



# SUSTAINABILITY REPORT

SKRETTING SUSTAINABILITY PERFORMANCE

2018





2018

SKRETTING  
SUSTAINABILITY  
REPORT

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# 1 CEO Letter

## The new food landscape



Therese Log Bergjord  
CEO Skretting

We are in a new food world. Increasingly, consumers want to understand what they're eating – from its origin to the values of the producer – and rightly so. At the same time, we have millions of people who cannot make any such food choices. What does this new landscape mean for us, a global leader in aquaculture feed and services, looking to supply the industry with sustainable nutritional solutions produced in a safe and ethical way? It's unquestionably an issue that's high on our minds as we continue to prepare for the future. So while many people may be tired of hearing that the world is in the midst of a digital transformation, at Skretting, as a world leading supplier of nutritional solutions and services for aquaculture, we are embracing and responding to this change. Precision farming, the way that we use big data, artificial intelligence and blockchain transparency are all part of our daily conversations and will have a huge impact on the way we move forward.

In our market, we operate in a system where we don't necessarily control the whole value chain. This raises the question of how we ensure that our suppliers, or the suppliers to our suppliers, are undertaking their business in an ethical and safe manner. Although we are a small fish in an agricultural sense, we are a global leader in aquaculture and will not ignore our responsibility. One way in which we are active in this space is through our partnerships, including pre-competitive initiatives like the Seafood Business for Ocean Stewardship (SeaBOS).

The new partnership of SeaBOS and the Global Dialogue on Seafood Traceability shows that we are taking this commitment one step further. Using blockchain technology, we can develop one of the most transparent supply chains in the world.

At the same time, as the global population continues to grow, we know that there will be a shortage of raw materials for feed and food production.

**During past years, and particularly in 2018, we have been mapping the potential impacts on our industry and increasing our focus on sustainable raw material supply chain.**

Indeed it's likely that some of the new macro and micro ingredients that we will use in the future are not even known in today's landscape. With the aquaculture industry becoming more substantial, we are finally at a place where we are able to have an impact on the development of novel raw materials.

Understanding and developing novel raw materials to a stage where they can be implemented in commercial feed was a big ambition for Skretting in 2018, and we achieved that milestone with both algal oil and insect meals in Norway and France. Seeing the resulting fish reach retailers and therefore consumers was a major highlight for us. What's obvious is that we cannot do this alone, and so we have also been working with a number of different stakeholders in the value chain, from raw material suppliers to customers to retailers to realise this achievement.

While we have made some excellent progress, we must also acknowledge challenges that we face, including serious allegations against our soy supply chain in 2018. After a report alleging our suppliers were engaged in illegal activities was released, we conducted an independent audit against our Supplier Code of Conduct. At the same time, we requested the auditor examine other allegations. The audits found no evidence based on recent transactions that any of

our suppliers have bought from soy farms engaged in illegal activities linked to deforestation, "slave like" labour or illegal pesticide use. Although this was a positive outcome, we see this as an ongoing process. We have a responsibility to ensure that the products we purchase are developed in a sustainable and ethical manner and are continuing a number of actions through 2019.

Our partnerships are critical. From SeaBOS to the Global Salmon Initiative (GSI) and Sustainable Shrimp Partnership (SSP) – it's extremely important that we work with other leaders to continue to instigate real change. Another concrete example of this is the new collaboration model we are undertaking with Cargill to reduce the fleet of feed delivery vessels in Norway – essentially halving our CO<sub>2</sub> footprint for this aspect of the business. This model will be executed in 2019. We are also very proud that the Pincoy Project was recognised at AquaSur in 2018 for its contribution to the environment. The project was initiated by Skretting and six other partners in 2016 as a collaborative response to reduce the use of antibiotics in the Chilean salmon industry. In 2019, we will see the implementation of Pincoy 2.0. Stay tuned for more.

Another great achievement in 2018 was our AquaVision conference. We were honoured to host more than 400 distinguished guests from all over the world, including Ban Ki-moon, former Secretary General of the United Nations, as well as HRH Crown Princess Victoria of Sweden. Both left a lasting impression on all those in attendance and the strong message that we must continue to improve by working together.

Skretting, together with Nutreco, also received the 2018 edie Award for Sustainability Product Innovation of the Year for MicroBalance FLX – our ground-breaking salmon feed that contains no fishmeal. For us, this recognition represents more than 20 years of research. At the same time, we are working with fisheries, because we know that when well-managed, fisheries will remain an important source of protein. To this end, we are engaged in a number of fishery improvement projects.

This year at Skretting, we are defining the road ahead. We know that we must keep focus and respond to the needs of the industry, but also look further beyond.

**Everybody everywhere must be able to eat, and our responsibility is to make sure that we provide the most sustainable solutions** – in both an environmental and economic sense – for an industry that is expected to play a significant role in providing safe, healthy and delicious protein to the world. That is our mission.

## 2 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 2018. It is available both as a printed report and on our website. Recognising that we have a broad range of stakeholders, including employees, customers, consumers, suppliers, governments and more, we believe that we should try to make it easier for readers to locate 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 issues. Skretting Australia and Skretting France will issue their own 2018 sustainability reports, while Skretting Norway will issue a report focused on sustainability information of its salmon feed products.

### SCOPE OF THE REPORT

In this report, the quantitative data covers the calendar year from January 1 to December 31, 2018, unless otherwise stated. The report covers all companies that are part of the Skretting division of Nutreco. The Skretting division represents the aquaculture nutrition and service activities of Nutreco. Dutch private company SHV owns Nutreco and all public financial information is reported through SHV. This report will only provide limited financial information.

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. We do not endorse or incorporate by reference any information from external websites in our report.

### REPORTING FRAMEWORK

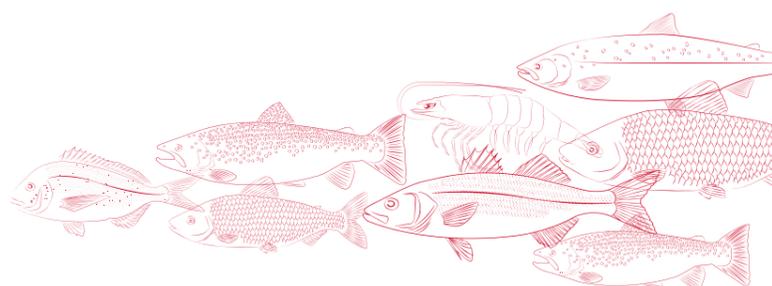
We prepared our report in accordance with the GRI Standards; Core option. This report also aligns with the United Nations Sustainable Development Goals (SDGs), and throughout we have highlighted how our own goals are aligned with and support the SDGs.

### 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.

### OTHER REPORTS

As part the verification for the Nutreco Sustainability Report, the external verification party visited 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.





The Nuterra programme sets out Skretting and Nutreco's sustainability strategy and provides the tools required to implement this throughout our company.

## About Skretting

Skretting is the global leader in providing innovative and sustainable nutritional solutions for the aquaculture industry.

The Skretting brand is supported by 4 fundamental pillars supported by an underlying foundation of innovation and R&D.

PRODUCT & CONCEPTS

FEED TO FOOD QUALITY

SUSTAINABILITY

PRECISION FARMING

MicröBalance™

protec™

Optiline



nutrace



nuterra™

AQUASIM™

INNOVATION

More detailed information about Skretting can be found later in this report.



### NUTRITIONAL SOLUTIONS

Enabling the animal and farmer to perform better

- Farm and feed performance
- Animal health and welfare
- Young animal feed
- Minimise food safety risks



### INGREDIENTS

Creating a sustainable base for feed

- Responsible sourcing
- Sustainable partnerships



### OPERATIONS

Ensuring our own house is in order

- Reducing environmental impact in our operations
- Improving our own working environment



### COMMITMENT

Involving people in the challenge of 'Feeding the Future'

- Employee engagement
- Stakeholder engagement
- Community development

The Nuterra programme is made up of distinct components.

### Nuterra Roadmap

Our Nuterra Roadmap sets clear ambitions regarding people, planet and profit. It's an aspirational vision designed to align our actions and initiatives over a period of several years, as we work to fulfil our mission of 'Feeding the Future'. These objectives are aligned with the long-term goals of our strategy as well as the SDGs.

### Nuterra Standard

Our Nuterra Standard is an internal tool that clearly outlines the actions needed to realise the Nuterra Roadmap and enables us to measure and score progress over time. Our operations undertake this assessment biannually to ensure that we hold ourselves accountable in our sustainability aspirations and targets.

# 3 Progress towards SDGs

In 2015, the United Nations introduced a set of 17 Sustainable Development Goals (SDGs) to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved by 2030. For the goals to be reached, everyone has a part to play: governments, the private sector, civil society and engaged people like the readers of this report. We believe that in many areas, our Nuterra programme is aligned with the SDGs. For example, our Mission of 'Feeding the Future' is firmly aligned with fulfilling goal number 2; End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Nuterra is a global sustainability programme implemented across Nutreco, highlighting our dedication and commitment to sustainability. Each of the four pillars in the Nuterra programme: Nutritional solutions, Ingredients, Operations and Commitment – address several of the SDGs within specific areas. Therefore, to a large extent, our sustainability report describes how we work and what we have achieved to support the United Nations in its effort to establish a new sustainable development agenda. The present SDGs are based on our current sustainability roadmap which was created several years ago for the lead up to 2020. We are now in the process of developing our 2025 roadmap.

Each of the four pillars in the Nuterra programme: **Nutritional solutions, Ingredients, Operations and Commitment** – address several of the United Nations SDGs within specific areas.

## PROGRESS AGAINST THE SDGs

SKRETTING OBJECTIVE	PROGRESS	EXPLANATION
<b>3</b> GOOD HEALTH AND WELL-BEING 	<p>By <b>2018</b>, we will contribute to a 50% reduction in antibiotic use in Chile through our involvement in the Pincoy Project</p>	Refer to the Commitment chapter of this report for further details
<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<p>By <b>2020</b>, we will have a total of five Community Development Projects in emerging markets that transfer knowledge and best-practice to subsistence farmers</p>	Refer to the Commitment chapter of this report for further details
<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<p>By <b>2020</b> we will have Nuterra Product Assessments for at least two of our new global products (total of six)</p>	Nuterra product assessment will be based upon LCA analyses. We are still in the process of aligning this with the development of the GFLI database and tools
<b>13</b> CLIMATE ACTION 	<p>In <b>2017</b> and beyond, we will continue to monitor, record and encourage operational action to reduce the impact in our five KPI monitoring programme across all of Nutreco companies in scope</p>	Refer to the Operations chapter of this report for further details
	<p>By <b>2018</b> we will launch a Nutreco wide efficiency programme to encourage OpCos to reduce energy and water consumption</p>	New Global Operations team restructures the implementation of this programme
<b>14</b> LIFE BELOW WATER 	<p>By <b>2017</b>, we will implement a multi-stakeholder fishery improvement project in Peru together with our industry and government partners</p>	Refer to the Ingredients chapter of this report for further details
	<p>By <b>2020</b>, we will successfully complete the fishery improvement project in Peru</p>	Refer to the Ingredients chapter of this report for further details
<b>15</b> LIFE ON LAND 	<p>By <b>2020</b>, we will contribute to the development of an industry-based solution to reduce deforestation associated with the primary production of crops</p>	Refer to the Ingredients chapter of this report for further details
<b>17</b> PARTNERSHIPS FOR THE GOALS 	<p>By <b>2020</b>, we will be functionally engaged with external partners and platforms addressing specific sustainability issues in Nutreco's value chain</p>	Refer to the Commitment chapter of this report for further details

# 4 Farmed fish represents food and nutritional security

The total volume of fish consumed worldwide has grown considerably over the past couple of decades, resulting in a near doubling of the global per capita consumption. This transformation has been made possible by the rapid development of aquaculture. Fish also has an important role to play in human nutrition. As such, population growth and economic development will increase the demand for fish as part of a healthy diet. Even when consumed in small quantities, fish represents a nutritionally important part of many people's diets, particularly in developing countries. It is a vital source of protein and micronutrients, and improves the quality of protein in largely vegetable and starch-based diets by providing essential amino acids.

Fish is rich in zinc, phosphorus, magnesium, selenium, and contains vitamins A, D and B12, while marine fish is a good source of iodine. Many of these vital nutrients are only found in small amounts, if at all, in staple foods such as maize, rice and cassava which make up the bulk of people's diets in developing countries. Fish are an indispensable source of these nutrients for many people, and small low-value fish, which are largely consumed by the rural poor, provide more minerals than the same quantity of meat or large fish, as they are consumed whole, with the bones intact. Fish also contain fatty acids that are essential for the development of the brain and body, and are particularly crucial for the diets of babies, children, and pregnant and lactating women.

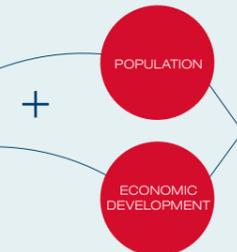
Consumption of omega-3 fatty acids during pregnancy reduces the risk of low birth weight, which is a key factor in both maternal and child mortality. These acids are also critical for the neurological development of infants, and are found almost exclusively in fish, making the consumption of fish during lactation and pregnancy especially important.

## FISH IN HUMAN NUTRITION AND THE SDGs

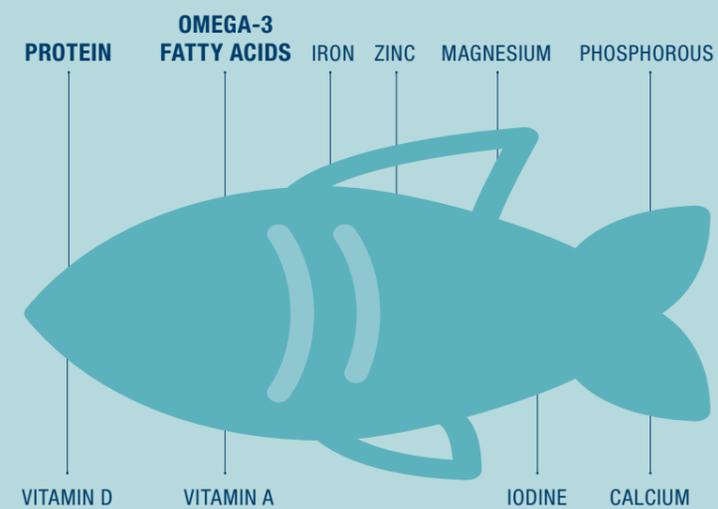
Fish as food make an important contribution to the SDGs. While the most obvious contribution is in terms of food and nutritional security, it also has an important nutritional role in reducing child mortality, improving maternal health, and health in general. Fish also contribute indirectly to several of the other SDGs through improved nutritional status and enhanced livelihoods, and to gender equality through women often being employed in aquaculture production and processing of fish and shrimp.



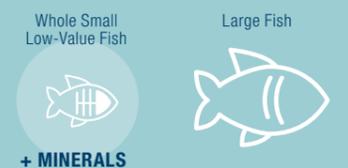
INCREASED  
**200%**  
CONSUMPTION  
PER CAPITA  
PAST DECADES



+ **DEMAND FOR FISH**  
as part of a Healthy Diet



### NUTRITIONAL VALUE



Small low-value fish, which are largely consumed by the rural poor, provide more minerals than the same quantity of meat or large fish, as they are consumed whole, with the bones intact.

### FATTY ACIDS

BRAIN & BODY DEVELOPMENT      REDUCE RISK OF LOW BIRTH WEIGHT



Fish contain fatty acids that are essential for the development of the brain and body, and are particularly crucial for the diets of babies, children, and pregnant and lactating women.

Consumption of omega-3 fatty acids during pregnancy reduce the risk of low birth weight, which is a key factor in both maternal and child mortality. These acids are also critical for the neurological development of infants.

# 5 Nutritional solutions

## SKRETTING'S OBJECTIVE:

To develop unique combinations of products, services and digital tools that are designed to help farmers boost productivity, support animal health and minimise negative environmental impacts.



The growth and waste prediction models for the various species and their respective products in RAS were also extended in 2018. From generated models, alternative feeding regimes can be analysed, enabling farmers to make informed decisions to optimise production.

To facilitate recycling of nutrients from RAS, Skretting has been involved in a pilot project together with Mowi, Scanship, Ivar and Høst in Norway to reuse the non-waste by-product. This project has ensured that we contribute to a circular economy.

Skretting has been investing research resources into RAS over many years, with three dedicated RAS-based research facilities across the world, each with a unique focus to support the growth of the land-based industry.

## 5.1 OPTIMISING LAND-BASED AQUACULTURE

The central RAS team at the Skretting Aquaculture Research Centre (ARC) comprises many knowledgeable researchers specialising in recirculating aquaculture systems (RAS).

Skretting is well-established as the global leader in RAS feeds, and introduced dedicated feeds into the market back in 2009 – an industry first.

Since then, it has introduced the specialised concept **RecircReady**, which takes into account growth and waste predictions, nutrient recycling solutions and health monitoring in addition to tailored feed solutions using patented faecal binders.

The growth of the land-based farming has led to a dramatic increase in investment and interest in the sector. In 2018, Skretting refreshed the RecircReady concept, tailoring the offering to meet changing customer needs. The primary offering of feed solutions defines the needs for RAS, which are extremely specific. Flexibility in raw materials is essential, as well as precise composition and digestibility to maximise nutrient retention and growth. The physical quality must be high, with minimal faeces load on the system filters. Skretting's portfolio of RC feeds ensures these parameters are consistently met.



## 5.2 DIGITALISING THE SHRIMP INDUSTRY

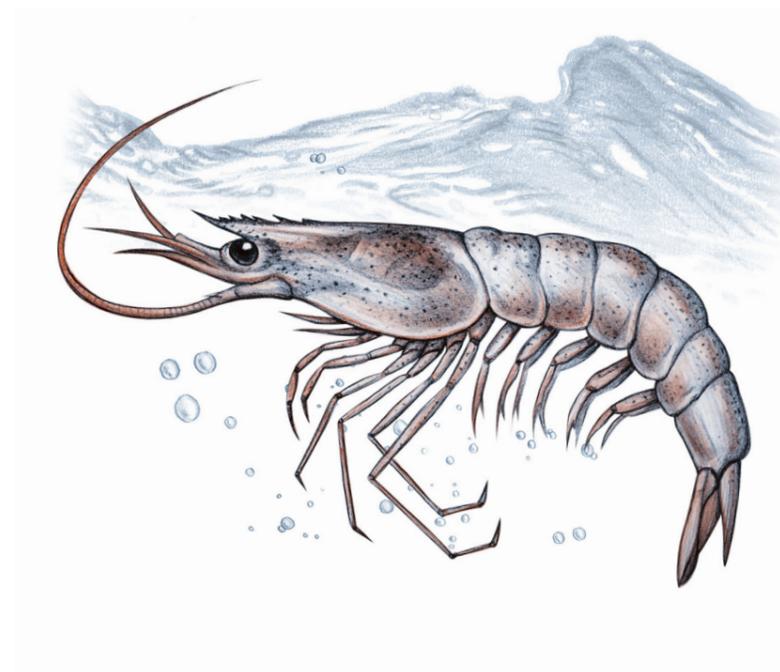
In 2018, Skretting Ecuador launched Skretting 360+, a ground-breaking

concept that empowers shrimp farmers by enabling them to optimise their harvests and the cost-efficiency of their operations while also reducing exposure to risk – all in a sustainable way.

Skretting 360+ is a complete package of precision-based tools. It incorporates explicit nutrition to maximise growth, survival and feed conversion, farm management practices and technical support, alongside Skretting's latest shrimp growth models and services.

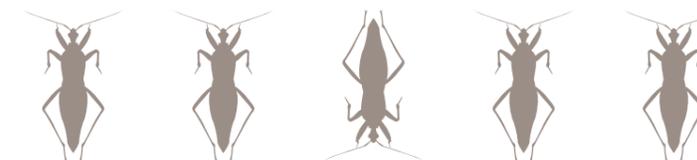
Because each shrimp farm is unique with its own specific requirements, through the incorporated AquaSim tools, Skretting 360+ has the capability to benchmark the performance of each production cycle and to also provide feed and harvest predictions for individual ponds. It does this by utilising real-time farm performance data and analysis. Consequently, farmers have a clear understanding of what is happening in the water and they are able to make better informed choices for the benefit of their operations. The precision feeding and forecasting models also provide guidance and recommendations, allowing the farmers to make more effective advanced plans.

**Skretting 360+**, a ground-breaking concept that empowers shrimp farmers by enabling them to optimise their harvests and the cost-efficiency of their operations while also reducing exposure to risk – all in a sustainable way.



The launch of Skretting 360+ followed a series of extensive trials conducted within Skretting's own R&D systems as well as through performance evaluations in commercial shrimp farms. These assessments provided conclusive evidence that with Skretting 360+, shrimp farmers can expect to operate in a much more cost-efficient, productive and sustainable manner.

Skretting has a rich history working with Ecuador's shrimp farmers. It was the first feed company to provide the country with an aquaculture-specific feed plant. Since then Skretting Ecuador has demonstrated the importance of feed quality and correct feeding in the first stages of the lifecycle, as well as how to optimise growth based on the genetics of their shrimp stocks.



## 5.3

### INSECTS PROVIDE A NATURAL, SUSTAINABLE PROTEIN SOURCE

In 2018, Skretting Norway's factory in Averøy produced commercial salmon

feed with insect meal for the first time. Salmon farming company Nordlaks was the first customer to test feed containing insect meal, with 360,000 fry receiving this pioneering diet.

"We expect it to be as good as our regular feed and hope that the commercial test will show the same good results as Skretting has seen in its efforts to improve feed intake," said Eirik Welde, freshwater director at Nordlaks.

While insects are an important natural food for wild salmon, the industrial manufacturing of insect meal is still in its infancy. Therefore, through our focus on increasing the flexibility of aquaculture feed raw materials, Skretting will support the further growth of high-quality insect meal production. Like many novel raw materials, the challenge has been to find insect meal suppliers that can produce enough volume with consistent, good quality.

**Insect protein offers an alternative to fish meal and soy products, and results from trials have shown fish have the same growth performance with feeds using insect meal as with traditional protein sources.**



### CONSUMERS ARE POSITIVE WHEN THEY SEE THE SUSTAINABILITY STORY

The feed produced by the Skretting Norway factory contains insect meal made from the larvae of the black soldier fly – an EU-approved commodity. Surveys show that Norwegian consumers are more receptive to eating salmon that has had insect meal in the feed than other Europeans.

"People who have grown up near a salmon river know that insects are natural foods for the salmon. People who have not thought so much about what a salmon eats are positive to insect meal when they hear that this is a good and sustainable raw material," says Welde.

### INDUSTRIAL PRODUCTION OF INSECT MEAL MUST BE INCREASED

In the European market, there is now little available insect meal for use on a large scale, and so Skretting is working with manufacturers who wish to increase their production to commercial levels. Ideally, by 2022 there will be at least five separate European suppliers, each producing 20,000 tonnes of insect meal per year. That would represent two-thirds of the volume of soybean concentrate that Skretting Norway uses today.

"Our goal is that in the future, ingredients used for aquaculture feed do not compete with food for human consumption. For us it's important to invest in alternatives like insect meal," says Mads Martinsen, Skretting Norway's Product Development Director, who has several new ingredient projects in process.





5.4

HELPING SEABASS BREATHE EASY IN SUMMER

In 2018, Skretting launched a diet specifically supporting Mediterranean seabass (*Dicentrarchus labrax*) against challenges brought on by both hot summer temperatures and low oxygen availability.

Seabass is one of the most commercially and socially important fish species to be farmed in Europe, but during most summers, many Mediterranean stocks are confronted by high water temperatures or low oxygen levels that can in turn lead to the onset of health issues. While mortality resulting from such events tends not to be very large, they are often quite lengthy episodes, causing farmers economic losses due to deteriorated growth performance, increased feed conversion and lower end-product quality. They can also potentially provide the gateway to secondary adverse problems that can cause greater mortality.

Because the cost implications for fish farmers can be significant, Skretting has invested substantial R&D resources into developing a health diet aimed at supporting the fish during times of increased risk due to high temperatures and low oxygen conditions.

Called **HTO2** due to the beneficial effects that it delivers against these issues, the diet is the latest solution to come from more than 25 years of health feed development at Skretting.

“Reduced oxygen levels brought by water temperatures in excess of 26°C have proved very limiting to the performance of seabass in farming systems, resulting in reduced feed intake and growth. Fortunately, a series of trials provided conclusive evidence that HTO2 addresses the situation. Not only does it ensure that the gut continues to function normally, it also enables increased growth rates while reducing the feed conversion rates.”

**Chris van Bussel**, Global Product Manager for Marine Species at Skretting.

Under high temperatures, the gut walls become thin and more permeable. Consequently, its structure becomes less complex and the surface area is reduced, which can lead to the loss of essential nutrients as well as the migration of inflammatory cells into the gut. HTO2 works by restoring the gut structure so that feed can be digested properly, thereby enabling the fish to continue to grow. HTO2 is also formulated with a higher natural lipid-soluble antioxidant content to restore the antioxidant status in seabass during high water temperatures.

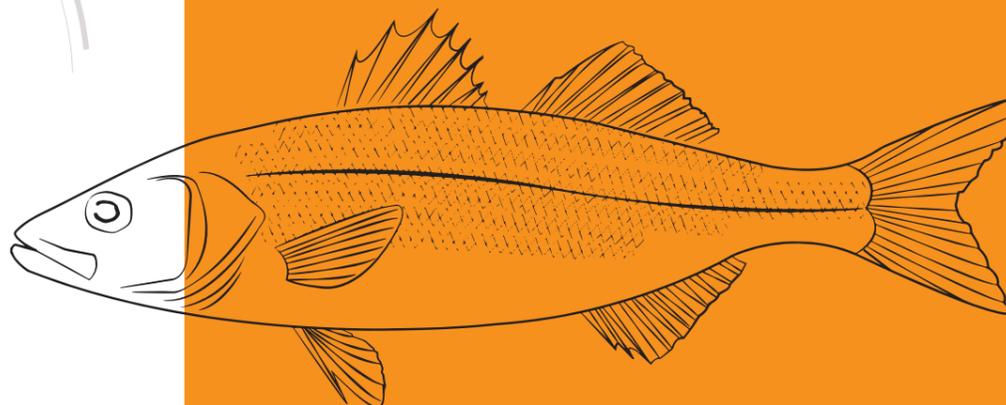
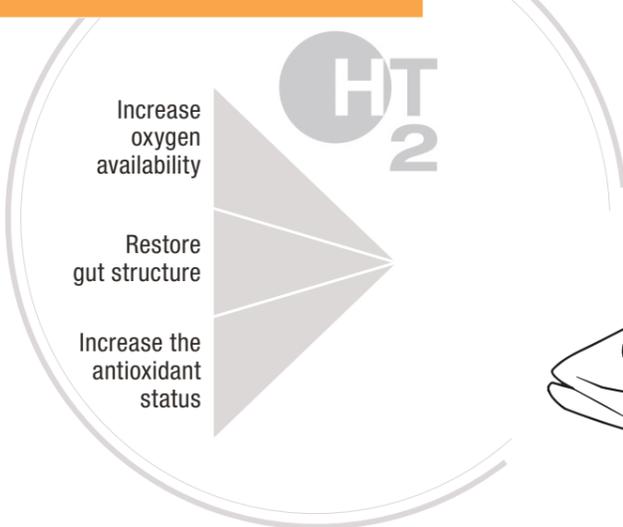
Consistent with the rest of the health feed portfolio developed by Skretting ARC, **HTO2 contains specifically selected functional ingredients that work in synergy to contribute to the ability of seabass to cope with the onset of high temperatures and low oxygen levels.** What Skretting has again evidenced is that specific combinations of these ingredients provide support to the fish that is greater than the sum of their individual benefits.

As with all of its functional feed solutions, Skretting advises that HTO2 should be included as part of a structured and holistic approach to performance and health management. It should be used proactively, before there is a challenge. Ideally, it should also prepare the fish ahead of heightened risk – when fish farmers can expect to first see environmental challenges. Therefore, it should be introduced before water temperatures reach 26°C as well as when oxygen levels drop below 4mg/L, and then continuously throughout the risk period.

“Skretting focuses only on complete solutions – combining specific high-quality nutrition with the most beneficial functional ingredients – and if used correctly, HTO2 will fill a very important gap in the market. High water temperatures are a major seasonal challenge for seabass farmers throughout the Mediterranean. With HTO2, Skretting is providing them with a tool that they can use to react to these costly events,” says van Bussel.



3 CORE PRINCIPLES



## 5.5

### SUSTAINABILITY PRODUCT INNOVATION OF THE YEAR

Nutreco and Skretting were presented with the edie award in the category of Sustainability Product Innovation of the Year

for an innovative concept developed by Skretting. The shortlist included 131 people, projects, products and organisations that are together redefining what it means to be a sustainable, ethical and responsible business.

The winning product, Skretting's MicroBalance FLX, is a feed for salmon containing zero fishmeal. The product is a result of three decades of research conducted by Skretting ARC – exploring the potential for alternative raw materials to replace traditional, finite, marine-based feed components, while ensuring the growth, health and final nutritional qualities that consumers expect from their seafood.

"Marine ingredients like fishmeal are great ingredients for aquaculture feed, and it took a long time to fine-tune our understanding of the complexities in order to replace them," says Alex Obach, Skretting R&D Director. "We have considered, among other qualities of fishmeal, the nutritional profile, digestibility and content of functional micro-ingredients.

Our research was carried out in a number of phases, first looking explicitly at the nutrient requirements of the fish, then evaluating alternative raw materials, undertaking digestive and metabolic research, before finally proving that by



clever selection and formulation, we can optimise the feed for the fish with no fishmeal, without any compromise on growth, health or quality."

Jose Villalon, Nutreco Sustainability Director, and Trygve Berg Lea, Skretting Sustainability Manager collected the award at a ceremony in London.

"We are extremely happy to be recognised for a product that epitomises our company-wide Mission of Feeding the Future. Innovation is the core of our values and Skretting's MicroBalance FLX is a great example of how we can use this innovative mindset to play a part in resolving the looming global food crisis," says Villalon.

**"With aquaculture production required to more than double between now and 2050 to meet the demands of a growing population, Skretting is well aware that we need to reduce the pressure put on the planet's resources," says Berg Lea. "So, how can we grow sustainably? Essentially, we need to produce more from less. Nutreco and Skretting are committed to supporting sustainable development of aquaculture around the world.**

This product shows our commitment, and highlights our activities supporting SDGs 12 and 14 – Responsible consumption and production and Life below water."

Aligned with this ambition, one of Skretting's most significant sustainability objectives has been to develop the capability to become independent of fishmeal. Launched in 2016, MicroBalance FLX is the biggest breakthrough in this work to date, when Skretting became the first commercial company to offer grower diets for salmon containing zero fishmeal.

SUSTAINABILITY PRODUCT INNOVATION OF THE YEAR

**MICROBALANCE FLX**

Feed for salmon containing **zero fishmeal**



**MicroBalance™**



# 6 Ingredients

**SKRETTING'S OBJECTIVE:**  
To expand our knowledge of the nutritional composition of feed ingredients as well as the impacts of the supply chains.



## 6.1 SECURING RESPONSIBLE RAW MATERIALS THROUGH THE VALUE CHAIN

The primary source of feed ingredients can be processed into different forms; wheat can be processed into wheat flour and wheat gluten, soya into soybean meal, soy protein concentrate and soybean oil. A fish or by-products from fish can be processed into fishmeal and fish oil. This means that the primary source of the feed ingredient is shipped to a factory and processed into the feed ingredient by the manufacturer. There are a number of sustainability issues that are common for manufacturers. For instance, harmful emissions to air or effluents to water. Sustainability also encompasses social issues, including ensuring that the factory is a safe working place. In addition, manufacturers must respect basic human and labour rights.

Skretting operates a systematic evaluation of the sustainability risks linked to primary sources of feed ingredients and manufacturers of feed ingredients. Based on the outcome of these risk assessments the combination of primary source and manufacturer of feed ingredients must be evaluated and approved before a Skretting company can buy the feed ingredient.

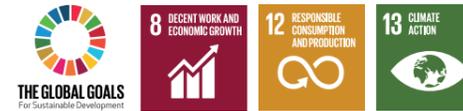
Responsible production and consumption requires that we look beyond the traditional aspects of cost and quality when making purchasing decisions.

At Skretting and Nutreco, we have identified the relevant sustainability issues in our Supplier Code of Conduct.

Our Supplier Code of Conduct enables us to engage with our suppliers on material issues relating to their operations and to set **minimum criteria relating to environmental, social and legal aspects.**

Based on spend, over 90% of our suppliers have signed off on their agreement to comply with the Code, and it is mandatory for all new suppliers to sign.

Supplier sustainability audits are performed, with an extra focus on countries and ingredients that have been identified as 'high risk'.



6.2

**FEED INGREDIENTS USED FOR THE PRODUCTION OF FARMED FISH AND SHRIMP**

Like humans, fish and shrimp have specific nutritional requirements - protein, fat, carbohydrates, vitamins and minerals. The composition varies depending on species and life stage. The nutrients in our feeds come from a range of natural raw materials. We source our primary feed ingredients from agricultural crops, fisheries and by-products from human food processing.

Our current global feed ingredient usage is comprised of 20% by-products. **These are ingredients from the human food processing chain that would otherwise be wasted if not used in the feed industry.** This represents an efficient use of natural resources and supports the development of a circular economy.

Aquaculture is part of the emerging bio-economy which comprises parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food. For example, Skretting is involved with research institutes to investigate the opportunities of converting wood biomass into a protein that can be used as a feed ingredient.

**Skretting is searching for ingredients that will result in more innovative, low emission aquaculture feeds.**

Agricultural crops represent the majority of feed ingredients for salmon, shrimp and tilapia. Marine ingredients are equally important in salmon and shrimp diets with the difference that salmon diets use less fishmeal and some more fish oil than shrimp diets. Tilapia feed can be made without the use of marine ingredients. In salmon and shrimp diets by-products from fish processing and land animal products (food waste) are important raw materials that make up about 20% of the diet.



FEED INGREDIENT PRIMARY SOURCE	FEED INGREDIENT	% IN DIET		
		SALMON	SHRIMP	TILAPIA
 AGRICULTURAL CROPS	<b>WHEAT, SOY, RAPESEED, CORN, FABA BEAN, RICE, SUNFLOWER, LUPIN ETC</b> <b>Typical feed ingredients</b> <i>Protein: wheat gluten, corn gluten, soybean meal, soy protein concentrate, rapeseed meal, sunflower meal, lupins and fababeans</i> <i>Fat: rapeseed oil, soybean oil, camelina oil</i> <i>Carbohydrates: wheat flour</i>	60%	68.3%	88.4%
 WILD-CAPTURE FISH AND CRUSTACEANS	<b>SMALL PELAGIC FISH AND KRILL</b> <b>Typical feed ingredients</b> <i>Protein: fishmeal, crustacean meal</i> <i>Fat: fish oil</i>	15.8%	15.1%	0.3%
 BY-PRODUCTS FROM FARMED LAND-ANIMALS	<b>BY-PRODUCTS FROM LAND-ANIMALS</b> <b>Typical feed ingredients</b> <i>Protein: poultry meal, feather meal, blood meal</i> <i>Fat: poultry oil</i>	13.1%	6.0%	5.6%
 BY-PRODUCTS FROM WILD-CAPTURE FISH AND CRUSTACEANS	<b>BY-PRODUCTS FROM A WIDE RANGE OF FISH AND SHRIMP must not originate from threatened species according to IUCN redlist</b> <b>Typical feed ingredients</b> <i>Protein: fishmeal, crustacean meal</i> <i>Fat: fish oil</i>	6.8%	4.9%	0.3%
 BY-PRODUCTS FROM FARMED FISH AND CRUSTACEANS	<b>BY-PRODUCTS FROM SALMON, TILAPIA AND SHRIMP</b> <b>Typical feed ingredients</b> <i>Protein: fishmeal, crustacean meal</i> <i>Fat: fish oil, salmon oil</i>	0.4%	0.0%	-
 MICRO NUTRIENTS	<b>VITAMINS, MINERALS, PIGMENTS</b> <b>Typical feed ingredients</b> <i>Vitamin premixes</i> <i>Mineral premixes</i> <i>Pigments</i>	3.8%	5.6%	5.4%

## 6.3 NOVEL INGREDIENTS

If we are to increase food production sustainably and ensure that the rising world population has access to food, it's important that we seek to reduce the amount of human food resources that are used in aquaculture feeds.

Novel ingredients are unconventional feedstuffs of plant or animal origin. Worldwide, there has been increased activity focused on the R&D of such ingredients with the aim to ascertain new protein raw materials and alternative sources of essential omega-3 long chain fatty acids (EPA and DHA) for use in aquaculture feeds.



The latest technologies include microbial and insect-based protein and oil sources, and already, algal oils containing EPA and DHA and high-quality proteins based on different insect species using waste streams as resources are commercially available.

While these and other novel ingredients offer an opportunity to overcome the risk of a raw materials gap, scalability is essential to their successful application. As well as delivering equal nutritional benefits and performance in the diet formulations, they need to be available at a price that is viable for fish farmers. At the same time, manufacturing processes cannot lead to negative environmental or social impacts.

Skretting has been evaluating alternative novel ingredients, the ways that they work together and the benefits that they can provide aquaculture species for many years.

The constant ambition throughout all of this R&D is to extend the flexibility of the aquaculture value chain, and this determination has been turning many innovations into commercial realities.

In 2016, we delivered MicroBalance FLX, the world's first commercial salmon feeds capable of being completely free of fishmeal and other marine proteins. Crucially, they provide equal performance in terms of fish growth and health. Through this technology, traditional feed ingredients have become much more interchangeable and this has allowed salmon farmers to produce more from less in a sustainable way. MicroBalance FLX was followed by N3, a salmonid diet that utilises marine algal oil containing high levels of EPA and DHA. This has brought the same level flexibility to fish oil.

## Novel ingredients

ALGAE  
INSECTS  
BACTERIA

## Scalability



Together, MicroBalance FLX and N3 have moved the aquaculture industry even closer to total independence from fish-based raw materials.

In fact, salmon have already been raised on a diet with zero fishmeal and fish oil inclusion. More innovations are in the pipeline, but while we're working to reduce the reliance on marine ingredients, we shouldn't completely stop using sustainably sourced raw materials that are available to us. We have to recognise that to do so could have detrimental effects on responsibly managed reduction fisheries. Because both fishmeal and fish oil still remain relatively abundant and provide natural, well-balanced sources of high-quality protein and energy for aquaculture feed formulation, we will continue to utilise them in our diets.

However, we will be striving to do that much more selectively, while also giving new technologies the platform to make tangible contributions to future food production.

As mentioned on page 17, in 2018, Skretting Norway's factory in Averøy produced commercial salmon feed with insect meal for the first time.

We also continue to work closely with many suppliers of alternative ingredients to maximise quality and ensure these raw materials are fit for market.

**FEED-X: A PLATFORM FOR FAST-TRACKING NOVEL INGREDIENTS**

FEED-X is the first pilot programme to come out of Project-X, a corporate systems accelerator that helps entire industries to adopt more profitable, sustainable innovations in their supply chains. The primary purpose of Project-X is to radically transform the sustainability performance of 10 selected industries in 10 years. The FEED-X project involves a number of strategic partners, with Skretting the lead corporate organisation. Others include WWF, IKEA, Climate KIC, University of Cambridge, BSR, One Planet and Thomson Reuters.

While important progress has been made in ensuring the more traditional resources in aquaculture feed are used responsibly, independence from any single raw material can provide the potential for almost limitless sustainable growth.



A constant ambition for Skretting has been to extend the flexibility and sustainability of the aquaculture value chain, most recently by **working to increase the use of novel ingredients.**

As outlined in a previous chapter, an overriding problem is bringing these ingredients up to a scale that makes them commercially viable. FEED-X intends to change that. This new initiative aims to source, test, finance and scale alternative ingredients into the global feed industry. The target is to have 10% inclusion into the feed value chains, and Skretting is the lead corporate partner in achieving this goal for the aquaculture feed industry. FEED-X is initially focusing on the salmon and shrimp farming sectors.

During **2018**, the project underwent the category de-risking phase, a process that has used six “lenses” or views to assess the risks posed by scaling up innovations which have the greatest potential to deliver sustainability gains in the feed value chain.

A number of experts took part in this process, including Harvard University, Wageningen University, Utrecht University,

Blonk Consultants, Brand Legacy and FAI Farms. This process has been used to identify the criteria to guide the search of categories of innovation. The integrated results will enable solid financing, insurance and purchasing in the future.

In **2019**, the project will undertake a search and select phase. That means to take specifications and the shortlisted criteria identified in the category de-risking stage, and search for the best-in-class innovators to be tested in the programme.



PROJECT-X ►►► FEED-X

**PURPOSE**  
Transform the sustainability performance of 10 selected industries in 10 years

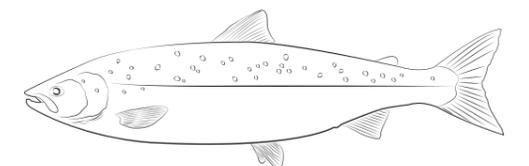
1<sup>ST</sup> programme to come out of Project-X, a corporate systems accelerator that **helps entire industries to adopt more profitable, sustainable innovations in their supply chains**

- Skretting**
- WWF
  - IKEA
  - Climate KIC
  - University of Cambridge
  - BSR
  - One Planet
  - Thomson Reuters

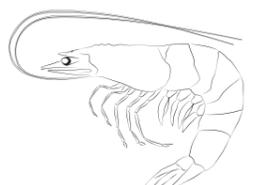
**AIMS TO:**  
Source, test, finance and scale alternative ingredients into the global feed industry

**TARGET**  
**10%**  
INCLUSION  
into the feed value chains

**Skretting: Lead Corporate Partner**



**SALMON AND SHRIMP FARMING SECTORS**  
Feed-X Initial Focus



## 6.5 WHAT IS A RESPONSIBLE SOY SUPPLY CHAIN?

Most stakeholders (NGOs, food retailers, consumers, etc) are in general agreement that alongside palm oil and beef production, soybean cultivation is one of the main commodities driving deforestation. At the same time, continued deforestation will lead to less carbon fixation from the atmosphere and increased climate change.

Skretting works to ensure we only purchase soy products from soybean farmers who have not contributed to deforestation. In practical terms, this requires our procurement teams to have clear sourcing guidelines and instructions with regards to how the soybeans were cultivated. Compiling such criteria is not easy. Indeed, defining what is a forest and what is deforestation is complicated. This is because forests come in numerous forms, varying in composition, biophysical characteristics and the diversity of flora and fauna, among many other traits. The United Nations Environmental Programme recognises more than 800 definitions of forests. There are also many ways to define the loss of a forest, or deforestation.

In addition, there is zero deforestation and zero net deforestation. Zero deforestation means no forest areas are cleared or converted, while zero net deforestation allows for the clearance or conversion of forests in one area as long as an equal area is replanted elsewhere.

Although many companies are addressing deforestation, corporate policies often tackle more than those activities related to the clearing of forests. They also detail other important elements of soybean production that go beyond deforestation. For example, they might include no clearing of High Conservation Value (HCV) areas, respect for indigenous land rights, obtaining free, prior and informed consent from local communities, no use of forced or slave labour and commitment to transparency regarding production practices.

In many cases, some deforestation under certain conditions is also made legal by governments. As a company, this raises the issue of whether we should set our soy sourcing guidelines higher than the legal bar; and if so, how do we define these requirements? The challenge is further exacerbated by the many practical challenges that would inhibit the soy processing value chain from meeting several different criteria, not least having logistic solutions in place that are capable of handling different product qualities.

Another area of contention is how far in the value chain can, and should, Skretting take responsibility and enforce its requirements.



Skretting does not buy soybeans from soybean farmers; instead we buy feed ingredients like soybean meal, soybean lecithin and soy protein concentrate. These are products made by a manufacturer of feed ingredients made from soybeans. However, we do require our soybean product suppliers to ensure their operations respect basic human rights, labour rights and do not pollute local environments. This is monitored by requesting information from suppliers, and through visits and audits.

Skretting's soybean ingredient suppliers might source from as many as 1,000 farms. These farms should also respect social and human rights, while the farmland should not be illegally deforested land (Skretting's Supplier Code of Conduct contains guidelines that soybean farmers must follow). As it is difficult for Skretting to monitor a vast number of soybean farmers, we could decide that our requirements are fulfilled by buying third-party certified products. These certification schemes should have Chain of Custody that makes it possible to document that products originate from specific soybean farms.

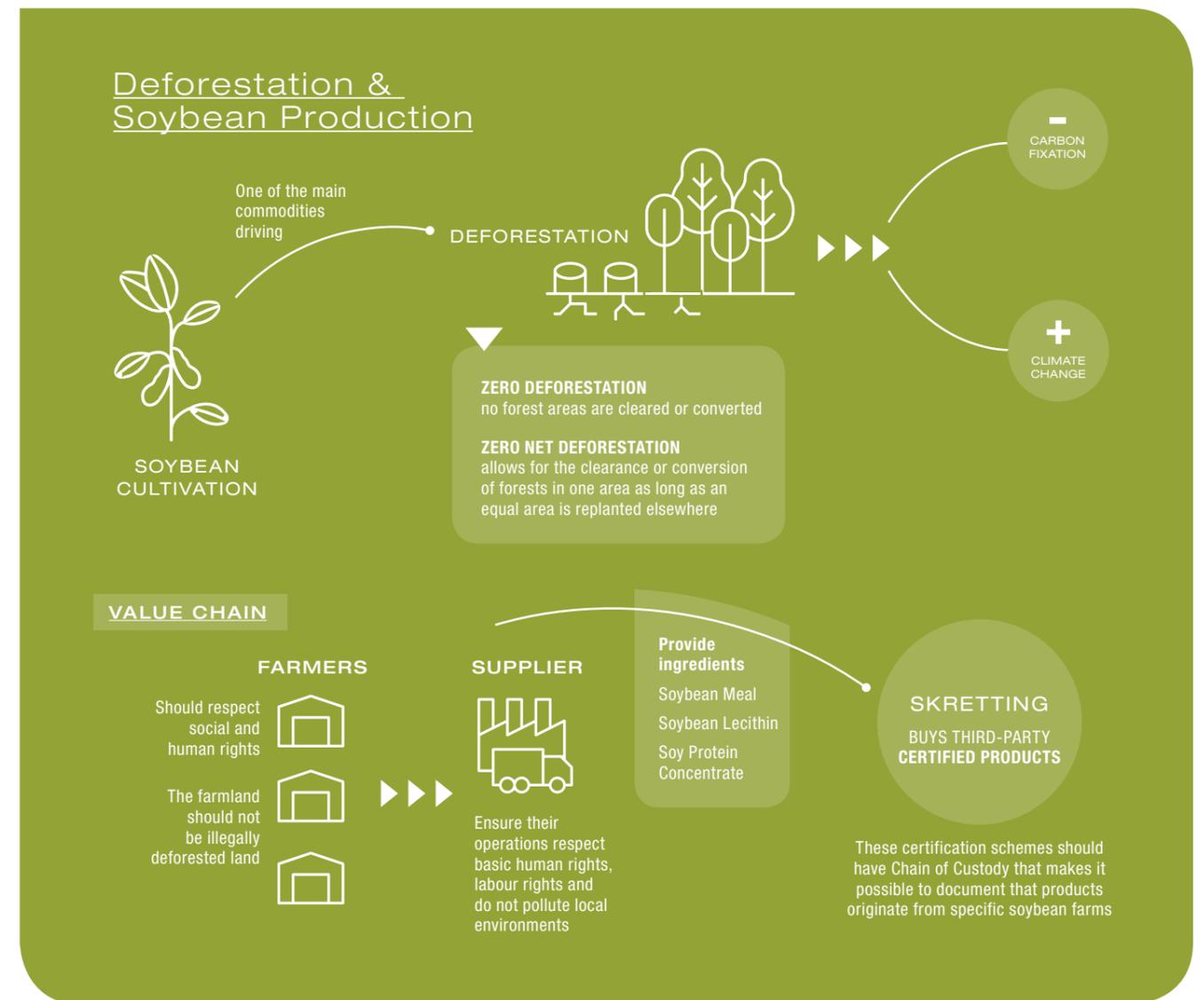
In October 2018, two NGOs in Norway released a report about Brazilian soy protein concentrate producers. These producers were accused of sourcing soybean from some specific farms that in the report's opinion had violated the law in a variety of ways, including illegal deforestation, slave-like labour and illegal pesticide use. The report did not accuse Skretting of having received products that potentially had come from these farms as we had purchased certified products. However, it suggested that

it is not enough to only buy certified products, and that feed producers also have a role to play in overseeing that the soy product suppliers only deal with soybean farms that operate responsibly. Skretting is in full agreement in principle, but we also think it is important to recognise the difficulty in being certain that all suppliers to our own suppliers operate in a responsible, legal way.

What is clear is that companies can't act on their commitments unless they have full visibility into traceable and transparent supply chains and know precisely where their raw materials are coming from.

For instance, improved information on where soybeans are cultivated and by whom will lead to a much better understanding of where forests are being cleared and who is responsible. At the same time, modern databases like AgroTools can ensure better and more efficient access to the information required. Aquaculture feed producers have developed very detailed traceability systems for the marine ingredients that we source and this could provide a useful platform for improving sustainability practices within the agricultural raw material sector.

In the meantime, and in order to improve the performance of the entire value chain, Skretting will continue to remain engaged with our suppliers and their suppliers.



6.6

**ORIGIN OF SOY INGREDIENTS**

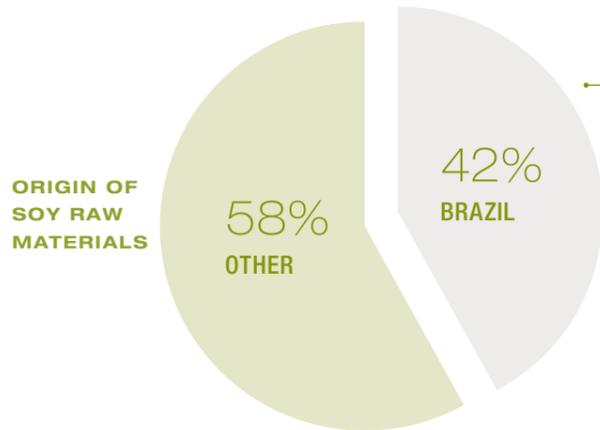
A cornerstone in our purchasing policy is ensuring that **all feed ingredients are produced in a safe and responsible way.**

In order to do so it's essential that also for vegetable raw materials we're able to trace these raw materials back to the country of origin – where they were cultivated. It is important to know the country of origin for raw materials in order to evaluate risks associated with illegal deforestation and lack of respect for labour rights and human rights.



**Skretting will work towards fulfilling The European Feed Manufacturers' Federation (FEFAC) Soy Sourcing Guidelines** - a set of professional recommendations for operators in the European feed industry who wish to purchase soy that is responsibly produced.

The guidelines consist of a set of minimum requirements related to the good environmental, social and agricultural practices of soy production. The guidelines consist of 59 baseline criteria (37 essential and 22 desirable) accompanied by verification requirements.

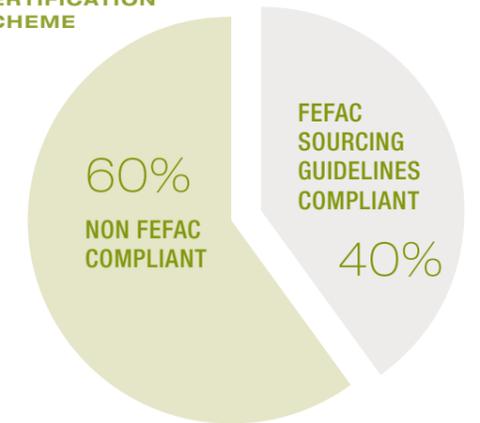


In 2018, 42% of the soy Skretting purchased originated in Brazil. However, this percentage is likely to be higher but cannot be identified exactly due to the mixed origin of some supply. The remainder originated from countries and regions including the USA, Canada, Europe, Africa and South America. As of today, we do not have a regular and mandatory system to trace soy products back to the country or region of soybean cultivation.

**In 2019, it will be a priority for us to improve our traceability system for soy products so we can trace origin back to country or region of soybean cultivation.**

This will also enable us to complete better and more targeted sustainability assessments of our soy products.

**CERTIFICATION SCHEME**



**In 2018, 40% of our soy purchases met the FEFAC sourcing guidelines.**

Compliance was ensured through buying soy that was either ProTerra or RTRS certified. The majority of FEFAC compliant soy products were bought by Skretting's salmon feed producing companies.

Since 2017 there has been a significant increase in the share of FEFAC sourcing guidelines compliant so products a – up from about 30%.

We have the ambition to increase this share in the coming years and this can partly be achieved by establishing better traceability of the origin of our soy products.



## 6.7 ORIGIN OF MARINE INGREDIENTS

Small pelagic fisheries are typically used in the fishmeal and fish oil industry, but in some regions, they are also important for direct human consumption.

Also known as forage species, pelagic fisheries are comprised of small, short-lived species that occupy a low trophic level (LTL) in the ecosystem. Due to their specific population biology and dynamics, these species are frequently resilient to fishing pressure if catches are well managed, but overfishing is always a possibility without effective controls. Through the Nuterra programme and engagement with FIPs, we strive to ensure that marine-based feed ingredients come from sustainable sources in the short- and long-term. The requirements aim to align industry incentives to support processes that will lead to improved fisheries management.



The processing of fish for human consumption gives rise to by-products in the form of heads, viscera, bones and skins, in addition to tails, fins, scales, blood and more. The material generated after processing is valuable as a raw material from which fishmeal and fish oil is produced. It's estimated that roughly one-third of fishmeal produced is made from by-product from fish for human consumption. The trend in general is for that proportion to increase as more whole fish are used for direct human consumption, and society becomes more successful at collecting by-product materials. A large section of by-products used to produce fishmeal and fish oil comes from wild-capture fish processing for human consumption but an increasing amount comes from the by-products of aquaculture processing. In 2018, 20% of fish oil and 27% of fishmeal in Skretting originated from trimmings and by-products. The majority of these by-products came from wild fisheries, however we do see an increase in the use of by-products from processing of farmed species like salmon, tilapia and shrimp.

	% FROM BY-PRODUCTS IN 2018
FISHMEAL	27
FISH OIL	20

The fish products that originate from trimmings represent in principle all fish that we consume for food. The trimmings are collected from seafood processing plants, from processing at retailers, processing plants in aquaculture, processing on board fishing vessels and more. Skretting's ambition is that all fishmeal and fish oil from trimmings must be able to be tracked back to the origin of the fishery and the species of fish. These species must not be listed as endangered on the IUCN Red List of Threatened Species.

Most fishmeal and fish oil originate from whole fish, or what is sometimes referred to as reduction fisheries. These are fisheries where the fishing boat delivers all its catch to a fishmeal factory. Typically, the vast majority of these type of fisheries relate to small pelagic species, mainly sardine, anchovy and herring fisheries. The largest anchovy fishery in the world is in Peru. As mentioned in a previous chapter, Skretting is engaged in FIPs in Peru, Ecuador and Vietnam.

Skretting sources fishmeal and fish oil from a large number of pelagic fisheries. Our ambition is that all fishmeal and fish oil originate from fisheries that are managed according to the FAO Code of Conduct for Responsible Fisheries. This requires our suppliers to be able to demonstrate that the fishmeal and fish oil is certified according to the IFFO Responsible Supply standard or participating in an improvement project with the aim of becoming IFFO RS certified. In 2018, 74% of fishmeal and 77% of fish oil meets this requirement.

	ORIGIN	IFFO RS CERTIFIED	IN A FISHERY IMPROVEMENT PROJECT	NOT CERTIFIED
FISHMEAL	Whole fish	60	14	26
FISH OIL	Whole fish	53	24	23

Skretting cooperates each year with the Sustainable Fisheries Partnership (SFP) to make a global sustainability overview of the main Pacific and Atlantic fish stocks used for reduction purposes (to produce fishmeal and fish oil). In 2018, we also added the first stocks in Asian waters – the Indian oil sardine – because of the strategic importance of this species.

The fisheries are rated according to the sustainability assessment presented on FishSource, the SFP public database of fisheries information. The assessments were based on the most recently available public data (as of July 2018) and generally represent a snapshot of the position in 2017 with regard to management quality and stock status indicators, and on 2016 for catch statistics.

The report is only concerned with fisheries that provide whole fish to the fishmeal and oil industry and does not cover fisheries that generate trimmings. The report does not include Asian fisheries (with the exception of Indian oil sardine), both small pelagics and mixed-species trawl fisheries, because of the current difficulty in establishing management and catch data. This omission is significant, because the fisheries of Asia provide very large quantities of fishmeal. We hope that future editions of the report will be able to extend coverage to at least some of these fisheries. Nonetheless, we are confident that the report covers approximately 50% of global fishmeal and oil production.



6.8

USE OF WILD FISH FOR FEED

The aquaculture industry has significantly reduced the inclusion rates of fishmeal and fish oil from forage fish in salmon feeds over the course of the past two decades. Skretting will continue to support the trend towards lower inclusion rates as well as the increasingly efficient use of marine resources.

Fishmeal and fish oil are both finite resources that are shared across a range of users with increasing demands – from direct human consumption to aquaculture to pig and poultry production.

Our Nuterra programme promotes the efficient use of these resources, producing increasing output from a given input of fishmeal and fish oil.

Our nutritional concept **MicroBalance** has made it possible to substitute finite marine ingredients with other raw materials in diets for a number of aquaculture species.

Under the Nuterra programme, we will regularly update the industry with our use of wild-caught fish used to produce 1 kg of feed, based on the average, weighted raw material composition. The use of wild fish is expressed as the Forage Fish Dependency Ratio (FFDR). This is calculated based on the use of fishmeal and fish oil.



USE OF WILD FISH IN FEED FOR SALMON

FORAGE FISH DEPENDENCY RATIO <b>FISHMEAL</b>	<b>2018</b>
FFDRM PER KG FEED	<b>0.41 KG</b> wild fish per kg feed
FORAGE FISH DEPENDENCY RATIO <b>FISH OIL</b>	<b>2018</b>
FFDRO PER KG FEED	<b>1.09 KG</b> WILD FISH PER KG FEED



MicroBalance®

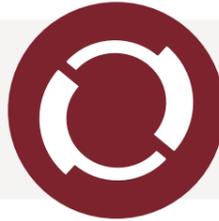


The Forage Fish Dependency Ratio (FFDR) is calculated based on 1 kg of wild fish yielding 24% fishmeal and 6.5% fish oil. The yield of fish oil reflects the geographic origin of the wild fish used to produce fish oil.

# 7 Operations

## SKRETTING'S OBJECTIVE:

To minimise the negative impacts of our direct operations and create valuable employment opportunities for the communities in which we operate.



### 7.1 ENVIRONMENTAL FOOTPRINT OF OUR OPERATIONS

Skretting continues to monitor, record and report its five environmental and social manufacturing KPIs on a quarterly basis. We began to do this in 2016, and now all production sites report through our financial reporting systems. We continue to strive for improvement and share best-practice among our different operations.

The table below shows our performance on these KPIs for Skretting companies per tonne of feed. Please note that the LTIs reported refers to incidents in the operating companies and they are not adjusted for the number of employees in the different operations (so they do not indicate a frequency).

		SKRETTING			
		2018	2017	DELTA	
	<b>ENERGY</b>	316	316	0%	kWh PER TONNE
	<b>CO<sub>2</sub> EMISSIONS</b>	78	86	-9%	KG CO <sub>2</sub> E PER TONNE
	<b>WATER WITHDRAWAL</b>	617	633	-3%	LITRE PER TONNE
	<b>WASTE GENERATION</b>	8	7	6%	KG PER TONNE
<b>LOST TIME INCIDENTS (LTI)</b>		49	34	15	



In 2018 the energy consumption per tonne of feed was the same as in 2017.

**CO<sub>2</sub> emissions were reduced by 9%** in 2018 to 78 kg CO<sub>2</sub>e per tonne of feed. This was mainly achieved through better energy efficiency and shift to lower carbon energy sources in Norway, Australia and Ecuador.

Water withdrawal was reduced by 3% down to 617 litres per tonne of feed. This was especially due to significant reductions at our operations in Africa and Asia.

Waste generation per tonne of feed was up 6% to 8 kg per tonne of feed. Waste generation can vary based on irregular activities like construction works, maintenance and cleaning of silos and tanks. As such, the relatively small increase seems to be within normal variability.

There was an increase in lost time injury incidents (LTIs) in 2018, but this was still relatively low compared to previous years. We are not able to detect any specific cause(s) for the increase in injuries, with the exception that in Africa there was a significant increase in overall activity.

In 2018, Nutreco and Skretting initiated our **Safety First programme**, which aims to enhance safety awareness and safe behaviour throughout the company next to our continued efforts to improve further plants and operations.

The project has the goal to create a strong safety culture and putting in place a global programme to help reduce the number of safety incidents.

Safety First will be implemented in 2019 and we believe it will contribute to reducing LTIs.





## 7.2 UNDERSTANDING THE CONSEQUENCES OF MARINE PLASTIC POLLUTION

Plastic pollution is a global challenge that's growing exponentially due to both an increase in consumerism and an increase in the number of plastics used in the manufacture of items we use on a daily basis. Many of these are single-use items, used once and then thrown away. Unfortunately, much of this plastic becomes an environmental problem, with a great deal of it ending up in the ocean. Thanks to a number of ongoing high-profile campaigns, the threat of marine plastics is an increasingly prominent conservation issue for global society. There are also increased efforts by the scientific community to understand to what extent small particles of plastics (microplastics) are entering food chains.

At present, it's largely unknown what impacts aquaculture feeds may be having in the natural ocean environment in relation to microplastics. Therefore, to improve our knowledge and understanding, **Skretting has begun a fact-finding mission, entering into a mapping project together with Mowi and AKVA Group.**

The different aspects of the project will examine the potential impact of sea pens (Mowi), the feeding systems (Akva Group) and the feed (Skretting). In addition, we hope to get answers about the potential impact on the fish, and subsequently, people.

The project is being funded by the Norwegian government, and carried out by Fiskeri og Havbruksnæringens Forskningsfond (Fishing and Seafood Research Fund). Skretting is looking forward to the results which will be available in 2019, and will use this information to determine any future actions.

We have also decided to **map our use of plastic bags and how empty bags are handled in our different markets.**

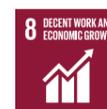
This mapping will be completed in early 2019. Based on the results of the mapping, we will evaluate what measures should be taken to ensure that empty feed bags do not end up as marine plastic pollution.



## 7.3 EMPOWERING EMPLOYEES AND BOOSTING SOCIO-ECONOMIC GROWTH IN VIETNAM

For many rural communities in Vietnam, aquaculture is an important source of social and economic stability. It provides essential employment, food security and livelihoods, as well as a means to safeguard traditional cultures.

In recognition of this crucial role, Skretting is committed to providing the feed solutions and sharing the global knowledge, techniques and practices that can enable Vietnamese aquaculture to flourish.



At the same time, we continue to implement initiatives that have a positive, lasting impact on local communities. In addition to measures aimed at boosting transportation links in key farming areas that include the construction of four bridges and helping to build new roads, we are a significant supporter of local education. In 2018, the multi-annual 'Skretting gets kids to school' programme, which has been implemented in 10 provinces nationwide, presented close to 1,300 scholarships to children from low-income families.

Meanwhile, the Community Day and World Food Day events focused on school infrastructure improvements and provided an in-class cooking/aquaculture learning experience, respectively.

Another important component of Skretting's sustainability promise is the responsible running of our own operations and workplaces, particularly the provision of a safe environment for our people and fair wages for their endeavours.

This commitment also includes nurturing our own talent and promoting gender equality and inclusivity. Of the 373 people employed by Skretting Vietnam in 2018, some 371 were from the local area. Moreover, 55 were women and 11 of these occupied management positions in areas that included production and operations, quality assurance, and procurement.



# 8 Commitment

## SKRETTING'S OBJECTIVE:

A sustainable future is not viable without the involvement of motivated people. We are actively engaged with internal and external stakeholders to achieve common sustainability goals.



### 8.1

#### BUILDING AQUACULTURE COMMUNITIES IN NIGERIA AND ZAMBIA

Skretting has important development projects underway in two impoverished fish farming regions in Africa. These initiatives are specifically designed to give small-scale producers the platform to be successful and completely independent of any subsidised support within a few production cycles.

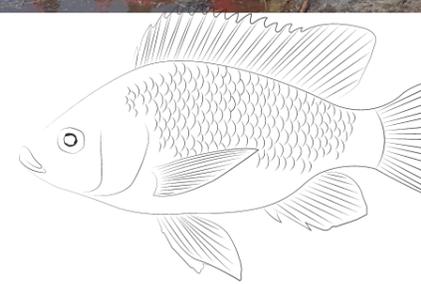
For the past three years, Skretting has been helping farmers grow catfish in Ibadan, Nigeria.

During this time, the Catfish Community Development Project expanded from 50 to 258 participating farmers.

In addition to essential technical support provided by Skretting and through

the partnership with local NGO JDPC, these farmers have access to a revolving fund that allows them to pay for their feed after harvest. They also participate in meetings twice per year to share their results and discuss challenges faced during farming cycles.

On average, the Nigerian farmers have seen their annual family net income increase by 215% and their FCR improved by 41%. The project's next steps include increasing the number of participants and promoting fair prices in the local markets where farmers sell their fish.



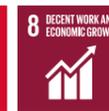
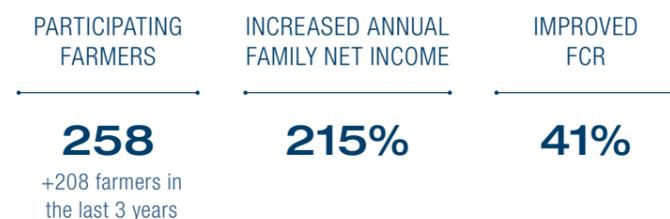
Meanwhile, Skretting's Tilapia Community Development Project, launched last year in Mpulung, Zambia, aims to help 40 local farmers by providing them with their initial fingerlings, subsidised feed and technical support.

#### ZAMBIA COMMUNITY DEVELOPMENT PROJECT - TILAPIA FARMING IN MPULUNGU

Zambia's first harvests are expected in the first-half of 2019, and farmers should be 100% independent from Skretting by the end of the third production cycle. Participants in the Nigerian catfish project are expected to be in the same position by the end of their fourth cycle.



#### AQUACULTURE COMMUNITY DEVELOPMENT PROJECT IN NIGERIA



## 8.2 PARTNERING WITH WORLD FISH TO ADDRESS FOOD SECURITY IN AFRICA

With the population of some African countries forecast to expand at much faster rates than most other global regions over the next few decades, there are opportunities to significantly increase aquaculture productivity at a local level and thereby meet the inevitable rising food needs.

**In 2018, Skretting and non-profit research organisation WorldFish signed a memorandum of understanding to develop aquaculture in Africa.** The aim of this multi-year collaborative project is to **understand the structure of Africa's aquaculture industry, and then improve its farming practices.**

Starting with Egypt and then Zambia, the partnership will work with a panel of fish farmers to develop best management practices, test new technologies and raise harvests and efficiency. Crucially, results will be shared with governments and other policymakers to illustrate the benefits of improving aquaculture best-practice on a national scale.

## 8.3 HELPING ITALIAN AQUACULTURE TO SHOWCASE ITS TRUE SUSTAINABILITY CREDENTIALS

With modern day aquaculture comprising so many different species, production systems and geographies, and with each at a different stage of technological progress, there's no rigid definition of what the term "sustainability" means. In 2017, recognising that sustainability should be a much more important marketing asset than it currently is,

Skretting Italy launched a programme designed to help Italian customers and their supply chains better define sustainability guidelines and communicate the value of their products using sustainability as a competitive advantage.

Communicate the value of the product using sustainability as a competitive advantage

### SKRETTING ITALY WORKSHOPS



COMMUNICATIONS KIT



To ensure that stakeholders could be equipped to share sustainability-based evidence that resonates with markets and thereby increase their commercial value, from 2017 Skretting Italy organised a series of three industry

workshops. The first of these sought to ascertain what sustainability means to customers and what issues are particularly relevant for marketing activities, while the second incorporated a roundtable that was also attended by key retailers. Its primary objective was to determine the main sustainability traits requested by Italian retailers in their fish purchasing policies, and how farmers can satisfy these needs. The roundtable provided some invaluable insights, including the importance of strengthening communication efforts towards the end-consumer and to address the incorrect information that exists about aquaculture.

The third gathering focused on training farmers on what messages should be communicated about fish in terms of nutritional characteristics and also the environmental impact of farming. To better convey the concepts, Skretting Italy assembled a Communications Kit containing short and effective answers to the most frequent and relevant questions about fish farming asked by retailers, consumers and other stakeholders.

This kit had five sections: Human Nutrition, Food Safety, Animal Welfare, Sustainability and Innovation.

The attending fish farmers were divided into teams to analyse the questions contained in the kit – gauging if the answers proposed were sufficiently clear or if further edits were required. Once all feedback from these reviews had been collected and incorporated into a revised draft, the farmers were joined by a group of retailers, journalists, bloggers and a representative of a chef association. The stakeholder roundtable that followed provided the opportunity to properly road test the tool, checking if it was fit for purpose and to get some ideas on how the industry might make best use of it.

Skretting Italy has now launched the finalised Communications Kit, which is now being distributed at key events and is also available via a free download.

This ground-breaking project, which is still ongoing, highlighted the importance of being a solution partner and working collaboratively with the value chain to change inaccurate perceptions about aquaculture and to share the industry's steady progress.





### 8.4 PINCOY: COLLABORATION AND INNOVATION FOR AQUACULTURE IN CHILE

The Pincoy Project was created in Chile in 2016 by seven companies spanning the entire salmon production chain. Its collective aim is to reduce the industry's antibiotic use by 50% by sharing knowledge and experience, and considerable progress to this long-term goal was made in 2018.

Historically, Chile's high usage of antibiotics has been to control the Piscirickettsiosis (SRS) disease. However, Pincoy has already confirmed that the **SRS challenge can be proactively addressed through holistic measures.**

These include farming salmon that are genetically more resistant to SRS, using optimal vaccination strategies, feeding the fish with functional and high-performance diets, ensuring good farming conditions, and only performing appropriate and necessary handling.

After two years, not only have Pincoy's first four pilot farming sites in the X and XI regions achieved very positive results and demonstrated the many benefits of focused, collaborative work, they have also inspired the development of the 'Good Practice Guide for Salmonidae Cultivation'. This manual is being prepared for sharing with the broader industry.

At AquaSur 2018, representatives of the seven companies participating in the Pincoy Project received recognition from the industry for the contribution of this initiative to environmental care. The award recognises projects that improve the environmental management of the industry in general, reducing the impact of aquaculture production on the environment, with special focus on the sustainability of the industry, which is one of the key objectives of the Pincoy Project.

Following on from these successes, the project's partners are now preparing the second phase, Pincoy 2.0, and identifying its component strategies for further antibiotic reduction.

In the meantime, the greater industry-wide emphasis on better production practices helped reduce Chilean salmon farming's rate of antibiotic use by 23% in 2018 (Source: Sernapesca).



### 8.5 SEABOS

Skretting and Nutreco are key contributors to the Seafood Business for Ocean Stewardship (SeaBOS) initiative. A brainchild of the Stockholm Resilience Centre (SRC), the SeaBOS initiative is unique because it has transferred an ecological concept of "keystone species", which are especially crucial for the functioning of their natural environments, to the business sector with respect to seafood production. CEOs from the 10 largest global seafood companies (including fishing, aquaculture and aquafeed manufacturing) have joined forces through SeaBOS to create transformative change on the water and across their value chains.

Nutreco chairs Task Force 1, in partnership with SRC and through close collaboration with Maruha Nichiro Corporation, Charoen Pokphand Foods and Dongwon Industries as well as several external environmental NGOs. This task force is focused on delivering:

- 1 A document that addresses the seven high-level voluntary principles and 45 main criteria to significantly reduce the prevalence of IUU Fishing activities and Modern Slavery; and
- 2 A demonstration proving that the outfitting of commercial fishing vessels with deck cameras, crew facial recognition and captured fish species recognition computer software, vessel tracking and the use of blockchain platform technology can be economically feasible and effective in documenting and reducing these risks.



The first component is intended for governmental regulators to potentially adopt into their national legislation programmes and for companies to adopt into their corporate procurement policies. The second component is meant to be implemented and adopted into best practices by corporate fishing vessels and contractor fishing vessels protocols.

Our theory with SeaBOS is that change will succeed if food retailers and foodservice companies demand these practices, significantly reducing the access to market of suspect products in the supply chain. If it's successful, it will **offer an unprecedented level of transparency and traceability in the high-seas fishing sector.**





**8.6 SUPPORTING IMPROVED FISHERY MANAGEMENT**

Skretting sets minimum criteria with regards to the sustainable sourcing of marine products and the responsible management of the fisheries fishmeal and fish oil originate from. We also subscribe to and promote the principles of the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries.

In some cases, we see that the fisheries we utilise cannot verify that they live up to the FAO principles. If this is the case, Skretting actively works together with other stakeholders to improve the management of the fisheries through fishery improvement projects (FIPs). In 2018, Skretting was involved in three FIPs.

**PERUVIAN ANCHOVETA FIP**

One of the most important fisheries in the world, the Peruvian anchovy fishery, is engaged in an FIP to achieve a “certifiable status” according to the guidelines of the Conservation Alliance for Sustainable Solutions (CASS).

The FIP was launched in 2017 after the signature of a memorandum of understanding between the Peruvian National Fisheries Society (SNP) and the Center for Development and Sustainable Fisheries (CeDePesca). The Action Plan for the FIP includes an update of the former pre-assessment against the Marine Stewardship Council (MSC) standard, an evaluation of the trophic impacts of the fishery, the improvement of controls for the small-scale fleet and a better understanding of the direct impacts on other species, through a private onboard observer programme. Feed producers Skretting and Cargill are supporting the FIP and participating in the steering committee.

There’s a strong sense that the level of exploitation of this fishery must take into account ecosystem needs, given the status of Peruvian anchovy as a low-trophic-level species. A more specific analysis on the trophic needs of species that prey on Peruvian anchovy has been completed by the Instituto del Mar del Peru (IMARPE). CeDePesca prepared a background document on trophic interactions using a compilation of relevant data, and IMARPE agreed to select an international expert to collaborate in conducting a full analysis. Dr Eduardo Morteo will act as the expert and collaborate with researchers in conducting the analysis on trophic needs of species that prey on anchovy.

After receiving comments from the working group, IMARPE adopted a working plan to conduct the analysis on trophic needs. This analysis is now underway. IMARPE has also committed to updating researcher Jorge Tam’s paper entitled “Relationship between Peruvian anchovy and other ecosystem components”. In 2019, documentation detailing the ecosystem approach and fishery management of Peruvian anchoveta will be completed. The improvement project is planned to be completed in 2020.



**IFFO RS IMPROVERS PROGRAMME ESTABLISHED IN ECUADOR**

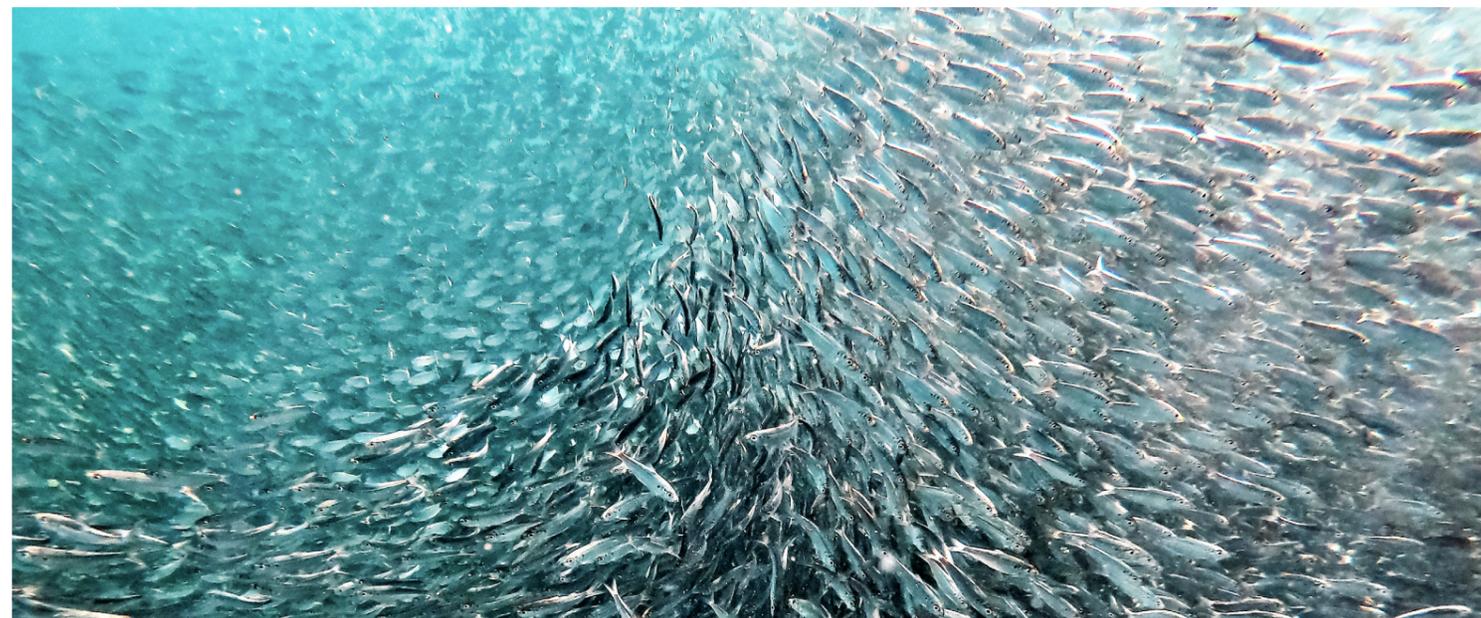
A group of 18 Ecuadorean fishing and processing firms, together with three international feed producers, have committed to carry out an FIP for small pelagic resources. The participating international feed producers are Skretting, Biomar and VitaPro Ecuador.

The companies involved represent about 80% of the country’s small pelagic fishing firms, active both in the production of fishmeal and of frozen and canned products for direct human consumption. The improvement project is part of the IFFO RS Global Standard for Responsible Supply fishery improvers’ programme, which allows producers of marine ingredients to demonstrate their commitment to improvement towards responsibly sourced raw materials.

**FIP IN VIETNAM’S VUNG TAU REGION**

Skretting Vietnam, together with fishmeal producers, governmental agencies and other aquaculture feed producers, continues to engage in an FIP in the Vung Tau province in Southern Vietnam. The aim of this project is to improve the fishery management of the Vung Tau province mixed trawl fishery over a five-year period to a level where it can meet the requirements of the IFFO RS standard.

IFFO RS has formally launched its multispecies criteria to be tested during the next three years with relevant fisheries such as mixed trawl fisheries in Southeast Asia. During this period, the pilot will work as part of the IFFO RS Improvers’ Programme (IP).



## 8.7

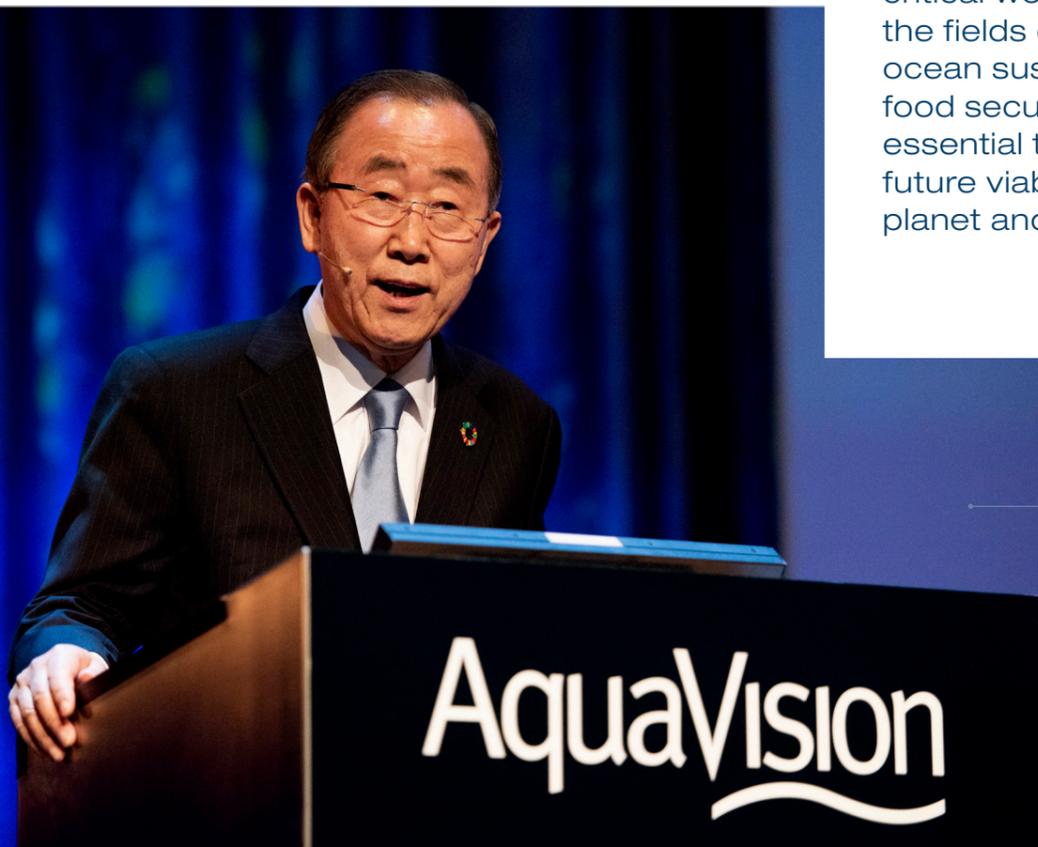
### AQUAVISION

Meeting the challenge of sustainably feeding the world of 2050 requires coordinated contributions from many stakeholders. Academics, aquaculture and agribusiness, food manufacturers, retailers, environmental groups, regulators and politicians need to work closely to identify, facilitate and implement the most significant improvements to the aquaculture industry to reach this goal.

Since 1996, AquaVision has served as the world's premiere aquaculture business conference. It has brought together key stakeholders from business and government alongside leading global experts, scientists, speakers, and decision-makers. Skretting and Nutreco take pride in the calibre of AquaVision attendees – presidents, CEOs and directors from the world's leading and largest aquaculture companies. Fully booked conferences, with more than 400 stakeholders from over 40 countries attending, have highlighted the importance of AquaVision as a meeting place for the global industry's leaders.

In 2018, AquaVision welcomed former Secretary-General of the United Nations, Ban Ki-moon as a keynote speaker. During his address, he stated, “the critical work you pursue in the fields of aquaculture, ocean sustainability, and food security is increasingly essential to ensure the future viability of both our planet and humanity”.

Ban Ki-moon at AquaVision 2018



Other keynote speakers in 2018 included HRH Crown Princess Victoria of Sweden, joining a high profile group including Sir Bob Geldof, and former Secretary-General of the United Nations Kofi Annan. In 2012, Annan spoke about the enormous potential for the aquaculture industry to help sustain population growth and economic development. In his address, he asked sector companies to look beyond their bottom line and help accelerate production by sharing knowledge in partnership with small fish farmers in developing countries. He also congratulated the industry for its focus on improving sustainability through initiatives such as the Aquaculture Stewardship Council, and urged participants to be mindful of the effects of climate change and its impact on productivity in the years ahead. The points made by Annan are still relevant today.



AquaVision 2018 provided an important networking opportunity contributing to stakeholder discussions on one of the biggest challenges of our time – delivering global food and nutrition security – aligned with the specific challenges and opportunities facing aquaculture today and in the future.



STAVANGER, NORWAY

# 9 Skretting

## 9.1 ABOUT SKRETTING

Skretting is the aquaculture division 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 47,000 people.

Skretting is the global leader in providing innovative and sustainable nutritional solutions for the aquaculture industry.

PRODUCTION FACILITIES

**19**  
COUNTRIES

SPECIES

**>60**

FULL TIME EMPLOYEES

**3,535**

AQUACULTURE FEEDS 2018

**2.3**  
MILLION TONNES

Skretting has production facilities in 19 countries, and its 3,535 employees manufacture and deliver nutritional solutions and services for more than 60 species from hatching to harvest.

The head office is located in Stavanger, Norway.

In 2018, Skretting produced 2.3 million tonnes of aquaculture feeds. Sales were the highest in Europe and Americas. The turnover for the Skretting Division in 2018 was 2.5 billion euros.

### SALES 2018

REGION	%
EUROPE	43
AMERICAS	38
ASIA	11
AFRICA	4
PACIFIC	4
TOTAL	100

### FULL TIME EMPLOYEES

REGION	FULL TIME EMPLOYEES	%
EUROPE	883	25
AMERICAS	1,310	38
ASIA	759	21
AFRICA	499	14
PACIFIC	84	2
TOTAL	3,535	100



9.2

MISSION, VISION AND VALUES

Skretting is the world leader in the manufacture and supply of innovative nutritional solutions

and services for aquaculture making us an essential link in the feed-to-food chain. We apply our knowledge of ingredients and the nutritional needs of fish and shrimp to develop innovations that achieve optimum nutritional value, sustainable production and economic performance as we seek to fulfil our company-wide mission of 'Feeding the Future'.

Skretting's mission: #FeedingTheFuture

feeding the future

Our mission is based on the challenge of feeding a global population that's forecast to reach 9.5 billion people by 2050. The fast-growing world population, increased urbanisation, a growing middle class and changing diets will lead to a surge in demand for protein, especially in emerging markets. Our ambition is to contribute to meeting the rising food needs in a sustainable manner. We will do this by constantly seeking innovative ways to raise the efficiency and nutritional value of our products, the productivity of our activities and those of our customers, and to reduce the environmental impact of our value chains. Sustainability is in the nature of our business.

Our mission is based on the challenge of feeding a global population that's forecast to reach 9.5 billion people by 2050

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 mission of 'Feeding the Future', we adhere to four clearly defined core values – Innovative, Caring, Collaborative and Capable – which are adopted throughout Nutreco.



SHV Supported by SHV Values Integrity | Loyalty





### 9.3 OUR GLOBAL SUSTAINABILITY EFFORT

**11**  
RESEARCH  
& VALIDATION  
STATIONS IN  
9 COUNTRIES

**€ 15M**  
ANNUAL  
INVESTMENT  
IN R&D

Our mission

*feeding  
the future*

Companies are listed in order of oldest to most recent. Smaller red dots indicate additional plants in the country.

- |  |   |  |
|--|---|--|
| <p><b>1. SKRETTING GROUP</b><br/> <b>Head Office:</b> Skretting Group<br/> <b>Head Office:</b> Skretting Aquaculture Research Centre (ARC)</p> <p><b>1. SKRETTING NORWAY</b><br/> <b>R&amp;D:</b> Skretting ARC Lerang Research Station<br/> <b>Plants:</b> Stokmarknes, Averøy and Stavanger<br/> <b>Feed for:</b> Atlantic salmon, seawater trout, cod, halibut, catfish and wrasse</p> <p><b>2. SKRETTING FRANCE</b><br/> <b>Plants:</b> Vervins and St Hervé<br/> <b>Feed for:</b> Freshwater trout, sea bass, sea bream, turbot, salmon, catfish, tilapia, sturgeon, eel, carp and shrimp</p> <p><b>3. SKRETTING ITALY</b><br/> <b>R&amp;D:</b> Skretting ARC Mozzecane Research Station and Skretting Validation Station Italy<br/> <b>Plant:</b> Mozzecane<br/> <b>Feed for:</b> Freshwater trout, sea bass, sea bream, sturgeon, eel, catfish and carp</p> | <p><b>4. SKRETTING UK</b><br/> <b>Plants:</b> Invergordon and Longridge<br/> <b>Feed for:</b> Atlantic salmon, freshwater and seawater trout, carp, tilapia and sea bass</p> <p><b>5. SKRETTING CHILE</b><br/> <b>Plants:</b> Osorno, Pargua and Puerto Montt<br/> <b>Feed for:</b> Atlantic salmon, pacific salmon, freshwater and ocean trout, tilapia, shrimp and yellowtail amberjack</p> <p><b>6. SKRETTING SPAIN</b><br/> <b>Plant:</b> Cojóbarr<br/> <b>Feed for:</b> Freshwater trout, sea bass, sea bream, turbot, sole, meagre, eel, carp, catfish, amberjack and sturgeon</p> <p><b>7. SKRETTING CANADA</b><br/> <b>Plants:</b> Vancouver and St. Andrews<br/> <b>Feed for:</b> Atlantic salmon, arctic char, pacific salmon, sable fish, sturgeon, trout, halibut and tilapia</p> | <p><b>8. SKRETTING JAPAN</b><br/> <b>R&amp;D:</b> Skretting ARC Kagoshima Research Station<br/> <b>Plant:</b> Imari<br/> <b>Feed for:</b> Yellowtail, red sea bream, bluefin tuna, amberjack, striped jack, sea bass, freshwater and seawater trout</p> <p><b>9. SKRETTING AUSTRALIA</b><br/> <b>R&amp;D:</b> Skretting Validation Station Australia<br/> <b>Plant:</b> Hobart<br/> <b>Feed for:</b> Atlantic salmon, chinook salmon, barramundi, yellowtail kingfish, abalone, freshwater and seawater trout</p> <p><b>10. SKRETTING EGYPT</b><br/> <b>R&amp;D:</b> Skretting Validation Station Egypt<br/> <b>Plant:</b> Belbies<br/> <b>Feed for:</b> Tilapia, catfish, mullet, carp and sea bass</p> |
| <p><b>11. SKRETTING USA</b><br/> <b>Plant:</b> Salt Lake City<br/> <b>Feed for:</b> Barramundi, char, catfish, hybrid striped bass, koi, largemouth bass, pacific salmon, sturgeon, steelhead, tilapia and trout</p> <p><b>12. SKRETTING TURKEY</b><br/> <b>Plant:</b> Güllük<br/> <b>Feed for:</b> Freshwater trout, carp, sea bass and sea bream</p> <p><b>13. SKRETTING BRAZIL</b><br/> <b>Plants:</b> Teresina and Ceará<br/> <b>Feed for:</b> Shrimp, tilapia and tambaqui</p> <p><b>14. SKRETTING VIETNAM</b><br/> <b>Plants:</b> Ho Chi Minh City and Long An Province<br/> <b>Feed for:</b> Black tiger shrimp, whiteleg shrimp, giant freshwater prawn, red tilapia, snakehead, climbing perch, pangasius (fingerlings), sturgeon, Asian sea bass, grouper, cobia, clown featherback, snakeskin gourami and pompano</p>                                   | <p><b>15. SKRETTING CHINA</b><br/> <b>R&amp;D:</b> Skretting ARC Hezhoubai Research Station<br/> <b>Plant:</b> Zhuhai<br/> <b>Feed for:</b> Whiteleg shrimp, black tiger shrimp, trout, sea bass, snakehead, golden pompano, catfish and sturgeon</p> <p><b>16. SKRETTING NIGERIA</b><br/> <b>Plant:</b> Ibadan<br/> <b>Feed for:</b> African catfish and tilapia</p> <p><b>17. SKRETTING ECUADOR</b><br/> <b>R&amp;D:</b> Skretting Validation Station Ecuador<br/> <b>Plants:</b> Three in Guayaquil<br/> <b>Feed for:</b> Shrimp, tilapia and trout</p>  | <p><b>18. SKRETTING ZAMBIA</b><br/> <b>Plants:</b> Siavonga<br/> <b>Feed for:</b> Tilapia</p> <p><b>19. SKRETTING HONDURAS</b><br/> <b>Plant:</b> San Francisco de Yojoa<br/> <b>Feed for:</b> Shrimp and tilapia</p> <p><b>20. SKRETTING INDIA</b><br/> <b>Plant:</b> under construction<br/> <b>Feed for:</b> Whiteleg shrimp, sea bass, tilapia</p>   |

9.4 SKRETTING'S ROLE IN

# the feed-to-food chain

## 1. PRIMARY PRODUCERS



Agricultural crops, land animal 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 rights violations.

## 6. CONSUMERS



People purchase and eat high-quality, safe and nutritious seafood – fish and shrimp.

## 5. FOOD DISTRIBUTORS



RETAILERS  
MARKETS  
FOODSERVICE

Food distributors have an important role to play in promoting and advancing sustainable consumption and production of farmed fish and shrimp.

1

ENERGY

Raw materials are used in energy production and co-products can be used in the feed-to-food chain

2

FOOD

Raw materials are used in food production and co-products from food processing can be used in the feed-to-food chain

## 2. FEED INGREDIENT 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.



3

## 3. SKRETTING

2.3 MILLION TONNES OF FEED PRODUCTION IN 19 COUNTRIES



AQUAFEED PRODUCER

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.

5

4

## 4. FARMERS

Aquaculture farmers feed their fish and shrimp to grow high-quality and nutritious food. Aquaculture farming performance is determined by animal health, nutrition and farm management.



AQUACULTURE

## 9.8 OUR STAKEHOLDERS

Stakeholder engagement is the key starting point for a company, not only in terms of its sustainability reporting cycle, but also as a means to connect to its business strategy and demonstrate how a company is responsive to the legitimate needs and concerns of its key stakeholders. Stakeholders are those groups who affect and/or could be affected by Skretting's activities, products or services and associated performance.

Skretting has many stakeholders, each with distinct types and levels of involvement, and often with diverse and sometimes conflicting interests and concerns.

### Key stakeholders

#### CUSTOMERS

Our customers are companies that produce aquaculture species typically for human consumption as seafood. Our company provides technical assistance through our service team and customer events. Information is made available via our website, customer magazines and we facilitate engagement through global forums, meetings and site visits.

#### EMPLOYEES

Our people are important to us. Our company has many programmes to ensure personal development opportunities and a safe and healthy work environment. Feedback from staff is obtained through annual climate surveys and annual performance reviews. We have regular business updates and our intranet "Nutranet" provides regular update of events.

#### NUTRECO

As a division of Nutreco, we contribute to annual performance objectives and targets. We engage with Nutreco through our intranet and internal newsletters and relevant updates are often communicated through press releases. The major forum for engaging on sustainability issues is the biennial AquaVision conference.

#### SUPPLIERS

Our procurement department is actively engaged with our raw materials suppliers on a daily basis. We also have strategic engagement activities and workshops with suppliers and potential suppliers to identify opportunities or improvements within the supply chain. Suppliers are also invited to take part in the AquaVision conference.

#### INDUSTRY ASSOCIATIONS AND RESEARCHERS

Being the link between raw material supply and customer demand, we are engaged with stakeholders as industry advisors or participants in applied research often through active research project collaborations or networks.



#### GOVERNMENT AND REGULATORS

We engage with government through our association with leading industry bodies. Our employees also give advice to government bodies on a variety of issues such as aquaculture feed legislation, issues relating to food safety and general information on the aquaculture industry.

Matters of interest and concerns can typically be grouped into categories including:

#### ECONOMIC/FINANCIAL

Profitability, cash flow, dividend policy, pricing, growth rate, exchange control

#### ENVIRONMENT

Carbon footprint, water, waste management, recycling and compliance

#### SOCIAL

Health and safety, skills retention, ethics, transformation and training

#### COMMUNITY DEVELOPMENT PROGRAMMES

Skretting is involved in many stakeholder processes for a number of different reasons:

#### DEFINING WHAT TO FOCUS EFFORTS ON

– consulting stakeholders, for example during a materiality assessment, helps us develop and validate key focus areas and/or material issues.

#### IMPROVING REPORTING

– Skretting may engage with internal and external stakeholders to ensure they are transmitting the right messages.

#### IMPROVING RISK MANAGEMENT AND COMPLIANCE

– Skretting has complex supply chains. Only by engaging with stakeholders will we fully understand the risks and whether we are meeting compliance issues.

#### DRIVING INNOVATION

– using different perspectives can help to get ahead of the game, taking the insights and creative ideas from those both within, and outside of, the business.

#### INFLUENCING CHANGE IN THE INDUSTRY SECTOR

– engagement in multi-stakeholder pre-competitive platform as a mean to move the entire value chain forward as a group.

#### DEVELOPING STRATEGY

– stakeholder engagement can be instrumental in developing strategies and achieving that all-important buy-in.

#### INCREASING FINANCIAL REWARD

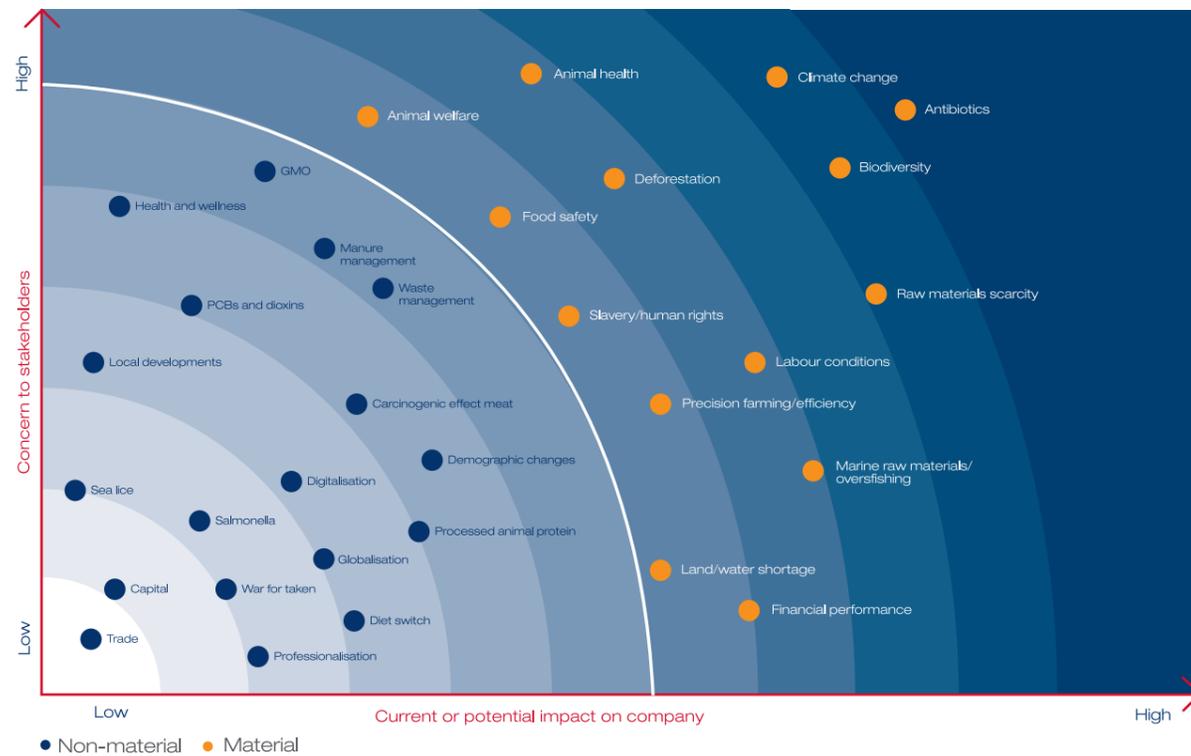
– engaging with stakeholders is more than a means to gather opinion, it's also an invaluable way to ensure that projects can go ahead, that they are executed smoothly and delivered efficiently.

## 9.5 MATERIAL ISSUES

### Materiality – Issues of greatest concern

Skretting and Nutreco undertook a full materiality assessment in 2015. This was reviewed internally in 2016. The content of this report is based on the findings of this assessment. Though Nutreco continues to address and focus on the issues found to be material in its full materiality assessment of 2015 and revalidated and confirmed in 2016 and again in 2017, in preparation for developing our new Roadmap 2025 we completed a full materiality assessment in 2018.

Some 700 stakeholders were invited to participate in a web-based questionnaire. Participants represented suppliers, customers, NGOs, academia, the owner's sustainability platform and Nutreco internal staff. We had the incredible response rate of 42%. In 2019, we will take the results and convene an internal workshop with members of functional Directors and Executive Committee representatives to define and ultimately develop Sustainability Roadmap 2025, which will be launched in the first-quarter of 2020.



## 9.6 GOVERNANCE

All Operating Companies (OpCos) producing for aquaculture are in the Skretting division, while those dealing predominantly with land animals are part of the Trouw Nutrition division. Nutreco has also established a group responsible for overseeing innovation and disruptive business ideas. Therese Log Bergjord is Chief Executive Officer of the Skretting division and is a member of the Nutreco Executive Committee.

In August 2018, Knut Nesse stepped down after six years in his role as Nutreco Chief Executive Officer and Rob Koremans took the helm. Corporate Sustainability Director, Jose Villalon, continues to report directly to the CEO, Chair the Nutreco Sustainability Platform (NSP) and represents Nutreco on issues pertaining to sustainability with Nutreco's owners, SHV, through the SHV-Sustainability Platform.

### Ethics and Legal Compliance

Skretting uses both internal resources and external consultants to ensure full compliance with all legislation governing our activities. Skretting employees undertake a mandatory training module on Nutreco's Code of Ethics. SHV has initiated a global 'SpeakUp line', enabling our people to effectively report and discuss any questions they may have.

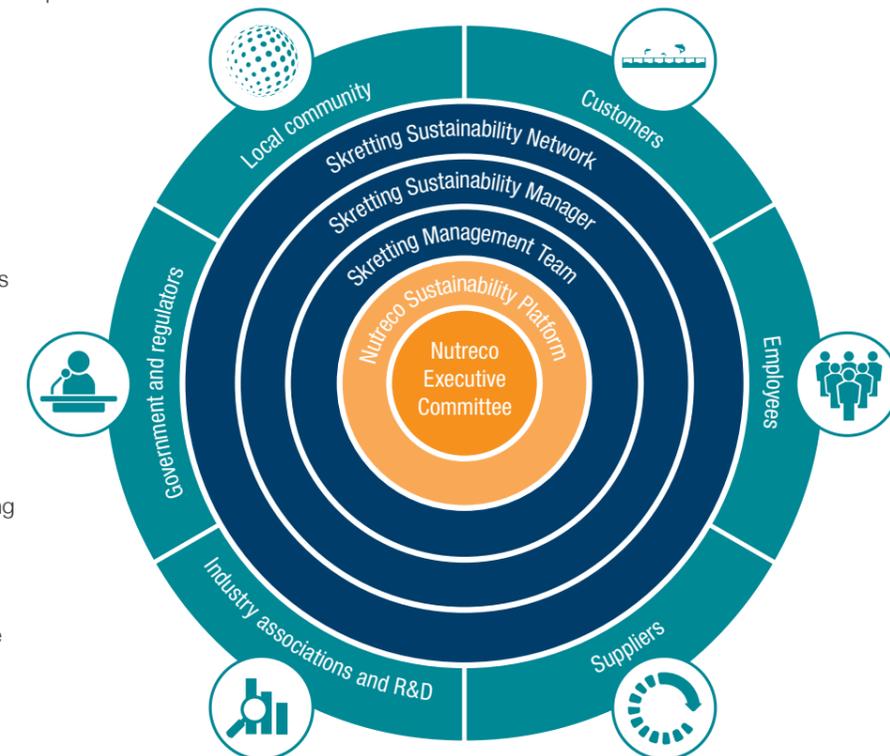
New policies introduced in 2018 included Third Party Due Diligence, Anti-Bribery and Corruption and Trade Sanctions & Export Controls.

To read Nutreco's code of ethics visit the Nutreco website - About Us - Code of Ethics

### Skretting Sustainability Governance

Trygve Berg Lea, Sustainability Manager at Skretting, previously reported to the Marketing Director, but this line of reporting changed to the newly created Brand Director in 2018. Each OpCo has a person that serves a coordinator for sustainability and who devotes 20-30% of their time executing sustainability-related tasks and providing feedback to the Nutreco Sustainability Platform (NSP) on sustainability issues that are relevant to their OpCos.

The Skretting Sustainability Manager is member of the NSP. The NSP meets monthly and governs sustainability policy within Nutreco and continues to have broad representation by the business with four members. Typical sustainability governance begins with sustainability policy and/or action being developed by consensus agreement within the NSP after which the Chair proposes action at the ExCo level. If approved, it returns to the NSP where it is communicated to the Nuterra Champions and their respective General Managers across all OpCos.



## 9.7 CERTIFICATION

Our operating companies continued to work closely with third-party independent bodies, customers and local authorities during 2018 to ensure compliance with internal standards, regulations and certifications and guarantee the consistent formulation and production of high-quality nutritional solutions for aquaculture. Skretting operating companies are certified to a number of ISO standards which help us ensure that we have a consistent quality systems and continuous improvement. We are also certified according to private standards like GlobalGAP, BAP, ASC and organic standards that can be important for our customers to gain market access.

SKRETTING COMPANY	ISO 9001	ISO 14001	ISO 22000	HACCP	GMP+	OHSAS 18001	OTHER
ARC	X						ISO 17025
Australia	X	X		X	X		
Canada	X			X			USDA
Chile	X	X				X	
China	X						
Ecuador	X			X			
Egypt	X	X	X			X	
France	X						RCNA
Italy	X	X		X			
Japan	X						
Nigeria			X				
Norway	X	X	X				
Spain	X	X	X			X	
Turkey	X		X				
UK	X						UFAS
USA	X			X			USDA
Vietnam	X						

<b>ISO 9001</b>	Requirements for a quality management system (QMS)
<b>ISO 14001</b>	Specifies requirements for an effective environmental management system (EMS)
<b>ISO 22000</b>	Food Safety Management
<b>HACCP</b>	Hazard Analysis (and) Critical Control Point
<b>GMP+</b>	Good Manufacturing Practices
<b>RCNA</b>	Référentiel de Certification de la Nutrition Animale
<b>USDA</b>	United States Department of Agriculture

SKRETTING COMPANY	GLOBALGAP	BAP FEED MILL	NATURLAND ORGANIC	OTHER
ARC				
Australia	X	X		Feedsafe, ASC compliant
Canada	X	X	X	Feed assure (70%), ASC compliant
Chile	X	X		OHSAS 18001, ASC compliant
China				
Ecuador	X	X	X	EU organic and Quality Certification Services, ASC compliant
Egypt		X		
France	X		X	Label Rouge
Italy	X		X	ASC compliant
Japan				ASC compliant
Nigeria				
Norway	X			ASC compliant, Label Rouge
Spain	X			OHSAS
Turkey	X	X		
UK			X	Soil Association, Label Rouge, ASC compliant
USA	X	X		
Vietnam	X	X		

<b>GLOBALGAP</b>	GlobalGAP compound feed manufacturing standard
<b>BAP FEED MILL</b>	Best Aquaculture Practice feed mill standard
<b>NATURLAND ORGANIC</b>	Organic standard
<b>EU ORGANIC</b>	Organic standard
<b>LABEL ROUGE</b>	French quality standard
<b>OHSAS 18001</b>	Occupational Health and Safety Assessment
<b>ASC</b>	Aquaculture Stewardship Council





## 9.9 MULTI-STAKEHOLDER ENGAGEMENT

### Engagement in the value chain

Skretting is of the opinion that we can only progress if we communicate to and enter into dialogue with stakeholders, in particular with our own employees, but also with society in general. Together with our parent company Nutreco, we are involved in several multi-stakeholder initiatives to improve sustainability in aquaculture. We would like to highlight the following engagements.

#### IFFO RESPONSIBLE SUPPLY STANDARD (IFFO RS)

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 IFFO RS 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 (SFP)

Skretting is a sponsor of the 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.

### ENCOURAGING RESPONSIBLE FISHERY MANAGEMENT

Great strides have been made by the aquaculture industry to improve its responsible practices in recent years, with substantial efforts particularly focused on encouraging marine ingredient suppliers to ensure that they source raw materials from well-managed, sustainable fisheries.

A large number of fisheries in Europe and the Americas today are certified to the IFFO RS standard. Skretting has the ambition to source from only IFFO RS compliant fisheries and we support fisheries to embark on improvement projects so they can become certified according to the IFFO RS standard. Currently, Skretting is engaged in three fishery improvement projects (FIPs): One in Peru is improving the Peruvian anchoveta fishery to be able to become MSC certified, the one in Ecuador is to become IFFO RS certified, while the one in Vietnam is to trial the new multispecies standard of IFFO RS.

#### GLOBAL SALMON INITIATIVE (GSI)

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.

#### THE ROUND TABLE ON RESPONSIBLE SOY (RTRS)

Nutreco is member of 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.

#### ROUNDTABLE ON SUSTAINABLE PALM OIL (RSPO)

Nutreco has been a member in good standing of 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 (NYDF)

Skretting is a signatory of 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.

#### GLOBAL AQUACULTURE ALLIANCE (GAA)

Skretting is a member of 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 which is 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 (FEFAC)

Nutreco is a member of the FEFAC Sustainability Committee, which meets two or three times each year in Brussels 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.

## 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

## AQUACULTURE STEWARDSHIP COUNCIL (ASC)

Established in 2010, the 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 (SSP)

Skretting is a founding member of the SSP. The SSP is 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.

The launch event at the Boston Seafood Expo featured Therese Log Bergjord as a keynote speaker, as well as other industry experts, including representatives from WWF, Harvard's Infectious Disease Institute and the National Chamber of Aquaculture Ecuador.





