

# Nutreco Sustainability Report 2022



OUR PURPOSE

Feeding  
the Future

# Sustainability at a glance



**27%**  
reduction in  
antibiotic use  
compared to 2021



**24%**  
women in  
senior executive  
positions



**22,000**  
hours of HSE  
training followed  
in 2022



**2.4%**  
absolute emissions  
reduction in Scope  
1 and 2 compared  
to 2018 baseline



**17%**  
of all electricity  
used within  
Nutreco  
is renewable



**222,525**  
metric ton circular  
raw materials  
upcycled with our  
top three customers

# Contents

## 1. About Nutreco

1.1. Who we are	06
1.2. Our brands, customers and suppliers	10
1.3. Double materiality	11



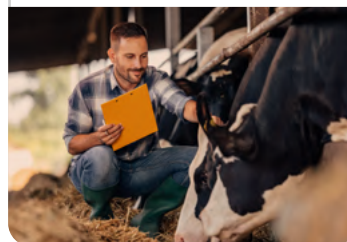
## 2. Our RoadMap

2.1. Our overall progress in 2022	16
-----------------------------------	----



## 3. Pillar one: Health & welfare

3.1. Our approach to AMR	22
3.2. Animal welfare	26



## 4. Pillar two: Climate & circularity

4.1. Climate and footprinting	29
4.2. Natural resources	38
4.3. Novel and circular ingredients	49
4.4. Transparency in the footprint of our products	58
4.5. Sustainable packaging	64

## 5. Pillar three: Good citizenship

5.1. Diversity and inclusion	70
5.2. Community development	76
5.3. Key partnerships	88
5.4. Occupational health and safety	92

## 6. Sharing dilemmas

6.1. Can companies take the long view on sustainability progress?	98
---	----



## 7. Ethics and compliance



## 8. Innovation: a sustainability keydriver

8.1. How Nutreco's innovation teams support sustainability	104
8.2. Propelling scientific progress into sustainable solutions	107
8.3. Partnering to develop tomorrow's feed and food business	109

## 9. About this report

9.1. Sustainability governance within Nutreco	113
9.2. GRI content index	115
9.3. Third-party (auditor) assurance letter	125



# Introduction

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**Feeding the Future is Nutreco's purpose. It gives us inspiration and makes us proud to help solve one of humanity's biggest challenges: sustainably feeding the world's ever-growing population. Given our purpose, sustainability sits at the heart of our company's strategy and agenda. It is integrated into the innovative products and services we offer our customers and is not only a passion but a business opportunity for our businesses around the world.**

This report outlines Nutreco's progress on our sustainability RoadMap 2025 over 2022 and has been guided by the Global Reporting Initiative (GRI) Standards. In 2022, the GRI modified its compliance criteria to offer only Comprehensive Reporting criteria. Nutreco remains committed to GRI guidelines for its reporting structure, but we will increasingly incorporate the broader Corporate Sustainability Reporting Directive (CSRD) criteria into our reporting format. We are exploring complete compliance with the CSRD in 2024. As a committed member to the Global Compact, Nutreco not only reports annually on our 2025 targets but also reports progress made against the Sustainable Development Goals (SDGs).

We feel strongly at Nutreco that communicating about our sustainability efforts and commitment is an important

way to influence change in our industry, so we are on a continuous quest to improve how we track, measure and report on our progress.

We invite you to watch this [video](#) in which our CEO Fulco van Lede introduces Nutreco's 2022 sustainability highlights. He looks back on another extraordinary year for our global community and how we continued to strive towards our purpose and sustainability ambitions despite the challenges we all faced.

**"Feeding the Future is our passion at Nutreco, but we cannot do it alone. We invite all our partners across the value chain to join us in creating a more sustainable food system that will help ensure a brighter future for people across the world."**

**José Villalón**, Nutreco's Corporate Sustainability Director



1.

About Nutreco

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# Who we are

As a leader in the global animal nutrition and aquaculture industry, Nutreco helps produce enough nutritious and high-quality food for the growing world population in a sustainable way.



### Our purpose, vision and values:

#### Our purpose

The global population is growing rapidly; it is estimated that there will be nearly 10 billion people living on our planet by 2050. Our purpose of Feeding the Future reflects our belief that we have an important role to play in ensuring the world's growing population has access to all the healthy, affordable and nutritious protein they will need to thrive. It centres around our commitment to help meet the world's rising food demand in a sustainable way through our expertise and continuous innovation. It is a call to action – to everyone in our company and across our supply chain – to embrace the challenges that will dramatically shape our industry.

As an essential link between producers of raw materials and farmers of livestock and fish, we are constantly seeking ways to improve the efficiency and nutritional value of our products, raise productivity, and reduce environmental impacts across our value chain to achieve our purpose.



#### Our vision

Our vision is to be recognised as a leading partner in functional and nutritional solutions for sustainable farming by focusing on three areas: supporting sustainable production enabled by technology, zeroing in on nutrition, health and farming and sourcing and developing future protein ingredients.

#### Our values

We updated our company-wide values in 2022. The new values of trust, inclusivity, curiosity, integrity and passion reflect our purpose of Feeding the Future and underpin our fundamental beliefs and the guiding principles of how we do business.



→ Our values:



**TRUST INCLUSIVITY  
CURIOSITY INTEGRITY PASSION**



## 🔍 CASE STUDY

### Skretting Chile launches Nutreco's new values

Our operating company (OpCo) in Chile held a hands-on, full-day event to immerse employees in the new company values and discover together how to bring them to life. More than 400 employees from all areas of the business gathered in the OpCo's first large face-to-face meeting since the pandemic started. People shared personal experiences related to the values, put them into action through different group activities, and spent time reflecting on the values and how they could incorporate them in their work.

**“It felt great to be a part of this, especially because the idea was to get everyone together and create an environment in which we could openly and freely share our thoughts, while making our values come alive, instead of just posting them on the walls of our facilities.”**

**Marcelo Oyarzún Roa**

*Product Manager Fish Quality Skretting Chile*

## 1.2. Our brands, customers and suppliers



Trouw Nutrition is a global leader in innovative and sustainable nutritional solutions for the livestock industry. The Trouw Nutrition business provides species-specific nutritional solutions, focused on dairy, beef, pork, poultry production and pets. It operates 80 plants globally with strong market presence in Western Europe, Central and Eastern Europe, the Middle East and Africa (MEA), Asia, Canada, the United States and Latin America.



Skretting is a global leader in providing innovative and sustainable nutritional solutions and services for the aquaculture industry. The Skretting business applies its knowledge of ingredients and the nutritional needs of fish, shrimp and other aquatic species to develop innovations that achieve optimum nutritional value, sustainable production and economic performance. Skretting operates production facilities in 18 countries, with sales in over 40 countries.



Customers

Feed compounders, integrators, distributors, farmers, companion animal feed industry, retail, wholesale, food industry and pig meat processors.



Suppliers

Producers of grains, vegetable proteins, land animal products, amino acids, trace elements, feed additives and minerals, vitamins, dairy products, vegetable oils, preventive animal health products and organic acids.



Customers

Skretting works together with farmers all over the world tailoring a unique value proposition specific to customer needs.



Suppliers

Producers of ingredients including grains, protein, oils, carbohydrates and micronutrients.

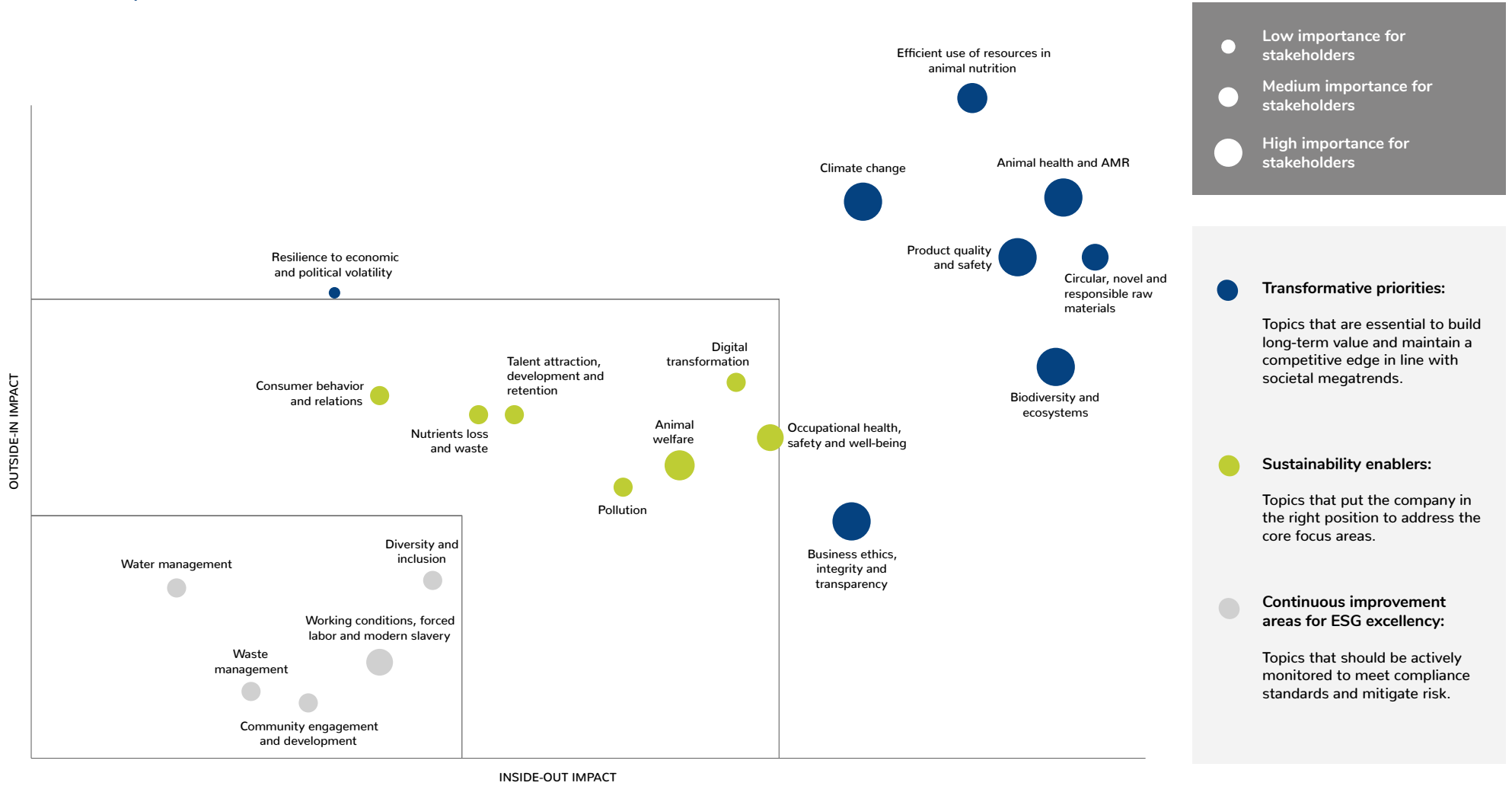
### 1.3. Double materiality

In anticipation of the sustainability reporting requirements outlined in the CSRD, which will be in force for disclosures related to 2024, Nutreco decided to already move forward in 2022 to perform a materiality assessment taking into account the double materiality principle. Double materiality in reporting accounts not only for how a company affects the environment and society but also how the environment and society impact the company's financial value. A sustainability topic meets the criteria of double materiality if it is material from the impact perspective (inside-out) and from the financial perspective (outside-in).

Through our double materiality assessment in 2022, we identified key internal and external stakeholders to engage in the different phases of the assessment. We considered a broad representation across geography, business line and relationship with Nutreco in order to reflect diverse internal and stakeholder perspectives through the process. We gathered input from these internal and external stakeholders about their prioritisation of sustainability topics through in-depth interviews and workshops. In line with the double materiality principles, our discussion with stakeholders focused on both the impact and financial perspective of each topic. This process enabled us to identify the topics that are highly material for Nutreco.



## Materiality assessment matrix





We identified the following highly material topics for Nutreco:

- 1 Efficient use of resources in animal nutrition
- 2 Animal health and AMR
- 3 Climate change
- 4 Product quality and safety
- 5 Circular novel and responsible raw materials
- 6 Biodiversity and ecosystems
- 7 Business ethics and transparency
- 8 Resilience to economic and political volatility

The results of our materiality assessment further confirm the areas of focus in our RoadMap 2025. In 2023, we will further implement the insights of our double materiality assessment into our 2025 RoadMap and sustainability strategy.

# 2.

## Our RoadMap

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## Introduction RoadMap 2025

Our sustainability RoadMap 2025 outlines our ambitions under three pillars – health and welfare; climate and circularity; and good citizenship – and includes clear, measurable targets for 2025. It was approved by Nutreco’s Management Board in June 2020.

Theme	HEALTH & WELFARE	CLIMATE & CIRCULARITY	GOOD CITIZENSHIP
Focus (mandatory topics)	Antimicrobial resistance (AMR)	Greenhouse Gas (GHG) emission reductions	Diversity & inclusion
We do this by...	<p><b>Innovating</b> new products and services that will directly <b>reduce dependency on antibiotic</b> usage in animal husbandry and adopting <b>five-step program</b> that will significantly reduce antibiotic usage by creating business opportunities for clients.</p>	<p>Setting science-based targets for reducing emissions through energy efficiency programs and sustainable ingredient sourcing, incorporating life-cycle assessment methodologies and utilising new ingredients.</p> <p>Addressing responsible use of natural resources in compound feed ingredients and the impact on biodiversity and ecosystems.</p>	<p>Building a more diverse and inclusive workforce.</p> <p><b>Empowering local communities</b> with best practices and technology to raise themselves out of extreme poverty through <b>farming sustainability</b>.</p>
Aspirations*	Animal welfare	Packaging / water / waste	Stakeholder engagement

\*Aspirations are measurable targets that are relevant for our businesses in geographies or markets where there is demand to address the respective topic.

## 2.1. Our overall progress in 2022

In 2022, we continued to make progress in all three pillars of our RoadMap and actively measuring our progress towards our 2025 KPIs.



### HEALTH & WELFARE

1

We implemented antibiotic reduction programs in Brazil, Spain and Mexico. These programs offer farmers an innovative solution to achieve the same performance with less antibiotics.

2

We made significant progress on our RoadMap 2025 target of zero use or sales of products containing antibiotics in the World Health Organization (WHO) class, "Critically Important for Human Medicine," achieving a 2022 year-on-year reduction of 35%.

3

We reduced 17% of preventative use of antibiotics and antimicrobial growth promoters (AGPs).

We can make a big difference, in partnership with our customers.







## CLIMATE & CIRCULARITY

1

We showed a 1.3% increase in scope 1 and 2 emissions in 2022 over 2021. This happened as a result of commercial changes we outline later in the chapter.

2

We made the decision to eliminate 100% coal from our last three operations in 2023 and eliminate fuel oil in boilers in one large Nutreco operation. After these capital expenditures are completed in 2023, we expect significant reductions in scope 1 emissions in 2024.

3

We also implemented solar panel installations and converted to renewable electricity options across several OpCos.

4

We saw a significant increase in our overall inclusion rate of novel ingredients from 0.056% to 0.8% of total raw materials purchased.

5

Toward our target of achieving 100% recyclable, reusable or compostable packaging, we showed an overall 4% increase in recyclable packaging.





## GOOD CITIZENSHIP

1

We saw a 2% increase in women in senior management positions in 2022 compared to 2021.

2

In our community development project addressing sustainable catfish farming with marginalised communities in Nigeria, we saw a 36% growth in the number of small farmers engaged in the project during the year.

Read on for more on these and other achievements under our three RoadMap 2025 pillars.

**We are compromise  
to empowering  
local communities.**



# 3.

**Pillar one:**  
Health & welfare

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## Antimicrobial Resistance

### Our targets

- Eliminate usage of antibiotics for growth promotion or preventive<sup>1</sup> usage and those categorised by WHO<sup>2</sup> as “Critically Important for Human Health” (CIA) in our products and services.
- Engage with governments to promote regulatory reform.

### Our progress

- 35% of Critically Important Antibiotics across Nutreco.
- 17% of preventive antibiotics and AGP at Trouw Nutrition<sup>1</sup> (Skretting uses no AGP and all antibiotics are prescribed).
- 28% of other antibiotics across Nutreco.
- Actively involved at local and global level.
- Five OpCos developed a three-year project plan to reach 2025 antibiotic reduction targets.



## Animal Welfare

### Our targets

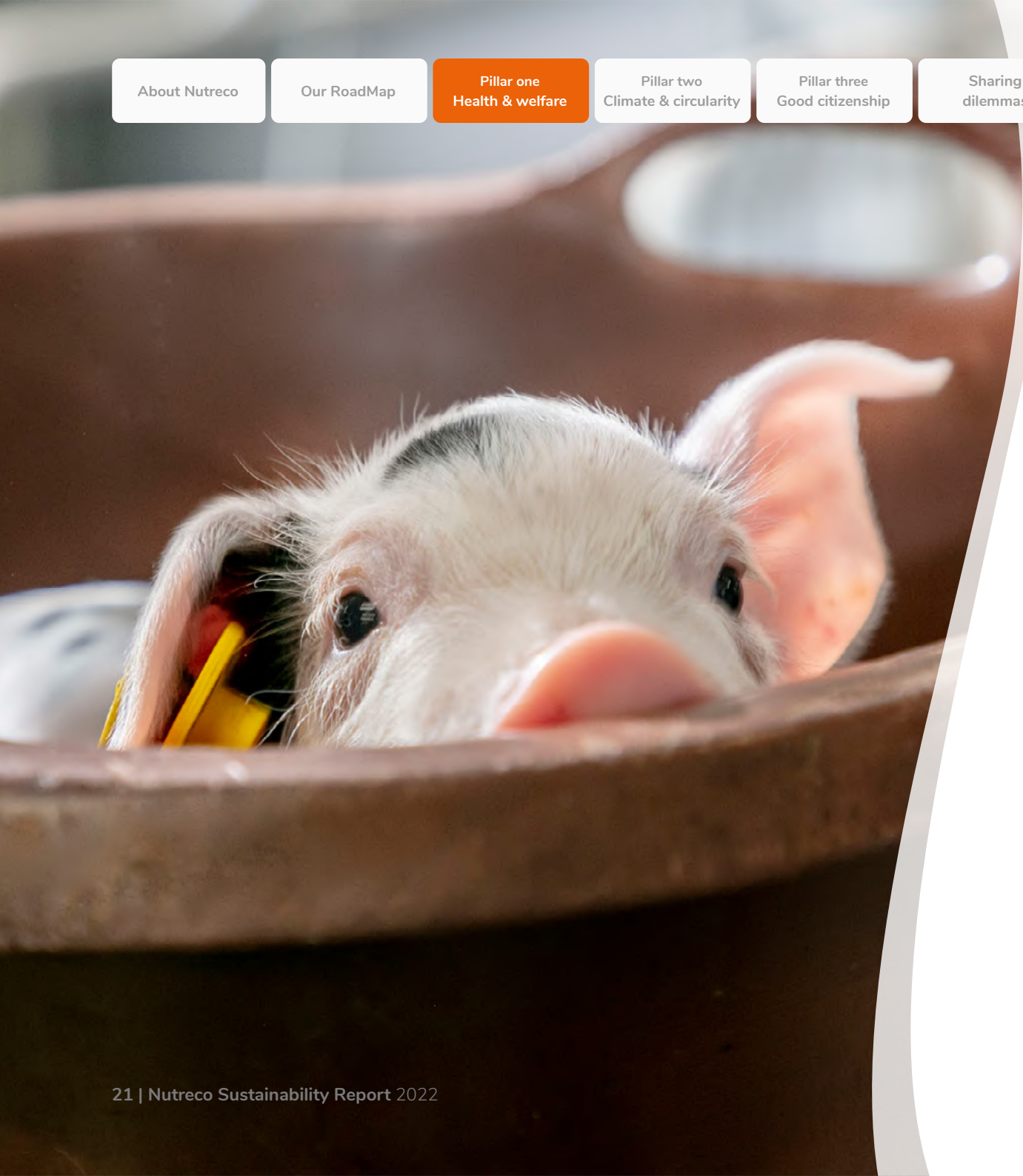
- Offer our services with expert teams to strategic OpCo clients.
- By 2025: All animal handling businesses must obtain local independent animal welfare certification.

### Our progress

- Broiler and turkey growing farms are covered by the Turkey Farmers of Canada's On Farm Food Safety Programme.
- Inga Food's production of Iberian pigs certified by the Iberian Animal Welfare certification.
- Compliance with the requirements defined by the Canadian Hatching Egg Producers regulations.

<sup>1</sup> Ensure no preventive usage of antibiotics in our products and services. Any order of medicated premix/feed should be accompanied by a valid prescription from an authorised professional.

<sup>2</sup> As published in “Critically important antimicrobials for human medicine: 6th revision,” <https://www.who.int/publications/i/item/9789241515528>.



Our main focus area under our health and welfare pillar is on addressing and reducing antimicrobial resistance (AMR) in the animal husbandry industry sector. We do this by providing customers with nutritional solutions and a holistic, best farming practices approach that help them avoid the need for antibiotics that are used preventatively or for growth promotion or that are on the WHO list of Critically important antimicrobials for human medicine (6th revision) (CIA).

At Nutreco, we are not opposed to the responsible use of antibiotics and recognise that if an animal becomes ill, it has a welfare right to receive treatment, but under professional supervision.



Providing customers with nutritional solutions and a holistic, best farming practices.

### 3.1. Our approach to AMR

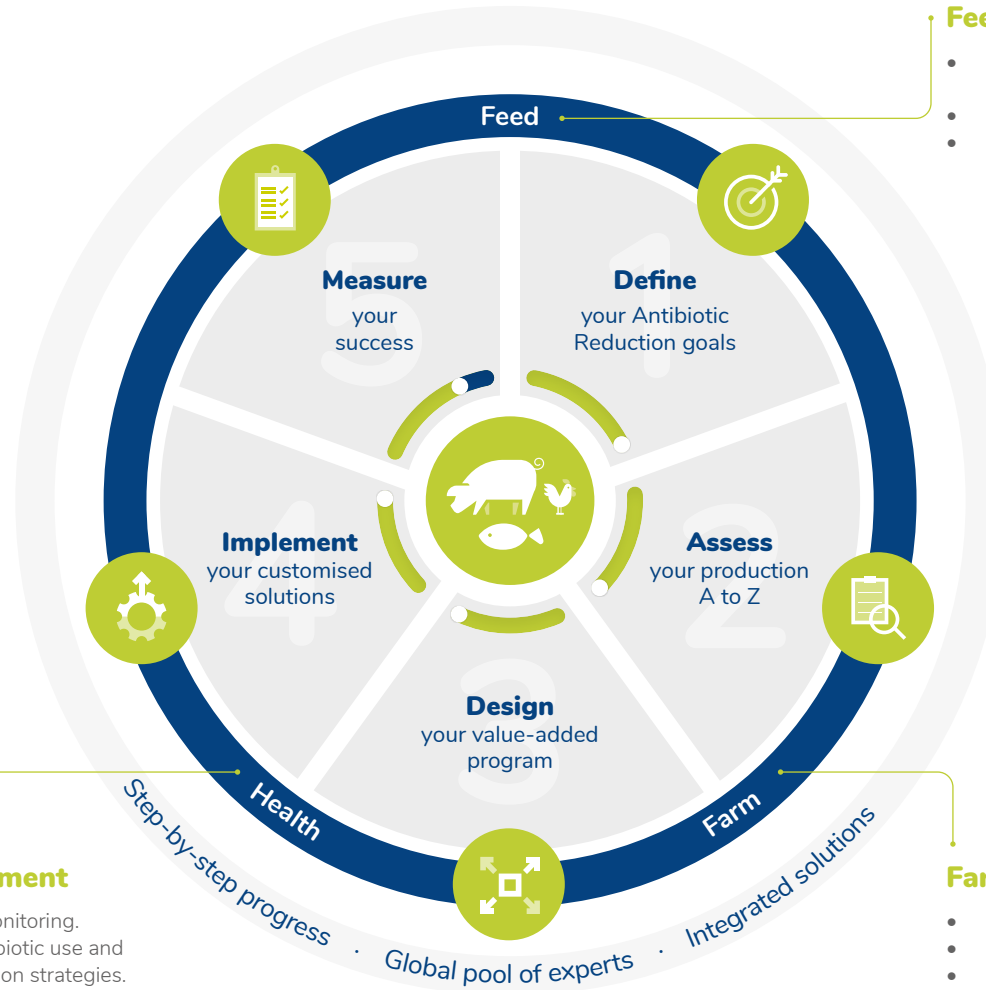
In 2022, Nutreco's AMR Working Committee continued working to create customer value by co-creating solutions at client production sites. The Committee consists of two colleagues from Trouw Nutrition, two from Skretting and one from Nutreco's Corporate office.

More than 70% of Nutreco antibiotics are sold in five Trouw Nutrition OpCos. These five OpCos developed a three-year project plan in 2022, that includes technical, marketing and sales strategies, to reach 2025 antibiotic reduction targets. Their first focus will be on monogastrics, followed by ruminants.

We also developed a five-step antibiotic reduction program to support customers with a holistic approach – including feed, farm and health management – that makes the switch to the responsible use of antibiotics easy and manageable. This antibiotic reduction program works by using a well-integrated package of our product solutions and services and a procedure to reduce dependency on antibiotics step by step, while maintaining or even improving the customer's profitability.



# Antibiotic Reduction Program



## Feed Management

- Microbiological quality of raw materials and feed.
- Optimise Nutritional strategies.
- Optimise Feed form and physical properties.

## Health Management

- Animal Health Monitoring.
- Responsible Antibiotic use and targeted vaccination strategies.
- Strategic use of Feed and Water additives.

## Farm Management

- Biosecurity.
- Farm conditions.
- Animal Management.

» **Our progress**

In 2022, Nutreco started building a real-time overview of the use of antibiotics in our products. This is now enabling us to follow trends in greater detail – for example, by species and by country – and use the data to identify the main challenges on which we want to focus our efforts, to support those who need it the most. Since the publication of RoadMap 2025, we have launched initiatives in several of our businesses to stimulate a more responsible use of antibiotics.

As a result of all these efforts, we have made good progress in reducing antibiotics usage over the past year. In 2022, Trouw Nutrition businesses processed 25% less antibiotics (active ingredients) compared to 2021 and used 35% less CIAs. Our businesses reported that only 12% of the total volume of antibiotics sold were used officially as AGPs, and the remaining volume as preventive or curative treatment. While we've achieved a significant reduction, the fact that 15% of the AGPs used are still classified as CIA underlines the urgent need to improve the responsible use of antibiotics in the animal husbandry value chain. Our aquaculture business, Skretting, reduced the use of antibiotics by 34% and CIAs by 28%.

Percentage change in use of antibiotics compared to 2021

	Nutreco	Trouw Nutrition	Skretting
Critically Important Antibiotics (CIA)	-35%	-35%	-28%
Antibiotic Growth Promoters (AGP) and preventive use	-17%	-17%	n.a.
Other antibiotics	-28%	-24%	-34%





## CASE STUDY

## Tackling Antimicrobial Resistance (AMR) through local efforts

**OpCos across Skretting and Trow Nutrition are working with customers and local stakeholders to reduce the use of antibiotics by taking a holistic approach to disease management.**

Our business in Brazil decided to start phasing out toll manufacturing Critically Important Antibiotics (CIAs) and replaced a significant volume of the CIAs used as Antibiotic Growth Promoters (AGPs) in monogastrics with a non-CIA solutions. This resulted in a 54% reduction in CIAs, and, by increasing the awareness around the importance of reducing antibiotic use, they were also able to reduce AGP and other antibiotic use.

Our South African OpCo created a strategy to train the local team and increase awareness around antibiotic reduction in 2022, which we expect will result in a reduction of AGP use in monogastrics in 2023. The OpCo's biggest use of AGPs is in ruminants, which will be addressed more proactively by Trow Nutrition in the market in 2024.

Skretting Spain and our Trow Nutrition Iberia business unit made significant progress in reducing the use of antibiotics during the year. They reduced CIA sales through a joint effort, together with customers, veterinarians and the government that included co-creating solutions with customers and proactively cooperating with Spain's National Action Plan against Antimicrobial Resistance (PRAN). Their efforts were based around offering customers value-added non-antibiotic solutions and a holistic approach to disease management that takes into account the feed, farm and health aspects of their businesses. Our Iberia business unit reduced CIA use by 61% during the year. All its divisions lowered antibiotic use drastically, and its pharma division stopped all antibiotic sales from January 1, 2023. The business unit also managed to reduce non-CIA use by almost the same level. Skretting Spain reduced CIA sales by 91% and reduced non-CIA use by a similar level – a major success.



## 3.2. Animal welfare

Nutreco has operational control over live animal management through independent integrated farmers in Spain and Canada.

These regulations cover animal welfare, housing conditions, animal density limits and transportation regulations.



Spain

1 We work with contract farmers in poultry hatchery and poultry broiler production, as well as with pork contract producers of white and Iberian pigs.

2 In 2022, Inga Food had all of its white pig farms certified by a new “Welfare Quality” standard for swine, after seeing its first farms certified the previous year.

3 We also ensured the certification of Inga Food’s entire production of Iberian pigs with the Iberian Animal Welfare certification; this certification coverage was finalised in January 2022.



Canada

1 We own a poultry hatchery that is audited on a monthly basis in accordance with the National Chicken Council animal welfare guidelines. It is also Hazard Analysis Critical Control Point (HACCP) accredited.

2 For sourced hatching eggs, we comply with the requirements as defined under the Canadian Hatching Egg Producers regulations.

3 We certify that all broiler day-old chicks have been inspected for general physical condition prior to shipping and are handled according to the National Farm Animal Care Council code of practice for the care and handling of hatching eggs, breeders and chickens.

4 Broiler and turkey growing farms are covered by the Turkey Farmers of Canada’s On Farm Food Safety Programme (Programme de la salubrité des aliments à la ferme) and monitored by the producer association Poultry Farmers of Quebec (Les Éleveurs de volailles du Québec).



# 4.

## Pillar two: Climate & circularity

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## Climate and footprinting

### Our targets

- Reduce 30% absolute of our Scope 1 & 2 emissions\* from our 2018 baseline.
- Use zero coal and fuel oil in our operations.
- Increase renewable energy use in our operations.

### Our progress

- 2.4% absolute emissions reduction in Scope 1 and 2 compared to 2018 baseline.
- 17% of energy consumption is renewable.



## Natural resources

### Our targets

- 100% sustainable supply of soy and palm.
- Sustainability certification of all our fish meal.



## Climate & Circularity



## Novel and circular ingredients

### Our targets

- 5-10% of feed ingredients come from alternative novel sources.
- Incorporate by-products into animal nutrition solutions.

### Our progress

- We doubled the use of novel ingredients.
- 222,525 metric tonnes of circular raw materials upcycled.

### Our progress

- 70% of soy and 76% of palm we purchased is in class A or B.\*\*
- 84% of whole fish and trimmings are certified by MSC or MarinTrust, or are part of a Fishery Improvement Project (FIP).

\*(Science Based Targets initiative).  
\*\* Refer to the table on page 47 for the classification.



The global food system is a significant contributor to GHG emissions, and Nutreco is in a unique position to help lower emissions across the animal protein production value chain. Our vision is to be recognised as a leading partner in functional and nutritional solutions for sustainable farming.

### 4.1. Climate and footprinting

At Nutreco, we are working to reduce greenhouse gas (GHG) emissions, not only within our own operations but also across the value chain by supporting our partners in reducing emissions within their businesses. Understanding our impact through carbon footprinting is a fundamental part of how we do this.

Nutreco is committed to reducing emissions in line with science-based targets. The GHG Protocol differentiates three different scopes categorising GHGs according to the power of influence a company has over them. Scope 1 covers the direct emissions within the company's direct control; scope 2 covers the indirect emissions related to purchased electricity, steam or heat; and scope 3 covers all other indirect emissions, including purchased raw materials.

#### Improving our impact in our own operations

We have the most control over the emissions that happen in our own operations (scope 1) and that relate to energy we purchase (scope 2).

### Our targets

### » Our progress



#### Climate and footprinting and energy



We have committed to the Science Based Targets initiative (SBTi) that we will reduce 30% of our scope 1 and 2 absolute emissions.

In 2022, we saw a 2.4% absolute emissions reduction in Scope 1 and 2 compared to 2018 baseline year. In terms of efficiency performance, we experienced a 15% emissions reduction in Scope 1 and 2 per ton produced.



Use zero coal and fuel oil in our operations.

In 2022, we finalised plans to completely phase out coal within Nutreco in 2023.



Increase renewable energy use in our operations.

17% of all energy used within Nutreco is renewable.



## Energy

We are evolving our energy strategy in order to adapt to today's biggest global challenges, including rising demand, energy security, carbon footprint reduction, sustainability and climate change. We do this by promoting smarter use of technology, unlocking efficiency and developing and diversifying our skills for the future. In 2022, the rise in energy prices brought about by the war in Ukraine made this work even more critical.

Many of our efforts to improve energy efficiency across the company were part of our Operational Excellence program, launched during the year. In 2022, Nutreco's operations team was focused on strengthening this program and maintaining our focus on improving the sustainability of our operations, while, at the same time, combating post-COVID-19 challenges such as volatile raw material and energy prices.

**We are committed to innovating our energy strategy every day to face the great global challenges.**





## » Our progress

Our preferred approach to reducing emissions is always to improve energy efficiency, simply because it results in absolute emissions reduction, and it is a cost-effective method that also brings financial benefits to our business. In 2022, we invested in defining and deploying a Nutreco-wide approach to operational excellence and introduced operational excellence teams in most of our business units and OpCos that work to identify opportunities and deploy projects to realise benefits. Our focus is on delivering results in efficiency and yield, by developing our operational maturity and our people competency. We also introduced a project and benefits tracking tool that governs and makes our progress visible.

In 2022, we delivered 148 Operational Excellence projects globally and will have even more underway in 2023. These projects have brought significant reductions of energy, paper, wood, plastic and raw material waste. All of our operational excellence projects will indirectly impact energy usage due to increased efficiency or yield and 41 projects are specifically focussed on energy reduction with a

calculated target reduction of 21,944,596 kWh or 5,475,124 kg CO<sub>2</sub>-equivalent. Operational excellence activities are a crucial component in our journey towards more sustainable, safer, cleaner, and efficient operations, and the success of our sustainability RoadMap 2025.

To help us identify major energy-savings opportunities, we are collaborating with another SHV company, EM3, an Ireland-based industrial energy and utilities consultancy. EM3 performed audits of six Nutreco sites last year, exploring the relationships between process and utilities energy streams. This deep dive has identified significant energy-savings opportunities and led to the development of a detailed energy and carbon savings RoadMap aimed at enabling those Nutreco sites to reach our SBTi goals. The proposed solutions varied, depending on the maturity of each site, from basic housekeeping improvements to using advanced technologies such as microturbine electricity generation at sites where grid electricity is unavailable or unstable, switching to renewable fuels, or implementing heat pumps.



We are aware that we cannot fully achieve our scope 1 and 2 SBTi targets through energy-efficiency programs alone, so we are looking for other cost-effective ways of reducing CO<sub>2</sub> emissions. At the current time, Nutreco is exploring best fit solutions for decarbonising scope 2 greenhouse gas (GHG) emissions. This may involve developing on-site and off-site PPAs and buying green electricity with certificates where other options are not feasible.



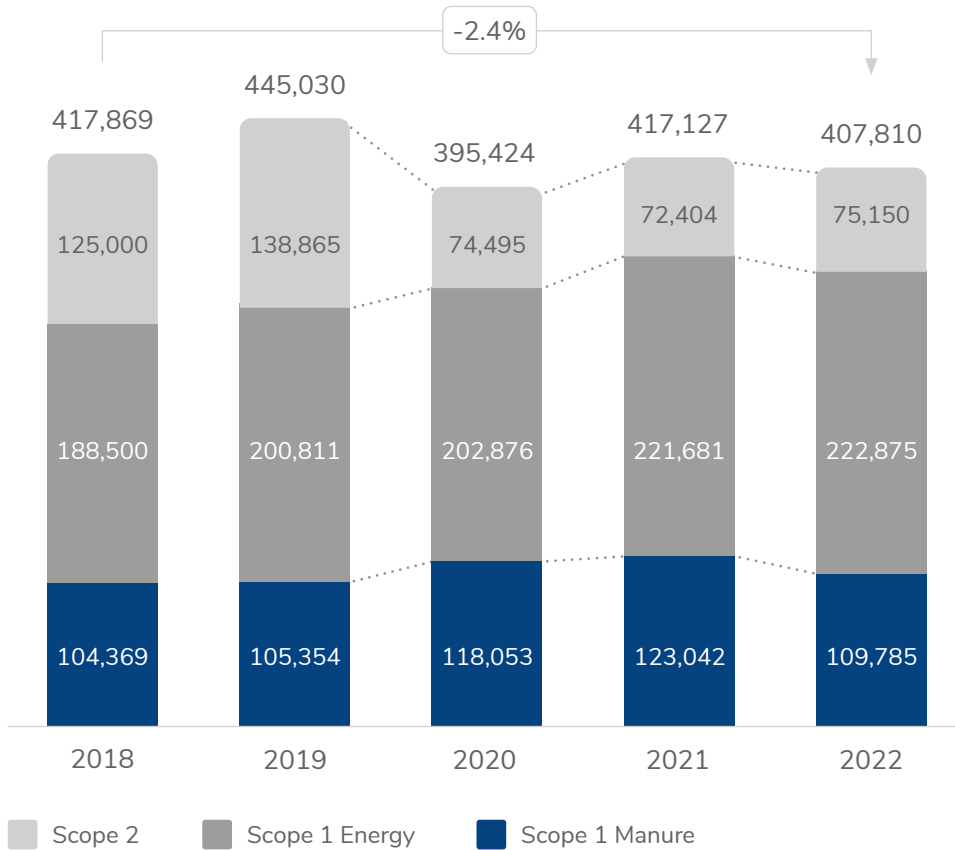
Nutreco is looking for the best cost-effective ways of reducing CO<sub>2</sub>.



## Our progress

While we show an overall reduction of 2.4% compared to 2021, this was due to a reduction in the number of animals being produced in our operations in Spain, which resulted in our manure scope 1 emissions decreasing. Our scope 1 and 2 emissions actually increased by 2.7% in absolute terms during the year. This was despite substantial efforts to reduce Nutreco's GHG emissions, and it resulted from commercial changes in our business. The scope 1 increase of 18% is disappointing and was directly related to an intensive volume growth in demand from new and existing customers for extruded shrimp feed, which requires high energy use in its production. This feed uses more energy for grinding and because a significant amount of water is used in its production, energy is also required for the drying process to later remove this excess water. While we did see improvement in specific energy consumption in shrimp feed plants (kWh/t) and many other factories in Nutreco during the year, this was not enough to offset the increased emissions due to the volume growth in extruded shrimp feed. Improvements in technology, infrastructure and use of renewable energy sources will be needed to change this situation. In 2023, Nutreco will also completely phase out coal, which will further reduce our scope 1 emissions.

### Scope 1 and 2 emissions at Nutreco



### Renewable energy and energy improvements

	2018	2019	2020	2021	2022
% total energy consumption coming from renewable sources	7%	5%	14%	16%	17%
Energy efficiency: CO <sub>2</sub> eq per ton produced feed	40	40	29	30	34

We are committed to increasing the use of renewable energy.



🔍 CASE STUDY

### Nutreco's most energy-efficient fish feed plant

**Skretting Stokmarknes produces extruded fish feed for salmon and trout and operates the most energy-efficient fish feed plant in Nutreco.**

This great performance is the result of years of continuous improvement in processes and operations – taking small steps that added up to major progress over time. The plant's energy-reduction journey started in 2009 (with 2008 as the reference year). Since then, the Stokmarknes team has performed numerous, mainly low-cost, improvements that led to a 19% reduction in energy needed to produce a ton of saleable feed.

In recent years, these efforts have been aligned with Nutreco's overall Operational Excellence program. Considering today's high energy prices, this work has been appreciated more than ever.

The key technical components of Stokmarknes' success are the plant's high overall efficiency; long production runs; low base load (rate of energy consumption when the factory is not producing); electric boiler, which uses a hybrid heat pump that recovers heat from the dryers' exhaust air; and many other small in-house solutions for energy recovery. In addition to its state-of-the-art equipment, the expertise of the local team and their passion for continuous improvement has been critical for the plant's overall success.

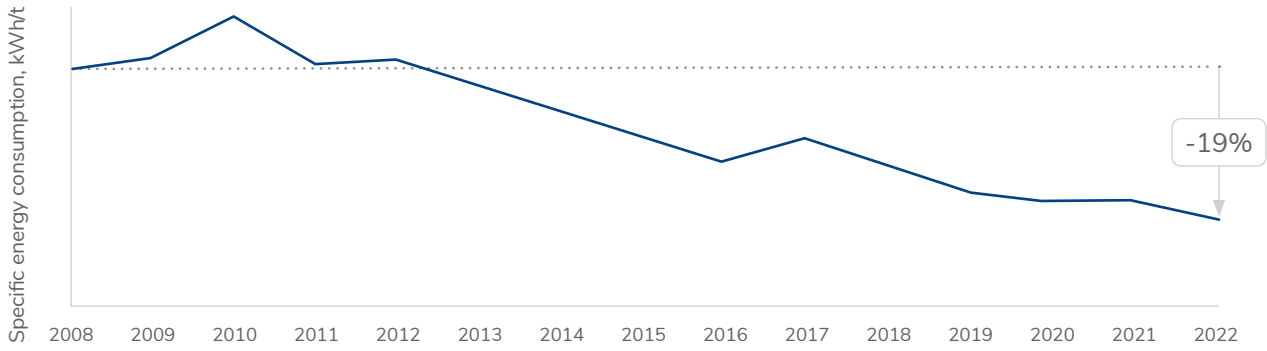


Figure 1. Reduction of specific energy consumption in Skretting Stokmarknes.



This is partly due to the leadership of Harald Steffensen, who heads up Skretting Norway's energy team, which is challenging the limits on the energy needed to produce fish feed and does not allow any energy-saving opportunity to pass unexplored. Harald Steffensen has worked at Skretting since 1989 and has led the energy team of all three of its factories for the last 14 years.

**We asked Harald what was key to Skretting Stokmarknes' success, and what advice would he have for other plants just starting this journey:**



From 2002 to 2009, Skretting Norway's factories underwent a LEAN improvement process, aimed at reducing waste of resources, time and effort. As technical manager at Stokmarknes, I learned that this helped significantly improve the factory's overall equipment efficiency and made it the most energy efficient in the Norwegian fish feed industry in 2009.



The Stokmarknes energy team carefully examines every opportunity and idea for energy reduction. We always need to make sure that proposed solutions have good financial and environmental benefits. To perform proper evaluation and identify best practices, it is important to have good data quality.



That same year, we started intensive energy-reduction work once we had the plant at an overall high level. We established energy teams and monthly reporting, implemented energy management in accordance with ISO 50001, energy meters and monitoring systems. This provided a good foundation for carrying out regular energy surveys and continuous improvement processes.

### **“My advice for other factories?”**

**The first step is to improve overall efficiency, such as yield, availability and throughput, in line with our Nutreco-wide Operational Excellence program. In addition, good data quality is important to help us find further opportunities to improve. So, we need to focus on monthly energy reporting and investing into energy meters and monitoring solutions to measure and compare the equipment efficiency of the most energy-demanding processes. Finally, have a dedicated energy team on site that works systematically according to an agreed level of energy management. And remember to celebrate victories!”**

**Harald Steffensen**

*Senior Operations Engineer at Skretting*





## Waste and water

Reducing waste is an increasingly important area as we try to mitigate the impact of our business on climate change. Because producing, transporting and disposing of goods all generate greenhouse gas emissions, waste can increase the environmental impact of our manufacturing processes.

Managing water in a sustainable way is becoming a growing global priority, as we work to meet the needs of a rising population and adapt to our

changing climate. Nutreco has been monitoring our water use for several years. Because the challenges around water usage vary based on local conditions, we manage them on an OpCo-by-OpCo basis, implementing water efficiency programmes in high-stress areas. We will correct our 2018 baseline water and waste figures for divestments, as the reductions in 2022 were a reflection of the divestments of Sada and our operations in Russia and Zambia.

(tonnes)	2018	2019	2020	2021	2022
Total hazardous waste	3,500	4,221	2,478	1,774	1,727
 Total non-hazardous waste	47,700	48,264	55,495	49,818	43,458
Total waste	51,200	52,485	57,973	51,592	45,186
 Water	2,981,600	2,985,265	2,957,207	2,928,046	2,130,112

## 4.2. Natural Resources: Improving our impact across the supply chain



At Nutreco we are concerned that our impact throughout the value chain improves every day and we strive to improve the lives of all the people involved in it.



## Our targets



### Natural resources



Source 100% of marine ingredients from sources audited and certified by MarinTrust or MSC.



Ensure that where MarinTrust- or MSC-certified marine ingredients are not available, all non-certified ingredients will be engaged in a Fishery Improvement Project (FIP). FIPs will publicly report developments annually.



Ensure that all marine ingredients produced from species caught for the sole purpose of producing a feed ingredient will, as of 2022, come from IFFO Responsible Supply-certified sources of whole fish or from fisheries that participate in a recognised programme to improve in order to become certified.

## Our progress

84% of our whole fish and trimmings are MarinTrust, MSC or MarinTrust-FIP certified an increase of 4% compared to 2021.



**Our targets**



**Natural resources**



All purchased soy and palm will be deforestation-free by 2025.



Ensure that by 2022, all agricultural vegetable products are traced back to the country where they were cultivated, to use in a risk filter and for footprinting requirements.

**Our progress**

70% of our purchased soy and 76% of our purchased palm is in class A or B.

We have traceability for soy and palm ingredients to the country where they are cultivated. Unfortunately, we have not yet successfully implemented a traceability system for other vegetable ingredients, due to the complexity of supply chains and the significant increase in administration that comes with it, both for us and our suppliers.

In 2023, we will set up a team to take this further. The team will engage with internal and external stakeholders to set up a system that will allow traceability up to the country of primary production without unnecessarily increasing administration.





Scope 3 emissions contribute to around 95% of Nutreco's total emissions. Since these emissions are outside of our direct control, we created a dedicated scope 3 reduction program, based on three reduction strategies and supported by an internal engagement program.

**We actively reach out to select suppliers to engage them on our journey.**



## Strategy 1

The first is **supplier engagement**, in which we actively reach out to select suppliers to engage them on our journey. Because Nutreco sources raw materials from many suppliers all over the world, it is impossible to engage with all of them in an effective way. We use secondary data, such as average LCA data from recognised LCA databases, to identify the ingredients and suppliers that potentially contribute most to our scope 3 emissions. We found that 216 ingredient suppliers account for 80% of our scope 3 emissions. These are the suppliers we will focus on, engaging with them to identify potential opportunities to reduce their GHG emissions. Nutreco is part of a growing group of companies setting ambitious GHG reduction targets for 2030, and we will ask our suppliers to do the same. By increasing the share of suppliers committed to science-based targets, we hope to increase the LCA knowledge within our supply chain and across the whole value chain.



## Strategy 2

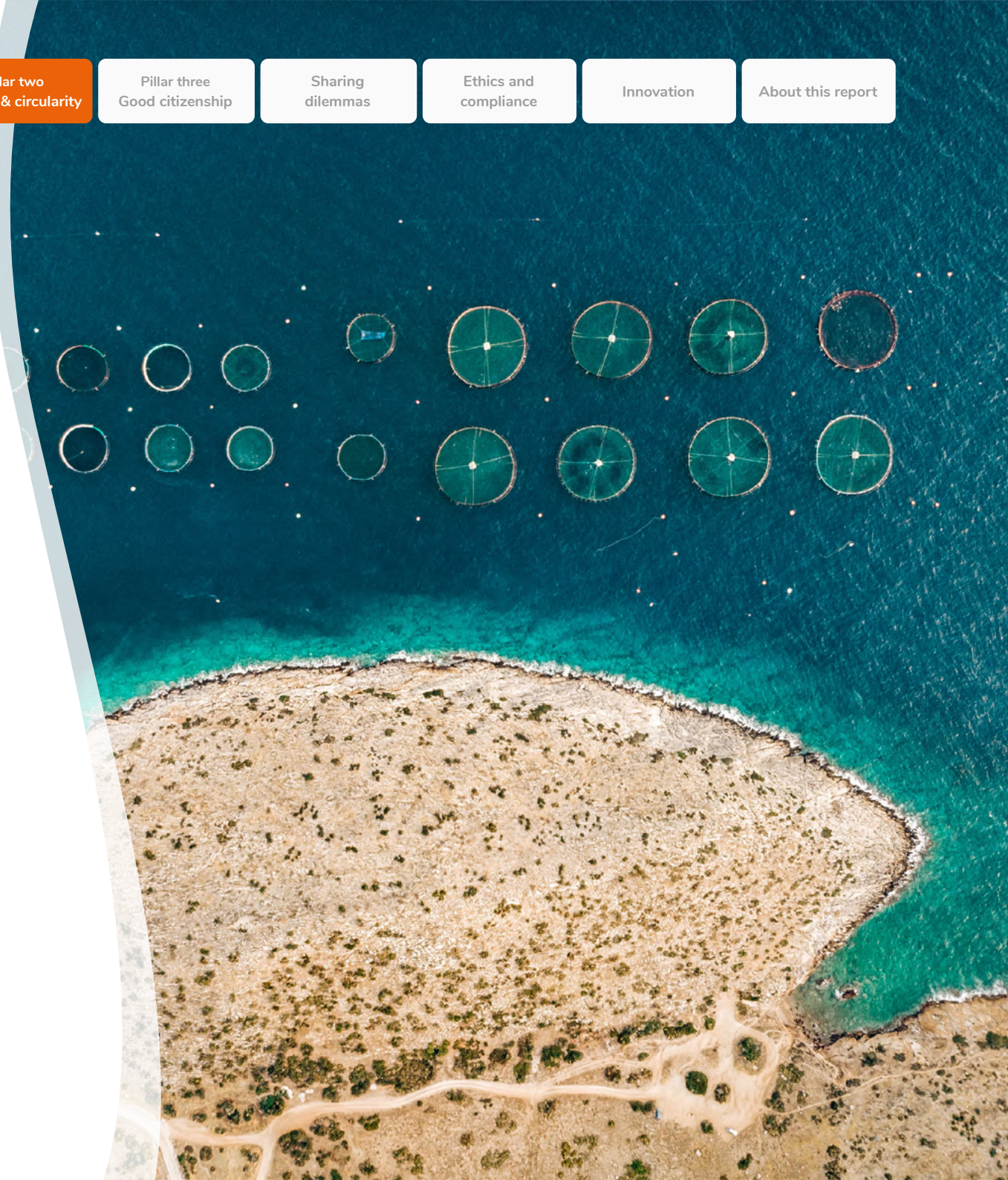
In these discussions, we will also request suppliers share primary emissions data, for example, LCA data for specific products they deliver. This will help us to better understand emissions across the supply chain and select **low-emissions ingredients**, the second of our three reduction strategies. When similar ingredients come with different footprints, we give preference to the ingredient with the lowest footprint. This should also be seen as an incentive for suppliers to obtain primary data for their products, as they might give better footprints, compared to secondary data, or at least gain insights into what reduction pathways they could explore to improve their emissions (such as switching to renewable energy).



## Strategy 3

Our third reduction strategy is related to the biggest driver of our scope 3 GHG emissions: **land use change**. Land transformation by human activities is often related to the release, or decreased sequestration, of GHGs. Deforestation, in particular, that frees up space for the cultivation of vegetable ingredients is driving up the land use change part of our emissions significantly. By working together with our suppliers to combat deforestation, we will reduce the land use change associated with our ingredients and, with it, the GHG emissions associated with our feeds.

We recognise that we will have to constantly re-align our approach because of the availability of better data, improved baselines and changing targets and standards. The recent addition of the Forest, Land and Agriculture (FLAG) guidance by the Science Based Targets initiative is an example of a significant change in standards that requires a re-alignment of our approach. The new FLAG guidance will trigger a new baseline, new targets and more detailed administration of GHG figures, which we will be working on in 2023. These changing figures not only bring challenges for precise reduction planning but also for communication to internal and external stakeholders. To address this topic, we are planning to add a data-quality KPI (see *Transparency in the footprint of our products*) into our systems and transparently report if improvements are based on improved data or actual reductions. In addition, our **internal engagement program** will aim to empower everyone within Nutreco to contribute to our ambitious scope 3 reduction program.



» **Our progress**

In 2022, we created a specialist team to strengthen our LCA platform and tackle the scope 3 science-based targets we have set. We launched a new marine sourcing policy, describing in an open and transparent way, as we did for soy and oil palm, our expectations around sourcing marine products and providing a step plan for our purchasing team.

We expect to see a lot of activity around scope 3 emissions reduction across Nutreco in 2023. Our plans include starting our supplier engagement program to encourage more suppliers to commit to SBT, solidifying our internal LCA model and ensuring internal engagement of all businesses and functions within Nutreco by distributing targets to all parts of the organisation.

As discussed above under *Reducing emissions in our own operations*, the increase in our scope 3 emissions was mainly due to the growth of our aquaculture line. In 2023, we will also adjust the baseline for disinvestments and acquisitions.

Scope 3 emissions (kT)	Aquaculture	Livestock	Total scope 3
2022	4,801	7,441	<b>12,242</b>
2018 baseline	4,152	8,047	<b>12,199</b>



## Ecosystems and biodiversity

Healthy ecosystems and rich biodiversity are vital to sustain life and enable society to function properly. Despite its significant economic, social and cultural value, biodiversity worldwide is being lost – in some areas, at an accelerating rate. At Nutreco, we are committed to making a difference in this area. We use independent certification as one tool to ensure the responsible use of natural resources.

An important focus area for us is deforestation and conversion. We are working to understand the associated risks, develop an action plan to address them, source from land-conversion-free sources and partner with stakeholders to help our industry reduce deforestation in livestock production.



## Deforestation free

Our soy and oil palm ingredients sourcing policy, published in 2020, outlines the steps we will take towards a deforestation-free supply of soy and oil palm ingredients by the end of 2025. This sourcing policy helps us understand the deforestation risk associated with our purchased soy and oil palm ingredients and navigate the available certification schemes that may help mitigate it.

We are working together with suppliers to get a better overview of the origins of our soy and oil palm ingredients. This information is not only used to verify our progress on the soy and oil palm sourcing policy, but also to calculate more accurate GHG emissions. Deforestation is a large contributor to our scope 3 emissions. Eliminating it within our supply chain, and getting suppliers and customers on board for these new solutions, will help us reduce these emissions.

## » Our progress

In 2022, we further decreased the amount of uncertified, high deforestation risk soy and palm ingredients in our products. We sourced a larger proportion of soy ingredients from low-risk countries, increasing the proportion of Class A soy from 52% in 2021 to 56% in 2022. In addition, 2022 was the first year our Skretting business put an intermediate goal in place, requiring it to source at least Class C ingredients for its products. In practice, this means that a large part of Nutreco's uncertified, high-deforestation risk soy and palm ingredients are now covered by RTRS and RSPO credits, which moves these volumes from Class D to Class B. Within our Trouw Nutrition business, 98.7% of Class D soy and palm is sourced in the European Union. The European Union's upcoming deforestation-free policy is expected to phase out soy and palm linked to deforestation by the end of 2024, moving a large part of our soy and palm volumes from Class D to Class A.

Nutreco welcomes the 2022 EU ruling addressing proper due diligence of a select list of imported commodities to ensure their deforestation-free origins.

While we understand the complexity and technological challenges of immediate compliance with certain criteria in the legislation, the end result will level the commercial playing field for the EU market. It will be very important for European retail, and ultimately the European consumer, to digest the additional cost of this more sustainable raw material in order to make the solution possible. We look forward to working collaboratively with suppliers to further leverage this EU legislation in support of our efforts to reduce scope 3 emissions in our supply chain. We urge all players in this field to use their influence to enable deforestation-free soy and oil palm supply chains.



## Nutreco 2022 soy and oil palm performance

		2020		2021		2022	
Origin		Soy	Palm	Soy	Palm	Soy	Palm
Class A	The soy or palm oil ingredient is traceable back to a country or region with a low risk of deforestation or is from a region with a high risk of deforestation but purchased through a certification scheme which verifies no deforestation occurred (segregated supply-chain).	56%	3%	52%	10%	56%	9%
Class B	The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation. For Class B, it must be purchased through a certification scheme with a defined cut-off date, using either mass-balance or credits.	7%	50%	14%	54%	14%	67%
Class C	The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation and must be purchased through a certification scheme that verifies no illegal deforestation occurred.	0%	0%	0%	0%	0%	0%
Class D	The soy or palm oil ingredient is traceable back to a country or region with a high risk of deforestation but purchased without any certification related to deforestation.	35%	47%	34%	29%	29%	24%
Unknown	It was not possible to trace the soy or palm oil ingredient to the country it was cultivated in.	2%	<1%	<1%	7%	<1%	<1%

## Marine ingredients

Our RoadMap 2025 gives clear targets for sourcing marine ingredients from certified sources or from fisheries that are part of FIPs. The clear increase in the share of fisheries meeting the RoadMap's goals, together with the launch of the Marine Ingredients Responsible Sourcing Policy, show that Nutreco is moving in the right direction towards fulfilling our ambitions.

### Percentage whole fish and trimmings certified

Origin	Marin Trust FIP	Marin Trust	MSC	Total
2020	4%	43%	21%	69%
2021	10%	46%	24%	80%
2022	12%	58%	14%	84%







### 4.3. Novel and circular ingredients

#### RoadMap target



5-10% of feed ingredients come from alternative novel sources.

#### » Achievements 2022

More than doubled the use of novel ingredients used in 2022, bringing the total to 0.8 %. Nutreco uses novel ingredients where market conditions permit.



In addition, we are active in utilising mechanisms to stabilise food and feed processing by-products to be able to further incorporate into animal nutrition solutions that will highlight circularity.

222,525 metric tonnes of circular raw materials upcycled with our top three customers.

Note: We expect that, in the course of 2023, the definition of “circular” and the circularity classification of ingredients will be further refined based on national and international initiatives that are currently ongoing.

## Novel ingredients

Particularly in tumultuous times, the priority for our procurement team is availability, ensuring we have the right nutrients available at the right location to ensure uninterrupted supply to our customers. As commodity prices remain high, we are focusing on alternative ingredients and suppliers to spread the risk and address sustainability challenges. This has created opportunities for several novel ingredients to become more competitive.

In 2022 we made important progress in novel ingredients, increasing our overall inclusion rate from 0.056% to 0.8% of total raw materials purchased.

The volume increase was partially due to our increased usage of omega 3 alternatives, such as algae and omega 3 canola oil. Several of these oils are now commercially available and implemented in most of our aquafeed businesses. We saw good momentum behind the introduction of novel vegetable raw materials, such as horse bean starch and concentrated maize distillers' grains, and we are pleased that these products, developed

specifically for the feed industry, are finding their way into animals' diets.

Nutreco was only able to achieve this progress by constantly focusing on novel market opportunities. We fully utilise our global procurement, quality assurance and R&D resources to identify, develop and implement ingredients that fit into our novel strategy, which is to focus first and foremost on low-footprint and right-cost ingredients.

**To sustainably feed  
a growing world  
population, we  
cannot rely only  
on conventional  
ingredients.**



 CASE STUDY

## Bringing novel ingredients to customers

Nutreco has long believed that the only way to make real progress in sustainability is to work together with other stakeholders in the supply chain. In 2022, one of these partnerships came to fruition after more than two years of efforts.

Klaas Puul, owned by Sykes Seafood, is one of the largest suppliers of peeled fresh-frozen tropical shrimp to European retailers. Its team is constantly challenged by retail clients who develop more demanding sustainable sourcing policies that go beyond the requirements in conventional sustainability certification schemes, such as those of the Aquaculture Stewardship Council (ASC). Albert Heijn is one of these retailers – the oldest and largest grocery store chain in the Netherlands, and a forward-looking organisation when it comes to the sustainability of the shrimp it sells.

In 2020, Nutreco, Klaas Puul and Albert Heijn decided to explore the possibility of cooperating to develop a proposition for Ecuadorian shrimp that could meet sustainability conditions that included strict requirements about the feed used to produce it.



“The partnership with Nutreco in driving this ambitious project forward has been a new and inspiring experience for me. The sustainability team's guidance in approaching the business case and value proposition to make it work for every value-chain partner involved was key to our joint success. I'm hopeful that there will be more opportunities for similar collaborations, because these initiatives will help the shrimp industry to secure a resilient future.”

**Jan Bootsman**

Senior Purchase Manager, Klaas Puul BV  
/ Sykes Seafood Ltd.



Skretting was able to develop a formulation that resulted in a feed with a fish in - fish out (FIFO) ratio of close to zero, using fishmeal and oil from processing by-products and novel ingredients from Protix and Veramaris to replace fishmeal and oil gradually while maintaining the feed's performance. Klaas Puul, together with its Ecuadorian farming and processing partner, designed a supply chain

that could meet all the requirements, including farming in dedicated ponds and full traceability and chain of custody from pond to plate.

During the next phase of cooperation, Skretting and Klaas Puul look forward to working closely together to deliver this proposition to additional retail clients in Europe.

**“This initiative is a great example of putting our purpose of Feeding the Future into action. Working closely with Nutreco’s Sustainability team, Skretting Ecuador will deliver one of the most sustainable farmed shrimp feeds on the market today. This will help us meet the targets of our Sustainability RoadMap 2025, particularly ensuring 5-10% inclusion of novel ingredients in feed formulations. We are proud of being part of this value chain collaboration that will move the needle forward to bringing a sustainable solution to end consumers.”**

**Carlos Miranda**  
*General Manager of Skretting-Ecuador.*

## Circular ingredients

Building connections between the food and beverage industries and agriculture provides opportunities to address the gap between today's feed production levels and the future's projected food requirements. Using by-products from the food industry in animal feed enables us to close the circle and keep more nutrients within the food chain.

These by-products, despite not meeting human taste, texture, or other physicochemical requirements, are often highly suitable for animal nutrition. Some examples include liquid or dry by-products from oilseeds, cereals, roots, potatoes and fruits in the food and beverage industry, as well as processed animal proteins (PAPs) from meat by-products. The extensive use of inedible human by-products in animal feed and their upcycling into human-edible food is a crucial requirement for sustainable animal protein production.

At present, a significant amount of nutritional and digestible by-products continues to be used for energy production. Considering today's volatile energy markets, and the ambitions of the European Union around recognising renewable energy as



one way to achieve carbon neutrality by 2050, allocating by-products toward energy production might seem to be a good idea. However, according to the food waste hierarchy (figure 1), by-products' use as food has the highest priority, followed by use in animal nutrition. Only when neither are possible are other uses acceptable, such as the production of biofuels.

Safety is always a top priority across the food product chain and maintaining by-products within the food-to-feed chain often comes with microbial challenges. For this reason, to effectively use by-streams of food and beverage production as

ingredients for high-value production processes, like animal nutrition, managing microbial quality is of the utmost importance. This is where Nutreco, and particularly our Selko Feed Additives team, can play an important role.

We are continuously exploring opportunities to collaborate with industry players to increase the use of circular ingredients. Our Selko Feed Additives team is running initiatives in different parts of the world to preserve valuable nutrient sources and utilise them within animal feed; its aim is to produce more sustainable animal protein to feed the growing world population.

### Food waste hierarchy



Source: European commission

**CASE STUDY**

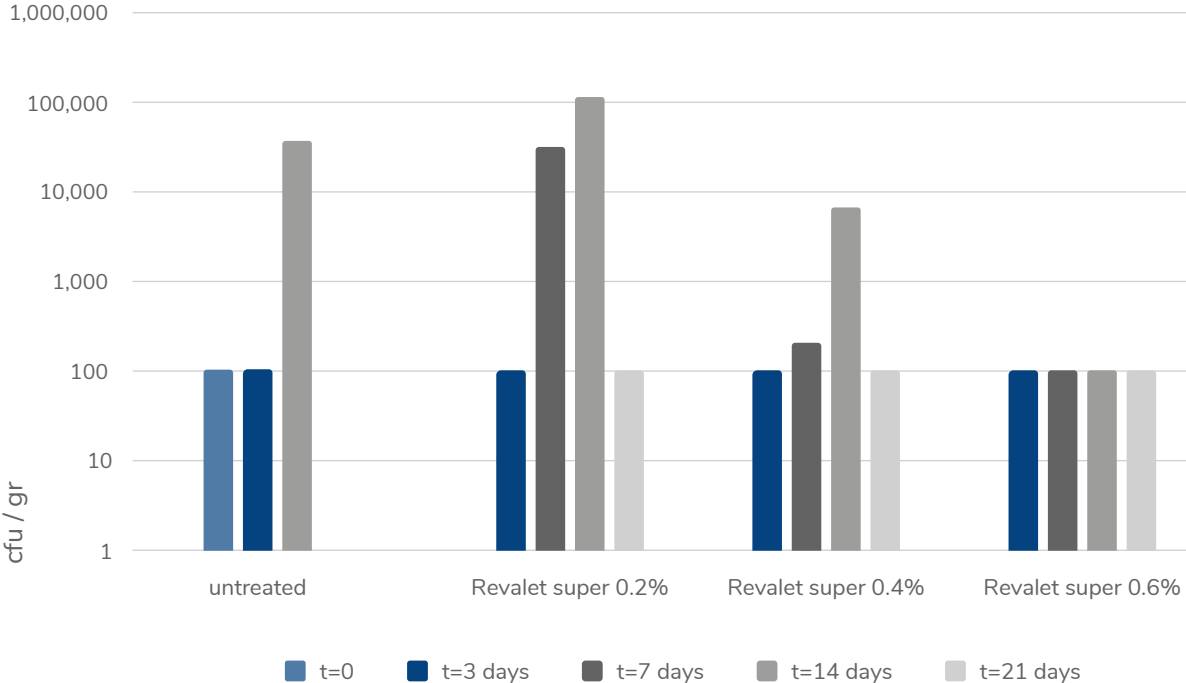
**Selko, Noblesse and Loop work together to keep nutrients in the food chain**

A recent collaboration between Noblesse Proteins BV, Loop and Selko is one example of how we connect businesses and maintain food by-products within the feed chain.

Noblesse Protein transforms by-products into high-quality proteins and fats for the animal feed, biofuel and fertiliser markets. The company is collaborating with Selko Feed Additives and Loop, a company specialising in extracting the maximum value from by-products from food and the fermentation industry, to divert an animal by-product from biogas production towards feed ingredients.

One challenge in upcycling by-products is ensuring their safety and quality is preserved, by implementing effective feed safety and preservation solutions. This is where Selko comes in. Noblesse ran various dose-response tests with various industry preservatives to find the best solution; the company selected Selko Revalet Super, as it provided the most cost-effective and broad-spectrum results (next graphic).

**Yeast development**



Dose response testing confirmed the most cost-effective solution. After day 7 the control sample was deemed unfit for feeding due to pungent smell, indicating complete microbial wastage. Therefore, it was taken out of the study.

## Maintaining nutritional value

In addition to the safety aspect, preserving nutritional value is critical to keeping by-products available for feed production. As microbes consume nutrients at an accelerating speed, deactivating them as early as possible is important. In addition to treating products with Selko Revalet, Noblesse collaborated with Loop to upcycle the by-products and get them to market. Following its "Loop Ladder," the company utilises by-products to develop alternative resources for, among others, the animal feed industry. This "triangle" of collaboration is a great example of how Nutreco is working with partners across the value chain to build more circular food systems.

**"Through the collaboration with Noblesse Proteins and Selko Feed Additives, we took a shared step towards infinity in the food production system."**

**Kelly Vermeer**

Manager Quality, Nutrition & Sustainability at Loop.

## Our goal is to keep by-products available for feed production.

**"For Noblesse, it is important to make all incoming proteins available to the feed market rather than supplying them to the bio-energy industry. With Selko Revalet Super we found a high efficacy when applied in lower dosages. The product helps to preserve the nutritional value of our by-products."**

**Edwin Huisken**

Product Developer at Noblesse.







Applying Selko solutions helps maintain nutritional value within the feed-to-food cycle.



## 4.4. Transparency in the footprint of our products

Summary achievements 2022 for RoadMap 2025 targets:

### 🎯 RoadMap target

Commit to SBTi



**Implement LCA footprinting in feed formulations, innovation stage gate and procurement.**

### »» Our progress in 2022

- LCA metrics implemented in all local feed formulation databases.
- Scope 3 dashboard extended to give OpCos specific insights into the carbon footprint drivers, e.g., by raw material or supplier contributions.
- Actively requested specific footprint data from 32 global suppliers through our LCA data collection and quality assessment template.
- Developed a tool to calculate packaging, operations, and outbound transport footprint for specific OpCos and products.
- Trouw Nutrition launched MyFeedPrint service to support customers in calculating the environmental footprint of animal feed.



**Develop footprinting capacity in our farm and formulation models to help customers measure and reduce their emissions.**

- First Excel-based on-farm carbon footprint tool for salmon available and under testing with customers.
- Provided eight salmon customers with a tailored carbon footprint report based on our reporting template. It gives transparent insights into footprint drivers by raw material groups, partly reported per product and quarter.
- Developed an environmental footprint reduction program for dairy customers to reduce the carbon footprint of milk. The program includes MyFeedPrint, MyMilkPrint footprint calculation services and our product solutions.

Measuring the environmental impact (or “footprint”) of our ingredients, operations and products is key to reducing our scope 3 emissions, as we are only able to manage what we measure. We are quantifying our footprint based on the robust and internationally standardised accounting methodology Life Cycle Assessment (LCA). This method allows us to calculate dependable results in a systematic way, make robust decisions based on these results, and deliver high-quality footprint data to our functions and stakeholders.

Nutreco defined its internal footprint database in 2021, which maps all our purchased ingredients with quality-assured LCA metrics, aligned with leading LCA standards. The database covers seven different environmental impact categories, including not only the carbon footprint, but also indicators for topics such as water footprint or land use.

## » Our progress

In 2022, we focused on connecting our internal footprint database with different internal systems. This enabled us to calculate and report the footprint of our products and company in a more automated way, and bring this information into the business functions and OpCos, where the reduction efforts ultimately need to take place.

One milestone we reached was the finalisation of a scope 3 carbon footprint dashboard, linking our Nutreco footprint database to our procurement data system. This enables us to calculate and track our scope 3 carbon footprint and gives valuable insights into which regions, local plants, ingredients and suppliers drive Nutreco’s carbon footprint most.

We also achieved a second milestone during the year: integrating footprint metrics into our feed formulation software. This gives us a powerful tool to ecodesign our products in the future, enabling customers to consider footprint metrics in addition to price and nutritional quality in product formulation. This integrated solution also helps us to calculate product footprints in a more automated way and understand how different formulation choices cause different impacts on a product level. The solution is now available for all our OpCos to use and is already actively used in our key markets in Europe, North and South America and Australia. We also created an internal tool to help us calculate the full cradle-to-gate footprints of our products by simply selecting the product packaging, location of the plant and outbound transport information.



## Procurement carbon footprint dashboard

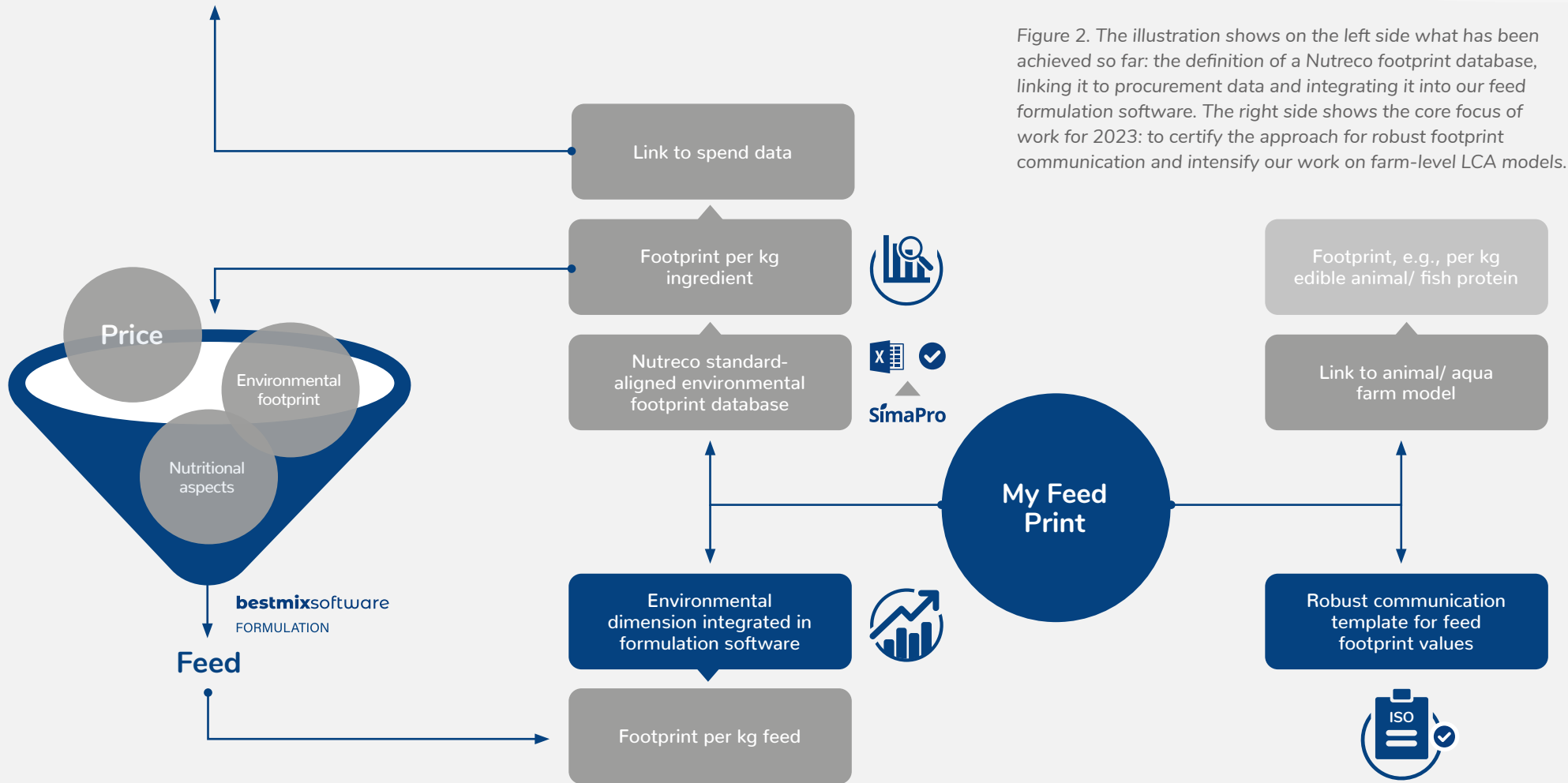


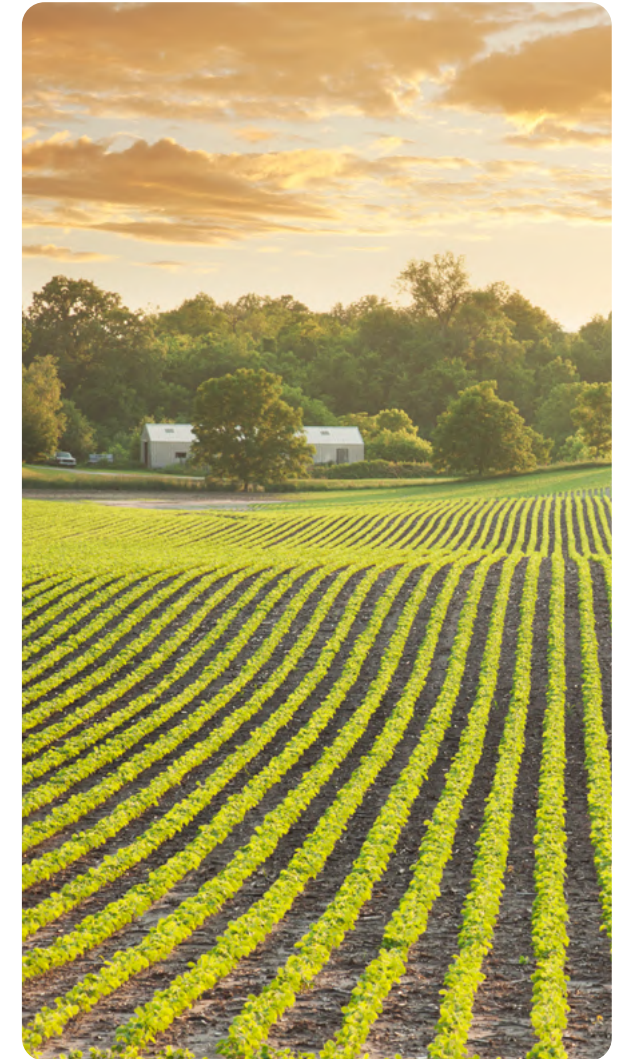
Figure 2. The illustration shows on the left side what has been achieved so far: the definition of a Nutreco footprint database, linking it to procurement data and integrating it into our feed formulation software. The right side shows the core focus of work for 2023: to certify the approach for robust footprint communication and intensify our work on farm-level LCA models.

While we made good progress in 2022, we still have more to do. One area we continue to work to improve is data quality, an important aspect often not well addressed when footprint metrics are calculated and communicated. Our current scope 3 baseline and the ingredient-related footprint of our products is mainly based on average or secondary data. While this is consistent with LCA standards, and we only source information from quality-assured LCA databases, there are still uncertainties associated with average or secondary data. To achieve more accurate calculations and to differentiate better between the performance of our suppliers, we need to collect more primary data.

We already started to request primary data from key suppliers in 2022 and we aim to increase this collection effort significantly in 2023 (See *Improving our impact across the supply chain*). To create a level playing field and collect comparable data, we have developed a specific data collection template, including a data quality questionnaire. We also have an internal data quality check procedure to guarantee supplier LCA data aligns with the leading LCA standards before we take any primary data into our footprint database. We want to introduce a data quality KPI into our systems that will enable us to track, validate and consistently reduce data uncertainty.

In 2023, we have plans to further advance our LCA work in a number of other areas:

- We will seek external certification of the Nutreco footprint database and its integration into formulation software.
- We plan to further build our LCA models to integrate product use and end-of-life phase emissions so we can analyse the complete life cycle of our products.
- In order to create more dependable scope 3 baseline and product footprint calculations, we will request more and better primary data from our suppliers.
- We plan to introduce uncertainty parameters to measure data quality and its improvement and develop a solution for automated batch level cradle-to-gate LCAs. And we are working on labelling our key products with LCA metrics.
- We will also further develop and implement farm footprint calculation tools and carbon footprint reduction programs for swine and poultry.



## Giving our customers insight in their footprints

The first focus of our environmental footprint reduction program has been on offering dairy farmers a program to reduce the carbon footprint of milk. Various dairy companies have set clear targets in this area and have or will embed carbon footprint reduction and other sustainability needs in their milk payment systems.

Nutreco's footprint reduction program provides customers with tools to calculate the environmental footprint of feed and milk, including MyFeedPrint, launched 2022 and MyMilkPrint, which will be launched in 2023. The program also includes feed and farm management intervention options to help farmers reduce the footprint from feed and enteric methane emission from their cows. We are using products and services to improve the health and longevity of dairy cows, in turn, enhancing efficiency and further reducing the carbon footprint of milk. We believe it will be technically and economically feasible to reduce the carbon footprint of milk by up to 30%, depending on the financial incentives available to farmers: for example, a premium payment for milk that meets specific sustainability criteria.



 CASE STUDY

## My FeedPrint helps Ireland's agriculture sector assess its environmental impact

The Irish government recently set out to better understand how the country's agricultural community contributes to its environmental footprint. They have started various projects to create LCAs for livestock farms across the island.

The models they are using are based on gathering primary data from farms and using generic figures for feedstuffs consumed on the farm. Since this generic data is not fully accurate, the timing of the MyFeedPrint model launch at Trouw Nutrition Ireland could not have been better. MyFeedPrint makes it possible to efficiently and accurately calculate the environmental footprint of compound feed or feed blends, based on input data for each of the raw material ingredients, including country of origin, distance travelled, mode of transport and energy used for production.

During meetings with the feed industry bodies in the north and south of Ireland, various NGOs and feed compounders, the Trouw Nutrition team has been able to explain the value of MyFeedPrint and

demonstrate both its simplicity and the accuracy of the data sets it is based on.

At a recent Global Feed LCA Institute (GFLI) workshop organised by the Irish Grain and Feed Association, the Trouw Nutrition team was able to show how its models utilise the most up-to-date environmental footprint figures available to establish a local database for raw materials, utilise production and transport energy use figures to calculate the feed mill footprint, and then combine both to calculate the footprint of any feed formulation produced by the mill and delivered to a farm.

Feed mill customers are already asking Trouw Nutrition Ireland to compare footprints for compound feeds based on a high level of imported raw materials with feeds produced using more homegrown energy and protein sources.

Linking customers to the Trouw Nutrition MyNutriOpt system, an online portal to analyse, manage and export feed data, will allow them to work with this model themselves and make procurement decisions based on a raw material's environmental footprint as well as its nutrition value.

**“We wanted to have an open and constructive conversation with our key business partners about how to take practical steps together to transition our sustainability vision into reality.”** The team outlined Trouw Nutrition Ireland's five-point plan of action on sustainability. **“It started a great discussion and generated a lot of enthusiasm among many of the customers in the room. We asked customers, ‘Are we right? Or what do we need to change?’**

**And let's do it together.”**

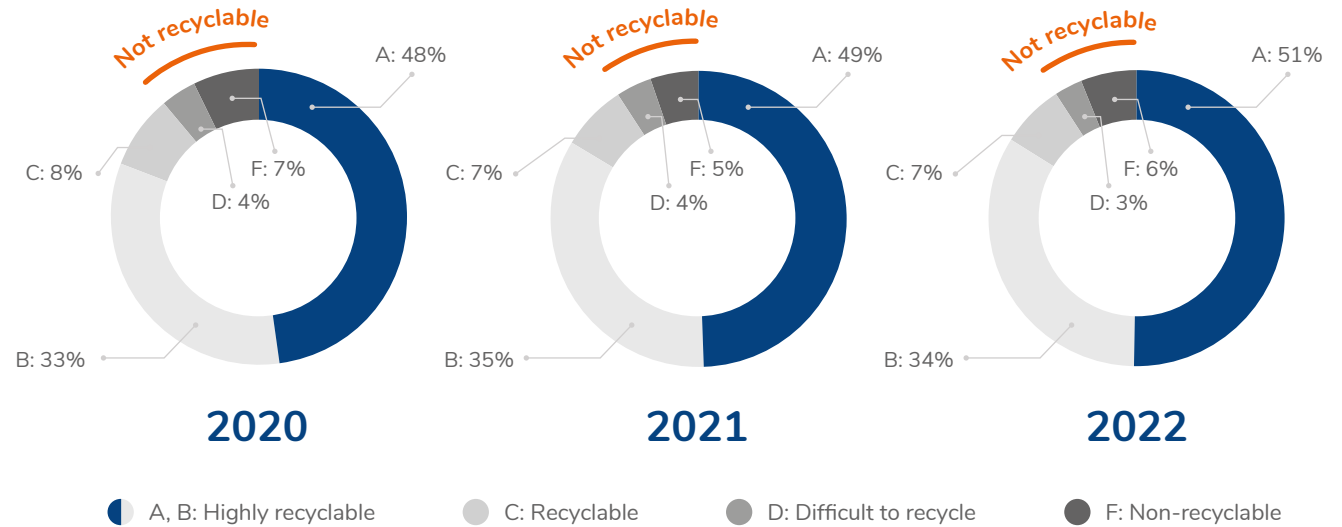
**Aidan Fisher**

General Manager at Trouw  
Nutrition Ireland.

## 4.5. Sustainable packaging

The packaging that helps protect and market our products has environmental impacts along the entire value chain. We work to balance using packaging with the lowest possible environmental impact with our need to deliver quality products and present our brands well. Our aim is to achieve 100% recyclable, reusable or compostable packaging by 2025.

### Percentage of packaging that is recyclable







## » Our progress

We are pleased to report that our share of non-recyclable packaging is steadily decreasing. From 2019 to 2022, our use of a non-recyclable packaging grade decreased from 13% to 9%. We also reclassified part of the dataset in 2022, which impacted scores from previous years in a positive direction, moving one set of bags from the "non-recyclable" to the "recyclable" category. One driver of this improvement was Arion, our Spanish pet food brand, which implemented less complex packaging in 2022.

During the year, we performed an assessment of the recyclability of our primary packaging. The key takeaway was that simple (mono-material) packaging yields goods scores on the assessment. Starting in 2022, Nutreco adopted this design principle with the help of the Nutreco sustainable packaging handbook. This handbook was launched in August 2022 to guide all our packaging purchase decisions by helping us improve our packaging material while maintaining the feed quality and often reducing the overall packaging cost. The handbook optimises our packaging by encouraging

a movement towards recyclability by design and minimising the usage of packaging material, and it also shares local success stories from across Nutreco. All colleagues related to packaging were invited to a launch webinar where they could ask questions about the new guidelines.



Our share of non-recyclable packaging is steadily decreasing.

## 🔍 CASE STUDY

### Skretting Italy significantly reduces use of virgin plastic

In 2022, Skretting Italy introduced plastic bags with post-industrial recycled (PIR) content to help reduce its use of virgin plastic in product packaging.

When using recycled content in flexible plastics, the main challenge is feed safety. To address this challenge, Skretting worked with their supplier to have the bags made with three layers, with the recycled content in the middle between layers of virgin plastic.

Another challenge in using recycled content is that the source of the plastic needs to be traceable to ensure no contamination throughout the supply chain. Skretting Italy checked compliance with relevant regulations and carried out a risk assessment approved by the veterinary control authorities and succeeded in receiving permission to use these innovative bags as feed packaging.

Around 50% of the bag is made from recycled material without increasing the thickness of the bag.

Skretting Italy also uses buckets made from 75% post-consumer recycled (PCR) content. The Skretting Italy success story has proved that there is a lot more possible when proactively engaging with the entire supply chain. Nutreco uses a structured approach and innovative tools to identify where opportunities exist to increase sustainability in our packaging portfolio. In 2023, we will continue to deliver towards our Sustainability RoadMap 2025 targets with new and innovative packaging solutions.

**“With about 105 metric tonnes of bags and over 3,000 buckets purchased in 2022, Skretting Italy used over 50 metric tonnes of recycled plastic. We are fully committed to the Nutreco Sustainability RoadMap 2025 – and improving the circularity of plastic material is an important step in this journey.”**

**Adamo Caldori**

*Purchasing Responsible at Skretting Italy.*





### 🔍 CASE STUDY

## Reducing packaging waste in Canada

Sometimes seemingly small changes can really add up. Operations teams at our Trouw Nutrition plants in Chilliwack and Sherwood Park in Canada identified 2.5 cm of packaging material overuse in each bag they use to package products. This extra bag length used to be cut, disposed of and accounted for as regular waste. By carefully optimising the packing process, the team was able to remove unnecessary bag length, reducing overall waste by 14% and achieving additional cost savings in packaging.



We analyse every detail to further reduce our packaging waste.

# 5.

**Pillar three:  
Good citizenship**

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## Community development

### Our targets

- Positively impact the lives of **12K** people in the communities where we operate.
- Assess human and environmental risks in our supply chain.
- Develop a local supply of raw materials in areas where it does not yet exist.

### Our progress

- 6,200 small farmers trained and engaged.
- 50% suppliers evaluated.



## Stakeholder engagement

### Our targets

- Engage with other stakeholder to focus on issues that are not easily addressed by one company.
- Focus on issues where we can play a leadership role.



## Diversity and inclusion

### Our targets

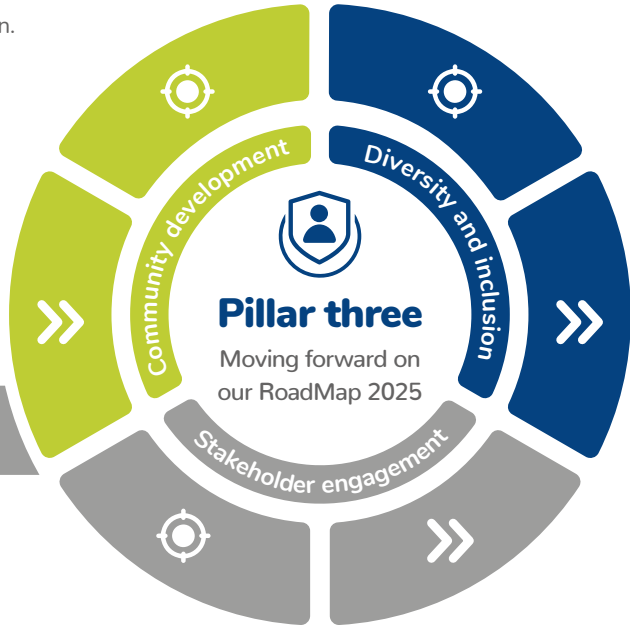
- One out of three hires is female.
- Ensure a diverse workforce.
- 30% women in senior leadership.

### Our progress

- 101 nationalities represented across our business.
- 24% of our senior leadership is female.
- <5% gender pay gap.

### Our progress

In 2022, we continued to engage with: the FEAC sustainability committee; the ASC supervisory board; the Collaborative Soy Initiative and Seafood Business for Ocean Stewardship.



2 ZERO HUNGER 
 5 GENDER EQUALITY

## Good Citizenship

### 5.1. Diversity and inclusion

At Nutreco, we aim for our teams to reflect the diverse and global society we live and work in, and to be the change we want to see. We want everyone to thrive in an environment where we feel valued and respected, in a culture that brings out the best in all of us.

To help us succeed in Feeding the Future, we welcome everyone as valued members of our family, with equal opportunities to be the best we can. We respect people for who they are and embrace diversity, listening to and learning from each other's unique perspectives.

#### Our targets

##### Diversity and inclusion (D&I)

- 
 Ensure a diverse workforce.
- 
 Have 30% women in senior leadership by 2025.
- 
 Implement the Taking the Stage programme, established in 2020, to help facilitate this transition.

#### » Our progress

- All our management teams feature more than one nationality.
- 24% of our senior leadership is female, an increase of 2% compared to 2021.
- Over 200 female leaders took part in Taking the Stage in 2022.



## » Our progress

During 2022, we continued to focus on our three key D&I areas:

### Balanced gender representation

By 2025, our goal is to have 30% representation of women in leadership positions. We are currently at 24% and making steady progress, but we will need to accelerate this progress to reach our ambition. We have specific recruitment targets aimed at improving female representation and we review them as part of our internal reporting and audit process. We also placed particular emphasis on improving gender representation within our talent pipeline.

### Increased nationality representation

We continued to perform strongly in this area, with all our management teams featuring more than one nationality. During 2022, the number of nationalities represented across our business grew to 101.

### A culture that promotes inclusion

We have been measuring our inclusion index as part of our employee surveys since February 2021. In 2022, our pulse survey included one D&I question, but not the full set required for an inclusion index. We will do another employee survey with the full D&I index in 2023. In 2022, we launched a new set of company values to align better with our Nutreco strategy and our parent company SHV's core values and to support our purpose of Feeding the Future. Our new value of "inclusion" provides a stronger platform to promote inclusive behaviours and culture. One example of how we visibly promoted inclusion in 2022 was by creating female dressing rooms in our Operations facilities; this small change is fundamental to hiring more women in Operations.





## Pay equity

**We are committed to offering equal pay and remuneration to employees with the same job requirements, skills and experience, who work in the same location.**

In 2022, we continued to conduct an in-depth gender pay gap study encompassing all employees and locations. We found that, across Nutreco, our gender pay gap is below 5%. We have pockets where we noticed bigger gaps – both negative and positive – but these could be explained by, for example, job type or tenure. We will perform

another analysis in 2023 to monitor our current status and developments. For countries or locations where we see a pay gap above 5%, we will investigate the root cause and create an action plan, if needed.

Even without a gender pay gap, we will continue to work on our policies and practices through consistent application of our job family framework and job grading, by safeguarding internal equity, increasing transparency, having policies to define eligibility for compensation and

benefit plans and recording any exceptions. In 2023, we plan to establish fair pay principles, give employees visibility into salary ranges in more countries, deep dive into countries or locations with more than 5% pay gap and educate managers on pay equity. While our efforts are aimed directly at the gender pay gap, we believe that by creating more awareness and transparency we are working toward more equitable pay, or pay based on job requirements, skills and experience, irrespective of gender, religion, ethnicity or sexual orientation.







## Supporting women leaders

### We continue to invest in leadership development programmes focused on supporting women leaders.

One example is our Taking the Stage training offering. Over 200 female leaders participated in this training in 2022, with great success. We are working with our parent company SHV to adapt and expand the reach of this program for 2023.

Our Management Board has also taken the initiative to build their own awareness of talented women within the company who could fill future leadership positions. In 2022, our Management Board started regularly devoting time on their agenda to discuss potential female successors to senior level positions within the company. In advance of our annual People Review process, each Management Board member will meet with several potential female successors in order to increase their line of sight on this important group.

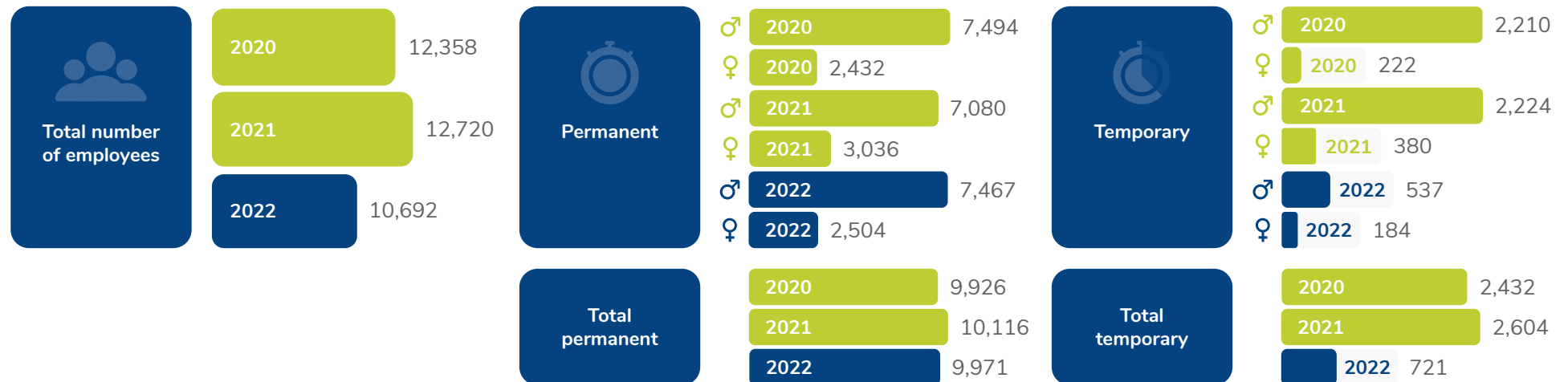
In February 2022, we shared inspirational stories from women scientists at Nutreco, revealing the challenges they faced, and the motivations that drive them in their careers, in a series of podcasts to mark the United Nations' International Day of Women and Girls in Science.

Nutreco participated in the Women in Food & Agriculture Summit in June 2022. In some of our countries, we also created a mentorship program to offer female colleagues in our company to connect with other people in similar industries.



## Nutreco HR statistics: three-year overview

# Employees

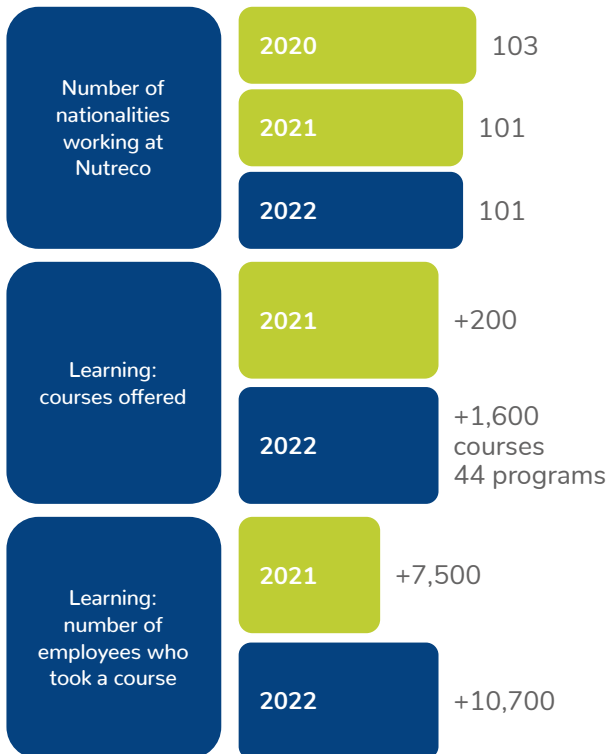
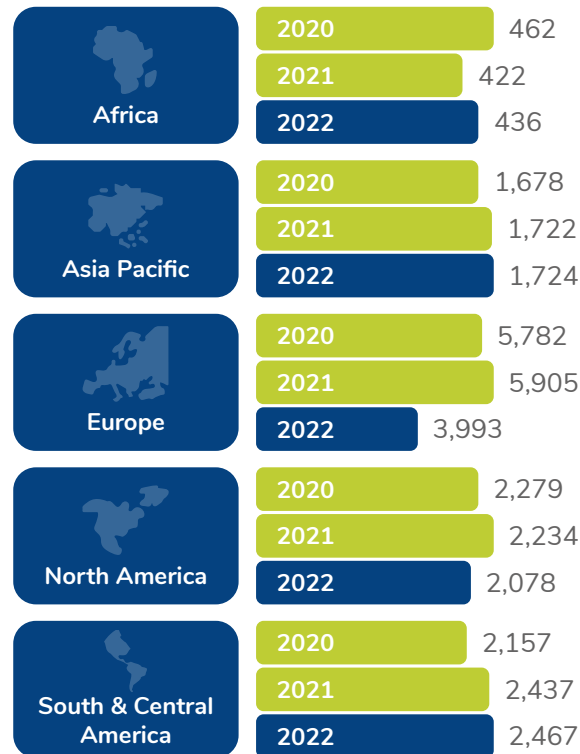


## Nutreco HR statistics: three-year overview

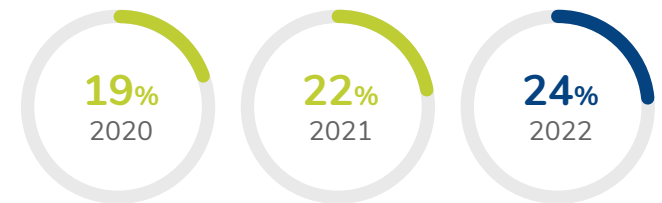
# Employees



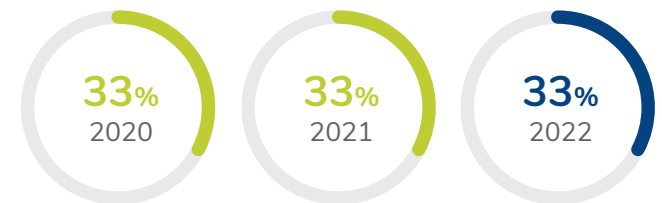
### Number of employees by region



### Gender balance: Senior management (N12>) and above (% woman)



### Gender balance: Management board (% women)




## 5.2. Community development



### Our targets

#### Community development


 Expand community development and community engagement initiatives to positively impact the lives of 12,000 people in the communities where we operate. This can be through direct development with small farmers at or near economic poverty levels (e.g., earning less than €1.90/day) that helps raise their incomes above poverty levels or direct engagement with local communities in projects that raise awareness of sustainability, educational initiatives and community improvements.


 Conduct a human and environmental risk assessment in our supply chain.

### Our progress

We have trained and engaged with over 6,250 farmers through our community engagement projects.

In 2022, we used this to evaluate the risk of 50% of our supplier base, highlighting over 100 high-risk suppliers. In 2023, we will engage with these suppliers to mitigate the risks.

## Social and environmental impact in our supply chain

The complex nature of the global commodity-based agricultural supply chains brings with it the risk of human and environmental abuses, particularly among our tier 2 and tier 3 suppliers.

While we have full control over our own operations, the challenge for Nutreco and other companies that operate in these global and complex supply chains is to engage with suppliers with whom we do not have direct relationships, to ensure they adhere to our high standards. We use tools such as our Code of Conduct Business Partners, compliance audits and the EcoVadis program to assess supplier risks and ensure suppliers are meeting our environmental and social standards or following steps to improve.

In 2023, we will set targets to reduce the supply chain risks and improve environmental and social performance in our supply chain. To ensure we reach these targets, we will track progress and report against them in monthly cross-functional meetings with the relevant stakeholders.





## Our Code of Conduct Business Partners

Nutreco is committed to engaging only with suppliers that uphold the same principles as we do and, where necessary, ensure the implementation of corrective measures. This is why all our suppliers and business partners are required to adhere to our Code of Conduct Business Partners, which we launched in 2013 and updated in 2021. The Code contains the basic principles of what we expect from both Nutreco's direct and indirect suppliers and the minimum legal and ethical requirements they need to meet. It enables us to engage with our suppliers on material sustainability issues relating to their operations, and to set minimum criteria for them to meet. All our new suppliers receive an email during the onboarding process stating, "by engaging into business with Skretting / Trouw Nutrition / Nutreco you accept and comply with this Code of Conduct for Business partners."



## EcoVadis program

In 2022, Nutreco started to implement the EcoVadis program, which helps us understand and mitigate sustainability risks among our suppliers so we can accelerate environmental and social improvements across the value chain. EcoVadis will enable us to embed sustainability in all our procurement processes, including category management, sourcing, supplier risk assessment and supplier performance.

We use EcoVadis to perform an initial risk assessment of our suppliers. In 2022, we used it to risk assess over 50% of our supplier base, highlighting over 100 high-risk suppliers. We define high-risk suppliers as entities operating in sectors and regions where the risk for social and environmental issues is relatively high. We will engage with these suppliers to further evaluate and mitigate the risk, with an initial focus on the suppliers we spend the most with. One of the methods we can employ to help us



do this is the EcoVadis Ratings; suppliers will be asked to answer a sustainability questionnaire and provide proof for their answers. The answers are then evaluated by EcoVadis and the supplier is scored accordingly. This will give us a good overview of the overall robustness of a supplier's sustainability policies so we can offer them concrete action points of improvement. In 2022, 183 of our suppliers had an EcoVadis rating available, and we aim to increase this number over 2023.

 CASE STUDY

## Increasing due diligence in Norway

On July 1, 2022, the Norwegian Transparency Act entered into force. This act is meant to increase the transparency around how larger Norwegian companies deal with possible human rights violations in their operations and also in their supply chains.

In our effort to comply with the new legislation, we decided to pilot the Corporate Social Responsibility risk assessment tool EcoVadis in our Skretting Norway business. The tool helps us perform supply chain risk assessments on environmental, sustainable procurement, ethics and labour and human rights topics. The risk assessment completed to date has identified 12 suppliers that require follow-up. In 2023, we will be requesting that these suppliers perform the EcoVadis Ratings assessment, through which the supplier's policies on the abovementioned topics are reviewed and rated. This review will enable us to determine which aspects a supplier sufficiently covers and if any require more attention. We will request improvements to the supplier's policies as soon as we identify any material topics that are insufficiently covered, striving for continuous improvement.

**“We recognise that the Norwegian Transparency Act is only the first of several new and similar laws to come in many of the countries where we operate, and we are designing policies and processes to be able to comply with all of these laws.”**

**Olav Kjeldstad**

*Ethics & Compliance Director  
Aquaculture.*

**We decided to implement the Corporate Social Responsibility risk assessment tool EcoVadis in our Skretting Norway business.**

## Our Community Development Projects

At Nutreco, we believe that people must be at the heart of our industry's transition to sustainable food systems. Most of the local communities in the developing world depend on agriculture for people's livelihoods. In recent years, Nutreco has committed to setting up projects in Asia and Africa to build inclusive, sustainable supply chain models. These projects focus on training and supporting local (smallholder) farmers to help them increase the quality and nutritional value of their products and grow their businesses in a sustainable way, so they can earn a living wage from their farms and feed their local communities.

In these projects, we work closely together with local NGOs and partners such as IDH Sustainable Trade Initiative, the Bill and Melinda Gates Foundation and Norwegian Agency for Development Cooperation. In 2022, Nutreco set up an additional four projects. One of the most significant was the Hendrix4U project, through which we are working closely with the Bill and Melinda Gates Foundation to enable sustainable access to affordable, safe, quality and custom-made animal feed solutions for small-scale livestock producers in Africa.





 CASE STUDY

## Catfish Sustainability Project helps small-scale farmers succeed

We started the Catfish Sustainability Project (CSP) in Nigeria in 2016 with the objective to enhance the productivity and income of small-scale catfish farmers, promote best management practices for achieving environmental benefits, and facilitate an organised structure to engage stakeholders in catfish production. The project is funded by Nutreco and Skretting Nigeria and facilitated by the Justice Development and Peace Commission (JDPC) NGO in Ibadan.

We kicked off the sixth year of the project with a target of supporting 1,200 catfish farmers in 2022, and we exceeded that mark by reaching 1,225 direct beneficiaries in 64 catfish farmer groups. CSP currently operates in three states of the federation and 18 farmer groups have recently participated in the project. Out of the 64 existing groups, 30 have successfully initiated cooperatives, four of which had existed before the project intervention.

To further sustain the small-scale farmers' catfish businesses, the farmer groups successfully launched

an Apex body in 2022, with clearly defined aims and objectives. The Apex body brings together representatives from each group to discuss major challenges facing the industry and offer solutions.

### The results prove the effectiveness of the project:

- Farmers have been able to improve the survival of their fish stocks by 34.78%, increasing from 69% in 2016 to 93.5% in 2022.
- We have also seen a 30.58% reduction in feed waste, improving the feed conversion ratio from 1.7 to 1.18.
- Harvest weight has increased by 155%, boosting the farmers' profits by 86.18%.
- The project resulted in the production of fish free of toxic materials and a reduction in the level of environmental pollution.



## Success stories



### Adewale Alimot Oreofe

Is a single parent in her early 30s supporting three young children. She started catfish farming and joined the project in 2020 and has benefited from Skretting Nigeria's input support. The CSP has enabled her to sustain a stable income to care for herself and her children.



### Amoo Adeboye

Has been part of the CSP since 2019. One of the most valuable lessons he has learned is about feeding fish with the appropriate quality and quantity of feed. This has enabled him to increase production from 1.250 tons to 3.5 tons per cycle.



### Akinbiyi Elizabeth

A fish farmer in her 60s, has participated in the CSP since 2017 and has hugely benefited from Skretting's input support, facilitated by JDPC. Because of her husband's health challenges, Akinbiyi is her family's breadwinner. The improved income she has been able to achieve through this project has enabled her to pay for her children's education and support her family.

## Summary of activities

### Train the Trainer Program and Farmer Meets

**2,436**

#### Dairy Farmers

Participation of Farmers in such Meets. Mass and one to one interactions.

**669**

#### Dairy Farmers covered under one-to-one interaction

Dairy Farmers touched in interior Villages.

**115**

#### Dairy Farmer Meets

Dairy Farmer, mass and one to one interaction meets.

**12**

#### Train the Trainer Program

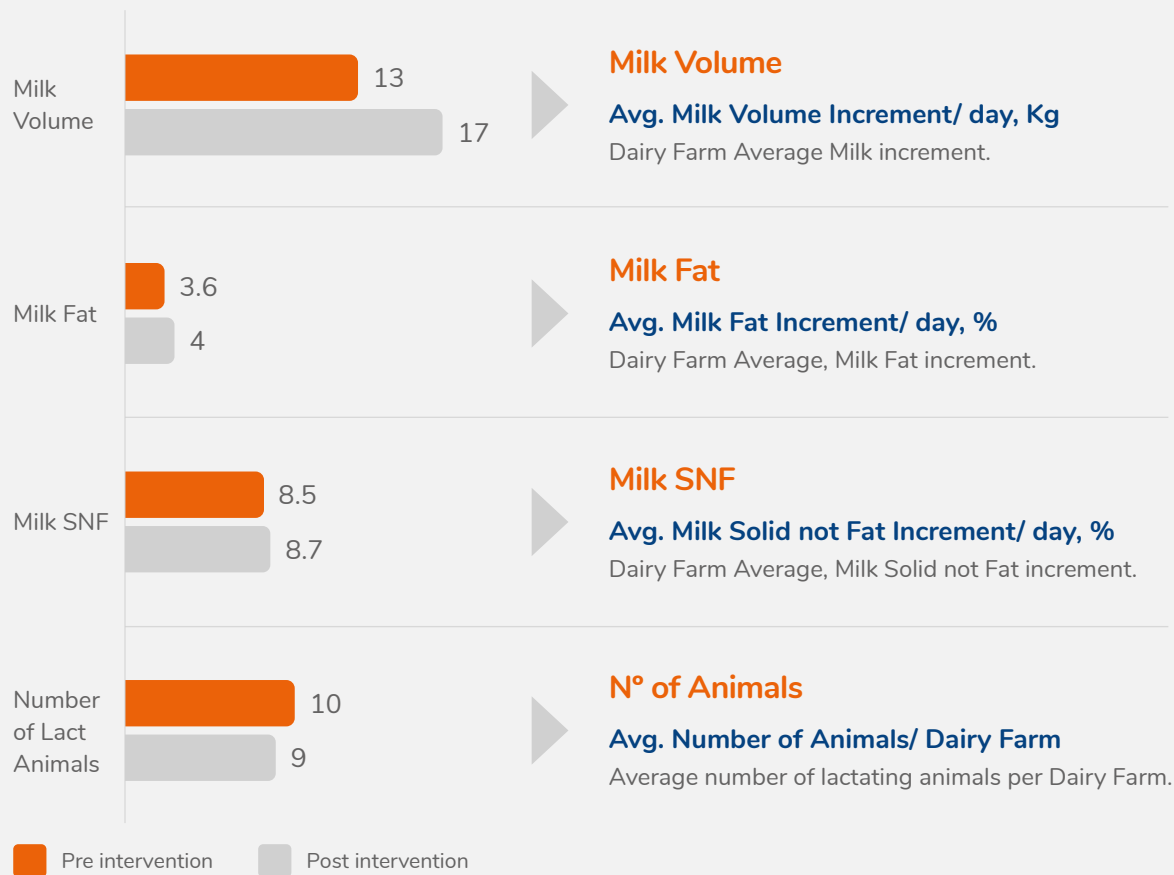
Training of Extension team by local and international experts.

Trust Dairy Project aims to transform dairy farming in India.



## Performance Change in Area

Change in Milk and Dairy Farm economics pre and post intervention



Milk is the largest crop in India; 25% of Indian households (approximately 76 million) are engaged in dairy farming, a majority as small and marginal farmers. India has the largest bovine population in the world, but milk productivity per animal is quite low (three to four litres per animal per day), resulting in low levels of income and profitability from dairy.

The Trust Dairy Project is a sustainable dairy farming initiative in India, delivered through a collaboration between Solidaridad, Nutreco, Govind Milk and Milk Products and the Baramati Agriculture Development Trust. The objective of this community initiative is to create a robust framework for small dairy farming based around the adoption of sustainable and economically feasible modern dairy farming technologies. This is helping farmers in India produce high-quality, safe and hygienic milk with a lower environmental footprint.

The project has already been deployed in the western part of the State of Maharashtra. Dairy farmers are actively involved in all the project's main focus areas – from dairy farm management to dairy nutrition and environmentally friendly manure management.

## » Our progress in 2022



### Training the trainers

The project team selected 10 instructors to train the dairy farmers who are part of the project. They deployed the TART educational model (training, assessment, and re-training), coaching the trainers through classroom as well as on-farm training sessions at a centre of excellence for dairy managed by the Baramati Agriculture Development Trust. They also performed internal assessments to gauge the trainers' understanding of the subjects that are part of the training.



### Supporting women entrepreneurs

Through the project, we also work to encourage and motivate women dairy farmers and promote female entrepreneurship. We conducted motivational and training programs for women dairy farmers, covering important messages about dairy farm management, including the importance of loose housing, the role of women in dairy farming, nutrition management and milking hygiene. Women and their young school-age children are also welcomed to the projects' dairy farmers meetings and training, giving the children a head start at learning basic dairy farming skills.



## » Our progress in 2022



### Forage improvement programs

Another aim of the project is to promote silage usage in feed to improve milk productivity and environmental sustainability. To this end, the team organised and conducted a workshop on the benefits and care of silage for balers. As a result, 190 dairy farmers are currently using silage on their dairy farms, assisted by Nutreco's NutriOpt onsite advisor, which helps them get the right quality and nutrient mix. Improving the quality of forage will not only help increase the dairy cows' milk productivity but also change enteric fermentation digestion patterns to reduce methane emissions.



### Biogas unit installation

In two of the districts that are part of the project, 50 dairy farmers agreed to install biogas units that use manure as fuel, in their farms for household use. Out of the 50 dairy farmers, 32 are already in the process of installing the biogas units. This will help us to reduce the carbon footprint of these farms through effective manure handling.



### Customising and deploying technology

To promote better and more sustainable farm management, the project team has deployed different technology to the participating farmers, including the Cool Farm Tool, Mycomaster Plus NutriOpt Onsite Advisor and Formulation as a Service, extensively training the project coordinator and workers to help support these tools.

In final phase of this project, Nutreco's global and regional Technology application teams are also exploring the possibility of working with the Nutreco India Dairy technical team to create the fundamentals of GHG emissions control by deploying advanced Nutreco dairy farm sustainability tools.

The project partners have introduced the Solitrace traceability tool to bring increased visibility and transparency to the dairy supply chain. The tool captures the quality and sustainability practices adopted by milk processors and producers and makes this information available to consumers through a QR code on the milk packaging.

For more information about Solitrace, visit: <https://www.hillsandvalleys.in/traceability/>.

## Success stories



**Sonali Rahul Bhujbal**

Took over her family's side business in dairy farming after her marriage. When she increased the size of the farm from four to nine cows, this also brought more challenges. The Trust Dairy project helped her improve her farm management, nutrition management and milking hygiene. As a result, she was able to make a long list of positive improvements to her farm and is seeing many great benefits. Her cows now have access to fodder and silage, her per day milk average has increased by 20 litres, she has been able to increase her income. Sonali is also able to manage manure properly and use it in the fields and maintain animal health with a low financial expenditure. She continues to regularly attend the Trust Dairy program and trainings.



**Alka Shiwaji Raskar**

The main source of income for her family comes from the eight cows on their dairy farm. She was having trouble earning enough income and balancing farm work and time for her family. After actively and regularly attending Trust Dairy's village-level training, Alka implemented many of the learnings on her farm, such as changing to loose housing, which has significantly improved the health and welfare her cows. Through her learnings, she has been able to increase her income and improve her farm management. Now both she and her cows are happy, and Alka continues to participate in Trust Dairy project activities, including the traceability feature launch, celebration of World Milk Day and village-level trainings.

### 5.3. Key partnerships

#### SeaBOS

Seafood Business for Ocean Stewardship (SeaBOS) is a science-industry initiative founded in 2016. It brings together ten of the world's largest seafood companies to collaborate with leading scientists to implement a joint vision to support more sustainable seafood production and improved ocean health. The initiative connects capture fisheries with feed producers and aquaculture businesses across Asia, Europe and North America.

Pre-competitive collaboration is at the heart of SeaBOS. Spanning cultural and geographical boundaries, its aim is to develop science-based solutions to address key challenges and provide leadership, guidance, stewardship and best practices for others to use.

Working with Nutreco and our members to lead a global transformation of the seafood sector is an ambitious task. That is why it is critically important that we have committed and engaged members who take action in their own operations and value chains – and who are not afraid to share their lessons learned.





## SeaBOS



As a founding member of SeaBOS, Nutreco has been leading the SeaBOS task force on IUU fishing and modern slavery from the outset.

The past five years, SeaBOS has contributed to a number of activities, from accelerating traceability in seafood value chains together with the Global Dialogue on Seafood Traceability, to piloting a Nutreco-led project on electronic monitoring on fishing vessels. To address IUU fishing and modern slavery risks specifically, SeaBOS has created:

- A tool kit that companies can tailor to meet their specific needs, and that outlines policies and guidance procedures to establish a framework to deal with the issues.
- Voluntary procurement actions that address issues ranging from responsible raw materials sourcing and mechanisms to help eliminate forced, bonded and child labour,

to protocols for auditing and compliance and advancing traceability.

- Risk analyses, developed by SeaBOS scientists, that map key risks of labour abuse and IUU fishing in ports, at sea, associated with transshipment, and with identified key risk drivers.

The objective of this work is to help identify and mitigate risks and strengthen the overall sustainability and labour performance of seafood operations.

We will continue to work with partners to create transformational change. The importance and value of working together to make the feed industry and seafood value chains more sustainable cannot be overstated. We have come a long way, but there is still important work to be done. Having Nutreco onboard as a committed and pro-active member on this journey is a strength to our collaboration and helps us move forward on our mission for ocean stewardship.

## European Feed Manufacturers' Federation (FEFAC)

**FEFAC is committed to enhancing sustainable feed production at a European and global level. Our member associations play an active role in facilitating opportunities for the feed industry to progress on their respective sustainability agendas by developing operational tools and guidance to assist companies at implementation stage.**

An important milestone in recent years was the development of the FEFAC Feed Sustainability Charter 2030, released in September 2020, which set five ambitions to underpin sustainable feed production. We are happy with the leadership and close involvement of large players in the European feed industry, such as Nutreco, in actively contributing to this sustainability agenda and ensuring that, at an EU level, we are communicating factually and efficiently on realistic and achievable targets on the path toward a more sustainable future for the feed and livestock sector.

A key challenge to look out for remains our joint capability to communicate with our value chain partners and policy stakeholders to ensure they

are receiving our messaging and are actively engaging on the ambitions that we have identified, as sustainable development requires a broad value chain partnership, including competent authorities. For all our livestock customers, the development progress on feeding techniques and animal nutrition solutions is of crucial importance to impact objectives such as reducing emissions, increasing circularity and boosting efficiency. At the same time, we must also listen to their needs and expectations, which also fully encompass economic sustainability-based demands on competitiveness and profitability. Without securing that economic pillar, no investments in more sustainable production methods are feasible.

**We are a member  
of the European  
Feed Manufacturers'  
Federation.**



## AquaVision: With united action, aquaculture can overcome its biggest challenges

Once again, Norway's Stavanger was the host city of AquaVision, the global aquaculture business conference that is organised biennially by Skretting and Nutreco. Attended by industry leaders and change-makers from across the world, AquaVision 2022 represented the 14th edition of the event – held some 26 years after the first one.

With the focus firmly fixed on navigating the future and expanding the possibilities of the aquaculture value chain, AquaVision 2022 sought to inspire its actors to work towards a food system that can sustainably feed a world population set to reach 10 billion by 2050.

Setting the scene, Keynote Speaker Professor Joseph Stiglitz, the Nobel Prize-winning economist, insisted that some of the main sources of the global food supply have not lived up to the fundamental requirement of providing sufficient products for the world population to consume in a stable and resilient way. AquaVision attendees heard first-hand how aquaculture faces the triple-headline challenge of huge population growth,

climate change and social impacts. They also learned why it is imperative that all production systems are enabled to collectively produce vast quantities of additional food that is both climate-friendly and that makes more positive contributions to human well-being.

Nutreco CEO Fulco van Lede told AquaVision 2022 that sustainably feeding the ever-growing world population is a challenge that no single organisation could, or should, face alone. Instead, he said the required “blue food” supply growth rates can only come from committed collaborations that span the entire value chain. Van Lede advocated that transparency, trust and accountability are essential requirements from all stakeholders and also that the value chain is far stronger when it is united in its actions.

The AquaVision 2022 programme also included guest speakers from the Monetary Authority of Singapore, IKEA, Mintel Group, AKVA Group, SalMar Aker Ocean, Glunashrimp, Mayank Aquaculture and Lattice Consulting.

**“Our story has to be about collaboration, and about showing that, if we want to drive transformational changes for our industry, we must work closer together as suppliers, feed producers, farming companies, NGOs, certification bodies and other relevant stakeholders across the value chain. We know that we have not done enough and that we must do more – better and faster.”**

**Fulco van Lede**  
Nutreco CEO.

**AquaVision**

## 5.4. Occupational health and safety

### Health & safety – Key figures for the years 2020 thru 2022



\* IOSH= Institution of Occupational Safety and Health.  
 \* NEBOSH= National Examination Board in Occupational Safety and Health.

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

Health and safety has a central position in our business and our ways of working. We operate a dedicated Global Health, Safety and Environment (HSE) Centre of Expertise to lead and support this important priority across the company and have launched many activities in recent years to promote the right leadership behaviours and control operational risks.

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

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

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



## » Our progress

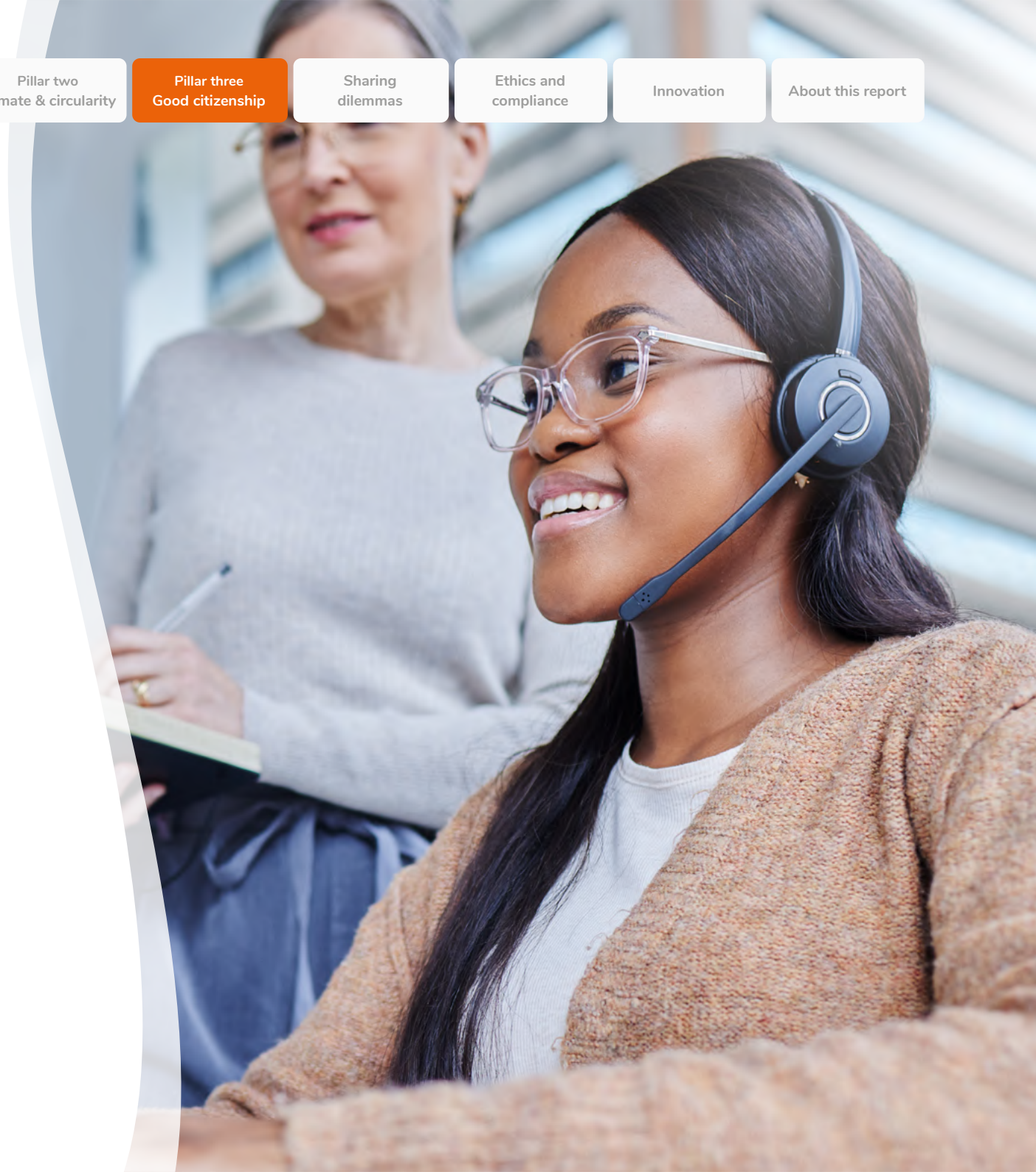
In 2022, we implemented many of the activities kicked off in 2021 when we put in place a new HSE structure, teams and management. In line with our NuSAFE 2024 RoadMap, in 2022, Nutreco mainly focused on the principles Visible Felt Leadership and a knowledgeable and competent workforce.



### Visible Felt Leadership

Visible Felt Leadership starts from the top; management's actions lead people at all levels to understand and "feel" their leaders' high standards and expectations and accept their strong commitment to safety as genuine, caring and respectful.

In 2022, 207 of the Senior Leadership Team and senior managers completed 12 hours of training on "Leadership Through Safety," delivered by Dr. Andrew Sharma – RMS Switzerland. This was the prerequisite to validate and launch our NuSAFE HSE Policy globally. We currently have 9,784 (or 96% of) employees trained on this policy.





## A knowledgeable and competent workforce

A capable organisation invests in its workforce, ensuring that employees have the right skills and knowledge to perform their activities safely and efficiently.

Speaking the same language and understanding each other's roles and responsibilities is a foundation for a healthy HSE culture. In 2022, Nutreco delivered over 22,000 hours of HSE-related training.



- **257 general managers**, plant managers, operational managers, and maintenance managers completed a 20-hour Institution of Occupational Safety and Health (IOSH) Managing Safety certification.
- **89 of our HSE professionals** completed 100 hours of training to receive their National Examination Board in Occupational Safety and Health (NEBOSH) International General Certificate in Occupational Health and Safety.
- **1,674 employees trained** in dust and explosion prevention.
- **1,203 employees trained** in life-saving rules.

These programmes will continue in 2023 and be a part of the on-boarding of new hires.



## A well-designed and maintained workplace

The most effective design processes begin at the earliest opportunity during the conceptual and planning phases of a workplace. This is where it is possible to find ways to prevent hazards and incorporate effective risk-control measures and efficiencies.

In 2022, we deployed our planned dust explosion prevention program by auditing 27 factories. Based on the outcomes of the audit, we have now launched a three-year CAPEX investment plan to upgrade our production equipment and reduce the risk of dust explosion in our operations worldwide. We have also enhanced and deployed high-risk activities standards: Material Handling, Hazardous substances, and Lock Out, Tag Out, Try Out (LOTOTO). HSE is now entirely integrated into new investment projects and our Operational Excellence program.



## Safe behaviours

To change a safety culture requires both awareness and desire. At Nutreco, we have put significant effort into enhancing our reporting culture on lagging accidents, but also promoting proactive reporting and recognition when right behaviours are demonstrated. As a result, our reporting penetration rate increased significantly from 35% to 76%, and the number of proactive reporting (Hazard identification & Recognition), climbed sharply from 0 to 8,122 reports, reaching 0.66 reports per full-time employee (FTE) during the year. (Target: 0.5).



## Nutreco HSE at a glance: 2022 vs. 2020

Our efforts to enhance our reporting culture and transparency have, as expected, resulted in an increase of our Total Recordable Frequency (TRCF) and Potential Serious Injury/Fatality (PSIF) rates. We have also improved the reliability of our data

through our IT integration programs. During 2022, we reached a plateau at a TRCF of around 1.9. We expect to see an improvement trend in 2023.

The increase in PSIF and TRCF rates is mainly driven by a more transparent reporting culture and more convenient methods of reporting.

	2020	2021	2022
Serious Injuries and Fatality Injuries (SIF)	1 (fatality)	4	3 (1 fatality *)
Potential Serious Injury/Fatality (PSIF)	84	149 (177**)	346
Total Recordable Frequency rate (TRCF)	1.25	1.36 (1.46**)	1.92
Proactive reporting of Hazards (Hi) and Recognition (T1)	0	244 (0.02 per FTE**)	8,122 (0.66 per FTE)

\* The fatality took place at Skretting Ecuador when an operator was fatally injured during the routine cleaning operation of a dryer.  
 \*\* Review of the 2021 numbers in alignment with definitions from our parent company, SHV.



# 6.

## Sharing dilemmas

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## 6.1. Can companies take the long view on sustainability progress?

**We shared some of our biggest dilemmas for the first time in Nutreco's 2018 Sustainability Report. In the years since, this has been the section of our report that elicits the most comments and questions from readers. We're glad we have sparked conversation about these issues.**

It's important to us to bring our challenges into the light as we work toward our RoadMap 2025. We call them "dilemmas" because there is no easy fix and resolving them often involves working across many layers of the value chain. We believe candid discussions around these dilemmas is the first step in tackling them together and moving forward as an industry.

In previous sustainability reports, we've talked about how to absorb the costs of sustainable feed ingredients across the value chain, and how pre-competitive platforms have promised to be an effective way to address complex and sensitive environmental and social challenges. As we write this year's report, we have just announced a development that brings this kind of collaboration into commercial reality. Our aquaculture business

line, Skretting, is partnering with Netherlands-based shrimp importer Klaas Puul and Dutch sustainable feed ingredient suppliers Protix and Veramaris to supply supermarkets across Europe – starting with leading Dutch supermarket chain Albert Heijn – with more sustainable shrimp produced in Latin America. We're proud to see this project come to fruition. But it was a long road to get there.

It started back in 2018, when Nutreco gave a talk at the Barcelona Seafood Summit about how sharing the costs of sustainability across the value chain can make real change possible. In mid-2019, Nutreco approached Albert Heijn with a compelling idea about using this approach to make shrimp feed more sustainable. Simultaneously, the retailer approached their supplier, Klaas Puul, with a similar proposition and asked them to connect with Nutreco to develop a joint proposal. Nutreco reached out to sustainable feed ingredient suppliers Protix and Veramaris to join the consortium. However, despite the partners' willingness to proceed, it took two-and-a-half more years to realise the joint ambitions.

This brings us to another dilemma. Do companies have the will and the patience often required



to shift to more sustainable business practices? Real change doesn't happen overnight. It requires transforming cultures and waiting for stakeholders to listen, understand, align and ultimately take ownership.

The same thing happens internally. Nutreco developed our bold but realistic sustainability RoadMap 2025 at the end of 2019, and it was signed off by management the following year. Soon we realised that while developing measurable targets is a very important step, it's only the first of many. We found that before you make progress, you need to get everyone on the

same page, get people to take ownership, and then, maybe, finally, you will reach the inflection point towards change.

For example, we committed to stop selling CIAs by 2025. We dedicated the first few years to mapping where and how much we were selling, informing our internal stakeholders and creating alternative approaches incorporating holistic best practices on animal farms – and ultimately saw little progress. Then it suddenly came together, with all relevant stakeholders taking action, and we achieved a 35% reduction in 2022 compared to 2021. While the reduction happened over one year, it reflected three

years of behind-the-scenes effort. How do often short-term focused corporates and management teams take a long-term view on making real progress on critical issues?

Sustainability progress almost always takes longer than we think. The targets are in place, the commitment is there, but then, timing and the human factors of understanding and ownership come into play. Our RoadMap 2025 makes our path clear – we have a dot on the horizon that shows where we want to go and how. Now we just need the patience and persistence to get there – and hope our partners have it too.



# 7.

## Ethics and compliance

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The Russian invasion of Ukraine in February 2022 caused a great deal of disruption across Europe and marked the start of an eventful year for Nutreco's Ethics & Compliance (E&C) function in 2022. In addition to caring for our Ukrainian colleagues and their families, we were required to manage our response to the sanctions increasingly imposed on Russia by the EU, the U.S., and several other countries, which had a direct impact on our Russian operations. As trade sanctions compliance is part of the E&C activities, it required intensive efforts by our team to comply with these measures. During the second quarter of 2022, we decided to divest our Russian business through a management buyout.

In 2022, we also continued to embed our compliance standards more fully into our business operations. Under Nutreco's new strategy, launched in late 2021, the company's business units (BUs), which are organised geography or by products, have become its main organisational units, fully mandated to and accountable for taking care of all aspects of their businesses, including E&C. We adapted Nutreco's overall E&C activities to the new strategy by reinforcing business unit management's accountability for E&C. This led to a renewed

reporting and monitoring process stretching from OpCo level to BU level to the Trouw Nutrition and Skretting Business Line COOs and finally the Ethics and Compliance Committee. Building on the new strategy and the BU's enhanced responsibility for E&C, we streamlined Nutreco's control environment, removing three E&C controls at OpCo level and introducing one new control at BU level.

During the year, we conducted a soft controls survey within Nutreco Asia, covering six OpCos and the overall business unit. This survey gave us insight into the strengths and weaknesses of the local compliance culture and provided tools for management teams to enhance soft controls within their organisations. We discussed these reports with the management teams and identified follow-up actions.

We revamped our Code of Conduct and the related e-learning programme in Nutreco's new branding (introduced in 2021), adding a new introduction by our CEO and an additional section on Health, Safety and Environment. We relaunched the Code of Conduct and the e-learning course to all employees who had participated in the previous e-learning more than 24 months prior.



We performed or validated compliance risk assessments on anti-bribery and corruption and on competition law compliance, in order to map developments in the company's risk profile on these topics and put in specific activities to mitigate risk.

Our E&C e-learning programme comprises four modules: Code of Conduct, Fair Competition, Anti-Bribery & Corruption and Data Protection. Our overall completion rate by employees across Nutreco was over 95%.

We took a deeper dive into awareness and knowledge of Conflicts of Interest (COI) during the year by interviewing approximately 100 randomly selected employees across the globe. No major deficiencies were found. Going forward, managers will be given insight into the COI disclosures made within their teams and COI disclosure will become part of the onboarding process.



We also performed a risk assessment on trade association memberships worldwide. While no major risks were found, we will create a central register of trade associations to better structure training and monitoring.

Our teams developed 2023 E&C annual plans at OpCo, BU and Nutreco level. In addition to reinforcing the BU management's accountability

for E&C, these plans focus on improving the effectiveness of our E&C activities.

In 2022, 43 reports were made through our whistle-blower line, Speak Up. As in previous years, the vast majority concerned HR, diversity and workplace respect. The average number of handling days was 73. About 50% of the reports made were found to be (partly) substantiated.

# 8.

## Innovation:

A key sustainability driver

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## 8.1. How Nutreco's innovation teams support sustainability

Science-based innovation has always been at the heart of what we do. Our business lines excel at product- and service-focused research and development to support customers and set our industry forward in a more sustainable direction. We've added a focus on breakthrough innovation and investments over the past several years. This is opening us up to completely new markets and helping us reach the unprecedented level of innovation that will be required to achieve our purpose of Feeding the Future.

### Sustainable innovation in products and services

Our product- and service-focused research and development takes place at business-line level through research centres and research farms across the globe. In 2022, the Skretting and Trouw Nutrition innovation teams continued implementing research to deliver products and other solutions that add value to our customers and advance the aquaculture and livestock industry in the most sustainable way. The teams tested new ingredients, as well as novel ingredients that can



Science-based innovation has always been at the heart of what we do.

increase the raw material basket and flexibility in feed formulations. These ingredients will be used in new products planned for launch in 2023. This knowledge will help us to drive the development of the most cost-efficient nutritional solutions to optimise our species performance, health and welfare, while also having a stronger focus on the environmental (beyond only carbon footprint impact) and social impacts connected with the production of our feeds.



## Aquaculture research and development at Skretting

**Skretting has an innovation team of over 140 specialists, including 40 with PhDs, coming from more than 25 countries. Skretting's research focuses on 10 key species of fish and shrimp.**

Skretting's Life Start segment continues building its position as a strategic segment for our aquaculture business line, and we expect to see relevant growth in the coming years. Its portfolio includes live feed, larval and starter feeds, as well as broodstock feed for all species (shrimp, salmonids, marine and freshwater fish).

In 2022, we extended the Skretting Bubble research facility by adding four laboratories, enabling the team to run activities on microbiology – to test if ingredients display antibacterial properties – fermentation and the production of hydrolysates, as well as cell culture experiments linked to a cell feed project underway with NuFrontiers. Skretting has also increased the scope of the techniques it can undertake. For example, the team has now run its first microarray analyses that allow us to screen the level of expression of all 50,000 genes in salmon and 25,000 genes in shrimp. Based on

these results, Skretting was able to document the effect of some diets and find promising biomarkers to monitor the onset of disease. In addition, the team uses AI software to boost the amount of information it can get from studying tissues (biopsies) and help analyse more parameters in a cost- and time-efficient way.

Skretting opened its AI Guayas Research Station in Ecuador in 2022, the business line's latest state-of-the-art station, fully dedicated to all stages of shrimp production. This new facility enables Skretting to achieve simulations and evaluations around health and welfare parameters, as well as growth and feed efficiency. Another key focus area of the research here is the digestibility of new and existing feed ingredients and balanced diets. This, together with a solid product mix and the implementation of Skretting 360+ precision farming tools, supported by the acquisition of a controlling majority stake in Internet of Things (IoT) company Eruvaka, will enable Skretting to keep a leading position in the shrimp feed market in Ecuador and increase its presence in other markets, such as Asia and Australia.



## Livestock research and development at Trouw Nutrition

**Trouw Nutrition's research and development team is comprised of 240 employees, 27 of whom hold PhDs. Trouw Nutrition's research and development focuses on sustainable feed ingredients, swine, poultry and ruminant nutrition.**

Trouw Nutrition's innovation strategy in swine, poultry and ruminant nutrition is focused on early life nutrition, healthy life, precision nutrition and sustainability. Our team in the livestock business line assesses innovation projects in the portfolio for their potential sustainability impact in early stages of development, using a list of criteria related to feed and food safety, animal welfare and health, climate and circularity, and social responsibility. Trouw Nutrition updated its sustainable-by-design approach in 2022 and follows it in the innovation process, seeking to create products and systems that minimise negative impacts and maximise positive impacts on animal health, welfare, environment and society.

Innovation projects underway at Trouw Nutrition that have a clear sustainability focus are the antibiotic reduction program (ABR) and the

environmental footprint reduction program described earlier in this report. The ABR supports customers with a holistic approach – that includes feed, farm and health management – to make the switch to a more responsible use of antibiotics easy and manageable. It comprises a well-integrated package of Trouw Nutrition's product solutions and services and a procedure to reduce dependency on antibiotics in a step-by-step way, while maintaining or even improving the customers profitability.

Trouw Nutrition's environmental footprint reduction program aims to help farmers reduce the carbon footprint of their animal products by utilising newly developed NutriOpt carbon footprint calculation tools, such as MyFeedPrint and MyMilkPrint for dairy producers, along with a package of Trouw Nutrition's product solutions. For swine, the team also uses the NutriOpt Swine Model to customise customers' feeding strategies, using data analytics and predictive modelling, providing detailed information about the environmental impact of their feed programs. Trouw Nutrition plans to introduce footprint-reduction programs for broiler chickens and layers in 2023.



To improve the sustainability and circularity of animal feed, a key area of focus for Trouw Nutrition is promoting and facilitating the use of by-products and former foodstuffs not suitable for human consumption. Trouw Nutrition Masterlab achieved a new innovation in this area with the launch of its new Near Infrared Spectroscopy (NIR) calibration lines. These enable swift assessments of the nutritional value of liquid food by-products, which are commonly used in swine feed. This helps farmers to understand the actual nutritional values of by-products that have a short lag time from being collected in food processing plants to being transported for use on farms. For more information on the use of by-products in feed, see Circular ingredients.

## 8.2. Propelling scientific progress into sustainable solutions

**Nutreco Exploration, or NutEx, is a small business entity, created at the end of 2021, which develops novel and proprietary ultra-specialties and empowers the development of innovative functional feeds. Through what it produces, but also how it operates, NutEx is a major tool to help us tackle our purpose of Feeding the Future in a sustainable way.**

First, NutEx's investments into ultra-specialties (feed additives) that target animal performance, health and welfare is key to helping Nutreco achieve our purpose, because these products can enable customers produce more nutritious protein more sustainably. In the past, Nutreco pursued growth in this space by acquiring feed additive companies and investing in our own internal R&D, but we have found that this is not enough. We need to approach ultra-specialties in a more transformative way – looking for solutions to the unmet needs of farmers and establishing completely new avenues for business development.

NutEx serves as a creative engine feeding the innovation groups at Skretting, Selko and Trouw

Nutrition. While these innovation groups remain focused on identifying customer needs and managing the life cycles of their product portfolios, NutEx explores two programs, phytotechnology and microtechnology, to discover novel ideas and develop them into exclusive ingredients to match the needs of Nutreco's businesses.

NutEx's phytotechnology program harnesses the power of the plant kingdom for application in aquatic species and livestock. We develop Phyto-actives: plant metabolites which, when added to feed, display a specific molecular effect that is beneficial for animal performance, health, welfare.

NutEx's second program, microtechnology, complements what cannot be achieved with plants. Its ambition is to mine the gut microbiome for the critical functions it provides to the host. Through this work, we develop Biome-actives or gut bacterial functions which, when added to the feed, display beneficial effects on animal performance, health and welfare. In this way, our NutEx programs contribute to feeding the world in a sustainable way. Phyto-actives and biome-actives are natural solutions that help eliminate drugs and other antibiotics from the feed of aquatic species and livestock.





Second, the way NutEx operates in a collaborative way with parties across the value chain also contributes to solving our sustainability challenges. While science has made major progress over the last 15 years, its application into practical sustainability solutions remains scarce. The NutEx team believes that we need to change the way these solutions are ideated and created through greater cooperation, given the level of complexity in our feed industry environment today. Promoting partnership, collaboration, and cooperation upstream and downstream across the feed value chain is the key to true innovative solutions and for propelling scientific progress into real sustainability solutions.

In 2022, NutEx launched its phytotechnology and microtechnology programs, and built strong connections and interactivity with our businesses. They hired a diverse team of experts, in terms of gender, age and nationality, to drive these programs forward and set up a centre of excellence for microbiome technology in the U.S. In 2023, NutEx plans to open a centre for medicinal plant solutions in Switzerland, as part of its phytotechnology program. The NutEx team has already brought a portfolio of 20 products to market for our Skretting and Selko businesses.

### 8.3. Partnering to develop tomorrow's feed and food business

More than an investment fund, Nutreco established NuFrontiers to be an active developer of tomorrow's new feed and food businesses, supporting them with the company's industry-leading expertise and resources. With its unique expertise, the NuFrontiers team can help fast-track growth, quickly bring products to market, and address major challenges and inefficiencies – including those related to sustainability. NuFrontiers invests in new technologies that are strategically relevant to Nutreco and its business lines, within the focus areas of nutrition, health, digital precision farming, sustainable aquaculture and alternative proteins. They do this through investments in start-ups and scale-ups or in innovative technology partnerships.

In 2022, NuFrontiers invested in two new start-ups, Anfjord Salmon and Roslin Technologies, both of which align with our purpose of Feeding the Future in a sustainable way. Anfjord Salmon, a land-based salmon farming system, utilises technology based on a flow-through system and requires low energy and operating costs, resulting in a minimal environmental impact. Anfjord's facility is also secured, which prevents



escapements that could endanger local wild salmon. In addition, bio residues from the facility are collected and reused as fertiliser. Beyond striving for ambitious environmental targets, Anfjord Salmon prioritises salmon welfare, which is evidenced by remarkably low mortality rates and optimal growing conditions.

Roslin Technologies is a developer of cell lines for cultivated meat production; the company has developed pluripotent stem cells with the capacity to self-renew indefinitely and differentiate in desired end-tissues for meat. Cultured protein has the potential to supplement animal protein in feeding a growing population sustainably, and Roslin Technologies offer a solution that addresses a major bottleneck in the cultured protein value chain.

In addition to welcoming these two new start-ups into our portfolio, NuFrontiers hosted the fourth edition of the Nutreco Feed and Food Tech Challenge (NFFTC) in 2022, which aims to identify and accelerate early-stage innovations that could reshape the future of protein production. With over 100 applications from 48 countries, the 2022 NFFTC attracted an impressive and highly competitive group of innovators. Aquarech, Kenya's first fish farming supply chain platform, ultimately received the top prize of a validation trial supported by Nutreco experts to further develop its technology. Aquarech aims to enable fish farmers in Africa to buy top-quality feed, sell fish, and learn about best practices to improve the economic, environmental and social sustainability of fish farming while improving the entire supply chain of high-quality fish to feed to local population.

 CASE STUDY

## Stellapps: Making a difference in the rural economy in a sustainable way

Nutreco invested into Stellapps in 2021, a company whose vision is to significantly improve farm profitability in the Indian dairy industry in a sustainable way through its value-added, technology-led platform services.

Stellapps has partnered with 2.1 million women farmers in India who are now taking ownership of their own dairy farms and many of whom run Stellapps village-level collection centres (mooMark Extension Points). With initiatives like a fully solar-powered milk chilling plant and electric vehicles, Stellapps has been working consciously toward reducing farmers' carbon footprint. Through its partnership with Stellapps, Nutreco provides products that help farmers improve productivity and also shares its extensive expertise with them on the feed, farm and health aspects of growing dairy cows.

One important enabler for ensuring farmers can maintain a stable income stream is linking them more closely with markets for their products. StellApps' productivity-led market linkage service,

mooMark, procures 200K litres of milk per day from the farmers with a transparent grading and pricing system. Through advisory and input (feed and supplement) services, mooMark has helped farmers increase their income by 110% over the last 24 months. The average volume of milk poured per farmer has also risen by 65%. With a 39% improvement in cattle productivity, methane emissions have also dropped by 56%, which has a significant positive impact on the environment.

Through its mooPay financial services arm, Stellapps is economically empowering small-holder farmers by offering credit and other financial services. A full 65% of its customers are farmers who have never taken a loan from a regulated entity. Through an alternative credit score called mooScore™, mooPay provides loans to "new-to-credit" or subprime farmers. Stellapps expects mooPay to reach an assets-under-management level of \$10M shortly.

Stellapps is also committed to ensuring gender diversity in its operations. Women make up 68% of farmers associated with mooMark and 85% of mooMark service providers. Of the farmers who have received loans, 53% are women.



**“The association between Stellapps and Nutreco has been of immense value to our farmers, who have been using Nutreco products and have seen an overall improvement in the health of their cattle. The Nutreco team works hand in hand with the mooGrow team to create awareness about cattle health and nutrition matters.”**

**Mr Umesh Prajapat**  
Business Head, mooGrow.



# 9.

## About this report

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## 9.1 Sustainability governance within Nutreco

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

The functional directors in the Trouw Nutrition and Skretting business lines are responsible for the implementation of sustainability activities aimed at achieving the targets set out in RoadMap 2025, working with teams in our businesses throughout the world (see Figure 3).



# Corporate sustainability governance

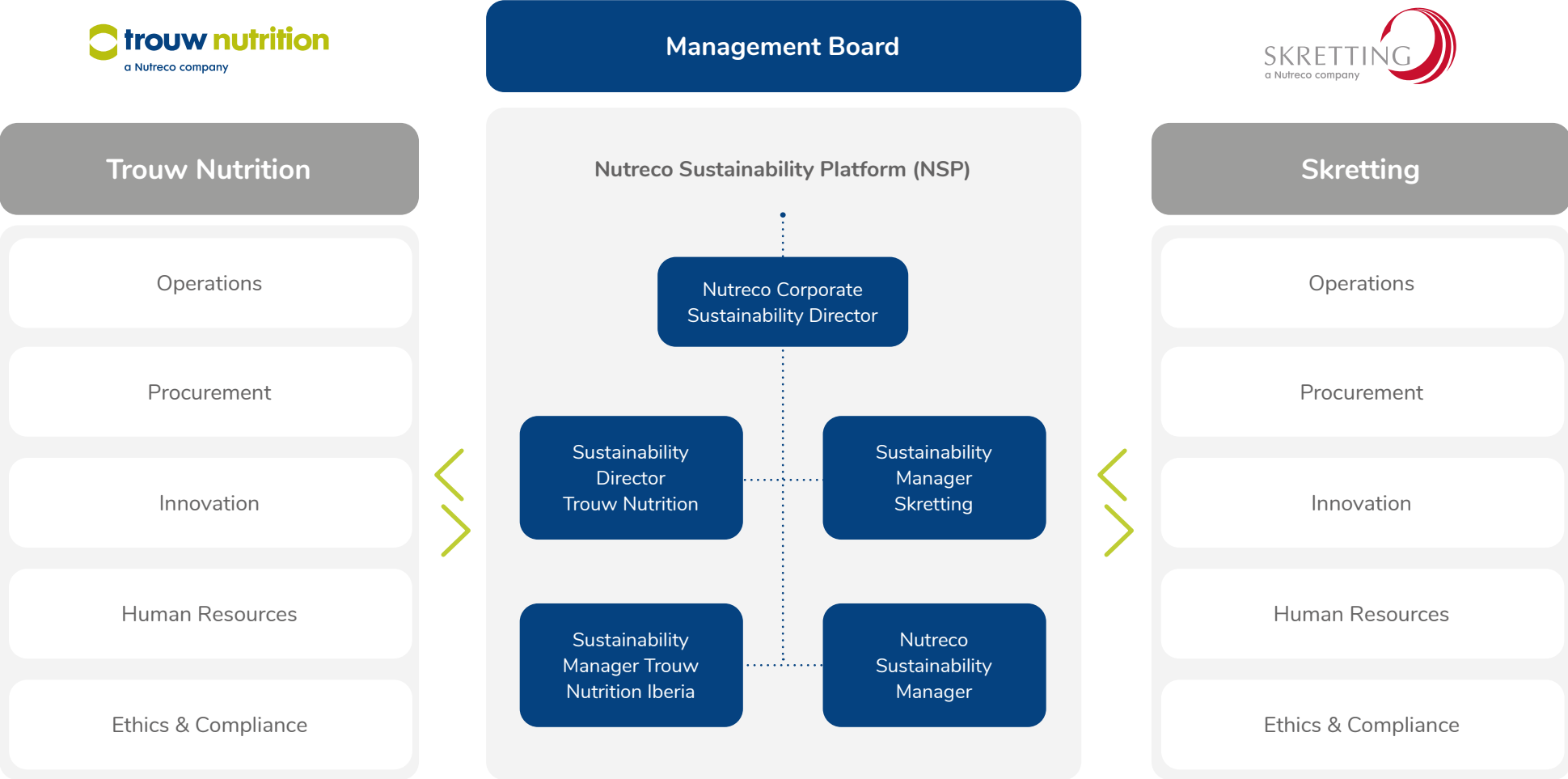


Figure 3

## 9.2. GRI Content Index

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
<b>Organisational profile</b>			
102-1	Name of the organisation.	Nutreco N.V.	
102-2	Activities, brands, products, and services.	1.2. Our brands customers and suppliers.	
102-3	Location of headquarters.	Amersfoort <a href="http://www.nutreco.com/en/Contact/">www.nutreco.com/en/Contact/</a>	
102-4	Location of operations.	1.2. Our brands customers and suppliers.	
102-5	Ownership and legal form.	<a href="#">Legal information - Nutreco Corporate</a>	
102-6	Markets served.	1.2. Our brands customers and suppliers.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
102-7	Scale of the reporting organisation.	5.1. Diversity and inclusion.	Nutreco is part of SHV. SHV gives a fair qualitative overview per company owned and discloses financial information at an aggregated level. It discloses net sales, income from operations, net income as well as its financial position, ratio information and cash flow information. For more information please read the SHV report on <a href="http://www.shv.nl">www.shv.nl</a>
102-8	Information on employees and other workers.	5.1. Diversity and inclusion.	
102-9	Supply chain.	4.2. Natural Resources: Improving our impact across the supply chain.	
102-10	Significant changes to the organisation and its supply chain.	There were no material changes to Nutreco's supply chain in this reporting year.	
102-11	Precautionary principle or approach.	4. Pillar two: Climate & Circularity.	
102-12	External initiatives.	5.3. Key partnerships.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
102-13	Memberships of association.	5.3. Key partnerships.	
<b>Strategy</b>			
102-14	Statement from senior decision-maker.	A video from our CEO, introduction page 4 and <a href="https://www.nutreco.com/en/sustainability/sustainability-report-library/">https://www.nutreco.com/en/sustainability/sustainability-report-library/</a>	
102-15	Key impacts, risks, and opportunities	1.3 double materiality.	
<b>Ethics and integrity</b>			
102-16	Values, principles, standards, and norms of behavior.	1.1. Who we are.	
102-17	Mechanisms for advice and concerns about ethics.	7. Ethics and Compliance.	
<b>Governance</b>			
102-18	Governance structure.	9.1. Governance structure.	
<b>Stakeholder engagement</b>			

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
102-40	List of stakeholder groups.	5.3. Key partnerships.	
102-42	Identifying and selecting stakeholders.	5.3. Key partnerships.	
102-43	Approach to stakeholder engagement.	5.3. Key partnerships.	
102-44	Key topics and concerns raised through stakeholder engagement.	1.3. Double materiality.	
<b>Reporting practices</b>			
102-45	Entities included in the consolidated financial statements.	SHV gives a fair qualitative overview per company owned and discloses financial information at an aggregated level. It discloses net sales, income from operations, net income as well as its financial position, ratio information and cash flow information. Read the SHV report on <a href="#">Financial information   SHV.nl</a>	
102-46	Defining report content and topic Boundaries.	Introduction and 9 About this report.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
102-47	List of material topics.	1.3 Double materiality.	
102-48	Restatements of information.	No restatements made.	
102-49	Changes in reporting.	1. Introduction and footnotes throughout the report.	
102-50	Reporting period.	1 January 2022 to 31 December 2022.	
102-51	Date of most recent report.	10 May 2022.	
102-52	Reporting cycle.	Annual.	
102-53	Contact point for questions regarding the report.	<a href="mailto:corpcomm@nutreco.com">corpcomm@nutreco.com</a>	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 101: FOUNDATION 2016 - GRI 102: GENERAL DISCLOSURES 2016</b>			
102-54	Claims of reporting in accordance with the GRI Standards.	This report has been guided by the GRI standards.	
102-56	External assurance.	9.3. Third-party (auditor) assurance letter.	
<b>Topic specific disclosures</b>			
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
<b>Climate change</b>			
103-1	Explanation of the material topic and its Boundary.	4. Pillar two: Climate and circularity.	
103-2	The management approach and its components.	4. Pillar two: Climate and circularity.	
103-3	Evaluation of the management approach.	4. Pillar two: Climate and circularity.	



SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
Own indicator	Total scope 1 emissions (CO <sub>2</sub> -eq).	4.1. Climate and footprinting and Energy.	
Own indicator	Total scope 2 emissions (CO <sub>2</sub> -eq).	4.1. Climate and footprinting and Energy.	
Own indicator	Coal consumption in Kwh.	4.1. Climate and footprinting and Energy.	
Own indicator	Energy consumptions (mwh).	4.1. Climate and footprinting and Energy.	
Own indicator	Electricity consumption from renewable resources (%).	4.1. Climate and footprinting and Energy.	
<b>Antimicrobial resistance (AMR)</b>			
103-1	Explanation of the material topic and its Boundary.	3. Pillar one: Health & welfare.	
103-2	The management approach and its components.	3.1. Our approach to AMR.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
103-3	Evaluation of the management approach.	Our progress , page 24.	
Own indicator	Critically important for Human Health category antibiotics (CIA).	Our progress , page 25.	
Own indicator	Antimicrobial growth promoters (AGP, non CIA).	Our progress , page 26.	
Own indicator	Other antibiotics (non AGP, non CIA).	Our progress , page 27.	
Own indicator	Total antibiotics.	Our progress , page 28.	
<b>Circular novel and responsible raw materials</b>			
103-1	Explanation of the material topic and its Boundary.	4.3. Novel and circular ingredients.	
103-3	The management approach and its components.	4.3. Novel and circular ingredients.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
103-3	Evaluation of the management approach.	4.3. Novel and circular ingredients.	
Own indicator	Novel ingredients % of volume.	4.3. Novel and circular ingredients.	
Own indicator	Metric tonnes of circular raw materials upcycled.	4.3. Novel and circular ingredients.	
<b>Biodiversity and ecosystems</b>			
103-1	Explanation of the material topic and its Boundary.	4.2. Natural Resources.	
103-2	The management approach and its components.	4.2. Natural Resources.	
103-3	Evaluation of the management approach.	4.2. Natural Resources.	
Own indicator	Whole fish and trimmings are MarinTrust, MSC or MarinTrust-FIP certified.	4.2. Natural Resources.	

SRS	Disclosure	Reference	Omission/ Explanation
<b>GRI 103: MANAGEMENT APPROACH 2016</b>			
Own indicator	% soy and palm deforestation free.	4.2. Natural Resources.	
Own indicator	Implement LCA footprinting in the innovation stage-gate process, and in procurement.	4.4. Transparency in the footprint of our products.	
Own indicator	Develop footprinting capacity in our farm and formulation models to help customers measure and reduce their emissions.	4.4. Transparency in the footprint of our products.	

### 9.3. Third-party (auditor) assurance letter

#### Independent Limited Assurance Statement to Nutreco N.V

ERM Certification and Verification Services Limited (“ERM CVS”) was engaged by Nutreco N.V (“Nutreco”) to provide limited assurance in relation to the selected information set out below and presented in the Nutreco Sustainability Report 2022 (the “Report”).

#### Basis for qualified conclusion

Due to inconsistencies in the consolidation of waste and water data undertaken by the Nutreco corporate function, we were unable to reach a conclusion on the completeness and accuracy over the following 2022 data and information:

- Total Waste [tonnes];
- Total Hazardous Waste [tonnes];
- Total Non-hazardous Waste [tonnes]; or
- Total Water Consumption [m<sup>3</sup>].

#### Engagement summary

	Whether the data for the reporting year ended 31 December 2022 listed below and presented in the Report, are fairly presented, in all material respects, with the reporting criteria:	
Scope of our assurance engagement	Total Energy Consumption <ul style="list-style-type: none"> <li>• Total Non-renewable energy (MWh).</li> <li>• Total Renewable energy (MWh).</li> </ul>	Total Waste <ul style="list-style-type: none"> <li>• Total Hazardous Waste (tonnes).</li> <li>• Total Non-hazardous waste (tonnes).</li> </ul>
	Total GHG emissions <ul style="list-style-type: none"> <li>• Scope 1 GHG Emissions (tonnes CO<sub>2</sub>e).</li> <li>• Scope 2 GHG Emissions-Market based (tonnes CO<sub>2</sub>e).</li> </ul>	Total Water Consumption (m <sup>3</sup> ). Our assurance engagement does not extend to information in respect of earlier periods or to any other information included in the Report.
Reporting period	1 <sup>st</sup> January 2022-31 <sup>st</sup> December 2022	
Reporting criteria	<ul style="list-style-type: none"> <li>• GHG Protocol Corporate Accounting and Reporting Standard (revised) including the GHG protocol Scope 2 guidance.</li> <li>• GRI 303: Water and effluents (2018).</li> <li>• GRI 306: Waste (2020).</li> </ul>	
Assurance standard and level of assurance	We performed a limited assurance engagement, in accordance with the International Standard on Assurance Engagements ISAE 3000 (Revised) 'Assurance Engagements other than Audits or Reviews of Historical Financial issued by the International Auditing and Standards Board.  The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement and consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.	
Respective responsibilities	Nutreco is responsible for preparing the Report and for the collection and presentation of the information within it, and for the designing, implementing and maintaining of internal controls relevant to the preparation and presentation of the Report.  ERM CVS' responsibility is to provide conclusions to Nutreco on the agreed scope based on our engagement terms with Nutreco, the assurance activities performed and exercising our professional judgement. We accept no responsibility, and deny any liability, to any party other than Nutreco for the conclusions we have reached.	

## Qualified conclusion

Based on our activities, with the exception of the matters described in the 'Basis for qualified conclusion' section above, nothing else has come to our attention to indicate that the 2022 data and information for the disclosures for:

- Total Energy Consumption [MWh];
- Total Non-renewable Energy [MWh];
- Total Renewable Energy [MWh];
- Total GHG emissions [tonnes CO<sub>2</sub>e];
- Scope 1 GHG Emissions [tonnes CO<sub>2</sub>e]; and
- Scope 2 GHG Emissions (Market based) [tonnes CO<sub>2</sub>e]

are not fairly presented in the Report, in all material respects, in accordance with the reporting criteria.

## Our assurance activities

Considering the level of assurance and our assessment of the risk of material misstatement of the Report a multi-disciplinary team of sustainability and assurance specialists performed a range of procedures that included, but was not restricted to, the following:

- Assessing the appropriateness of the reporting criteria for the Report.

- Interviews with management representatives responsible for managing the selected issues.
- Interviews with relevant staff to understand and evaluate the relevant management systems and processes (including internal review and control processes) used for collecting and reporting the selected disclosures.
- An analytical review of the year-end data submitted by all locations included in the consolidated 2022 group data for the selected disclosures which included testing the completeness and mathematical accuracy of conversions and calculations, and consolidation in line with the stated reporting boundary.
- A review at corporate level of a sample of qualitative and quantitative evidence supporting the selected disclosures.
- Visits to Nutreco production sites in Zaragoza (Spain) and Osorno (Chile) to review source data and local reporting systems and controls.
- Desktop reviews of Sloten B.V. (Netherlands), Ecuador Fish Feed (Ecuador) and Advit (South Africa) sites where we checked the calculations and data to source.
- Confirming conversion and emission factors and assumptions used.
- Reviewing the presentation of information relevant to the scope of our work in the Report to ensure consistency with our findings.





## The limitations of our engagement

The reliability of the assured information is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. It is important to understand our assurance conclusions in this context. We do not provide any assurance on future performance or the achievability of Nutreco's goals and targets.

## Our independence, integrity and quality control

ERM CVS is an independent certification and verification body accredited by UKAS to ISO 17021:2015. Accordingly we maintain a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements. Our quality management system is at least as demanding as the relevant sections of ISQM-1 and ISQM-2 (2022).

ERM CVS applies a Code of Conduct and related policies to ensure that its employees maintain integrity, objectivity, professional competence and high ethical standards in their work. Our processes are designed and implemented to ensure that the

work we undertake is objective, impartial and free from bias and conflict of interest. Our certified management system covers independence and ethical requirements that are at least as demanding as the relevant sections of Parts A & B of the IESBA Code relating to assurance engagements.

The team that has undertaken this assurance engagement has extensive experience in conducting assurance on environmental, social, ethical and health and safety information, systems and processes, and provides no consultancy related services to Nutreco in any respect.

Gareth Manning | Partner, Corporate Assurance  
London, United Kingdom

03 May 2023

ERM Certification and Verification Services Limited,  
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*Snutreco*