producers must follow,” says Ranum.

Working together

There are three companies that deliver soy to the European salmon industry. Two of them, Caramuru and CJ Selecta have undergone the audits. The third company, Cervejaria Petropolis-Imcopa, is in a corporate change and a separate audit is conducted now for them. There was no non-conformity observed by the Auditor, only improvement opportunities.

“European fish feed producers were punching above our weight here. Even combined we are not a big player in the Brazilian soy market, but our combined effort made a complete value chain become 100% deforestation and conversion-free. Now we need to show them our support to make this important effort continue”, says Leif Kjetil Skjæveland, Manager of Sustainability and Public Affairs in Skretting Norway.



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The origin of our marine ingredients

Our ambition is that by 2025 all fishmeal and fish oil we use originates from fisheries that are managed according to the [FAO Code of Conduct for Responsible Fisheries](#). This means that our suppliers must be able to demonstrate that the fishmeal and fish oil is certified according to the MarinTrust standard (which includes Marine Stewardship Council certification), or be participating in an improvement project with the aim of becoming MarinTrust certified.

In addition to the progress specified in our sustainability reports, and aiming to bring more transparency, Skretting commits to publish the origin and environmental sustainability of wild-caught and farmed seafood sourced by our global operations through the [Ocean Disclosure Project](#).

In 2021, 82% of fishmeal and fish oil originating from whole fish that was purchased by Skretting came from fisheries certified according to the MarinTrust or MSC programmes, or from fisheries that were part of a MarinTrust fishery improvement programme (FIP).

Figure 13: Origin of marine ingredients.

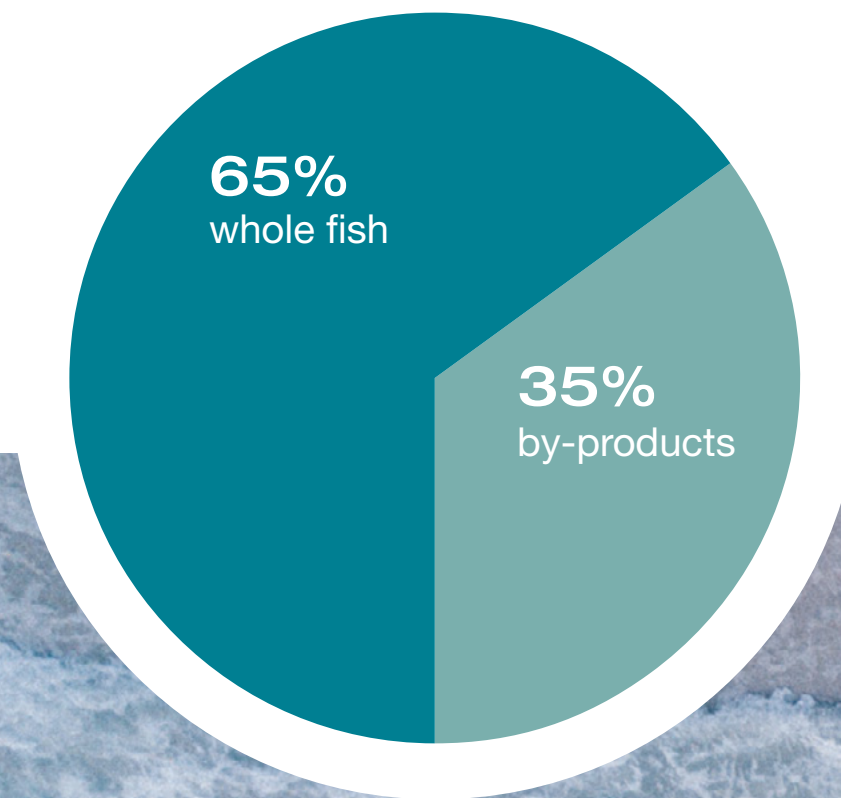
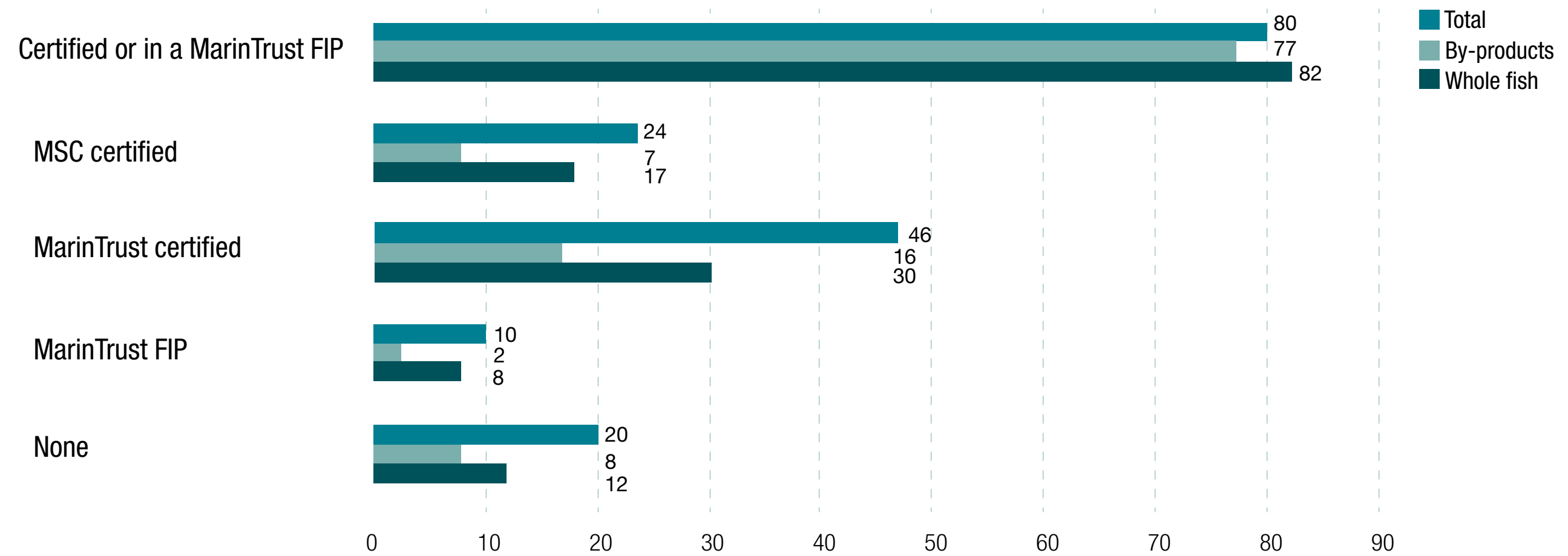


Figure 14: Certification overview of marine ingredients 2021 (%).



1) Data on marine ingredients origin and certification are based on Skretting global purchases.

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Fisheries of origin of marine origin – reduction fisheries

Aquaculture feeds often contain fishmeal and fish oil that have been processed from wild-caught fish. Such fisheries are referred to as reduction fisheries. A reduction fishery is one that uses (or “reduces”) its catch to produce fishmeal or fish oil rather than for direct human consumption. After the fish are caught, they are delivered directly to a marine ingredients processing plant. Marine ingredients from reduction fisheries can also be referred to as marine ingredients from “whole fish”.

The Sustainable Fisheries Partnership (SFP) published an updated [annual report about the world’s most important reduction fisheries in 2021](#).

The report gives a global sustainability overview of the main Pacific and Atlantic fish stocks used for reduction purposes (to produce fishmeal and fish oil). The fisheries are rated according to the sustainability assessment presented on [FishSource](#), SFP’s public database of fisheries information. Skretting welcomes the work developed by SFP and use it as a tool to evaluate the sourcing of our marine ingredients.

Thirty-two species made up 95% of Skretting purchases of marine ingredients in 2021 originating from whole fish. The most important species are small pelagic fish from fishing areas Pacific Southeast, Atlantic Northeast and Atlantic Eastern Central.

The remaining five percent originate from an additional 46 species. There are several reasons for the relatively large number of species registered. In all fisheries there is a certain amount of by-catch. When the by-catch is at low levels it is part of the legal fishery. In some areas the manufacturer of marine ingredients by law are instructed to register all by-catch. This means that when Skretting receives a consignment of marine ingredients, easily more than 10 species will be declared that might only constitute a few percentages of the delivery.

Another factor is that many fisheries are multi-species fisheries, especially in more tropical areas. Here it is possible to find a large species diversity and single species fisheries are not common.

Table 12: Species and fisheries that make up 95% of purchases of marine ingredients in Skretting in 2021 and which originate from whole fish.

Species	Latin name	Fishmeal %	Fish oil %	Country of origin	FAO fishing area
Peruvian anchoveta	<i>Engraulis ringens</i>	13,77	27,53	Chile, Peru, Ecuador	87
Sandeel	<i>Ammodytes tobianus</i>	9,81	6,06	Denmark, Norway	27
Blue whiting	<i>Micromesistius poutassou</i>	8,58	0,68	Norway, Denmark, Faroe Islands, Iceland	27
Chub mackerel	<i>Scomber japonicus</i>	7,63	4,22	Mexico, Ecuador, Peru, Chile	87
European sprat	<i>Sprattus sprattus</i>	7,14	8,91	Denmark, Norway	27
Pacific thread herring	<i>Opisthonema libertate</i>	5,47	0,22	Panama, Ecuador, Mexico	87
Menhaden	<i>Brevoortia patronus</i>	3,94	0,93	USA, Mexico	31
Atlantic salmon	<i>Salmo salar</i>	3,80	8,04	Chile, Norway	farmed
Chinese anchovy	<i>Stolephorus chinensis</i>	3,71	0,08	China	61
Araucanian herring	<i>Strangomera bentincki</i>	3,37	5,70	Ecuador, Panama, Peru	87
Chilean anchoveta	<i>Engraulis ringens</i>	3,29	4,44	Chile	87
European sardine	<i>Sardina pilchardus</i>	3,14	1,28	Mauritania, Morocco, Turkey	34,37
Norway pout	<i>Trisopterus esmarkii</i>	3,08	2,03	Denmark, Norway	27
European anchovy	<i>Engraulis encrasicolus</i>	2,62	1,56	Turkey	37
Pacific anchoveta	<i>Cetengraulis mysticetus</i>	2,13	4,34	Mexico, USA	87,77
Frigate tuna	<i>Auxis thazard</i>	1,95	0,67	Ecuador	87
Atlantic herring	<i>Clupea harengus</i>	1,92	4,62	Norway, Denmark, Faroe Islands, Iceland	27
Pacific thread herring	<i>Opisthonema libertate</i>	1,02	6,10	Mexico, USA	87,77
Sardine	<i>Sardinella spp</i>	0,94	1,27	Vietnam, Philippines	71
Common Searobin	<i>Prionotus carolinus</i>	0,90	0,17	Ecuador	87
Black-velvet Angelfish	<i>Chaetodontoplus melanosoma</i>	0,82	-	Vietnam	72
Atlantic horse mackerel	<i>Trachurus trachurus</i>	0,74	0,19	Morocco, South Africa	34,47
Pacific jack mackerel	<i>Trachurus symmetricus</i>	0,73	4,65	Chile, Ecuador, Mexico	87,77
Unicorn leatherjacket	<i>Aluterus monoceros</i>	0,69	-	Vietnam	71
Pacific drum	<i>Larimus spp</i>	0,69	-	Ecuador	87
Krill	<i>Euphausia superba</i>	0,63	-	Antarctica	58
Greater Lizardfish	<i>Saurida tumbil</i>	0,59	-	Vietnam	72
Rainbow Trout	<i>Oncorhynchus mykiss</i>	0,57	1,15	Chile	farmed
Hake	<i>Merluccius spp</i>	0,51	-	USA	77
Shortfin Scad	<i>Decapterus macrosoma</i>	0,46	0,14	Ecuador	87
Common Ponyfish	<i>Leiognathus equulus</i>	0,45	-	Vietnam	72
Roncador	<i>Haemulopsis axillaris</i>	0,39	1,14	Ecuador	87
Sum		95,50	96,12		

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Fisheries of origin of marine origin – by-products

In addition to the use of wild-caught fish, the processing of fish for human consumption gives rise to a by-product that is not used in the final seafood product. These offcuts generated after processing are valuable as a raw material from which fishmeal and fish oil is often produced, and it is estimated that roughly a third of fishmeal produced is made from seafood by-products from fish for human consumption. The use of by-products is increasing as more whole fish are used for direct human consumption, and society becomes more successful at collecting the material and fuelling the bioeconomy.

Thirty two species make up 95% of Skretting purchases of marine ingredients in 2021 originating from by-products (trimmings), in addition to 46 additional species of fish that are registered as the origin of fishmeal and fish oil from by-products, but in lower volumes (< 5%). Marine ingredients from different tuna species are common, which is due to the tuna canning industry. The industrial processing of tuna makes it possible with efficient use of the trimmings.

The species registered as origin of marine ingredients from trimmings reflect fisheries important in human consumption. Hake, cod, pollock and different mackerel species are all important. We also see trimmings from small pelagic fishes like anchovy, sardines and sprat. Marine ingredients from farmed species like Atlantic salmon is also becoming important.

We cannot establish with certainty the FAO fishing area for these species because the country of processing might be different from where the original catch was landed.

Table 13: Species and fisheries that made up 95% of purchases of marine ingredients in Skretting in 2021 and which originate from by-products.

Fish species / fishery	Latin name	Fishmeal (%)	Fish oil (%)	Country of origin/processing
Skipjack tuna	<i>Katsuwonus pelamis</i>	27,82	4,60	Ecuador, Spain
Yellowfin tuna	<i>Thunnus albacares</i>	10,44	2,90	American Samoa, Philippines, Papua New Guinea, Thailand, Ecuador, Mauritius, Spain
Tuna	<i>Thunnini sp</i>	6,80	5,37	Ecuador, Portugal, Spain
Sardine	<i>Sardinella spp</i>	5,50	4,03	Several
Other	-	5,35	9,70	Several
Atlantic mackerel	<i>Scomber scombrus</i>	4,57	7,44	Denmark, Iceland, Norway, Spain, UK
Chub mackerel	<i>Scomber japonicus</i>	2,56	1,52	Ecuador
Hake	<i>Merluccius merluccius</i>	2,31	1,12	Ecuador, France
Pacific thread herring	<i>Opisthonema libertate</i>	2,07	0,59	Ecuador, Panama
Atlantic salmon	<i>Salmo salar</i>	1,63	18,47	Chile, Italy, Latvia, Norway, UK
Peruvian anchoveta	<i>Engraulis ringens</i>	1,55	1,81	Peru
Splendid Ponyfish	<i>Eubleekeria splendens</i>	1,54	-	Vietnam
Albacore	<i>Thunnus alalunga</i>	1,40	1,18	Spain
Orange-spotted Spinefoot	<i>Siganus guttatus</i>	1,37	-	Vietnam
Jackmackerel	<i>Trachurus symmetricus</i>	1,13	2,43	Chile
Cod	<i>Gadus morhua</i>	0,88	1,72	Denmark, France
Anchovy	<i>Engraulis spp</i>	0,76	1,00	Several
Frigate tuna	<i>Auxis thazard</i>	0,72	0,63	Ecuador, Mexico
Pacific Anchoveta	<i>Cetengraulis mysticetus</i>	0,61	-	Ecuador
Yellow Stripe Trevally	<i>Selaroides leptolepis</i>	0,58	-	Vietnam
Atlantic herring	<i>Clupea harengus</i>	-	26,58	Canada, Denmark, France, Iceland, Italy, Norway, UK
Alaska pollock	<i>Gadus chalcogrammus</i>	-	2,23	USA
Blue whiting	<i>Micromesistius poutassou</i>	-	0,96	France, Norway
Ranbow Trout	<i>Oncorhynchus mykiss</i>	-	1,15	Norway
Coho Salmon	<i>Oncorhynchus kisutch</i>	-	0,69	Chile
Channel catfish	<i>Ictalurus punctatus</i>	-	0,69	USA
Saithe	<i>Pollachius virens</i>	-	0,69	Denmark, France, Italy

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Our Marine Ingredients Sourcing Policy – Raising the level of transparency of marine ingredients used in aqua feeds

To protect the ocean and ensure that fish stocks intended for direct or indirect human consumption are caught within clearly defined, sustainable limits, in Q1 2022 Nutreco and Skretting published a new [responsible sourcing policy](#) which serves as a practical guide to decide on the type of marine ingredients that can be sourced for our global operations.

The document builds into the ambitions of our Sustainability RoadMap 2025, which aims to ensure that by 2025, Skretting sources marine ingredients that are 100% certified or coming from a fishery improvement project for our global operations, as well as ensuring that all the fishmeal and fish oil used to produce feed originate from fisheries that are managed according to the FAO Code of Conduct for Responsible Fisheries.

The policy is built on a risk-based approach, with clear sustainability classes and sourcing targets for marine ingredients from whole fish, by-products from wild fish catch, and by-products from aquaculture. It was developed through internal collaboration to reflect the realities in the markets and included comments and revisions from external stakeholders. We invited one of them, [Sustainable Fisheries Partnership](#), to reflect on what this policy can bring to the market and the challenges that we still need to face.



Our Sustainability RoadMap 2025 aims to ensure that by 2025, Skretting sources marine ingredients are 100% certified or coming from a fishery improvement project for our global operations.



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Taking on big challenges in marine ingredients

For more than a decade, Sustainable Fisheries Partnership (SFP) has been working with leading feed companies like Nutreco/Skretting to track the status of key fisheries globally used in the production of marine ingredients (fish meal and fish oil), and support precompetitive collaboration to drive improvements where needed. Over that time, the overall sustainability status of these fisheries (as measured by FishSource) improved through 2017, but has since plateaued with some fisheries even slipping backwards.

Over this same time, business and consumer awareness of and attention to the sustainability of marine ingredients has expanded dramatically. Where once little attention was paid the sources of marine (and other) ingredients used in aquaculture feed, there is now increasing interest in full ingredient transparency and life cycle analyses. While driven partly by a general growth of interest in seafood sustainability, this increased attention is also the result of growing understanding of the not only the environmental challenges in some of these fisheries, but the potential for significant social problems including labor abuse, food insecurity and displacement of small-scale fishers. Recently, some groups have been using these concerns to demand that companies switch from marine ingredients to alternative protein (eg insects, algae) in the name of sustainability (with the sole argument that they are not fish, which ignores potentially major sustainability tradeoffs). It must be noted that while aquaculture feed is the main use of marine ingredients, these same ingredients are used in a range of other products including pet food, nutraceuticals, cosmetics, baby formula and others.

With all this in mind, SFP welcomes the new responsible sourcing policy developed by Nutreco and Skretting. It represents an expanded commitment by the companies to improve their own practices, and acknowledges that companies must do better faster to deliver sustainability. It also specifically calls out a number of key challenges and opportunities facing the industry.

Transparency: Buyers of marine ingredients must work with the whole supply chain to improve sourcing and traceability of responsible ingredients, and public reporting through the Ocean Disclosure Project helps demonstrate this commitment.

Traders: Global trading companies are an integral part of the marine ingredients supply chain (as well as other ingredients used in aquaculture and pet feed). They buy and sell huge volumes yet are largely invisible, and can make or break sustainability and traceability efforts.

Multispecies fisheries can capture hundreds of species in a single net and may account for as much as half of fishmeal and oil produced globally. There is as yet little international consensus on what “good” management looks like in these fisheries, let alone any adequate certification criteria or scheme (although work is underway).

Forced Labor and Food Security are two significant risks. Companies must conduct due diligence to work with suppliers to eliminate labor abuses, and must be committed to not source from fisheries that undermine local food security.

Increased use of byproducts is a good approach to increase efficiency, decrease waste, avoid food security issues and potentially improve local seafood processing capacity.

Key to addressing these and other challenges is the understanding that one company cannot do it alone. Which is why it is so important the Nutreco/Skretting have participated in numerous precompetitive collaborations and are early members of the Global Roundtable on marine ingredients. SFP looks forward to working with Skretting to meet the commitments contained in their new policy and help address these global challenges.

Dave Martin
Program Director
Sustainable Fisheries Partnership



“Where once little attention was paid the sources of marine (and other) ingredients used in aquaculture feed, there is now increasing interest in full ingredient transparency and life cycle analyses.”

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The role of certifications and why we use them

Voluntary sustainability standards (VSS) are standards specifying requirements that producers, traders, manufacturers, retailers or service providers may be asked to meet, relating to a wide range of sustainability metrics, including respect for basic human rights, workers health and safety, environmental impacts, community relations, land-use planning and others.

A certificate or label is provided to demonstrate the level of achievement of that specific product or service against the standard. Some voluntary sustainability standards are associated with consumer-facing product labels and claims; others are used mainly within business-to-business relationships.

In aquaculture there are several VSS related to farmed fish or crustaceans. In addition, the VSS set requirements that goods used in the production of the farmed species must originate from certified goods, including feed. The VSS of feed in turn prescribe requirements that raw materials used in feed production must come from certified sources. This has led to that many products in the aquaculture value chain potentially must be produced according to VSS.

There are several factors influencing the uptake of VSS in the private sector. Commercially, the achievement of certification can mean increased market access, being more competitive in some market segments and sometimes being able to achieve a price premium on the certified product(s). In other cases, private companies can also use certification schemes as a third-party verification of their own sustainability performance and ambitions – independent from direct market requirements. Industry segments with high uptake of certification can also use this as a public disclosure of sustainable industry practices in order to maintain their social licence to operate.

VSS may have shortcomings and negative effects in some areas. In developing countries, the cost of obtaining certifications can result in uncompetitive products, while the lack of certifications can be a barrier to trade in some markets.

Many small producers struggle to meet certification standards because of financial capacity or lack of competence, technology or general knowledge. This means that these producers do not gain access to markets where VSS are demanded. For Skretting, it is important to support and educate suppliers in areas where it is evident that they struggle to comply to VSS requirements because of lack of knowledge and competence. Private industry relates to many national laws and regulations. These laws and regulations are much more comprehensive and detailed than what can be referenced in private standards. National laws and regulations create a level playing field for the industry. This is in contrast to VSS, which often create several playing fields. It is more in the interest of industry to support the development of good and sound national laws and regulations compared to a multitude of voluntary sustainability standards.

Duplication and overlapping between schemes can create confusion in the marketplace and might contribute to greenwashing. The divergent monitoring, reporting and assurance requirements of different schemes also increase the cost of compliance. There is no doubt that the uncoordinated development of many VSS is very costly for the aquaculture industry. The industry must look at better alignment between certification schemes and national regulations, in order to limit the amount of reporting and number of audits.

Governments are increasingly recognising voluntary sustainability standards as tools to require producers and operators to comply with verifiable environmental and social criteria. We also see that increasingly VSS are being integrated into public procurement and trade policy. This can help enhance the sustainability performance of global value chains. But certification is not enough, it must also be focus on developing and enforcing better public sustainability laws and regulations.

All details of certifications held by Skretting OpCos can be found at the end of this report.



For Skretting, it is important to support and educate suppliers in areas where they struggle to comply to VSS requirements.

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How the ASC's new Feed Standard is extending transparency and accountability across the supply chain

Certification offers a credible way of recognising and rewarding responsible practices. The ASC standards assess whether aquaculture farms are operating responsibly and the consumer facing logo is proof of achievement in a market leading programme for the production of responsibly farmed seafood. However, to make aquaculture more sustainable, it is essential to address feed which can make up as much as four fifths of aquaculture carbon emissions.

The ASC Feed Standard takes the ASC's approach to responsible aquaculture and extends it to the feed mills that manufacture aquafeed, as well as the suppliers of their ingredients. The ASC Feed Standard is the first standard to take into consideration the impacts created across all key ingredient groups and throughout the ingredient supply chain. This will include all major agriculture crops such as wheat, corn and canola, in addition to soy and palm oil, and marine ingredients.

As a source of protein, aquaculture has one of the lowest carbon footprints, but it is important that the industry monitors and works to reduce its footprint along the entire supply chain. ASC certified feed mills will have to record and report their energy use and greenhouse gas emissions; and work to improve energy efficiency, use of renewables, and water usage.

The Feed Standard uses an improvement model for marine ingredients which requires feed mills to source from more sustainable fisheries over time. MSC and MarinTrust play a crucial role in this mechanism and form the key stepping stones for improvement. The model offers a unique opportunity for feed mills to work together with their fish meal and fish oil suppliers to meet the increasing requirements over time. Ultimately, the major volume of marine ingredients needs to be derived from MSC fisheries.

For plant-based ingredients, as with marine based, mills will have to record and report all ingredients that make up over 1% of a feed, and will need to take steps to ensure they have been responsibly sourced. Crucially, they will have to assess the risk of a particular ingredient contributing towards deforestation or land conversion, and must commit to transitioning to a supply chain free from these key negative impacts.

As well as environmental sustainability, mills must also ensure they and their suppliers are socially responsible. For instance, independent auditors must verify that mills are not using forced or child labour, pay and treat their staff fairly, and must not discriminate on any grounds. They must also be responsible neighbours, communicating proactively with their local communities. Certified feed mills are required to conduct Due Diligence on their supply chains to adhere to these principles as well, ensuring an impact in areas where the risk of these issues are more prevalent.

By taking a holistic approach to addressing the environmental and social impacts of feed production, the ASC Feed Standard re-enforces transparency and accountability within feed supply chains.

Alexandra Warrington

Senior Coordinator Feed Standard
Aquaculture Stewardship Council



“As a source of protein, aquaculture has one of the lowest carbon footprints, but it is important that the industry monitors and works to reduce its footprint along the entire supply chain.”

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The Small Pelagics Fishery Improvement Project in Mauritania

The Small Pelagics FIP (Fishery Improvement Project) in Mauritania was initiated in 2017 by OLVEA Fish Oils and several of their suppliers, but has since then extended to include a wider subset of stakeholders across the entire sector, including Skretting from 2021, in Mauritania and beyond. Today, the FIP benefits from the support of Mauritanian institutions in the sector of fisheries resources management: MPEM (Ministry of Fisheries and Maritime Economy) and IMROP (Institut Mauritanien de Recherche Océanographique et de Pêches); and also ONISPA based in Europe (Office National d'Inspection Sanitaire des Produits de la Pêche et de l'Aquaculture).

Guidance and coordination are provided by a Steering Committee chaired by the Ministry of Fisheries, while day-to-day management is ensured by ONISPA and IMROP.

The FIP has a detailed and tangible workplan based on the rigorous sustainability standards set by MarinTrust and MSC (Marine Stewardship Council).

A key component of our activities involves improving data collection and sampling from the fishery by providing additional resources and supporting the improvement of equipment and training. This is a crucial basis for improving our understanding of the stock status, a fundamental requirement for sustainable management. We also provide input to government on fisheries management; both for long-term policy and for shorter-term management plans and measures. In 2022, finance permitting, we will take the project further, on ecosystem-based management and the protection of endangered species such as marine mammals, which are abundant in Mauritanian waters. We are also undertaking a project to consider the social aspects of the fishery, including conditions on board the vessels and wider issues related to the access to resources and food security.

FisheryProgress evaluates and measures FIP progress to understand the rate of improvement of a fishery. In recognition of its advanced progress and sustainable actions carried out, The Small Pelagics FIP in Mauritania received the [“A” grade](#).

Learn more on the [FIP website](#).

Dr Jo Gascoigne

Coordinator of the Morocco and the Mauritania FIP



FISHERY
PROGRESS.ORG

“Improving data collection and sampling from fisheries is crucial for improving our understanding of the stock status, (which is) a fundamental requirement for sustainable management.”

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Fishery Improvement Project to stop practise of overfishing in the North Atlantic

The 'huge bank of dead fish' seen off the coast of France in February 2022 created a massive international outcry. But this is small fry compared to the over 1.7 billion blue whiting that are overfished annually, due to Northeast Atlantic fishing nations failing to respect scientific advice for the stock.

When considering overfishing of wild fish, Norway, UK and EU members may not be the first states to spring to mind. But for years these coastal states including Faroe Islands, Greenland, Iceland and Russia have not agreed to a quota sharing agreement that follows scientific advice. This practise has resulted in overfishing and consequently the suspension of the MSC certification of blue whiting.

Despite blue whiting being an important component of salmon feed, Skretting Norway stopped sourcing blue whiting when the MSC certificate was suspended.

Skretting is a founding member of North Atlantic Pelagic Advocacy Group (NAPA) who advocate for long-term, science-based management of fish stocks. In collaboration with MarinTrust, NAPA has established a policy FIP to secure sustainable management for blue whiting. The clock began in October 2021 towards a three-year countdown to certification-ready blue whiting fisheries.

“This is not about improving the fishery levels — this is a policy FIP. So the coastal states must resolve the allocation issues around these stocks. We do not have a position of who gets what, we just want to avoid unsustainable overfishing. The goal must be long-term management”, says Mads Martinsen, Director Product Development and Sustainability, Skretting Norway.

Skretting Norway will continue purchasing blue whiting as long as the FIP is in place rather than walk away, because by maintaining involvement we will drive change. But should progress falter, or the FIP fail, Skretting Norway will continue its stand to not source fishmeal containing uncertified blue whiting.



Skretting is a founding member of North Atlantic Pelagic Advocacy Group (NAPA) who advocate for long-term, science-based management of fish stocks.

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Norwegian Government sponsors green development of real offshore aquaculture

The Norwegian Government has issued the 'Green Platform' program coupled with €100 million funding to accelerate the transition to a green society. In September 2021, €10 million was awarded to a project for offshore salmon production. As part of the project, Skretting Norway will develop a new green floating pellet and health monitoring to increase fish welfare and survival rates.

The project has 18 members from the value chain including salmon producers, suppliers, research institutions and Skretting as the feed producer. The goal is to develop a low-emission value chain for offshore salmon production through innovation within offshore and closed post-smolt systems, biology, fish feed, electrification, digitalisation and logistics.

A key player is SalMar Aker Ocean who already has a semi-offshore production unit in place, Ocean Farm 1. This project will support in the development of their next generation of offshore farms. Grieg Seafood, FishGlobe and Hauge Aqua are key for the development of post-smolt for offshore aquaculture. To combine industrial development with knowledge the project has several R&D partners including the Norwegian Marine Institute of Marine Research (HI), the Norwegian Veterinary Institute, NORCE and several universities.

Skretting plays a vital project role and will lead the work packages on fish welfare and sustainable feed for fish survival and a greener pellet plus increased knowledge on feeding systems for offshore locations. Skretting will also take part in the sub-projects on post-smolt production in closed systems in addition to ocean logistics.

"Offshore aquaculture has the potential to both be a solution for a more sustainable global food production, and to create billion-dollar value for Norway. However, there are many challenges to address before we are there. Now the largest investment of all time is being launched to develop many of the solutions, so that we can get closer to realisation", says Professor Ragnar Tveterås from the University of Stavanger, partnership coordinator.

€100 million

in funding for the program "Green Platform" to accelerate the green transition.

€10 million

awarded to a project for offshore salmon production.

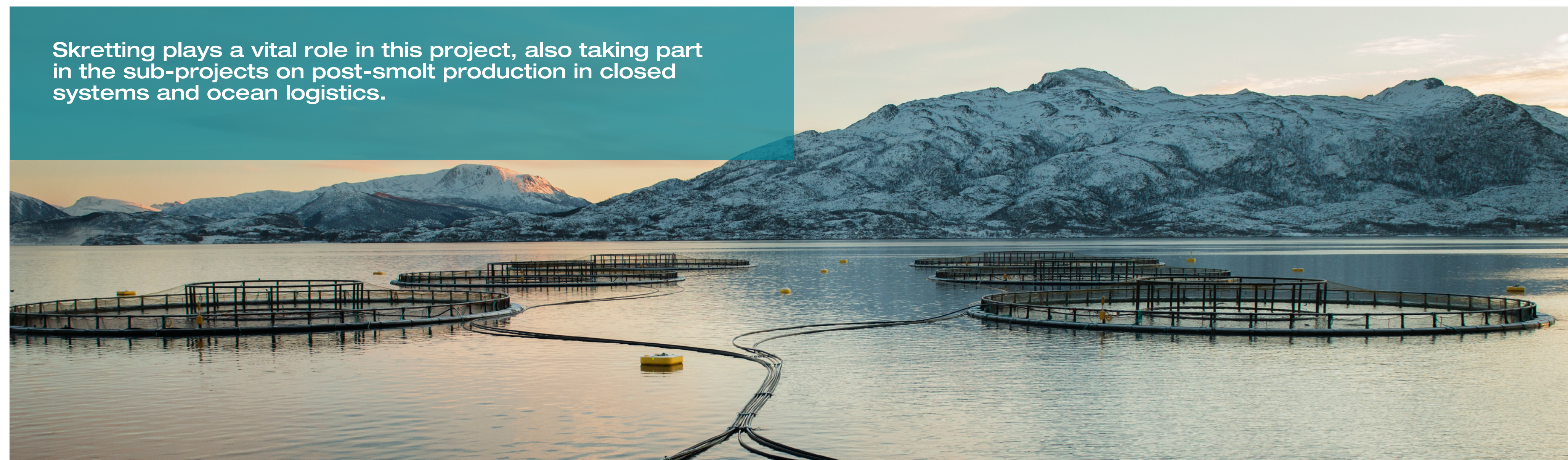
18 members

- Salmon producers
- Suppliers
- Research institutions
- Skretting as feed producer



As part of the project, Skretting Norway will develop a new green floating pellet and health monitoring to increase fish welfare and survival rates.

Skretting plays a vital role in this project, also taking part in the sub-projects on post-smolt production in closed systems and ocean logistics.



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CarbonBalance shortlisted as finalist of the edie Sustainability Leaders Awards

Skretting Italy's CarbonBalance® was shortlisted as a finalist in the Product Innovation of the Year category of the prestigious [edie Sustainability Leaders Awards 2022](#). This is a fantastic achievement in a year where edie received its highest number of entries ever, and an important recognition of the work we're doing across Nutreco to achieve our purpose of Feeding the Future.

CarbonBalance is following the path of another Skretting product, [MicroBalance FLX](#), the winner of the 2018 edie Sustainable Leaders Award in the Product Innovation category and is a new solution helping fish farmers reduce their operations' carbon footprint. The programme includes the first ever carbon neutral aquafeed, Feed4Future, along with an entire suite of services designed to enable farmers to produce fish in a fully carbon-neutral way.

Feed4Future's feed formulation provides optimised nutrition with a carbon footprint at least 5% lower than comparable standard products and can lead to a 30% reduction of the emissions generated by a farmer's fish throughout the life cycle. Skretting is currently in the beginning stages of introducing CarbonBalance to the market.

"AQUA De Mã has always been active in promoting a positive image of aquaculture, communicating our efforts to prove the commitment we have for sustainability and environmental care. I therefore welcome CarbonBalance as a correct and forward-looking strategy to tackle the urgent and complex issue of climate change. Skretting is a front-runner in addressing this issue, with a concrete and immediately available offering such as Feed4Future," says Roberto C , Founder and CEO, AQUA De Mã.



edie sustainability leaders awards

2018

MicroBalance FLX wins edie Sustainable Leaders Award in the Product Innovation category.

2022

Skretting Italy's CarbonBalance® was shortlisted as a finalist in the Product Innovation of the Year category at the edie Sustainability Leaders Awards.



30% reduction

in emissions generated by a farmer's fish throughout the life cycle can be achieved.

5% lower

carbon footprint in comparison to standard products.

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Flexibility in the use of raw materials

Fish and shrimp have specific nutritional requirements, which vary both between species and within a species at different life stages. By understanding these requirements, we can produce flexible aquaculture feeds. Instead of relying on ingredients, formulating to meet the needs of nutrients like protein, amino acids, energy, fatty acids, vitamins, and minerals means we can ensure fish and shrimp receive a nutritionally complete feed whilst using a wide range of ingredients from vegetable, marine and land animal origin.

The introduction of Skretting's Microbalance® concept and the continuous research by Skretting Aquaculture Innovation has allowed for further flexibility, to the extent that it is possible to produce feeds for some species with a zero fish in, fish out (FIFO) ratio. The diverse raw material basket also helps mitigate the risk associated to relying on individual ingredients with high price or availability volatility by replacing these with more cost-effective alternatives of similar nutritional value, sourced from all over the world.

However, global sourcing has recently come with its own challenges. The COVID-19 pandemic has led to production and logistical challenges, increasing transportation costs to record high levels. Additionally, pet ownership has increased with more people working from home, meaning greater competition from the pet feed industry. The combined effect may mean that vegetable or animal ingredients that are staples in feeds today may become too expensive for use in aquaculture feeds in future.

Beyond price, sustainability is a key driver of ingredient use in future, with a growing focus on where and how we source ingredients. Using Life Cycle Assessment (LCA) as an additional formulation criterion in aquaculture feeds could control the use and origin sourcing of materials, however primary data is currently limited. When accounting for LCA, it is important to consider the complete sustainability impact including other factors, such as FIFO ratio for example.

The result of all these factors may be increased local sourcing of alternative novel raw materials. Assessing crop and animal production by geographical region allows us to see what ingredients could be available close to market, that are not utilised in aquaculture feeds today. In addition, novel production technologies and waste processing techniques are creating new ingredient opportunities, such as insect and single cell protein meals and oils. By combining our knowledge of the nutritional requirements of different fish and shrimp species with our understanding of the nutritional and sustainability profile of new ingredients, we can identify the aquaculture feed markets where these ingredients are most suited.

This trend has already started and today we are at 0.064% globally. Skretting's continuous research effort in identifying and evaluating novel ingredients can help us achieve the ambition outlined in our Sustainability RoadMap 2025 to source 5-10% of feed ingredients from novel alternative sources by 2025.



Samuel Eggington
Global Formulation Manager

Table 14: Targets regarding novel ingredients.

Our targets: Novel ingredients		
<p>Target: 5-10% of feed ingredients come from alternative novel sources.</p> <p>Our progress: 0.064% of our feed ingredients come from novel ingredients. Far from target but due to our research and testings testings we are ready to implement novel ingredients as and when they become available (read details here).</p>	●	<p>SDG sub-target 2.1/Business interpretation - Identifying new ways to feed the growing global population sustainably by transforming the global food system and agricultural production towards sustainable and environmentally sound practices.</p> <p>Recognising the responsibility of business for significant social and environmental impacts of agricultural production within the supply chain.</p>
<p>Target: The innovation stage gate process includes a sustainability filter (qualitative and quantitative) to ensure no environmental impact trade-offs and encourage the most significant environmental impact.</p> <p>Our progress: All innovations have been assessed with a sustainability filter.</p>	●	<p>Assessing social and environmental impacts of sourcing operations on farmers, workers, the marginalised/ underrepresented groups and the affected communities.</p>
<p>Target: For its overall R&D efforts, Nutreco invests a minimum of €30 million per year in innovation.</p> <p>Our progress: Nutreco's investment in innovation was 42.9 million in 2021. Skretting contributed with 19.2 million.</p>	●	<p>SDG sub-target 9.5/Business interpretation – Understanding that a transformative shift towards sustainable development requires a significant and equitable investment in education, training and lifelong learning.</p> <p>Enhancing scientific research and technological capabilities through investing in technology innovation R&D in own operations, recruiting R&D workers and providing sustainability training to employees.</p>

“Skretting’s continuous research effort in identifying and evaluating novel ingredients can help us achieve the ambition to source 5-10% of feed ingredients from novel alternative sources by 2025.”



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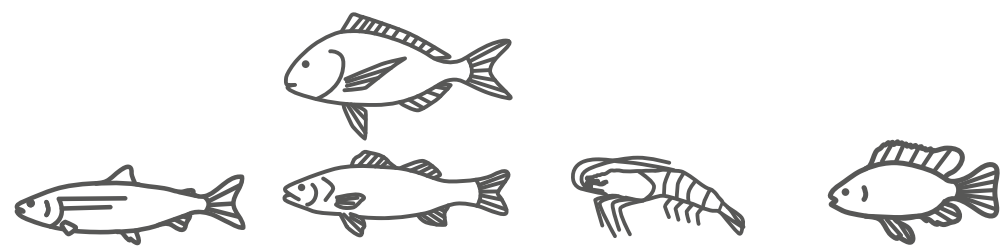
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Inclusion of different nutrients in Skretting feed

Table 15: Overview of the ingredients included in Skretting feeds, together with averaged inclusion percentages.

	Primary raw material	Ingredient group	Typical examples	 Salmon Seabass & sea bream Shrimp ² Tilapia				Average Skretting	
				average % inclusion in feed					
Protein	Wild capture and farmed fish and crustaceans	marine proteins	fishmeal crustacean meal	11.2	19.2	11.3	1.0	12.4	From the CEO
	By-products from farmed land animals	land animal proteins ¹	poultry meal	13.2	19.1	7.3	6.2	10.7	About this report
	Agricultural crops	vegetable proteins	wheat gluten corn gluten soybean meal soy protein concentrate rapeseed meal sunflower meal lupin faba	33.2	29.3	35.2	74.7	35.6	Food systems
Fat	Wild capture and farmed fish and crustaceans	fish oil	fish oil	9.7	8.7	1.4	0.2	6.6	The role of blue foods
	Agricultural crops	vegetable oils	rapeseed oil soybean oil camelina oil	17.7	3.5	7.3	0.1	10.9	Connecting our strategy
	By-products from farmed land animals	land animal oils ¹	poultry oil	1.4	1.3	0.0	0.0	0.8	Transparency and trust
Carbohydrates	Agricultural crops	starch raw materials	wheat	9.9	17.0	29.1	14.0	18.2	Key partnerships
Micronutrients	Micronutrients	vitamins minerals pigments	vitamin premixes mineral premixes pigments	3.6	1.9	8.4	3.8	4.7	RoadMap 2025

¹ Use of land animal by-products will depend upon market acceptance and legislation
² Level of starch raw materials will be different in extruded and pelleted feed

Our progress on novel ingredients

In 2017 we intensified our efforts to implement sustainable alternative ingredients for the future, and reduce the impact of market volatility, through the establishment of our novel ingredient category. We solidified the structure of previously executed R&D and established a new platform for scouting and sourcing novel ingredients.

Novel ingredients are defined as non-conventional feed ingredients, or those that need or have had further development before being utilised as alternatives for conventional ingredients traditionally used by feed manufacturers. We consider novel ingredients those that have been introduced to our formulations after 2015.

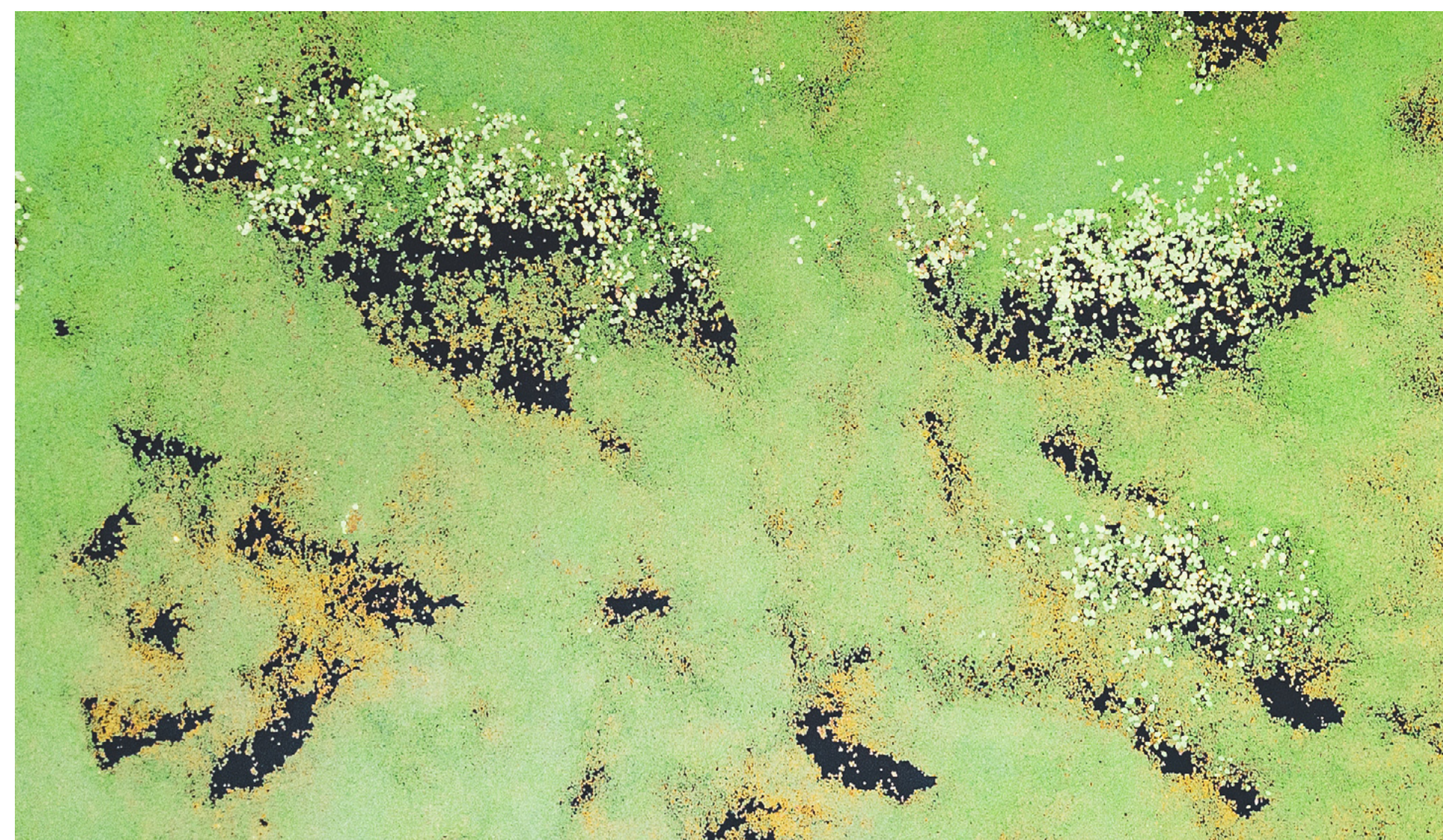
Since 2017, we have tested and identified close to 200 unique ingredient combinations that fall under the sub-categories EPA/DHA alternatives, insect ingredients and single cell proteins (SCP). Our research proves that many of the novel ingredients are well suited for aquaculture feeds, and initial carbon footprint calculations indicate that these ingredients have great potential. Based on scientific results and planned and continuous research we are ready to implement novel ingredients as and when they become available.

EPA/DHA alternatives, such as algae oil/meal and genetically modified rapeseed oil high in omega-3, are the most mature of the sub-categories. The production is both stable and scalable and these products are used in many regions. Competition from seasonally fluctuating traditional raw materials such as fish oil and vegetable oils, however, means they are often seen as high-end replacements of those. Scaling of production that can spark a decrease in prices and make the omega-3 replacements more competitive has not yet fully taken place. Commitment from the entire value chain is required for the next steps.

Insect ingredients are expected to commoditise within the next 5-10 years. The ability of insect larvae to convert and upgrade by-products from industrial side-streams and consumer waste facilitates the high-volume production of nutritious feed raw materials. Today, the majority of available insect ingredients are sold to the human nutrition and pet food markets. However, within 5-10 years, the volumes are expected to grow, and we predict that legislation will change so that increasingly more waste streams and by-products will be permitted to feed larvae. Consequently, scalability will take place and prices will come down. This process will pave the way for higher inclusions in aquaculture feed.

Single cell proteins offer many opportunities based on fermentation of industry side-streams around the world and we see a large potential for this sub-category of high protein feed ingredients.

Along with testing the physical and nutritional properties of the ingredients we also emphasise our requirements for life-cycle assessments in order to make sure the ingredients are not only fit for feed but also fit for the future.



Mette Lütcherath
Category Manager Novel Ingredients

“Based on scientific results and planned and continuous research we are ready to implement novel ingredients as and when they become available.”

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Metro Turkey brings more sustainable fish through Skretting Turkey's innovative feed solution

The project "The Feed of Today is The Food of Tomorrow" is designed to support sustainable fisheries, ensure the supply of sustainable raw materials and to protect the right of future generations to access nutritious and healthy seafood. The partnership between Metro Turkey, Skretting Turkey and Hatko Aquaculture has brought sustainable omega-3-rich fish to the market and created an opportunity for retailers to expand their nutritious and sustainable seafood offerings. Earlier in 2021 we communicated about this project on our website, and for this Sustainability Report we invited Metro to share their perspective.

Metro has been officially chosen as Turkey's most reliable and trustworthy seafood retailer. While we are glad and proud of this privilege and recognition, we are also aware of the great responsibility put on our shoulders.

This responsibility is not only towards our customers to whom we are committed to provide quality, assortment and service beyond standards, but even more towards oceans and seas that provide us these unique sources for healthy protein in form of seafood products.

Sustainability, which is core to our business, is also a passion for us at Metro Turkey. All the projects from the resource to the shelves are developed with this passion and focus.

We see the future of seafood in aquaculture, but feeding fish in farms with fish from oceans is not sustainable at all. Even though this is a global concern, we wanted to act as a global industry player and started to work on different sustainability projects three years ago.

With "Metro Premium Fish Project", we intended to use algae oil instead of fish oil for the first time in industrial scale, came to live basing on this passion, responsibility and concern. And of course, we would need partners who would share this passion and responsibility with us. So without hesitation we knocked at the doors of Skretting Turkey and with their great support, cooperation and devotion, we were able to make our first harvest and introduce this unique fish to the global markets.

We named our fish as "Happy Fish". Because we know if the fish is happy, so will be the customers.

We will save almost 500 tonnes of wild fish stocks while we produce 400 tonnes of fish until the end of 2022.

Now we feel a bit more comfortable both towards the oceans and our future generations. And we believe that the real impact will come if all partners in the supply chain are dedicated and engaged for the same goal. Therefore, our collaboration with Skretting is very valuable in this journey.

Sinem Türüng
CEO
Metro Turkey

"The partnership between Metro Turkey, Skretting Turkey and Hatko Aquaculture has brought sustainable omega-3-rich fish to the market and created an opportunity for retailers to expand their nutritious and sustainable seafood offerings."



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Packaging circularity

By 2025, our ambition is to make 100% of our packaging either recyclable, reusable or compostable. The first step in this journey has been to assess the current situation. To this end, we have created a database containing relevant aspects such as the materials, weight and composition of our packaging.

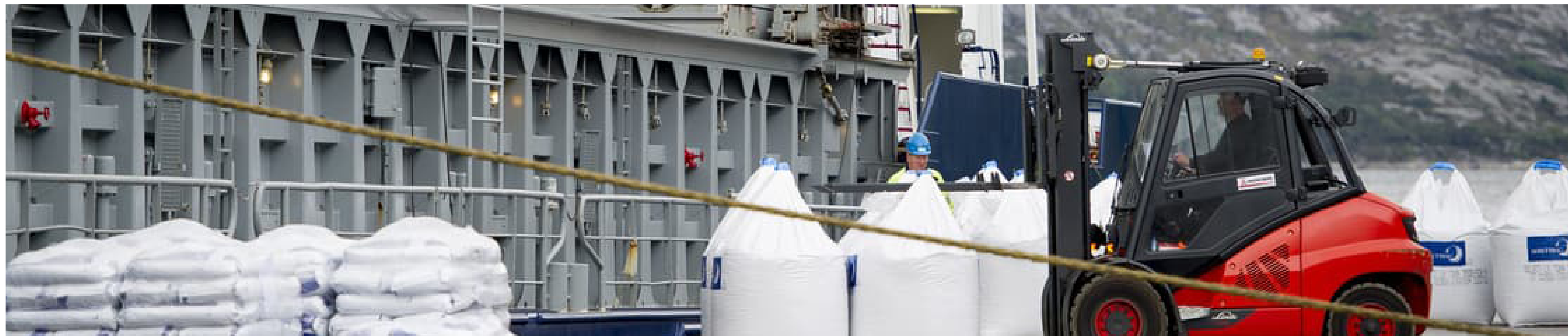
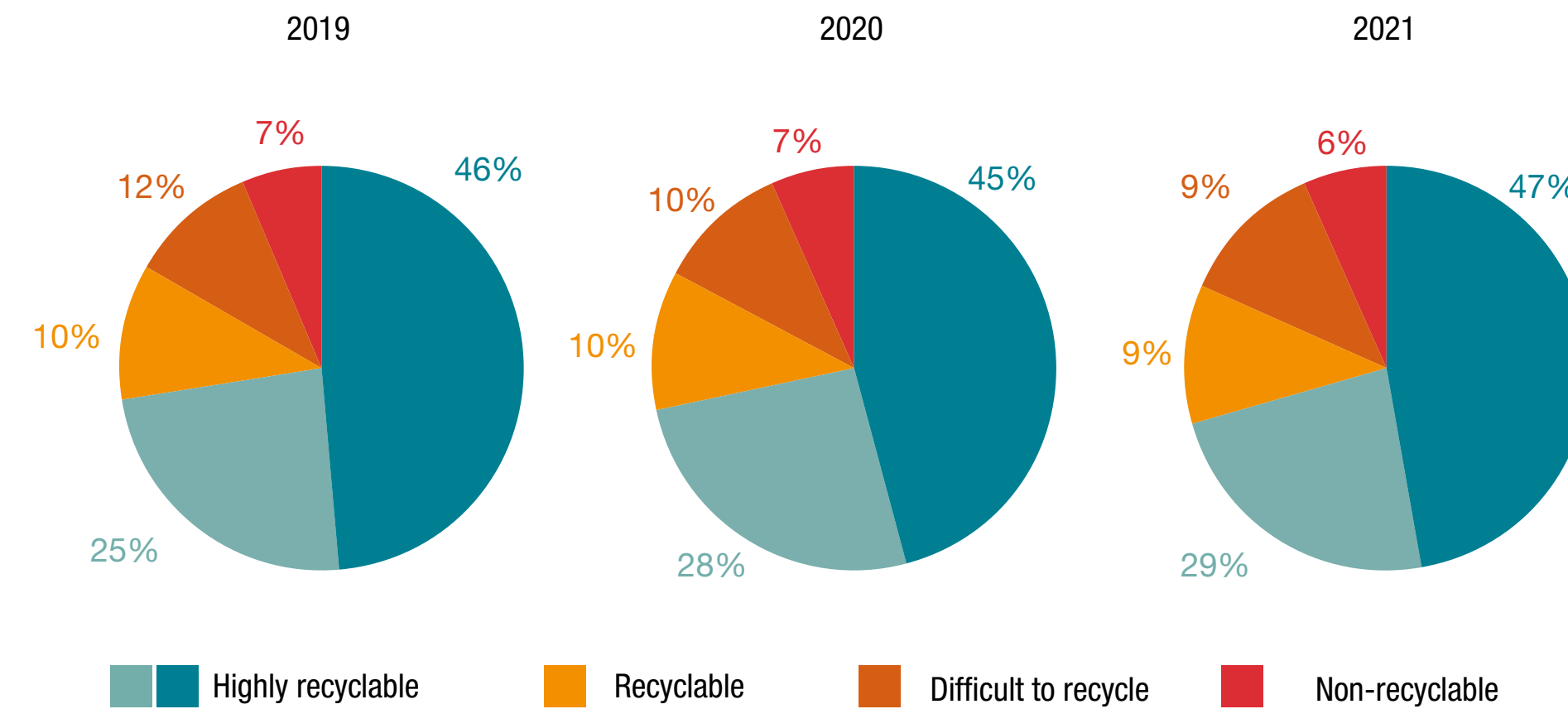
Feed bags are our main form of packaging. We separate these into three categories: paper bags, polyethylene bags and polypropylene woven bags. Each has its own set of unique challenges with regards to transitioning towards circularity.

The first aspect evaluated was recyclability. Packaging composed of a single material (“mono-material packaging”), is preferred in the recycling waste stream as it requires the least amount of sorting and processing. Using protocols developed by industry experts, such as **CEFLEX**, we performed a self-assessment. CEFLEX is a collaboration of over 180 European companies, associations and organisations representing the entire value chain of flexible packaging.

Over the past three years, we have achieved a gradual increase in our recyclable packaging. The majority already has excellent value in the recycling waste stream. Our assessment also identified the most problematic segment, which is considered as not recyclable. Moving forward, we are looking to replace this segment with suitable alternatives and improve on this baseline.

Our database also allows us to make comparisons within Nutreco providing valuable insights into options and potential synergies.

Figure 15: Percentage of packaging that is recyclable.



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Skretting Egypt – from high durability to high impact sustainability

To progress our ambitions for packaging circularity, Skretting Egypt has made a commitment to reusable packaging as an eco-friendly substitute to single-use packaging, collaborating with an award-winning design studio to craft fashionable bags using recycled Skretting packaging.

Skretting Egypt bags are manufactured from laminated woven polypropylene in Egypt, with high specifications of durability and water resistance. These elements make them easily reusable both in-house and by the community, both in Egypt and abroad.

The team from Skretting Egypt are currently in the R&D phase of a collaboration with the award-winning multinational Reform Studio to create fashionable high-end bags, woven from recycled bags into a special eco-friendly luxurious fabric embedded with Skretting's Fish symbol.

Reform Studio is internationally recognised for their innovations in sustainable design and their positive impact, both environmentally by activating a circular economy that re-uses its products and thus optimises waste management and protects the planet, and their social impact of reviving traditional crafts, supporting craftspeople and underprivileged women with a steady income.

In addition to the fashion market, Skretting Egypt has manufactured sustainable grocery bags which were distributed to 160 families of our local community and employees, guaranteeing seven years of continuous use, saving a minimum of 80,000 plastic bags ending up in landfills.

The local community in Egypt has been adept at utilising the resilience of Skretting's feed bags, turning them into truck covers, shed housing on farms, and both as a water-proof clothing layer to protect the farmers during fish harvest, and for the transport of crushed ice needed for fish display.



7

years of conscious use guaranteed

80,000

plastic bags saved from landfills

Reused bags as...

- Truck covers
- Shed housing
- Eater-proof clothing
- Transport of crushed ice

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Skretting and Mowi finalise pilot project for compostable bags in Chile

In January 2022 Skretting Chile made the first delivery of freshwater diets in sustainable bags to Mowi Chile. The move coincided with Mowi's objective of reducing the use of plastics, proposed by the company worldwide in its Corporate Sustainability Strategy.

The initiative is evaluating technical parameters based on the objectives of both companies, with encouraging results for the project coordinators.

The bag material is a degradable biopolymer that breaks down in as little as four months under ideal composting conditions. The packaging has already been validated in the manufacturing plant for small feed bags and Skretting Chile is now scaling up the project to review additional parameters to evaluate longevity in storage, temperature sensitivity and safety.

“The reduction of the use of plastic in each of the stages of our production cycle is established as a priority in our Corporate Sustainability Strategy. That is why we are very happy with this compostable bag initiative that we are carrying out together with our food supplier, because it is undoubtedly consistent and adds to other efforts that we are making as a company to continue advancing in this line,” says Constanza Aguirrebeña, Communications and Community Manager at Mowi Chile.

Skretting Chile is working to expand the offering to other customers during 2022.



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One of the cornerstones of our strategy is to employ talented and passionate professionals. Our committed employees, who feel proud to work for a global leader in animal nutrition and aquafeed, are the most important ambassadors of our employer brand.

During 2021, our employees continued to be significantly impacted by COVID-19. We saw the impact of further lockdowns, home-schooling, loss of social activities, and a strain on health systems and economies in the countries and communities where we operate. We are very proud of our people, who went the extra mile to ensure that our employees remained safe and received the support they needed to take care of themselves and their families.

Despite COVID-19-related challenges, we continued to invest in our employees and focused on the following areas in 2021:

- Acquiring and investing in talent.
- Shaping leadership behaviours.
- Building a more diverse workforce.

Table 16: Our targets regarding diversity and inclusion.

Our targets: Diversity and inclusion	
<p>Target: One out of three hires are female (starting in 2020).</p> <p>Our progress: 32% of our hires was female in 2021.</p>	<p>●</p> <p>SDG sub-target 5.5/Business interpretation – Ensuring all workers – women and men – have an equal voice in the workplace, including through adequate grievance mechanisms.</p> <p>Including non-discrimination clauses in supplier code of conduct policies and supporting suppliers in advancing gender equality and women’s empowerment.</p>
<p>Target: 30% women in senior leadership by 2025.</p> <p>Our progress: 28% of our senior leadership is female.</p>	<p>●</p> <p>Supporting women’s leadership and ensuring sufficient participation of women in decision making and governance bodies at all levels and across business areas.</p> <p>SDG sub-target 5.5/Business interpretation – Setting internal targets for the number of women at each level/position within the organisation.</p>
<p>Implement the Taking the Stage programme, established in 2020, to help facilitate this transition.</p> <p>Our progress: The taking the stage programme is fully implemented within Nutreco.</p>	<p>●</p> <p>SDG sub-target 5.5/Business interpretation – Investing in female leadership programmes, to help enable women to progress in their careers, and expand and develop their leadership skills.</p>

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The Skretting workforce in 2021

Table 17: Our targets regarding community development.

Our targets: Community development	
<p>Target: Expand community development and community engagement initiatives to touch the lives of 12,000 people in the communities where we operate. This can be through direct development with small farmers at or near economic poverty levels (eg, earning less than €1.90/day) that helps raise their incomes above poverty levels or direct engagement with local communities in projects that raise awareness of sustainability, educational initiatives and community improvements.</p> <p>Our progress: In 2021 we have engaged with around 7,000 people on a Nutreco level in the communities in which we operate through community development and engagement projects.</p>	<p>SDG sub-target 1.2/Business interpretation – Paying employees at a minimum the living wage, taking into consideration the needs of workers and their families, the general level of wages in the country, the cost of living, social security benefits, and the relative living standards of other social groups.</p> <p>Developing adequate, affordable and accessible products and services for low-income populations</p> <p>SDG sub-target 2.1/Business interpretation – Identifying new ways to feed the growing global population sustainably by transforming the global food system and agricultural production towards sustainable and environmentally sound practices.</p>
<p>Organise a Local Community Day each year where Nutreco employees engage in projects to help the local community.</p> <p>Our progress: Due to COVID-19, only 13 of Nutreco’s business were able to organise a Local Community Day.</p>	<p>SDG sub-target 2.1/Business interpretation – Undertaking responsible investing, impact investing, community investing and social impact investing.</p>

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Table 18: Overview of employees distribution by gender, geography and nationality.

Year	2021	Female	Male
Total number of employees	3,238	656	2,582
Africa	156	21	135
Asia Pacific	935	166	769
Europe	830	258	572
North America	176	32	144
South and Central America	1,141	179	962
Number of nationalities working at Skretting	56		
Gender balance: Senior management N13 and above (% women)	28%		

3,238
employees

5
continents

56
nationalities



Catfish sustainability project – generating income for marginalised farmers in Nigeria

The Catfish Sustainability Project is a social intervention for catfish farmers funded by Nutreco and Skretting Nigeria and facilitated by our local NGO partner, the Justice Development and Peace Commission, Ibadan. The project aims to improve the performance of small-scale catfish farmers through increased productivity and income generation, promotion of best management practices to ensure environmental sustainability, and facilitation of an organised catfish farmers' structure to engage stakeholders' participation in catfish production.

After the fifth phase in December 2021, the project had reached a total of 798 catfish farmers, aggregated in 46 groups in Oyo and Ogun States, Nigeria.

Between 2016 and 2021, 78.5% of trained farmers have adopted at least two of the innovations on best management practices. Likewise, there has been an increased average profit per farmer from 11% to 39%, an increase to catfish survival rates from 69% to 95%, and a doubling of average harvest weight from 600g to 1.2kg. The adoption of a more responsible production systems by participating farmers has led to the production of healthy catfish for consumption and environmental sustainability.

Twenty-eight catfish farmer groups were able to sustain a fully established cooperative/thrift model. The farmer's groups are being connected to form organised structures. Participants learned to be flexible and better adapt to challenges that would have threatened their businesses.

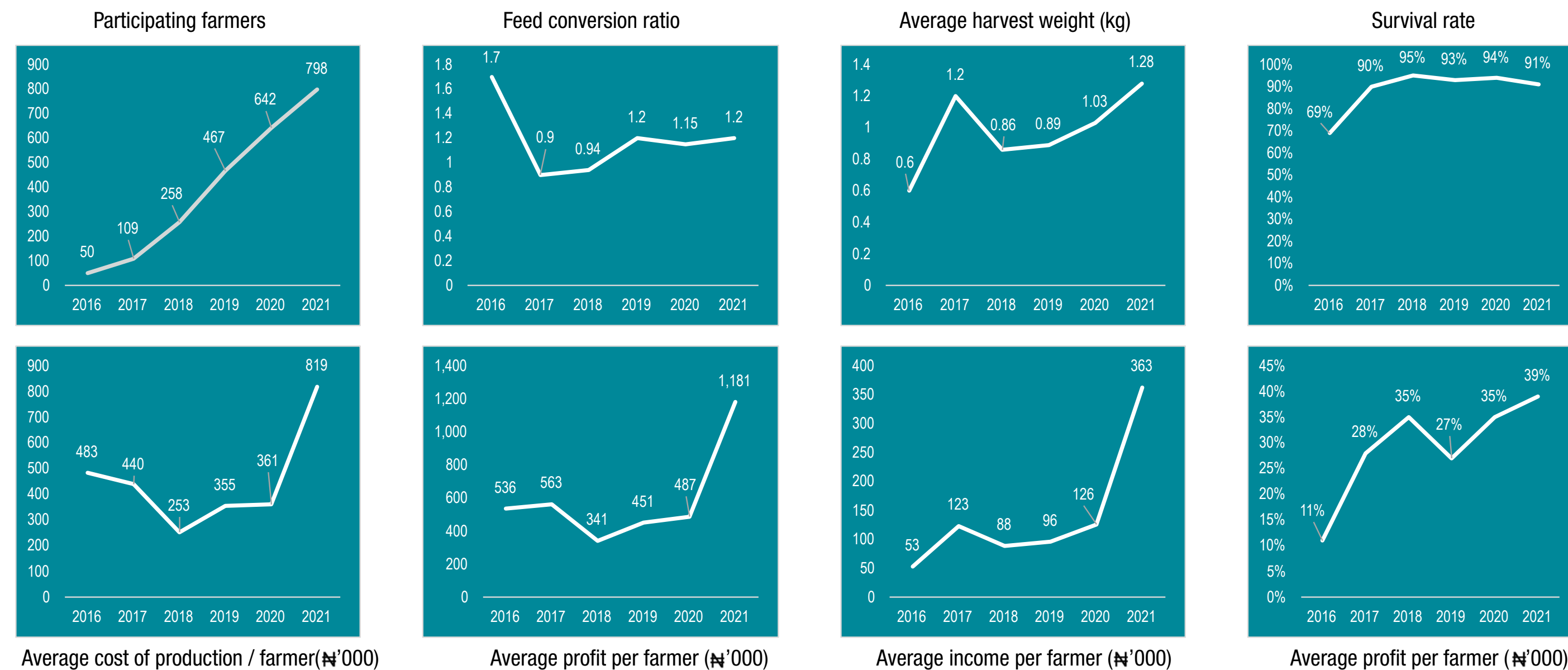
Read Oyelami Toyese's customer success story in [Nutreco's Sustainability Report](#).

798 catfish farmers. **39%** increased average profit per farmer.

Doubling of average harvesting weight.



Figure 16: Progress overview of the catfish sustainability project within different dimensions.



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Beach clean-up to remove plastics from the oceans

It is estimated that eight million tonnes of plastic pollution enter the oceans every year and that marine plastic pollution creates up to 2.5 trillion dollars a year to the world. With the aim to promote actions to reduce ocean plastics pollution and as part of SeaBOS' transformation efforts for a healthy ocean, Skretting and Nutreco participated in a coastal clean-up for marine plastics, which contributed to remove some plastics and, at the same time, to communicate the challenges that ocean plastics present for the marine environment, as well as show that 'individual actions can have impact'.

Colleagues from the Skretting central office in Norway, in addition to Chile and Turkey joined the initiative on the coasts. Additionally, although COVID-19 restrictions presented challenges to organise the initiative, our team in Nutreco Asia engaged with the spirit of the initiative and collected plastics at their own homes. In total, more than 170 colleagues contributed to remove approximately 650 kilograms of plastics out of the oceans during the activity.



Skretting partners with the Inspiring Girls Foundation in Chile

In 2021, Skretting Chile and the Inspiring Girls Foundation collaborated to host talks by leading women among the industry for high school girls from different cities of the region in which we operate. This initiative provided spaces for students to hear the experience of nine professionals from Skretting Chile, who shared their stories of personal and professional life in three different conversations that gathered more than 80 girls in the region.

María Jesús Saldes, Organisational Development Manager at Skretting Chile remarked on how powerful the experience was, both for the company's professionals and for the teenagers and girls in the region. "For the women of our company, it has been a tremendously inspiring experience to share their own journey to inspire teenagers who are exploring options for their future and who receive these meetings as a great push to choose the future they are dreaming of. This also allowed our team to review their own professional careers, remembering their own paths, something of great personal value for each of them. As Skretting Chile it fills us with pride to participate in these activities, which we will undoubtedly continue to support and promote over time."

Skretting Chile will continue to carry out knowledge transfer activities to strengthen female empowerment among girls and teenagers from the region through its alliance with Inspiring Girls.



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Giving a hand in Latin America

The 'giving a hand' project was initiated on August 2021 in Ecuador and is centred around caring for women, animals and the planet. It was sparked by the donation of medical supplies to the "Casa de la vida" foundation.

Located in the north of Guayaquil in Ecuador, the foundation receives around 1000 women per month, who are then supported during their pregnancy and after birth. Skretting Latam originally supported a group of 21 women, providing training on entrepreneurship, advice on legal considerations for starting a business, tips on how to prepare a good CV, as well as marketing and finance.

The Skretting team hosted the women for local team events, such as National Day and Christmas celebrations. Over the coming years Skretting Ecuador plans to support another group of women.

In addition to the support of women, one tonne of dog feed is donated every month to the "Alma Animal" animal shelter, and during November and December of 2021, eight employees spent weekends volunteering. To support in finding connecting people who want to adopt animals or monetary donations, the marketing team have been supporting the shelter to develop their website and social media networks.

To care for the environment, a number of initiatives were activated in 2021, including recycling, energy and water saving campaigns. Thirty tonnes of waste were collected from the streets surrounding our facilities from 2017 until 2021, with support from other local companies and our suppliers.

To enable more efficient recycling, plastic collection points were added to each facility in 2021. The collected plastic was sold to approved companies, and the proceeds were donated to a cancer foundation for children.

Skretting Japan coordinates local community-led projects to increase fish sales and consumption

Japanese yellowtail consumption decreased in 2021 due to COVID-19, financially impacting our customers. To combat these impacts, Skretting Japan facilitated projects to promote fish consumption in metropolitan and local production areas.

The sales team connected multiple stakeholders up- and downstream in the value chain to develop promotional strategies for high-quality yellowtail from the Sukumo area, as well as offering practical support to measure fish and analyse condition factors prior to harvest - essential for final quality.

Selected fish were distributed, promoted and sold to supermarkets in metropolitan areas. Promotional materials were developed in collaboration with school children from Sukumo, resulting in increased interest in yellowtail far from the production sites.

Our Skretting team has created delicious fish recipes and set up a food stall during professional football matches to increase local awareness and consumption. During this campaign, over 2,000 yellowtail burgers were sold. All profits were donated to Sukumo city to support the local aquaculture industry and child education.



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Skretting Egypt supporting local shrimp farming pioneers

Consumer demand for shrimp in Egypt has historically been dependent on imports, however in recent years success has been increasing. Our team from Skretting Egypt has been focused on facilitating the success of the industry through technical training and education. The remarkable results we achieved were very much worth the effort that emerged into an impressive success story.

Through our global networks and collaborations, Skretting Egypt facilitated training for hatchery owners in Ecuador to learn best-practices and technical knowledge from the world's leading shrimp producers.

The team also assisted farmers to import equipment and water treatment products and continued providing support through technical consultation, including feed and farm management, as well as ways to increase their profit with high survival rate, growth rate and optimum feed conversion ratio.

The impact left in the Egyptian market is an immense source of pride for the local team, particularly after hearing the testimonials of the farm owners.

“This is the first time I have generated a profit from shrimp farming because Skretting supported me by technical service and good feed”, says Ahmed Nassar.

“Skretting is transforming Egypt’s Shrimp Aquaculture with technical service & good feed!”

“Skretting helps us to succeed in shrimp farming. My results are very good with FCR around 1.5 and sales revenues around 70%.”- Moatas Abu Omer.

“Skretting is transforming Egypt’s Shrimp Aquaculture with technical Service & good feed!” - Yousef Aldeep

Skretting is now producing shrimp feed in Egypt, becoming the first world-class local producer and decreasing the need for external imports. This plays a big role in shrimp farming success, through its inception and the resulting well-fed and high-quality shrimp.



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About Skretting

Skretting is the global leader in providing innovative and sustainable nutritional solutions for the aquaculture industry. Skretting has production facilities in 18 countries, and its 3,483 employees manufacture and deliver high-quality feeds from hatching to harvest for more than 60 species. The head office is in Stavanger, Norway.

Skretting is the aquaculture business line of Nutreco, which is headquartered in Amersfoort, the Netherlands. Nutreco is owned by SHV Holdings, a privately-owned Dutch trading company, regarded as one of the world's largest private trading groups. SHV is a highly diversified company, with interests in transport, retail, oil, food and financial services. It currently employs around 60,000 people and operates in 58 countries.

OUR PURPOSE

Feeding the Future



The vision that inspires us

Together with our customers, suppliers and partners, we lead innovation to ensure access to more sustainable, healthier and safer seafood for the world's growing population.

The values we live by

Skretting follows a global culture that is open, in which all our people care deeply about what they do, about each other and the environment in which they work. To fulfil our purpose of 'Feeding the Future', we adhere to four clearly defined core values – Innovative, Caring, Collaborative and Capable – which are adopted throughout Nutreco. Our values are underpinned by SHV's most important values of integrity and loyalty.

Our results

In 2021, Skretting produced 2.6 million tonnes of aquaculture feed. Sales were highest in the Americas and Europe. The turnover for the Skretting Division in 2021 was 2.5 billion euros.



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Our approach to Ethics & Compliance

Skretting's efforts of embedding and enforcing Ethics & Compliance (E&C) policies, as well as understanding and mitigating risk, made good progress also in 2021. In recent years we have introduced a number of new or updated policies, procedures and training modules for E&C. In 2021 our [Code of Conduct](#) was given a makeover, but other than that we did not introduce any major additions to the compliance program. As such, the compliance program in Skretting is for most OpCo's now transitioning from an "introduction and implementation-phase" to more of a "maintenance and modification-state".

By the end of 2021 all OpCo's had completed topic-specific risk assessments for Anti-Bribery and Corruption and Competition Law Compliance together with their dedicated E&C resource. The overall takeaway from these exercises has been that risks are generally well understood and mitigated to an appropriate degree. Employees and managers are aware of activities that require extra caution and know to contact E&C for advice in such cases. E&C is frequently asked to provide written advice to managers who will ultimately approve or reject requests. E&C logs any advice given in a central register and is thereby gradually building a comprehensive database that can be accessed for consistency and best practice, as well as for audit purposes.

In addition to the above-mentioned advice requests and topic-specific risk assessments, E&C (2nd line) and first line management remains closely connected through regular reporting and meetings. Every OpCo has appointed a Local Compliance Champion (LCC) from among its management team, who assists the General Manager on compliance and reporting. During 2021, E&C initiated a network for the LCC's where they can meet and exchange experience, best practices and concerns for the benefit of local as well as global compliance efforts. The aim is to organise webinars for the LCC's at least twice a year and for E&C to communicate with them more frequently via email bulletins etc. During 2021 we also introduced an electronic conflicts of interest disclosure process covering all employees with system access. It helped to raise awareness on this particular issue and reminded people of their duty to disclose any (potential) conflicts to next level management so proper measures can be considered.

Based on 1) the data received from periodic reports, 2) various 'soft controls'/ culture surveys, 3) regular meetings and ad hoc discussions with GMs, LCCs and other employees, 4) numerous recent and thorough risk assessments, 5) the employee engagement survey results, 6) internal audit observations, and 7) a low number of Speak Up reports; we believe that the effectiveness and management support of Nutreco's compliance program in Skretting OpCos is satisfactory. However, we remain fully dedicated to take further improvement initiatives. For the coming year we plan to complete a repetition e-learning campaign for our Code of Conduct, and strengthen the E&C function both in terms of human resources and tooling.

“Skretting's efforts of embedding and enforcing Ethics & Compliance (E&C) policies, as well as understanding and mitigating risk, made good progress in 2021.”



Olav Kjeldstad
Ethics & Compliance Director



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Occupational health and safe work

We care about the health, safety and security of our employees, contractors, visitors and the communities in which we operate. We are committed to promoting a safe working environment of continuous improvement, trust and mutual collaboration.

In 2021, we fully embraced SHV's purpose, "Courage to Care", and positioned health and safety more centrally in our business and our ways of working. We set up a dedicated Global Health, Safety and Environment (HSE) Centre of Expertise to lead and support this across the company, and launched many activities to promote leadership behaviour and control operational risks.

To help prevent accidents and work-related illnesses, Nutreco has developed its NuSAFE principles, a set of policies, manuals and standards, which include four elements:

- Visible Felt Leadership
- A knowledgeable and competent workforce
- A well-designed and maintained workplace
- Safe behaviour

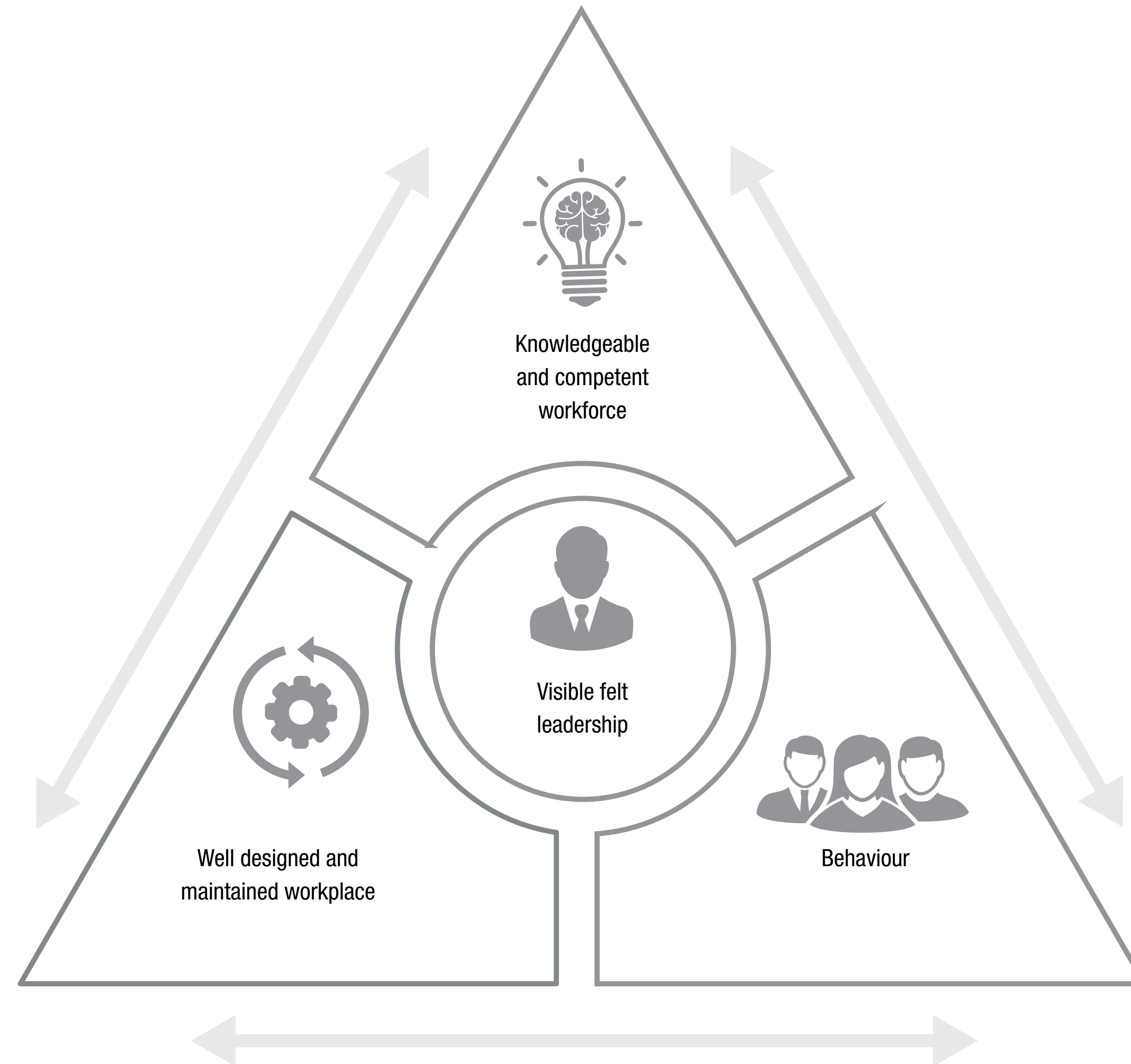
We are working to ensure all four elements are in place and continuously improved across Nutreco's operations globally. Each element is critical and linked to the others; we will ensure our sites never rely on any one element, but rather take a holistic and integrated approach to HSE risk management.

Read more details about how we address these four elements and our progress on [Nutreco's Sustainability Report](#).

Table 19: Skretting HSE at a glance 2021 vs 2020.

SKRETTING	2021	2020
Serious Injuries and Fatality Injuries (SIF)	1	1
Potential Serious Injury/Fatality (PSIF)	56	25
Total Recordable Frequency rate (TRCF)	1.19	0.97

Figure 17: NuSAFE principles overview (Source: Nutreco).



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Our role in the value chain

Figure 18: Value chain overview.



Primary producers

Agricultural crops, land farming and wild fisheries are directly and indirectly used for food, feed and energy. If not managed properly, primary producers of feed ingredients can contribute to a loss of biodiversity, climate change and human right violations. We have been actively working on eliminating deforestation in our supply chain and setting up a reduction strategy for scope 3.

Feed ingredients manufacturers

Raw materials are processed into ingredients that can be made into fish and shrimp feeds. Feed ingredients are selected for the nutrients they can provide, the absence of anti-nutritional or undesirable substances, economics and sustainability credentials.

Despite the challenge of finding the right balance between price and quality, we have been working on increasing our novel ingredients use and innovative feed additives.

Skretting

Skretting converts ingredients into innovative fish and shrimp feed products. Our operations are built upon a solid foundation of human resources provided with good labour conditions and a safe working environment.

Farmers

Farmers feed their fish and shrimp to grow high-quality and nutritious food. Aquaculture and livestock farming performance is determined by animal health, nutrition and farm management. We have been actively launching initiatives to stimulate a more responsible use of antibiotics by the farmers and developing on farm environmental footprint tools.

Food distributors and retailers

Food distributors have an important role to play in promoting and advancing sustainable consumption and production of seafood and livestock products. We have been actively working on collaborations with food distributors and retailers to bring more sustainable seafood and livestock products to the market.

Consumers

People purchase and eat high-quality, safe and nutritious seafood products.

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Our operations



1 SKRETTING CENTRAL OPERATIONS

Head office: Skretting
Head office: Skretting Aquaculture Innovation (A)

1 SKRETTING NORWAY

Plants: Stokmarknes, Averøy and Stavanger
Feed for: Atlantic salmon, seawater trout, cod, halibut, catfish and wrasse

2 SKRETTING FRANCE

Plants: Vervins and St Hervé
Feed for: Freshwater trout, sea bass, sea bream, turbot, salmon, catfish, tilapia, sturgeon, eel, carp and shrimp

3 SKRETTING ITALY

Plant: Mozzecane
Feed for: Freshwater trout, sea bass, sea bream, sturgeon, eel, catfish and carp

4 SKRETTING CHILE

Plants: Osorno and Pargua
Feed for: Atlantic salmon, pacific salmon, freshwater and ocean trout, tilapia, shrimp and yellowtail amberjack

5 SKRETTING SPAIN

Plant: Cojóbar
Feed for: Freshwater trout, sea bass, sea bream, turbot, sole, meagre, eel, carp, catfish, amberjack and sturgeon

6 SKRETTING CANADA

Plants: Vancouver and St Andrews
Feed for: Atlantic salmon, arctic char, pacific salmon, sable fish, sturgeon, trout, halibut and tilapia

7 SKRETTING JAPAN

Plant: Imari
Feed for: Yellowtail, red sea bream, bluefin tuna, amberjack, striped jack, sea bass, freshwater and seawater trout, coho salmon

8 SKRETTING AUSTRALIA

Plant: Hobart
Feed for: Atlantic salmon, chinook salmon, barramundi, yellowtail kingfish, abalone, prawn, freshwater and seawater trout

9 SKRETTING EGYPT

Plant: Belbies
Feed for: Tilapia, catfish, mullet, carp and sea bass

10 SKRETTING USA

Plant: Salt Lake City
Feed for: Barramundi, char, catfish, hybrid striped bass, koi, largemouth bass, pacific salmon, sturgeon, steelhead, tilapia and trout

11 SKRETTING TURKEY

Plant: Güllük
Feed for: Freshwater trout, carp, sea bass and sea bream

12 SKRETTING VIETNAM

Plants: Ho Chi Minh City and Long An Province
Feed for: Black tiger shrimp, whiteleg shrimp, giant freshwater prawn, red tilapia, snakehead, climbing perch, pangasius, sturgeon, Asian sea bass, grouper, cobia, clown featherback, snakeskin gourami and pompano

13 SKRETTING CHINA

Plant: Zhuhai
Feed for: Whiteleg shrimp, black tiger shrimp, trout, sea bass, snakehead, golden pompano, catfish and sturgeon

14 SKRETTING NIGERIA

Plant: Ibadan
Feed for: African catfish and tilapia

15 SKRETTING ECUADOR

Plants: Guyaquil x 3
Feed for: Shrimp, tilapia and trout

16 SKRETTING HONDURAS

Plant: San Francisco de Yojoa
Feed for: Shrimp and tilapia

17 SKRETTING INDIA

Plant: under construction
Feed for: Whiteleg shrimp, sea bass, tilapia

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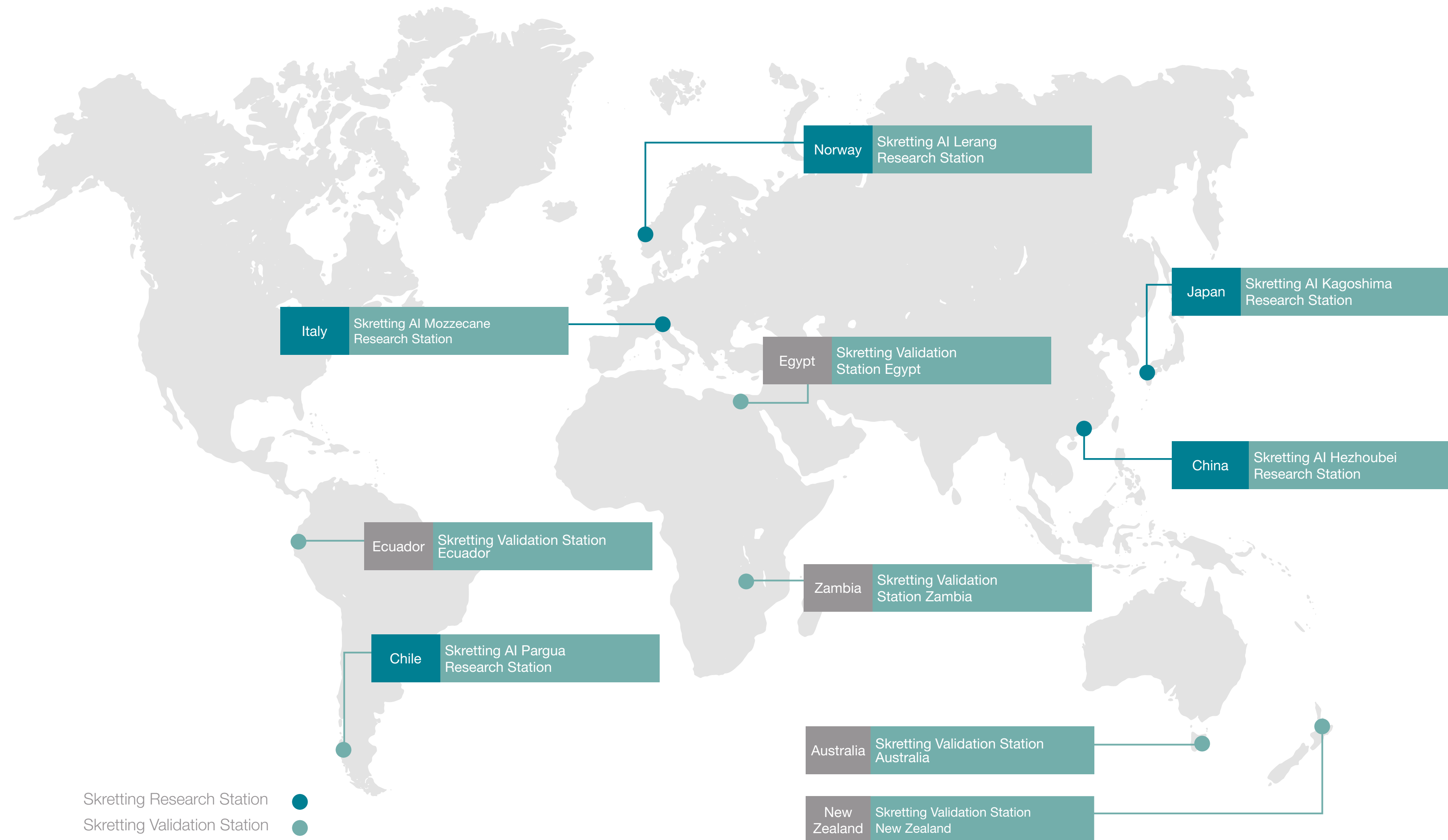
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R&D and validation



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Certifications

In 2021, our OpCos continued to work closely with third-party independent bodies, customers and local authorities to ensure compliance with standards, regulations and certifications to guarantee the consistent formulation and production of high-quality nutritional solutions for fish and shrimp.

Skretting OpCos are certified to a number of ISO standards which help us ensure that we have consistent quality systems and continuous improvement. We are also certified according to private standards that are important for our customers to gain market access. Below is an overview of certifications and compliance held by our OpCos.

Nutrace® is Skretting's company-wide management programme that ensures feed-to-food quality and safety. All internal operations are audited, and all suppliers undergo a comprehensive evaluation and approval process to ensure premium-quality, renewable and responsibly managed resources. We conduct robust analyses of all approved raw materials - at delivery, throughout the formulation process, and up to the point of feed delivery.



Table 20: Certification overview across OpCos.

	ISO 9001	ISO 14001	ISO 22000	HACCP	GlobalGAP	BAP	ASC (compliant)	Organic	OHSAS 180001	Other
Skretting ARC										ISO 17025
Skretting Australia										FeedSafe
Skretting Canada										Feed Assure
Skretting Chile										ISO 45001
Skretting China										
Skretting Ecuador										Naturland, GMP, Punto Verde
Skretting Egypt										ISO 45001
Skretting France										Label Rouge, VLOG, Naturland, FQC
Skretting Honduras										GMP
Skretting Italy										Naturland Organic
Skretting Japan										
Skretting Nigeria										
Skretting Norway										Debio, VLOG
Skretting Spain										Halal, CIPA
Skretting Turkey										Halal
Skretting USA										
Skretting Vietnam										

Compliant = fulfilling requirements without certification.

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Stakeholder engagement

We believe that engaging with internal and external stakeholders is key to ensuring we invest the right focus and effort in continuous improvement and dealing with the complex issues that face the future of sustainable food. Through active conversations with several stakeholder groups, we benefit from their diverse perspectives as we explore our solutions. We identify our stakeholders as any group or individual Nutreco affects through its activities or products and services or who, in turn, may affect Nutreco's ability to achieve its goals. Using this definition, we recognize six main stakeholder groups: Employees, government, external platforms for specific sustainability topics, food retail and services, academia and NGOs.

Table 21: Overview of stakeholder groups and their expectations, engagement and activities.

Stakeholder group	Concerns and expectations	How we engage and how often	Main topics and activities addressed in 2021
Employees	<ul style="list-style-type: none"> • What is the company strategy? • What is our financial performance? • What is the company going to do around cost cutting? • Do we need to close our factory? • How can I make a (international) career at Nutreco? 	<ul style="list-style-type: none"> • Regular (local) town hall meetings. • Monthly broadcasted interviews with leadership. • Nutranet (intranet) announcements. • Divisional strategy updates (annual or bi-annual). • Annual European Works Council. • Regular local Works Council. 	<ul style="list-style-type: none"> • 2024 long-term strategy. • 2020 financial performance. • Restructuring activities (Innovation). • Company performance in the industry (including awards). • Integrations (CA) or benefit harmonisation (global).
Government	<ul style="list-style-type: none"> • Protection of consumer and animal health. 	<ul style="list-style-type: none"> • Showing leadership through continuous organisation of and participation in relevant stakeholder platforms, focusing on solutions. • Launching nutritional solutions. 	<ul style="list-style-type: none"> • Establishing new regulatory possibilities for innovations (e.g.eg, nutritional solutions as part of integrated multi-stakeholder “feed-farm-health” concept).
Platforms for specific sustainability topics	<ul style="list-style-type: none"> • Deforestation for commodity production. 	<ul style="list-style-type: none"> • Developing soy and palm sourcing policy in alignment with RoadMap 2025. 	<ul style="list-style-type: none"> • Implementing purchasing decision based on policies.
Food retail and foodservice	<ul style="list-style-type: none"> • GHGs and novel ingredients. 	<ul style="list-style-type: none"> • Engaging with supply chain to increase novel ingredients 	<ul style="list-style-type: none"> • Coordinating efforts to offer solutions for farm shrimp produced in LATAM.
Non-Governmental Organisations (NGOs)	<ul style="list-style-type: none"> • Overfishing ocean species for marine ingredients supply. • Deforestation for soy commodity production. 	<ul style="list-style-type: none"> • Engaging in FIPs • Collaborating on platforms that address specific concerns 	<ul style="list-style-type: none"> • Joined an FIP for West African fisheries. • Improving transparency and traceability around deforestation-free soy.
Academia	<ul style="list-style-type: none"> • R&D collaboration and validation of animal performance on circularity, health (AMR reduction) and welfare, and emissions reduction. 	<ul style="list-style-type: none"> • Setting up or intensifying collaborative projects. • Engaging with over 80 academic institutions around the world. 	<ul style="list-style-type: none"> • Product development and joint projects.

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Global stakeholder platforms

MarinTrust

MarinTrust, formerly known as the Global Standard for Responsible Supply (IFFO RS) has become the leading independent business-to-business certification programme for the production of marine ingredients. Skretting is a member of the MarinTrust governance board. The main purpose of the standard is:

- To ensure that whole fish used come from fisheries managed according to the FAO Code of Conduct for Responsible Fisheries.
- To ensure no Illegal, Unreported and Unregulated (IUU) fishery raw materials are used.
- To ensure pure and safe products are produced under a recognised Quality Management System, thereby demonstrating freedom from potentially unsafe and illegal materials.
- To ensure full traceability throughout production and the supply chain.

Sustainable Fisheries Partnership

Skretting is a sponsor of the Sustainable Fisheries Partnership (SFP). This non-profit organisation fills a specific gap between industry and the marine conservation community, utilising the power of the private sector to help less well-managed fisheries meet the environmental requirements of major markets. Their work is organised around two main principles: making available up-to-date information on fisheries for the benefit of major buyers and other fisheries stakeholders; and using that information to engage all stakeholders along the supply chain in fisheries improvements and moving toward sustainability. SFP operates through two main principles: information and improvement.

Global Salmon Initiative

An important way in which Skretting is helping advance the salmon sector is through its membership of the Global Salmon Initiative (GSI). In partnership, GSI salmon farmers and feed companies have committed to working precompetitively together to accelerate progress towards ever increasing standards of sustainability for the farmed salmon industry, and to driving progressive innovation in the feed sector.

Skretting is a proud Associate Member of GSI. These are organisations that have a shared interest in the continued growth and prosperity of the farmed salmon industry as well as a shared commitment to improving the sustainability of the sector.

Associate Members work closely with the GSI members on specific projects where shared knowledge and collaborative working will support accelerated progress.

The ProTerra Foundation

Skretting is member of the ProTerra Foundation which is a not-for-profit organisation that advances and promotes sustainability at all levels of the feed and food production system. A commitment to full transparency and traceability throughout the supply chain and concern for corporate social responsibility and the potential detrimental impact of herbicide-resistant, genetically modified crops on ecosystems and biodiversity is at the heart of everything we do.

Independent third-party certification is central to the Proterra Foundation. ProTerra certification ensures that high quality supplies of crops, food, and feed are independently certified and produced with improved sustainability.

UN Global Compact

Nutreco is a member of The United Nations Global Compact programme. This is a non-binding United Nations pact to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report on their implementation. The UN Global Compact is a principle-based framework for businesses, stating ten principles in the areas of human rights, labour, the environment and anti-corruption. Under the Global Compact, companies are brought together with UN agencies, labour groups and civil society. Nutreco has been a member since 2015.

SeaBOS

In 2021, Skretting continued to be a key contributor to the Seafood Business for Ocean Stewardship (SeaBOS) initiative. CEOs from the 10 largest global seafood companies have joined forces through SeaBOS to create transformative change. The work is divided into five task forces: (1) Illegal, Unreported and Unregulated (IUU) Fishing & Modern Slavery, (2) Transparency and Traceability, (3) Improving Regulations, (4) Internal Governance and (5) Innovation.

Round Table on Responsible Soy

Nutreco is member of the Round Table on Responsible Soy (RTRS), which is a civil organisation that promotes responsible production, processing and trading of soy on a global level. RTRS encourages current and future soybean to be produced in a responsible manner to reduce social and environmental impacts while maintaining or improving the economic status for the producer through the development, implementation and verification of a global standard.

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Roundtable on Sustainable Palm Oil

Nutreco has been a member in good standing of the Roundtable on Sustainable Palm Oil (RSPO) since near its inception. Committed to this multi-stakeholder platform, we purchase green palm certificates for all our palm oil products excluding kernel oil.

New York Declaration on Forests

Skretting is a signatory of the New York Declaration on Forests (NYDF), which is a voluntary and non-binding international declaration to take action to halt global deforestation. It was first endorsed at the United Nations Climate Summit in September 2014, and by October 2017 the NYDF supporters grew to include over 191 endorsers: 40 governments, 20 sub-national governments, 57 multi-national companies, 16 groups representing indigenous communities, and 58 NGOs. These endorsers have committed to doing their part to achieve the NYDF's 10 goals and follow its accompanying action agenda.

Aquaculture Stewardship Council

Established in 2010, the Aquaculture Stewardship Council (ASC) is a robust and credible environmental/social standard in the farmed seafood sector. It currently has over 1.6 million tonnes of farmed seafood independently certified and compliant to the standard. Nutreco's Sustainability Director sits on the Supervisory Board of the ASC. Currently Skretting is a member of the steering committee overseeing the work related to develop an ASC Feed Standard.



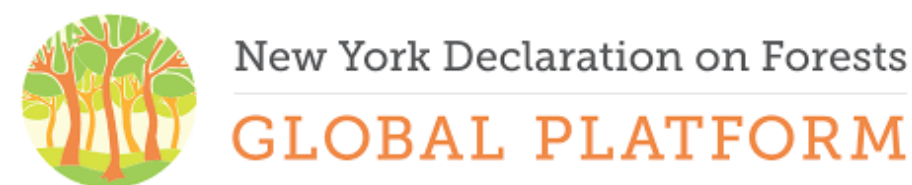
Sustainable Shrimp Partnership

Skretting is a founding member of the Sustainable Shrimp Partnership (SSP), a group of leading companies who share one mission: to make shrimp aquaculture a clean, stable, and successful practice for the world. In order to reach that goal, the leaders have set a clear and ambitious plan to elevate the whole sector to the next level.

Global Aquaculture Alliance

Skretting is a member of the Global Aquaculture Alliance (GAA), an international non-profit organisation that promotes responsible aquaculture practices through education, advocacy and demonstration. For over 20 years, GAA has demonstrated a commitment to feeding the world through responsible and sustainable aquaculture.

It does this by providing resources to individuals and businesses worldwide who are associated with aquaculture and seafood. They improve production practices through partnerships with countries, communities and companies, as well as online learning and journalism that has an active readership in every country of the world.



GlobalGAP

Skretting is member of GlobalGAP, an organisation that has developed criteria for food safety, sustainable production methods, worker and animal welfare, and responsible use of water, compound feed and plant propagation materials. Skretting is also a member of the technical committee that oversees the GlobalGAP aquaculture standard.

European Feed Manufacturers' Federation

Nutreco is a member of the European Feed Manufacturers' Federation (FEFAC) Sustainability Committee, which meets two or three times each year in Brussels, Belgium, to address sustainability initiatives associated with the European feed industry.

A positive outcome of this committee was the roll-out of the FEFAC Soy Sourcing Guidelines, which lay out the minimum criteria that purchasing feed mills could incorporate when making their soybean, soybean meal and soy concentrate purchases.



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Cerrado Manifesto Statement of Support Group

Established in 2017, Nutreco was one of 23 founding member signatories to the Cerrado Manifesto Statement of Support Group (SoS). The SoS has become the world's largest business-driven group calling for immediate action in defence of the Cerrado by supporting local and international stakeholders.

Today, there are 132 company signatories to the SoS across agro-industrial, farming and food processing, finance, packaged consumer goods, retail and foodservice and other supporter groups. Its key focus in 2019-2020 is to support the activity of the Brazilian Grupo de Trabalho do Cerrado (GTC) by accelerating the transition to deforestation and conversion-free soy production and to share knowledge and action plans with key Chinese companies and stakeholders.

The North Atlantic Pelagic Advocacy Group

The North Atlantic Pelagic Advocacy Group (NAPA) was created as a sector wide, multi-stakeholder initiative of partners to build a shared, global and non-competitive solution to complex sustainability issues in the Northeast Atlantic Pelagic fisheries.

NAPA represents retailers, foodservice companies and suppliers from EU and non-EU countries with the shared aim of sourcing sustainable and certified seafood in order to supply a growing demand for eco-labelled fish products.

To achieve this, NAPA is seeking an agreement on total allowable catches for Northeast Atlantic Pelagic fisheries in line with scientific advice, and for a long-term science-based management agreement.



The Global Roundtable on Marine Ingredients

Founded in 2021, Skretting is a member of the Global Roundtable on Marine Ingredients. The initiative aims at taking action based around the framework of the UN Sustainable Development Goals. Additionally, it works to provide a single value chain contact point to contribute to existing platforms aimed at ensuring sustainable management of fisheries providing marine ingredients.

The Roundtable will foster and support precompetitive efforts by members to:

- Identify and agree on ways to further improve the availability of sustainable marine ingredient materials.
- Investigate the potential of new raw material sources, such as mesopelagic species and others.
- Catalyse and support existing and new fisheries improvement projects.
- Understand and address urgent social issues and enhance social responsibility in key fisheries and regions.
- Maintain a global overview of the state of the resources and industry.

The first priority for the Roundtable is West Africa, where production of marine ingredients (both direct and through by-products) has grown dramatically over the last decade, and a number of economic and social challenges have been identified. Southeast Asia is another geographic priority, where multispecies fisheries pose unique management challenges, and some fisheries are tainted by human rights and labour abuses. The Roundtable will also address other important topics such as life cycle assessments and potential new raw material sources.



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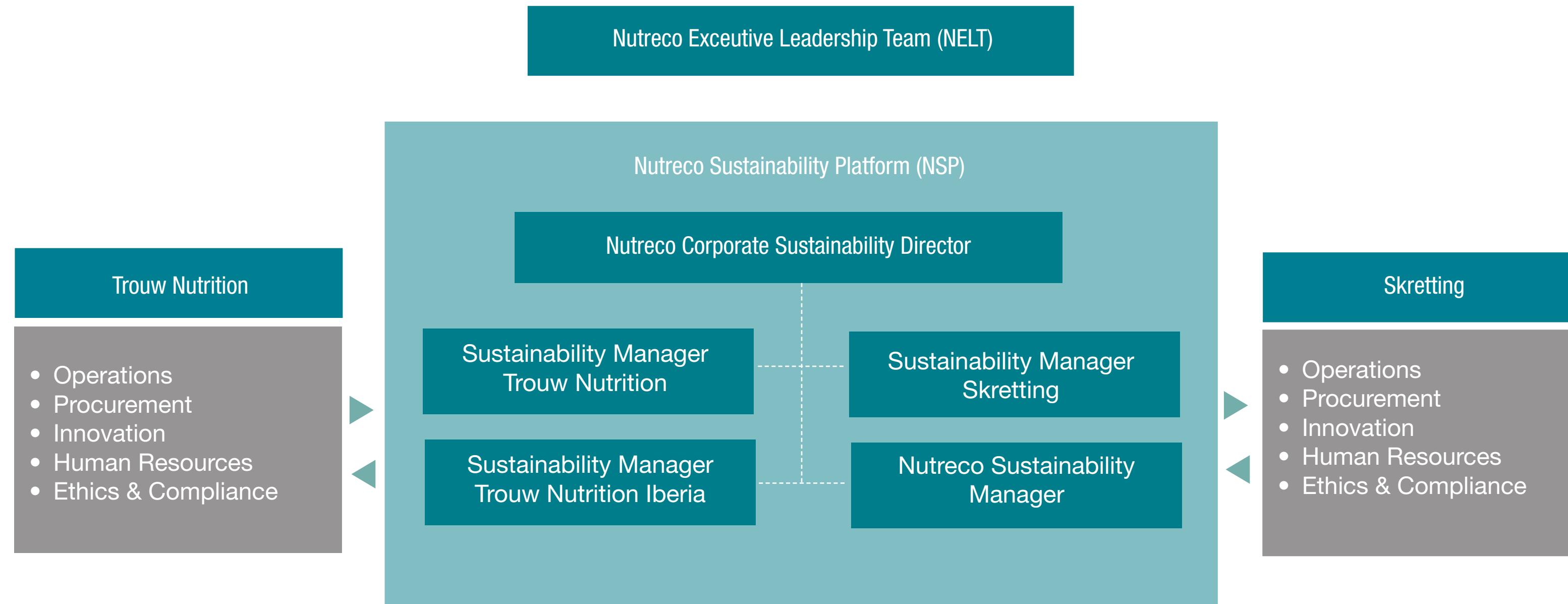
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Governance

Nutreco's Sustainability function is led by our CEO. The Corporate Sustainability Director reports to the CEO and chairs the Nutreco Sustainability Platform (NSP). The NSP is where the sustainability aspects of our strategy are developed, and where sustainability issues are addressed. It is made up of five individuals, three of whom represent the businesses.

The divisional functional directors in Trouw Nutrition and Skretting are responsible for the implementation of sustainability activities aimed at achieving the targets set out in RoadMap 2025, working with teams in our businesses throughout the world.

Figure 19: Nutreco Corporate Sustainability Governance.



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Materiality

Nutreco conducted a complete materiality assessment in late 2018, that identified 14 issues as material for our future by internal and external stakeholders:

- Product safety*
- Innovation and R&D
- Sustainable products and services
- Antimicrobial resistance (AMR)
- Business integrity*
- Occupational health and safety*
- Natural resource scarcity
- Bribery and corruption*
- Animal welfare
- Employee development*
- Labour conditions*
- Sustainable procurement practices
- Diversity and equal opportunities

*These areas are not reflected in RoadMap 2025 because they fall under the responsibility of different functions within Nutreco.

In 2021, we performed a “materiality refresh” to determine whether these 14 areas still reflect Nutreco’s most material sustainability topics. We found that, overall, the 14 topics were still seen as material.

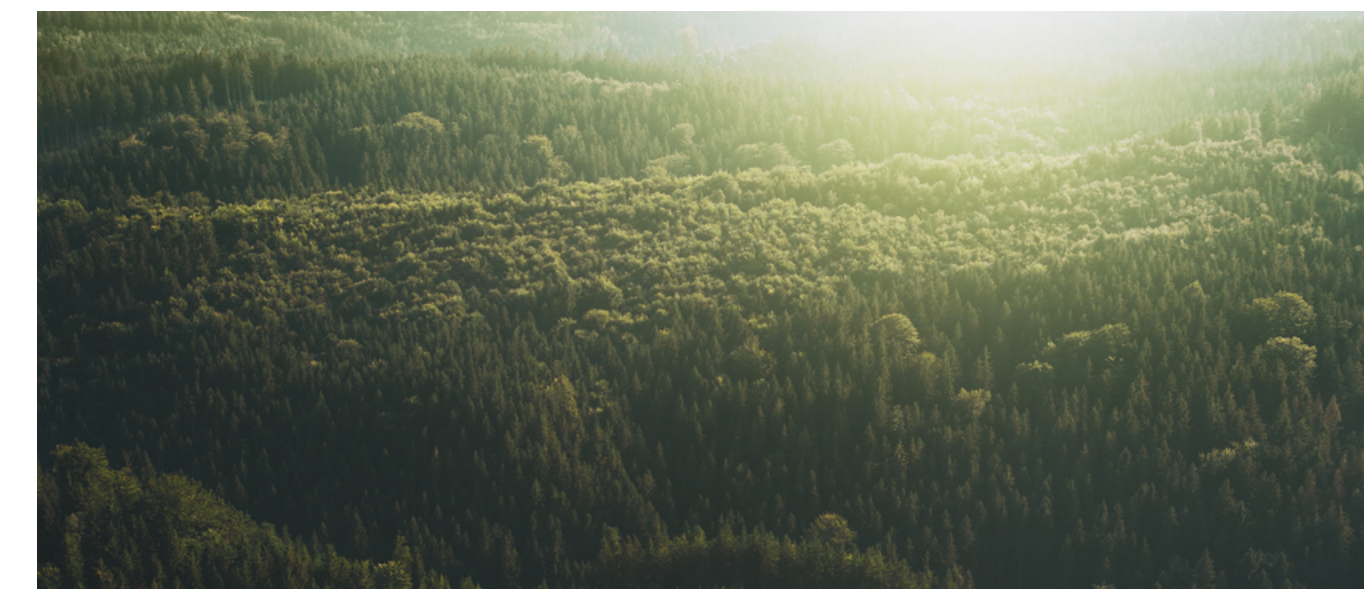
To narrow our focus, we started the refresh exercise with all 14 material issues and then eliminated the issues that were considered highly material but are covered by other corporate departments, for example, health and safety, product safety and business integrity. Of the six remaining material topics covered by the sustainability department, animal welfare and natural resource scarcity were not considered highly material by the participating materiality stakeholders. It was notable that climate change was also missing from the original list. This was mostly attributed to the issue being misinterpreted by our stakeholders in the original materiality assessment.

Regardless of these results, our sustainability team recognises the importance and urgency of addressing climate change and therefore made it a key pillar in our RoadMap 2025.

Through our materiality refresh we identified the following six material topics for Nutreco going forward:

- Climate Change
- AMR
- Sustainable Procurement Practices – deforestation
- Diversity and Equal Opportunity
- Sustainable Products and Services
- Innovation and R&D - Novel ingredients

Three of these topics – climate change, sustainable procurement and diversity and equal opportunity – are considered highly material. The refresh also demonstrated that sustainability continues to be important to our internal and external stakeholders. We will be conducting a full materiality assessment during 2022 to further establish the focus of RoadMap 2025.



From the CEO

About this report

Food systems

The role of blue foods

Connecting our strategy

Transparency and trust

Key partnerships

RoadMap 2025

Pillar 1: Health & welfare

Pillar 2: Climate & circularity

Pillar 3: Good citizenship

About Skretting



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