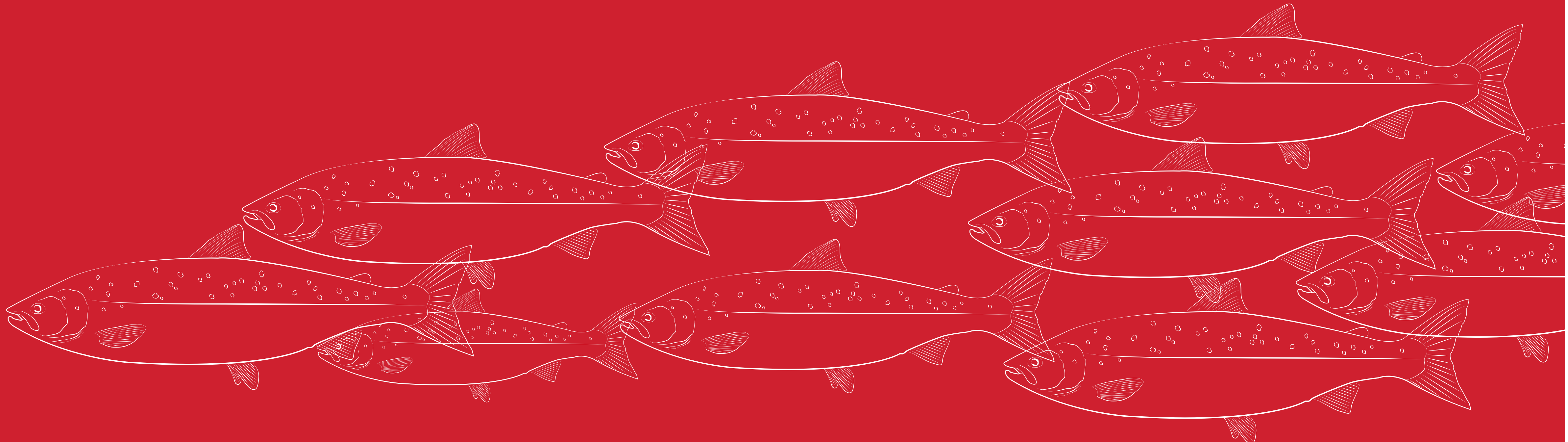


ENVIRONMENTAL
FOOTPRINT OF SKRETTING
NORWAY SALMON FEED



Use and origin of ingredients and environmental
impact of products and operations

2018





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ENVIRONMENTAL FOOTPRINT OF SALMON FEED

2018

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1 The Environmental Footprint Assessment 2018

PURPOSE AND SCOPE OF THE ENVIRONMENTAL FOOTPRINT REPORT

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

Skretting's commitment to sustainability is expressed through the Nuterra programme, which identifies the key sustainability issues facing the aquaculture industry and the actions Skretting undertakes to address them.

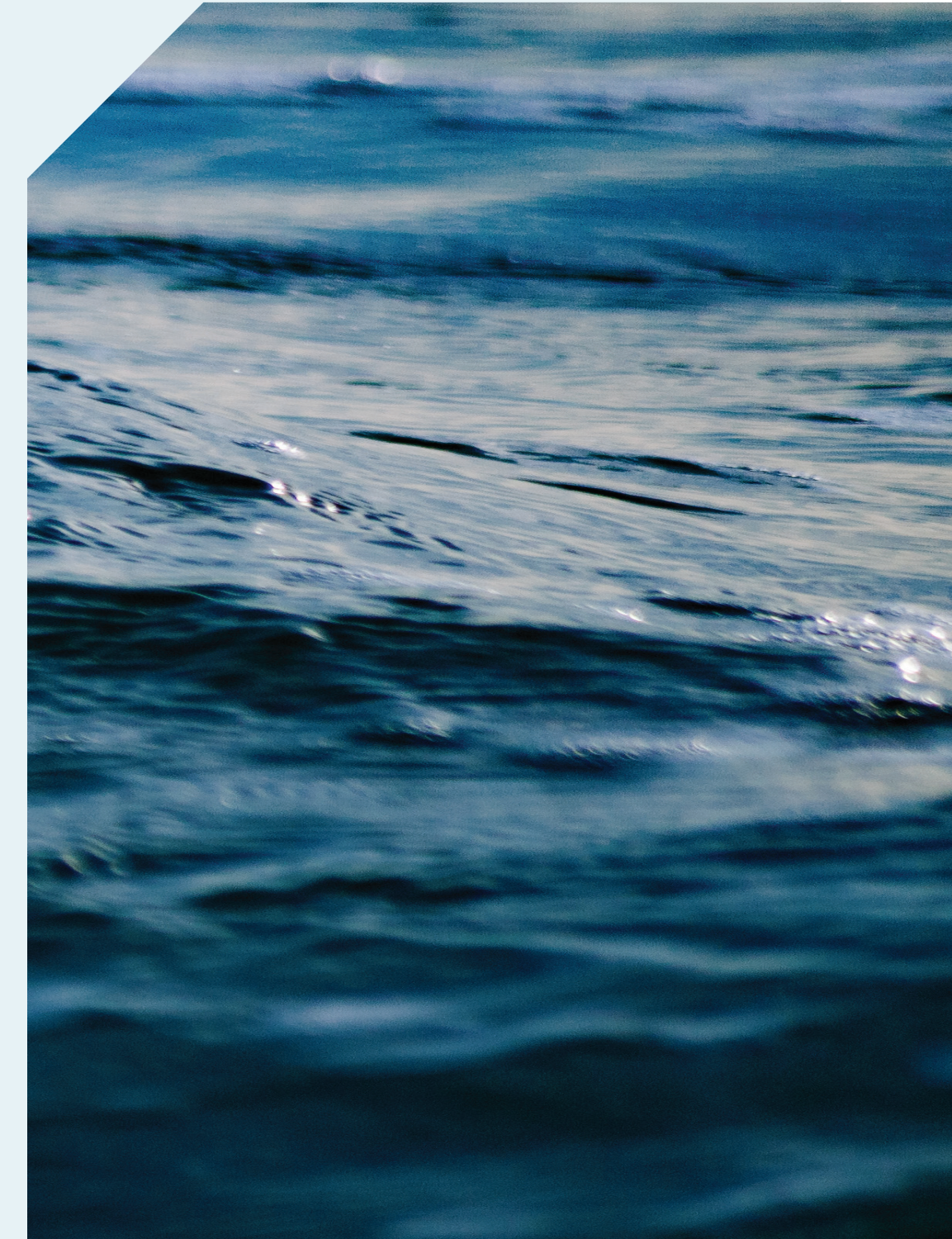
A number of our stakeholders, including customers, retailers and certification bodies require documentation of the environmental footprint of our products. As a responsible company,

Skretting Norway is committed to make this information available in this document so that our customers can share it with their seafood buyers or other parties who request specific information.

The issues addressed under the umbrella "environmental footprint", relate to the areas where we have the most requests for information, and the areas where we at present are able to provide information of good quality.

This document is an assessment in order to describe the environmental footprint from Skretting feeds used to produce salmon and represents an average of the specific products used throughout the life cycle of the salmon. The information provided here, is applicable to Skretting Norway fish feed and numbers are based on 2018 full year production. This assessment is updated annually.

Trygve Berg Lea
Sustainability Manager, Skretting



2 Our products

Skretting Norway has a large range of products for many aquaculture species. The focus here is on the most common products used in salmon farming in sea – which represents the bulk of our product sales.

TABLE 2.1

PRODUCT OVERVIEW

| LIFE START | FEED EFFICIENCY | HEALTH & WELFARE |
|--|--|--|
| Specific hatchery and nursery nutrition for challenging first life stages. Transition diets and broodstock nutrition | High performance feed for maximum growth and feed efficiency potential. Nutritional solutions to enable raw material flexibility | Functional feed for proactive fish health and welfare support. Nutritional solutions for specific challenges |
| Typical products Nutra Sprint, Supreme, Vitalis | Typical products Spirit Plus, Premium, Prime, Express | Typical products Protec, Shield |



MicroBalance™

Using technology that is based upon our latest understanding of essential micronutrients and how they interact with fish and shrimp, MicroBalance allows us to replace one feed raw material with another without impacting performance, welfare or end-product quality.

Crucially, this innovation, which is the result of several decades of research conducted by the Skretting Aquaculture Research Centre (ARC), enables us to produce feeds with much lower fish meal content across several major species.

At a time when raw material prices are highly volatile, the raw material flexibility enabled by MicroBalance presents a major advantage over traditional aquafeeds. It reduces the aquaculture industry's dependence on raw materials that become too expensive by replacing them with less costly alternatives that maintain the same nutritional values. This raw material flexibility ensures that we supply aquaculture diets that are both more economically and environmentally sustainable.

The edie Awards are some of the largest and most prestigious awards, and in 2019, Skretting was presented with the 'Sustainability Product Innovation of the Year 2019' for our MicroBalance FLX feeds for salmon containing zero fishmeal. It is a recognition for the efforts to limit use of marine ingredients in fish feed and the result of three decades of research.



protec™

Many salmon aquaculture systems are open to the natural environment, which exposes the fish to stress, such as extreme temperatures, handling and a range of parasites and diseases that can lead to negative health impacts. Skretting is committed to helping farmers secure animal health through continued investment in R&D, which helps to improve the sustainability of production by maintaining a high level of animal welfare as well as increasing the efficiency of production.

More than 20 years of research has given us the Protec products that help protect the skin, intestine and gills of aquaculture species. They support immune systems, add the building blocks for new cells and increase the level of antioxidants.

3 Nutritional solutions

USE OF WILD FISH FOR FEED

The salmon aquaculture industry has significantly reduced the inclusion rates of fish meal and fish oil from forage fish in salmon feeds during the past two decades. Skretting's Nuterra programme aims to support the trend toward lower inclusion rates as well as the increasingly efficient use of marine resources. Fish meal and fish oil are both limited resources that are shared across a range of users with increasing demands including direct human consumption, aquaculture and pork and poultry production. The Nuterra programme promotes the efficient use of these resources, producing increasing amounts of farmed salmon from a given input of fish meal and fish oil.

Our nutritional concept MicroBalance has made it possible to substitute fish meal and fish oil with other raw materials in diets for a number of aquaculture species. Fish oil is a limited raw material and our nutritional concept LipoBalance enables us to substitute fish oil with alternative oils.

Under the Nuterra programme, we regularly update the industry with our use of wild 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). It will be calculated based on the use of fish meal and fish oil.



TABLE 3.1

USE OF WILD FISH IN FEED
(FORAGE FISH DEPENDENCY RATIO — FISH MEAL)

| FORAGE FISH DEPENDENCY RATIO FISH MEAL | 2014 | 2015 | 2016 | 2017 | 2018 | UNIT |
|--|------|------|------|------|------|--------------------------|
| PROPORTION FISH MEAL FROM TRIMMINGS | 15.0 | 24.0 | 17 | 27.0 | 22.0 | % — of total fish meal |
| TOTAL FISH MEAL | 14.8 | 13.1 | 12.6 | 13.1 | 12.4 | % — of total feed |
| MINUS FISH MEAL FROM TRIMMINGS | 2.2 | 3.2 | 2.3 | 3.5 | 2.7 | % — of total feed |
| FISH MEAL FROM WHOLE FISH | 12.1 | 9.9 | 10.3 | 9.5 | 9.7 | % — of total feed |
| FISH MEAL FROM WHOLE FISH PER KG FEED | 121 | 99 | 103 | 95 | 97 | grams |
| FISH MEAL YIELD, STANDARD NUMBER | 23 | 23 | 23 | 23 | 23 | % — yield of fish meal* |
| FFDRM PER KG FEED | 0.53 | 0.43 | 0.45 | 0.41 | 0.42 | kg wild fish per kg feed |

TABLE 3.2

USE OF WILD FISH IN FEED
(FORAGE FISH DEPENDENCY RATIO — FISH OIL)

| FORAGE FISH DEPENDENCY RATIO FISH OIL | 2014 | 2015 | 2016 | 2017 | 2018 | UNIT |
|---|------|------|------|------|------|--------------------------|
| PROPORTION FISH OIL FROM TRIMMINGS | 20.0 | 26 | 20 | 32.0 | 26.0 | % — of total fish meal |
| TOTAL FISH OIL | 11.2 | 9.8 | 10.7 | 10.5 | 10.9 | % — of total fish feed |
| MINUS FISH OIL FROM TRIMMINGS | 2.2 | 2.6 | 2.2 | 3.4 | 2.8 | % — of total feed |
| FISH OIL FROM WHOLE FISH | 9.0 | 7.2 | 8.5 | 7.1 | 8.1 | % — of total feed |
| FISH OIL FROM WHOLE FISH PER KG FEED | 90 | 72 | 85 | 71 | 81 | grams |
| FISH OIL YIELD ADJUSTED FOR GEOGRAPHICAL ORIGIN (ACCORDING TO THE ASC STANDARD) | 5.0 | 5.0 | 5 | 6.3 | 6.5 | % — yield of fish oil* |
| FFDRO PER KG FEED | 1.79 | 1.44 | 1.70 | 1.13 | 1.24 | kg wild fish per kg feed |

* The yield refers to the amount of fish meal and fish oil one in average will get from processing 1 kg of wild fish. Typical figures from the industry refers to that one in average get 230 grams (23%) fish meal from processing 1 kg of wild fish and in average 50 grams to 70 grams of fish oil (depending on origin) from processing 1 kg of wild fish. The yield of fish oil will be highly variable – depending on species and season of the year.



CARBON FOOTPRINT OF FEED

Climate change represents perhaps the biggest environmental challenge facing current and future generations. As a result, the carbon footprint of food production has become a source of public concern. Skretting recognises the importance of efficient and sustainable energy use and is looking for low carbon solutions. Therefore, we believe that energy consumption in the production of feed should be monitored on a continual basis and that feed manufacturers should develop the means

to improve efficiency and reduce consumption of energy sources, particularly those that are limited or carbon-based.

The data identified in this process can also be used by farmers to calculate the carbon footprint of their fish. This information can then be made available in the value chain. Under the Nuterra programme, we will regularly update the carbon footprint of 1 kg of feed used to produce 1 kg of salmon based on the average weighted raw material composition.

The carbon footprint of an average kilogram of Skretting salmon feed delivered at factory gate based upon average raw material composition in 2018 was missing

TABLE 3.3

CARBON FOOTPRINT OF SKRETTING NORWAY'S SALMON FEED

| | WITH LAND USE CHANGE | WITHOUT LAND USE CHANGE | UNIT |
|---|----------------------|-------------------------|-------------------------------|
| RAW MATERIALS | 3,32 | 1,82 | kg CO ₂ eq/kg |
| MANUFACTURING PROCESS | 0,03 | 0,03 | kg CO ₂ eq/kg |
| TOTAL — CARBON FOOTPRINT OF FEED (AT FACTORY GATE) | 3,35 | 1,85 | kg CO₂eq/kg |

About Land Use Change:
The United Nations Climate Change Secretariat defines land use and land-use change as a "greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human-induced land use such as settlements and commercial uses". Land-use change can be a factor in CO₂ (carbon dioxide) atmospheric concentration, and can thus be a contributor to global climate change.

TABLE 3.4

NUTRIENT RELEASE OF NITROGEN AND PHOSPHORUS. GRAMS PER KG OF FEED*

| | NITROGEN | PHOSPHORUS |
|------------------------|-------------|------------|
| IN FAECES | 7,6 | 5,5 |
| DISSOLVED IN WATER | 29,5 | 1,0 |
| TOTAL DISCHARGE | 37,1 | 6,5 |

**The nutrient discharge information is based on an average release from a 5 kg (live weight) salmon in sea water. The actual emission can vary with body composition, feed waste and feed conversion factor.*

NUTRIENT RELEASE

Nutrients such as phosphorus and nitrogen are essential for life and these elements occur naturally in the water column of both fresh and marine environments. In the environment they function as nutrients for algae growth. The reported nutrient discharge cannot be used to measure the effect of the nutrients in the environment (the farm site). The effect of the nutrient load must be measured in the ecosystem through for example analyses of water and the surrounding environment of the farm.

Under the Nuterra programme, we will regularly update and inform the industry about the nutrient discharge of nitrogen and phosphorus from our standard product lines.

SLUDGE FROM FISH FECES TURNED INTO A RESOURCE

In many fish farms in Norway today effluent water is filtered and the residual sludge removed and dried. This has become a valuable resource. Dried sludge from farming can produce valuable agricultural fertiliser. After analysing the fertiliser value, nutritional content and properties, the first results look promising with better crop yields than regular chicken fertilizer.

In 2018, Skretting Norway was a partner in a project looking at collecting sludge from farms and shipping it to a central plant where it can be used in fertiliser or biogas production. In 2019, Skretting will extend this project and offer to manage dried sludge from farms.

METHOD AND DATA

Functional unit: 1 kg of salmon feed (based upon average raw material composition)

System boundaries: From growing of crops and fishing of marine ingredients to finished feed pellets at factory gate. A cradle-to-gate assessment.

Method: The assessment is performed with respect to the established ISO standards for life cycle assessment.

Allocation: Mass allocation is used.

Impacts assessment method: IPCC 2013 GWP 100a v1.03.

Main data sources (see Table 11 and Table 12 for more details)

Vegetable ingredients: The Agri-footprint database version 4.0 (2017) [1]

Marine ingredients, project reports [1]–[2].

[1] E. S. Hognes and J. I. Jensen, "Drivstofforbruk og klimaregnskap for den norske fiskeflåten. Utviklingen fra 2001 til 2015. OC2017 A-071.", 2017.

[2] E. S. Hognes and H. Stenwig, "Marine Fish PEFCR: Screening and recommendations," Report from the Marine Fish PEFCR pilot, 2016.

4 Responsible sourcing and use of feed ingredients

RESPONSIBLE SOURCING POLICY

Aquaculture feed can contain many different ingredients of vegetable, marine and land animal origin. The most common agricultural crops are soya, wheat and rapeseed. Marine ingredients traditionally originate from wild fisheries like sardine, anchovy, herring and many more. There are a number of sustainability issues linked to the primary production of feed ingredients. Cultivation of agricultural crops needs to be responsible; otherwise, it can lead to detrimental impacts like deforestation, loss of valuable habitats (for example rainforests and wetlands), excess use of water and soil erosion – to mention a few. A wild-capture fishery needs to be responsibly managed so that it is not overfished and does not lead to the unwanted catch of protected or endangered species.

The primary source of the feed ingredient is processed into different forms; wheat can be processed into wheat flour and wheat gluten, soya into soybean meal, soybean concentrate and soybean oil. A fish or by-products from fish can be processed into fishmeal and fish oil. This means that the primary sources of the feed ingredients are shipped to a factory and processed into the feed ingredient by manufactureres of feed ingredients. There are a number of sustainability issues that are common for manufacturers. For instance, the manufacturing process must not lead to environmental pollution like 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 rights and labour rights.

Skretting operates a system of 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 ingredient must be evaluated and approved before a Skretting company can buy the feed ingredient.

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.

TRACEABILITY OF RAW MATERIALS

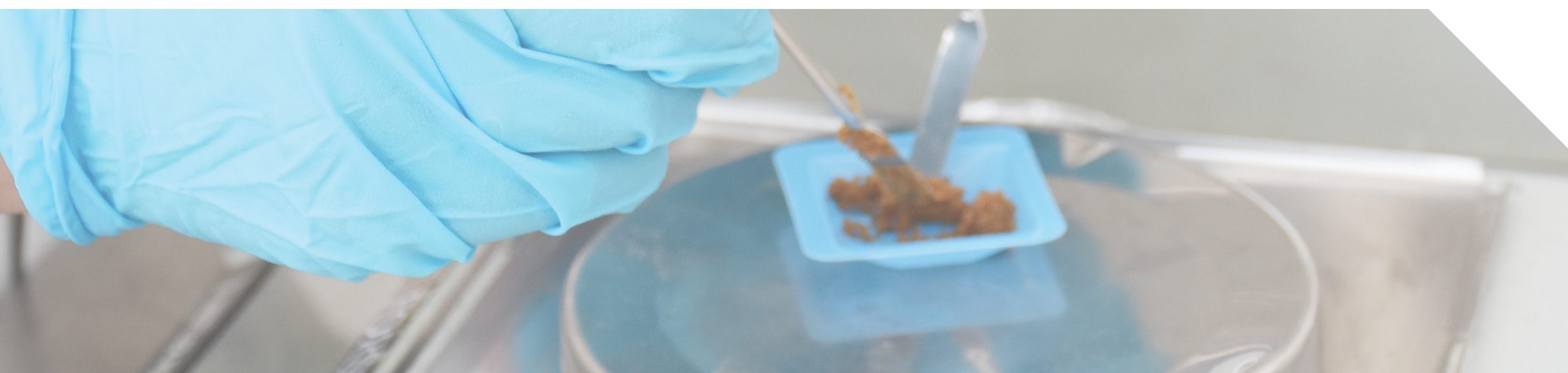
Raw material traceability is fundamental to the Nuterra programme. This requirement makes raw material sourcing more transparent in the value chain. For some feed ingredients this will demand traceability with regard to country of origin, while for marine raw materials we demand more detailed traceability back to the fishery from which the marine raw materials originated.

TABLE 4.1

AVERAGE RAW MATERIAL COMPOSITION OF 1 KG OF SALMON FEED IN 2018

| | |
|---------------------------|--------------|
| FISHMEAL FROM WHOLE FISH | 9.7 |
| FISHMEAL FROM TRIMMINGS | 2.7 |
| VEGETABLE PROTEIN | |
| SOY PROTEIN CONCENTRATE | 26.5 |
| FABA BEANS | 5.2 |
| WHEAT GLUTEN | 11.5 |
| SUNFLOWER MEAL | 0.9 |
| NOVEL PROTEINS | |
| INSECT MEAL | * |
| MARINE OILS | |
| FISH OIL FROM WHOLE FISH | 8.1 |
| FISH OIL FROM TRIMMINGS | 2.8 |
| MICRO ALGAL OIL | * |
| FISH OIL FROM FARMED FISH | 0.8 |
| VEGETABLE OILS | |
| RAPESEED OIL | 19.2 |
| CAMELINA OIL | 1.0 |
| CARBOHYDRATES | |
| WHEAT | 8.2 |
| OTHER | 3.3 |
| TOTAL | 100.0 |

* Insect meal and micro algal oils were used in small, but commercial quantities



SOURCE OF MARINE RAW MATERIALS

Wild fish harvested from the ocean and processed into fish meal and fish oil are ingredients in salmon feeds. Small pelagic fisheries are used in the fish meal and fish oil industry, but in some regions they are also important for direct human consumption. Also known as forage species, these are 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, 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.

Under the Nuterra programme, all fish meal and fish oil originates from responsibly managed fisheries as defined by Nutreco Supplier Code of Conduct – requirements for marine raw materials.

TABLE 4.2

ORIGIN OF FISHMEAL AND FISH OIL FROM WHOLE FISH

| SPECIES | LATIN NAME | FISHMEAL | FISH OIL | COUNTRY OF ORIGIN |
|----------------|-----------------------------------|----------|----------|--------------------------|
| ANCHOVY | <i>Engraulis Sp</i> | 5.6 % | 26.4 % | CHILE, PERU, PANAMA |
| BLUE WHITING | <i>Micromesistius Poutassou</i> | 32.4 % | 11.0 % | DENMARK, ICELAND, NORWAY |
| CAPELIN | <i>Mallotus Villosus</i> | 8.6 % | 7.4 % | NORWAY |
| HERRING | <i>Clupea Harengus</i> | 4.3 % | 3.6 % | DENMARK, NORWAY |
| HORSE MACKEREL | <i>Trachurus Trachurus</i> | 0.1 % | | DENMARK, ICELAND |
| MACKEREL | <i>Scomber Scombrus</i> | 0.8 % | 0.2 % | DENMARK, NORWAY |
| NORWAY POUT | <i>Trisopterus Esmarkii</i> | 0.9 % | 1.0 % | DENMARK, NORWAY |
| SANDEEL | <i>Ammodytes Marinus</i> | 17.6 % | 4.0 % | DENMARK, NORWAY |
| SPRAT | <i>Sprattus Sprattus Sprattus</i> | 7.8 % | 9.5 % | DENMARK |
| BALTIC SPRAT | <i>Sprattus Sprattus Balticus</i> | | 2.5 % | DENMARK |
| SARDINE | <i>Sardinella Sp</i> | | 8.4 % | MAURITANIA, INDIA |
| TOTAL | | 78.0 % | 74.0 % | |

TABLE 4.3

ORIGIN OF FISHMEAL AND FISH OIL FROM TRIMMINGS

| SPECIES | LATIN NAME | FISHMEAL | FISH OIL | COUNTRY OF ORIGIN |
|-------------------|-----------------------------------|----------|----------|--------------------------------|
| CAPELIN | <i>Mallotus villosus</i> | 2.5 % | 1.0 % | ICELAND, NORWAY |
| COD | <i>Gadus morhua</i> | 0.6 % | | DENMARK, ICELAND, NORWAY |
| HERRING | <i>Clupea harengus</i> | 13.5 % | 17.8 % | NORWAY |
| HORSE MACKEREL | <i>Trachurus trachurus</i> | 0.1 % | 0.0 % | ICELAND, NORWAY, FAROE ISLANDS |
| MACKEREL | <i>Scomber scombrus</i> | 3.7 % | 5.9 % | NORWAY |
| POLLOCK | <i>Pollachius sp.</i> | 0.3 % | | DENMARK |
| SPRAT | <i>Sprattus sprattus sprattus</i> | 0.0 % | 0.1 % | DENMARK |
| TRIMMINGS — OTHER | | 1.2 % | 1.2 % | UNKNOWN |
| TOTAL | | 21.9 % | 25.9 % | |



TABLE 4.4

ORIGIN OF FISHMEAL AND FISH OIL FROM FARMED FISH

| SPECIES | LATIN NAME | FISHMEAL | FISH OIL | COUNTRY OF ORIGIN |
|---------------|--------------------|----------|----------|-------------------|
| FARMED SALMON | <i>Salmo salar</i> | | 100.0 % | NORWAY |

TABLE 4.5

CERTIFICATION STATUS OF MARINE RAW MATERIAL

| | FISHMEAL | FISH OIL |
|-----------------------------------|----------|----------|
| IFFO RS AND MSC APPROVED MATERIAL | 98% | 74% |
| ASC APPROVED MARINE RAW MATERIAL | 80% | 71% |



USE OF SOY RAW MATERIALS IN FEED IN RELATION TO DEFORESTATION AND LOSS OF BIODIVERSITY

Tropical deforestation is widely regarded as one of the most serious global environmental problems of our time. As such, Skretting is committed to supporting raw material production initiatives that do not occur in regions subject to deforestation. We have also built long-term sustainable purchasing and supplier policies that prohibit the sourcing of soy products from lands that are illegally deforested. In addition, part of our purchasing policy is to encourage our suppliers to pursue certification according to recognised schemes for responsible production, especially when it comes to soy.

Under the Nuterra programme, soy raw materials originating from Brazil must come from responsible producers. They must not originate from areas of deforestation. Furthermore, soy producers must also ensure legal use of land and water, and respect the needs and rights of smallholders and indigenous people as well as protection of workers' health and rights.

All soy protein concentrate in Skretting Norway products originates from soya which is ProTerra certified (<http://www.proterrafoundation.org/>).

REPORT ON NORWEGIAN SOY PURCHASES FROM BRAZIL BY THE FUTURE IN OUR HANDS AND THE RAINFOREST FOUNDATION

Norwegian aquaculture and fish feed producers were criticised earlier in 2018 for buying soy from Brazil through the publication of a report commissioned by the Norwegian NGOs Future in Our Hands and the Rainforest Foundation, which suggested that Brazilian soybean farmers sold illegally cultivated soy beans to our producers.

Based on this report, Skretting conducted a sustainability audit of all our soya suppliers in Brazil. We engaged the Bureau Veritas to carry out the audit. The auditor sampled a large selection of all purchases of soy that the companies had made in 2018 and examined these against the overall issue the report addressed.

The audits found no evidence based on recent transactions (2018) that any of our suppliers have bought from soy farms engaged in illegal activity linked to deforestation, "slave like" labour or illegal pesticide use. The Skretting team met with the auditor who stated that based on the report from the two environmental organisations, he had expected to find our suppliers having many problems. On the contrary the auditor was surprised to find very competent and engaged companies with good routines, procedures and also in the process of further improving their systems.

Please find below some more details regarding the specific allegations and the report findings.

ILLEGAL DEFORESTATION

No soy bought by our suppliers came from farms that were involved in illegal deforestation. This was verified by comparing information about the farm against information such as IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) which is publicly available. IBAMA has information about areas blocked for the sale of agricultural products because the areas are protected.

Two of the suppliers have also used the database AgroTools. This database processes a huge and increasing amount of data to provide information through its TerraMatrix geographic platform. Official government and trading data grows fast, along with satellite data. As more information becomes available from drones and digital farm sensors, AgroTools total data volume can reach 1600 petabytes in the coming years. AgroTools has been developed in collaboration with Google Cloud.

"SLAVE-LIKE" WORK

No soy bought by our suppliers came from farms the authorities had blacklisted for having slave-signed working conditions. Working conditions were checked against lists published by the Brazilian Ministry of Labor (MTE). For MTE list was no soy from any supplier appearing on MTE "Slave Labor List" according to lists updated at 10 April 2018 and 8 October 2018. No purchases were discovered from farms that violated slave labor criteria.

ILLEGAL USE OF PESTICIDES

It is difficult for our suppliers to uncover direct illegal acts as proven by their suppliers. The companies have guidelines above their suppliers to use legitimate pesticides and to use pesticides with caution. Skretting Norway buys ProTerra certified soy. Farms that are ProTerra certified may be revised in accordance with this Standard's provisions on the use of pesticides, which also are stricter than Brazilian law.

LAND CONFLICTS

There will be cases where there is disagreement about the ownership of farms. Unfortunately, in Brazil there are examples that such disagreement can lead to violent conflicts. Dispute over property rights will be a civil law case between the disputed parties. However there is no public register in Brazil over such civil law cases, so it is not possible to check if a farm owner or a farm is involved in a dispute over property rights.

INDIGENOUS PEOPLE AND RIGHTS TO LAND

No suppliers were found to have purchased soy from countries belonging to the indigenous people. This was verified by investigating information about the property / farm against information available from IBAMA and information in the mentioned database AgroTools.

IMPROVEMENTS

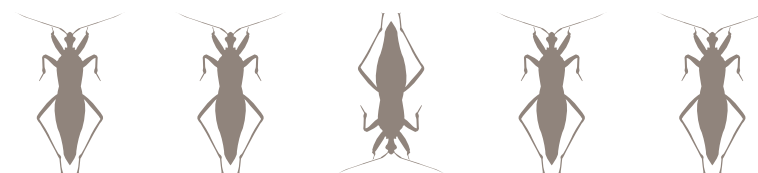
The audit of suppliers also identified some areas where improvements have been made and will be made. Some soy is bought through cooperative organisations where co-operation can consist of several hundred farms. In such cases it has been difficult or impossible to trace back to the individual farm. Here companies have improved their routines, for example preparing more clear written sustainability requirements for their suppliers. We also see that one can now use modern information technology through databases like AgroTools as a major advance. Here, we believe manufacturers in Brazil will lead in a future development where the use of modern information technology ensures sustainable development.

Use of novel raw materials

INSECT MEAL

In 2018 Skretting progressed in the use of novel feed ingredients. 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 for use in aquaculture feeds. The latest technologies include microbial and insect-based protein and oil sources, and already, algae oils containing EPA and DHA and high-quality proteins based on different insect species using waste streams as resources are commercially available.

Skretting Norway's factory in Averøy produced commercial salmon feed with insect meal for the first time in 2018. Insect meal offers an alternative to fish meal and soy and the fish show the same growth performance with feeds using insect meal as with traditional protein sources. Insects are an important food for the wild salmon, and we see that insect meal even can increase the feed intake of the fish.



Insect meal has the potential to be an important raw material in the future. The feed produced by the Skretting Norway factory contained insect meal made from the larvae of the black soldier fly, an EU approved commodity. Consumers are positive to eating salmon that had insect meal in the feed.

In the European market, there is now little available insect meal for use on a large scale, and Skretting is working with manufacturers who wish to come up at a commercial level. Ideally, by 2022 there will be at least five different European suppliers, each producing 20,000 tonnes of insect meal per year.

OMEGA-3 OIL FROM MICROALGAE

In 2018 Norwegian salmon farmers have started feeding their salmon a diet produced by Skretting which includes omega-3 EPA + DHA algal oil. This has been possible due to the innovation from our collaborator Veramaris, a joint venture between DSM and Evonik, to produce industry-first marine algal oil containing both long-chain omega-3 fatty acids, EPA and DHA.



Fish oil has been difficult to substitute out of fish feed because previously the only source of EPA and DHA was small pelagic fish harvested from the ocean. Despite being currently in good supply, fish oil is a limited resource and in high demand from a number of other feed, food and pharmaceutical sectors. However, fish cannot produce large amounts of long-chain omega-3 fatty acids. The original source is marine microalgae. Through the culture of microalgae, the fatty acids can be obtained while bypassing the marine food chain entirely. Feeding salmon with natural marine algal oil resonates strongly with the sustainability efforts of numerous retailers worldwide.



USE OF GENETICALLY MODIFIED PLANT MATERIAL IN FEED

Under the principle of legal compliance Skretting Norway does not use any transgenic* plant raw materials in its products

Processed genetically modified foods must be approved by Food Act general regulations for production and marketing of food and feedstuffs. These regulations contain the key elements of EU legislation on the approval of genetically modified products. Those who want to use genetically modified feed ingredients in feeds in Norway must first apply to the Food Safety Authorities for approval of products, even in cases where the same transgenic feed raw material has already been approved in the EU. Approval is based on thorough health risk assessments. When genetically modified

feeds have been approved, they shall comply with the labelling regulations and labelled accordingly in order that customers can make an informed choice. In addition, Norway has distinct regulations prohibiting genetically modified products that contain genes coding for antibiotic resistance.

Currently, Norwegian food and feed law has not approved any transgenic plants for use in food or feeds, and there is a mandatory requirement to disclose the use of transgenic* plant raw material to the customer.

**Defined as containing <0,9% transgenic materials in the plant raw material used. When less than 0,9% transgenic material is found, it must be the result of technical random and unavoidable pollution in the supply chain.*



5 Operations

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

Skretting Norway is certified to a number of recognised standards within the area of food safety and environmental compliance.



TABLE 5.1

SKRETTING NORWAY CERTIFICATION OVERVIEW

STANDARD

| | |
|---|--|
| NS-EN ISO 9001:2015 | QUALITY MANAGEMENT SYSTEMS |
| NS-EN ISO 14001:2015 | ENVIRONMENTAL MANAGEMENT SYSTEMS |
| ISO 22000:2005 | FOOD SAFETY MANAGEMENT SYSTEMS |
| GLOBAL GAP - GGN NUMBER: 4050373823641 | COMPOUND FEED MANUFACTURING (NORWAY) |
| GLOBAL GAP - GGN NUMBER: 4052852471015 | COMPOUND FEED MANUFACTURING (FRANCE) - IMPORTED STARTER FEEDS |
| HAZARD ANALYSIS AND CRITICAL CONTROL POINTS (HACCP) | ALL 3 SKRETTING NORWAY FACTORIES HAS IMPLEMENTED HACCP (NOT CERTIFIED) |
| ASC RESPONSIBLE SALMON STANDARD | DELIVER ASC COMPLIANT FEED FOR PART OF THE PRODUCTION |

OPERATING IN COMPLIANCE WITH ALL APPLICABLE NATIONAL LAWS AND LOCAL REGULATIONS

Skretting operates in accordance with the Norwegian laws governing feed production.

These laws are:

- The food law
- The feed regulation
- Regulations on the use of feed ingredients
- Regulation on feed hygiene
- Regulation on labelling and trade of feed stuffs
- Sector regulation on feed production.
- Factory emission permits

Skretting's operations are registered with the Norwegian Feed and Food Authorities (Mattilsynet).

TABLE 5.2

**SKRETTING NORWAY'S
FEED PLANTS**

| REGISTRATION NUMBER | OPERATION |
|---------------------|-----------------------|
| NO10050187 | SKRETTING STAVANGER |
| NO10050270 | SKRETTING AVERØY |
| NO10050269 | SKRETTING STOKMARKNES |

Skretting Norway also operates in accordance with the Pollution Control Act (Act of 13 March 1981 No.6 Concerning Protection Against Pollution and Concerning Waste).

Each operating plant has permits related to emissions to air, effluents to water and ground and handling of waste. Detailed description of permits for each operating plant together with historical records of emissions can be found here <http://www.norskeutslipp.no/>



Skretting Norway seeks to be a safe workplace. In 2018 we registered 3 lost time injuries (LTI), meaning that there were three incidents where people were hurt at work and had to stay away from work to recover.

TABLE 5.3

**ENVIRONMENTAL
FOOTPRINT OF OPERATIONS**

| ENVIRONMENTAL PERFORMANCE INDICATOR | VALUE | UNIT |
|-------------------------------------|-------|---------------------|
| ENERGY CONSUMPTION | 229 | KWH PER TONNE |
| CARBON EMISSIONS | 28 | CO2 EQ KG PER TONNE |
| WATER WITHDRAWAL | 533 | LITERS PER TONNE |
| WASTE GENERATION | 6 | KG PER TONNE |

6 Multi stakeholder involvement



ENGAGEMENT IN THE VALUE CHAIN

Skretting is of the opinion that we can only progress if we communicate to and enter into dialogues 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.

In this assessment, we would like to highlight several engagements on the following pages. For the full list of initiatives Skretting is involved in, please see our Sustainability Report.



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 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 Sustainable Fisheries Partnership (SFP). SFP 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 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 (FIP). One is in Peru to improve the Peruvian anchoveta fishery to be able to become MSC certified, one in Ecuador to become IFFO RS certified and one in Vietnam to trial the new multispecies standard of IFFO RS.



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

Nutreco is member of the Round Table on Responsible Soy (RTRS) which is a civil organisation that promotes responsible production, processing and trading of soy on a global level.

RTRS encourages current and future soybean to be produced in a responsible manner to reduce social and environmental impacts while maintaining or improving the economic status for the producer through the development, implementation and verification of a global standard.

NEW YORK DECLARATION ON FORESTS

Skretting is a signatory of The New York Declaration on Forests (NYDF) which is a voluntary and non-binding international declaration to take action to halt global deforestation. It was first endorsed at the United Nations Climate Summit in September 2014, and by October 2017 the NYDF supporters grew to include over 191 endorsers: 40 governments, 20 sub-national governments, 57 multi-national companies, 16 groups representing indigenous communities, and 58 non-government organisations.

These endorsers have committed to doing their part to achieve the NYDF's ten goals and follow its accompanying action agenda.

GLOBAL AQUACULTURE ALLIANCE

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

GAA 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 boasts active readership in every country of the world.

GLOBALG.A.P.

Skretting is member of GLOBALG.A.P. 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 GLOBALG.A.P. aquaculture standard.

7 Skretting Norway's quantified targets for raw materials

#1

Growth in Norwegian aquaculture shall not be covered by increasing the demand for soy in Brazil.

Skretting Norway will not purchase more soy from Brazil than we did in 2018

Feet on the ground in Brazil together with the Norwegian agriculture industry to work outside of our direct value chain.

The goal is to protect the rainforest and combat climate change.



#2

Find and foster alternative raw materials to enable sustainable growth of Norwegian aquaculture

New vegetable protein raw materials will account for at least 10 percent of our feed by 2022

Foster and purchase certified European soy

Novel* raw materials will account for at least 6 percent of our feed by 2022

*Novel raw materials are ingredients from unconventional feedstuffs of plant or animal origin. Such as microbial, insect-based and microalgae protein and oil sources.

#3

Use of sustainable marine raw materials

100% of marine raw materials are IFFO RS certified or subject to a Fishery Improvement Project (FIP) by 2020



