Charting a sustainable course: The SeaBOS initiative

Our Impact 2022-2023
SeaBOS at a glance

Seafood Business for Ocean Stewardship (SeaBOS) is a collaboration between nine of the world’s largest seafood companies. SeaBOS is the result of a series of keystone dialogues initiated by scientists, aiming to evaluate whether or not the largest seafood corporations in the world could drive systemic change. Scientists from leading institutions, coordinated by Stockholm Resilience Centre, are collaborating with SeaBOS members, with independent funding – to help companies lead a global transformation towards sustainable seafood production and a healthy ocean. The member companies represent over 19% of the world’s seafood production and operate over 465 subsidiaries. SeaBOS is coordinated by a secretariat with funding from member fees from the companies.

SEABOS MEMBERS

SCIENTIFIC COLLABORATORS
The mission of SeaBOS is to lead a global transformation towards sustainable seafood production and a healthy ocean. During the 2020 and 2021 keystone dialogues, five time-bound goals* were agreed upon by the CEOs of the SeaBOS member companies. Below is an overview of these goals and the progress we have made in achieving them in 2022-2023.

**The big picture: SeaBOS goals and actions 2022-23**

### GOAL
- **IUU FISHING & MODERN SLAVERY**
  - Reducing IUU Fishing and Eliminating Modern Slavery

- **BIODIVERSITY & ECOSYSTEMS**
  - Advancing Protection of Endangered Species

- **ANTI-MICROBIAL RESISTANCE**
  - Reducing Antibiotics Use

- **CLIMATE RESILIENCE**
  - Addressing Climate Change

- **REDUCING OCEAN PLASTICS**
  - Reducing Plastic Pollution

### MEASURES
- **IUU FISHING & MODERN SLAVERY**
  - Conducted a Social Assessment of Suppliers

- **BIODIVERSITY & ECOSYSTEMS**
  - Identified Affected IUCN Red List Species

- **ANTI-MICROBIAL RESISTANCE**
  - Shared High-Resolution Antibiotic Data

- **CLIMATE RESILIENCE**
  - Measured Scope 1 & 2 GHG Emissions

- **REDUCING OCEAN PLASTICS**
  - Adopted Plastics Reduction Strategy

### JOINT ACTIONS
- **IUU FISHING & MODERN SLAVERY**
  - Undertook Social Assessment of Suppliers

- **BIODIVERSITY & ECOSYSTEMS**
  - Conducted Assessment of Biodiversity Risks and Impacts on Natural Areas

- **ANTI-MICROBIAL RESISTANCE**
  - Established a Road Map for Reducing Antibiotic Use

- **CLIMATE RESILIENCE**
  - Set Climate Targets to Reduce their Emissions

- **REDUCING OCEAN PLASTICS**
  - Adopted Plastics Reduction Strategy

### OUTCOMES
- **IUU FISHING & MODERN SLAVERY**
  - Assessment of forced labour and IUU fishing risks in own operations, and in supply chains in majority of member companies.

- **BIODIVERSITY & ECOSYSTEMS**
  - Initial efforts to assess and manage biodiversity risks and impacts across operations and supply chains.

- **ANTI-MICROBIAL RESISTANCE**
  - Increasing transparency in the measurement and disclosure of antibiotic use.

- **CLIMATE RESILIENCE**
  - Measurement and target-setting of scope 1, 2 & 3 GHG emissions, emission reductions achieved in certain scopes by some companies.

- **REDUCING OCEAN PLASTICS**
  - Global ocean cleanup resulting in 25 tonnes plastic recovered, reduction initiatives in place, and packaging footprints measured.

*A detailed overview of the SeaBOS time-bound goals is available [here](#).
This report provides an overview of the progress and impact made by the Seafood Business for Ocean Stewardship (SeaBOS) initiative in 2022 and 2023. It articulates our commitments, the nature of SeaBOS, and the science-driven action we have taken to achieve a sustainable transformation within the seafood industry.

The report presents the progress we have made on our time-bound goals, highlighting specific case studies from our task forces and illustrating how our work contributes to sustainable seafood production and a healthy ocean. It seeks to foster understanding, awareness, and continued engagement among our stakeholders and the broader public. For more information about SeaBOS or for questions about this report, please visit our website to learn more.

Specific data and qualitative disclosure relating to SeaBOS goals for individual member companies can be found in the Appendix of this report including links to the comprehensive sustainability reports of member companies, where further detailed disclosure is contained. A description of the SeaBOS Monitoring and Reporting framework is also presented on page 9.
Our journey so far

The seafood industry is facing challenges that one company cannot tackle alone. That is why SeaBOS is so important – it brings together likeminded businesses to achieve positive change on a global scale. Collectively, and grounded in science, we have the strength and reach to make a difference. Thai Union’s own goals and ambitions align with those of SeaBOS, and together we want to protect our oceans, ensure fisheries around the world are sustainable, and protect workers across the entire industry. After it’s launch in 2016, SeaBOS has a clear vision, but much work remains. It is crucial that the work of the individual member companies remains aligned with that of SeaBOS, with equal ambitions. As this Impact report shows, we have achieved good progress on some of our goals, and less on others. Seven years in, we need to continue delivering on our ambitions on ocean stewardship, work together and do our part to make further progress in our operations and supply chains to positively influence the industry as a whole.

Thiraphong Chansiri  
President and CEO  
Thai Union and Chair of SeaBOS

In 2016, eight keystone actors answered our call from science to discuss their possible engagement in global ocean stewardship. In 2017, two additional companies joined, and scientists were asked to identify key geographical areas of IUU fishing and labor abuse. By 2018 companies agreed to focus on these challenges, antibiotics use and plastics, and to substantially advance transparency. In 2019 they added climate change and resilience as focus areas. By 2020, companies set time bound goals and started to share sensitive data with us, on their possible exposure to IUU fishing and labor abuse, use of antibiotics, plastics, and climate emissions. By 2022 they published their first progress report. Today, they share publicly, in ways they have never done before, their achievements, challenges and ambitions. They have come a long way and have far to go. I am proud to be part of this movement towards ocean stewardship and encourage the seafood industry to follow their lead.

Henrik Österblom  
Professor, Stockholm Resilience Centre

SeaBOS is firmly established as a unique collaboration, with exciting and challenging opportunities ahead, to deal with some of the biggest problems in the seafood sector. We have developed trust between and amongst science and industry members from wild-catch, aquaculture, fish feed producers, and processors. We have aligned ourselves with a common vision, commitments, and time bound goals. Having developed the fundamentals of trust across our group, we have been able to hold ‘constructive dialogue’ about potential solutions and challenges, develop collaborations across our group and broader, and this Impact Report is a mechanism to hold both ourselves accountable to our stated goals and collaborations, as well as demonstrate publicly what we are doing. There is still much to achieve, but this report demonstrates there has been valuable progress, and we will continue efforts to speed up and deliver on our vision.

Martin Exel  
Managing Director, SeaBOS
Our ambition

SeaBOS is a collaboration between leading scientists and CEOs of global seafood businesses. Together we are leading a science-based global transformation towards sustainable seafood production and a healthy ocean.

In 2016, we established ten commitments, which we have been implementing in the SeaBOS task forces. Going forward our ambition is to accelerate our progress and impact on these, including to:

Provide healthy food from a healthy ocean
The potential of the ocean to help provide healthy food for hundreds of millions of people is tremendous. But bold and firm action is needed to make this happen. As the Keystone Actors in the international seafood industry, depending as we do on a healthy and resilient ocean, we know we can and must make a major contribution.

Take action and be transparent
We have established operational Task Forces, ambitious strategies, and bold time bound goals to help direct our actions and publicly report on progress. We are taking actions to drive impact through both short- and longer-term programs.

Create transformational change through collaboration
We, the undersigned, reaffirm our common purpose and desire to create transformational change across the seafood sector through our corporate stewardship and collaborative actions for a healthy ocean.

SeaBOS is a collaboration between leading scientists and CEOs of global seafood businesses. Together we are leading a science-based global transformation towards sustainable seafood production and a healthy ocean.
Seafood Business for Ocean Stewardship (SeaBOS) is a unique initiative that sets out to lead a global transformation towards sustainable seafood production and a healthy ocean. What makes SeaBOS special is its innovative approach to bridging the gap between science and industry.

It represents a collaboration between scientists and nine of the world’s largest seafood companies, connected across wild capture fisheries, feed producers, seafood processors, and aquaculture businesses in Asia, Europe, and North America. This cross-sectorial synergy is an industry-first and sets the stage for integrated, system-wide improvements in sustainability.

Read the Joint Statement from 2016.

The journey of SeaBOS began in 2012 with an intriguing question: could there be “keystone actors” within the seafood industry that could drive transformative change in ocean stewardship? Research at the Stockholm Resilience Centre (SRC) at Stockholm University, the Beijer Institute of Ecological Economics, and the Global Economic Dynamics and the Biosphere program (GEDB) revealed that only a small number of companies exerted significant influence over the seafood industry. Thirteen companies were found to control between 19-40% of some of the largest and most valuable stocks, as well as 11-16% of the global marine catch. These keystone actors, defined by their dominance in global production revenues and volumes, their control over globally relevant production segments, and their influence over global governance processes and institutions, presented a significant opportunity for initiating transformative change.

Following years of bilateral contacts and dialogues initiated by the Stockholm Resilience Centre, eight of the world’s largest seafood companies agreed to an initial meeting in November 2016, resulting in a shared commitment to ocean stewardship. This marked the genesis of SeaBOS, a global science-business initiative dedicated to driving sustainable practices within the seafood industry.

Today, SeaBOS involves nine major companies and fosters an annual CEO-level dialogue with scientists, reaffirming our commitment to bridging the gap between scientific research and industry application. Our approach hinges on mutual learning, co-designing sustainable practices, and fostering change through collaboration and dialogue.

SeaBOS timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2015</td>
<td>Data collection &amp; analysis to identify keystone actors; bilateral company visits; co-design to create dialogues.</td>
</tr>
<tr>
<td>2016</td>
<td>SeaBOS Initiative launched</td>
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<tr>
<td>2017</td>
<td>SeaBOS commitments &amp; task forces in operation; underpinning research on issues; identify knowledge &amp; impact partners; survey company practices &amp; identify best practices; stewardship workshop.</td>
</tr>
<tr>
<td>2018</td>
<td>SeaBOS Fundraising Foundation launched and Secretariat established.</td>
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<tr>
<td>2019</td>
<td>Established Time Bound Goals and science-based climate commitments.</td>
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<tr>
<td>2020</td>
<td>Committed to no IUU fishing or modern slavery in own operations; roadmap for Antibiotics; endangered species strategy agreed.</td>
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<tr>
<td>2021</td>
<td>Focus on strategic partnerships, M&amp;R framework and reporting, and awareness building for transformative change.</td>
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<tr>
<td>2022</td>
<td></td>
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<tr>
<td>2023</td>
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HOW SEABOS WORKS

SeaBOS organizes its activities into Task Forces, each led by SeaBOS members and supported by scientists from the Stockholm Resilience Centre and other partners. This structure allows SeaBOS to tap into the collective wisdom and expertise of its members and supporting scientists, ensuring that the work it undertakes is both practical and science-based.

Each Task Force focuses on specific areas of challenge and opportunity, such as reducing illegal, unreported, and unregulated (IUU) fishing, eliminating seafood fraud, improving working conditions, and minimizing the environmental impact of seafood production. The work of these Task Forces forms the backbone of SeaBOS’s operations, enabling the initiative to enact meaningful, industry-wide change and pave the way for a sustainable future for the ocean and the seafood industry.

Through its structure and approach, SeaBOS is working towards a progressive and science-based transformation of the seafood industry, fostering mutual learning among its members and setting new standards for ocean stewardship.
SeaBOS Monitoring and Reporting framework

Ensuring transparency, progress and building trust

The M&R framework is based on the standards of the World Benchmarking Alliance Seafood Stewardship Index (WBA) and Global Reporting Initiative (GRI), including GRI 13.

PURPOSE

The SeaBOS Monitoring and Reporting framework ("the M&R framework") was established at the Santpoort Keystone dialogue in 2022. The purpose of the M&R Framework is to measure progress and demonstrate that the member companies are accountable and transparent, but also to enable sharing of best practice within SeaBOS, with company subsidiaries and the broader industry.

INDICATORS FROM LEADING GLOBAL STANDARDS

The M&R framework consists of indicators from leading global reporting frameworks considered most relevant for measuring progress on the SeaBOS time-bound goals. In addition, SeaBOS specific indicators – co-developed by the companies and the science team - have been established where no indicators exist to sufficiently cover SeaBOS reporting needs.

The indicators used are based on the two frameworks Global Reporting Initiative (GRI) and the World Benchmarking Alliance’s Seafood Stewardship Index (WBA). The new GRI 13 sector standard on Agriculture, Aquaculture and Fisheries is incorporated. The indicators SeaBOS members are reporting on are both qualitative and quantitative in nature to enable a better understanding of the processes and management approaches taken.

DATA TO INFORM SCIENCE AND TASK FORCE ACTIVITIES

The reported data is used internally to inform the scientific work of SeaBOS, to advance learning and support progress in the work of the SeaBOS Task Forces. Collected data shown in the Impact report is a selection of the indicators considered the most material for this baseline year of reporting, and important factors for inclusion have been comparability and data quality across companies.

The 2023 Impact Report is considered the first step towards establishing biennial public reporting on progress on SeaBOS goals. The M&R framework will be further developed to incorporate learnings and feedback from this baseline year. Ultimately, the objective of the SeaBOS Impact reporting is to help advance ocean stewardship in the seafood sector.

The SeaBOS members individual reports are presented in the Appendix.

The M&R framework is available here.
A deeper dive into our commitments
Illegal, unreported, and unregulated (IUU) fishing and modern slavery are undermining human rights, food security, and the sustainability of seafood production. As industry leaders, we aim to eradicate these detrimental practices and foster ethical operations, for our sake and that of future generations.

GOAL 1
Reducing IUU fishing and eliminating modern slavery

Illegal, unreported, and unregulated (IUU) fishing and modern slavery are undermining human rights, food security, and the sustainability of seafood production. As industry leaders, we aim to eradicate these detrimental practices and foster ethical operations, for our sake and that of future generations.

MANAGEMENT APPROACH:
We're implementing a comprehensive, systematic approach grounded in scientific guidance and complemented by innovative tools to combat IUU fishing and modern slavery. This involves conducting risk assessments of our supply chains, identifying high-risk areas, and engaging in proactive initiatives to mitigate these risks. We've co-developed a Tool Kit, which includes policy documents, audit protocols, and advanced traceability mechanisms. We also engage in external reporting for accountability and transparency, and actively engage with governments, civil society, and other stakeholders to influence policy changes and inspire broader industry change.

SEABOS GOALS

1. Have no IUU fishing products or modern slavery in our own seafood operations by Oct 2021.

2. Put science-based measures in place that substantially reduce the risk of IUU fishery products or modern slavery being in our supply chains.

3. To act swiftly and transparently on any evidence that IUU fishing/modern slavery exists within our operations and/or supply chains.
OUR IMPACT
Our actions, while fostering new industry norms, have also highlighted the need for more effective public policies and legislation. By sharing high-resolution operational data with the Science Team, our member companies are aiding in the development of innovative solutions and risk mitigation strategies. Through our advocacy and collaborative efforts, we are proud to be making progress towards a more ethical and sustainable seafood industry.

OUR PROGRESS IN MITIGATING IUU FISHING AND MODERN SLAVERY RISKS
SeaBOS members are collectively battling IUU fishing and modern slavery with actions to improve transparency of supply chains and activities, policies and risk analyses of own operations and supply chains. We are working with other industry initiatives to call for combined government and industry actions to strengthen regulations, including calling on governments to implement the Port State Measures Agreement and associated transparency measures. Separately, we have written to the World Trade Organisation to recommend removal of harmful subsidies from seafood production.

Thai Union has launched rigorous audit programs and a Vessel Improvement Program and Code of Conduct (VCoC) with regular compliance monitoring. They aim to ensure 100% on-the-water monitoring by 2025, partnering with The Nature Conservancy.

Cargill, with initial focus on supply chains to Norway and Scotland, carries out risk assessments on suppliers using the US State Department TIP report and ASC Country Risk Score Cards. Intensive Human Rights Impact Assessments are being carried out on supply chains identified as higher risk, so appropriate mitigations can be implemented if needed. One example is with Partner Africa in Mauritania and Senegal, through work with the Global Roundtable on Marine Ingredients.

Companies like Skretting, Nissui, Maruha Nichiro, and Kyokuyo are leveraging tools such as EcoVadis, SeaBOS toolkit, and supplier surveys to monitor risks. Dongwon adheres to guidelines from NGOs and international organizations and participates in the Fishery Improvement Project (FIP).

Cermaq enforces its code of conduct, disallowing forced, bonded, or child labor and monitors fishmeal and fish oil origins to ensure IUU compliance. CP Foods, has an extensive Human Rights Due Diligence Process, working closely with the Labour Protection Network Foundation (LPN) to ensure labor rights and recruitment transparency. Cumulatively, SeaBOS members are proud to be supporting a more transparent and humane seafood industry.

OUR ACTIONS
Our concerted actions are integral to our efforts to eliminate IUU fishing and modern slavery. The graphics below outline the initiatives each member company has undertaken.

<table>
<thead>
<tr>
<th>Assessed IUU fishing risks in the supply chain</th>
<th>Assessed forced, bonded and child labour risks in the supply chain</th>
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<tbody>
<tr>
<td><img src="chart1.png" alt="IUU fishing risk chart" /></td>
<td><img src="chart2.png" alt="Child labour risk chart" /></td>
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Assessed by 7/9

<table>
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<tr>
<th>Assessed suppliers using social criteria</th>
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<tbody>
<tr>
<td><img src="chart3.png" alt="Social criteria risk chart" /></td>
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Assessed by 9/9
SCIENCE OUTLOOK

Scope, scale and urgency of action

In 2023, despite major efforts during the last two decades in national, regional, and global institutions, among corporations and across governments, modern slavery and IUU fishing remain endemic in the seafood industry. The International Labour Organization along with the Walk Free Foundation and International Organization for Migration estimated that at least 128,000 fishers remain under forced labor conditions aboard fishing vessels. Research has highlighted considerable overlap in patterns of risk for modern slavery and IUU fishing in the seafood industry (see Figure), although the actions needed to address them will differ. The livelihoods, well-being and economic impacts of IUU fishing are devastating for coastal communities and nations, with economic losses in hotspots of IUU fishing such as West Africa estimated at up to USD 9.4 billion annually.

Pathways forward

Modern slavery and IUU fishing represent unacceptable practices for any seafood company. SeaBOS members have worked to assess IUU fishing and modern slavery risks across their operations and to improve traceability in their supply chains, with support from the science team. They have also advocated for government action on the Port State Measures Agreement, which includes efforts to eliminate IUU fishing. These steps are important, but not sufficient. Companies have a responsibility to ensure they have adequate policies, traceability schemes, auditing processes and mitigation approaches for addressing IUU fishing. They also need to engage directly with fisheries workers to develop monitoring and report mechanisms and design solutions to address modern slavery. They can also advocate for closing loopholes in national regulatory frameworks that fail to protect migrant fisheries workers. For both modern slavery and IUU fishing, they can share risk assessment frameworks and approaches and communicate openly how they will address known risks, and directly engage with key governments and actors to collaborate on addressing them.

KEY PUBLICATIONS

- Background briefs on Defining Modern Slavery and Human and Labour Rights Reporting
- Selig et al. 2022 “Revealing global risks of labor abuse and illegal, unreported, and unregulated fishing”

There is no question. As leaders of industry, we have a responsibility to make a positive impact. We cannot do it alone, and we don’t. As industry, we must seek inputs based on science, and then – and this is the critical step – we must act.

Therese Log Bergjord
CEO of Skretting
CASE STUDIES
Transparency and traceability are important elements to fight IUU fishing and ensure that modern slavery is not present in seafood supply chains. Below are some examples of our joint action in SeaBOS on this topic.

Transparent reporting for accountability
Public reporting in accordance with the GRI standards has a requirement in SeaBOS since 2020 based on conducted materiality assessments. Some SeaBOS companies are also reporting through the Ocean Disclosure Project (ODP) and making their marine products portfolio publicly available. Four companies have been engaging with GDST to implement traceability solutions.

Electronic monitoring on vessels
SeaBOS has developed a Proof of Concept (PoC) to transform the level of transparency aboard commercial fishing vessels, using facial recognition software and deck cameras to identify e.g. species and catch volume, with automatic upload to a blockchain platform. The PoC illustrated that it is possible to execute this level of traceability on fishing vessels.

Joint statements
SeaBOS has publicly supported the removal of harmful fishing subsidies, a key barrier for reducing IUU fishing. In addition, we have published a joint statement on traceability and Port State Measures to support healthy marine ecosystems and fisheries.

"I’ve learned a lot from the other companies’ activities and efforts, they serve as a motivation for us to work harder."

Dr. Myoung-Woo Lee
CEO of Dongwon Industries
GOAL 2
Advancing protection of endangered species

The health of our oceans and the future of sustainable seafood rely on robust biodiversity. However, endangered species are under increasing threat due to human activities, with seafood production playing a significant role.

MANAGEMENT APPROACH:
In accordance with our Endangered Species Strategy, SeaBOS members have agreed to conduct rigorous internal due diligence to identify and understand their exposure to risks related to endangered species. We prioritize engaging with science-based best practices and continuously innovate to mitigate these risks. Our collaborative approach extends beyond our operations to include our supply chains and other industry actors. Through these strategic efforts, we are working towards science-based operational measures that substantially reduce the risk of harm to endangered elasmobranch and seabird species.

SEABOS GOALS

1. Implement measures to significantly lower risks to endangered sharks, rays, and seabirds from our operations and supply chains by Oct 2022.
2. Publish a “best practice” list for limiting harm to these species by Jan 2022.
3. Develop a framework for monitoring and reporting species interactions by May 2022, for adoption in Oct 2022.
5. Using lessons from initial phase, expand SeaBOS endangered species work scope from Oct 2023, aiming to gradually eliminate all negative impacts on endangered species.
OUR IMPACT

As the newest task force in SeaBOS, established in 2022, we are starting to develop collective efforts to deliver on our Endangered Species strategy, focusing on seabirds and elasmobranchs as a first step. With a new global momentum following from the Kunming-Montreal biodiversity agreement, SeaBOS aims to take leadership in biodiversity protection in the seafood industry through individual company initiatives and collective action, including development of nature based solutions such as mangrove and eelgrass restoration projects.

HOW WE ARE SAFEGUARDING BIODIVERSITY

SeaBOS companies are collaborating on significant projects and fostering innovative efforts to safeguard biodiversity. Ongoing projects include mangrove restoration projects led by Thai Union and CP Foods in Thailand, eelgrass restoration in Japan by Maruha Nichiro and Cermaq’s mussel and kelp restoration projects in Chile and Norway.

Specifically, Thai Union has committed to no deforestation in their operations and has partnered with the Sustainable Fisheries Partnership (SFP) to enhance transparency in their supply chains. Through this partnership, they conduct bycatch audits and ensure the protection of endangered species in their fisheries.

Skretting mitigates risks in its supply chain by working with certification bodies and interacting with other stakeholders like the Sustainable Fisheries Partnership and Global Roundtable on Marine Ingredients.

Maruha Nichiro is engaged in eelgrass bed restoration in Tokyo Bay and collaborates with SeaBOS and BirdLife to monitor the biodiversity of marine products.

CP Foods conducts biodiversity risk screening using the Integrated Biodiversity Assessment Tool (IBAT) to manage their operations near key biodiversity areas, while Cermaq uses the IUCN Red List to catalogue endangered species in their operation areas, actively rejecting suppliers that violate their Code of Conduct.

Cargill pushes for ecosystem-based fisheries management. They increasingly source certified marine ingredients, and support credible FIPs to improve fisheries not yet managed to maximize biodiversity protection.

All these efforts are valuable, although we recognise there is still much more to be done, so that we can collectively be protecting endangered species and safeguarding our planet’s biodiversity.

OUR ACTIONS

SeaBOS members are committed to protecting endangered species. Below is an overview of our member companies’ initial actions for this task force.

Conducted a biodiversity risk assessment including IUCN red list species
SCIENCE OUTLOOK

Scope, scale and urgency of action

Seafood production is directly dependent on, and can fundamentally affect, the functioning of ecosystems. Species such as sharks, seabirds and rays are critically important for aquatic foodchains, but their populations have declined sharply. Currently, 31% of all seabird species are globally threatened according to the IUCN Red List, and almost half of all species have declining populations. Similarly, shark and ray populations in tropical, subtropical and oceanic ecosystems have declined by over 75% and 71%, respectively. For oceanic sharks, these declines have been attributed to an 18-fold increase in fishing pressure, while entanglement in fishing gear remains the single greatest threat to sea turtles. Long-term studies of albatross species in the south Atlantic Ocean indicate that fisheries are the primary driver of 40-60% population declines, and the extinction risk for sharks and rays exceeds that of any other category calculated by the IUCN Red List.

Pathways forward

The seafood industry has the power to do something about this challenge, and previous work to reduce negative impacts on seabirds illustrates that concerted efforts can generate significant results. Implementation of bycatch regulations in the Namibian hake fishery, for instance, reduced albatross mortality by 94%. Understanding risks, engaging with high-risk areas, and spreading knowledge about what works, can ensure that best practices are used, normalized, and legislated. Participating in regional initiatives to identify Important Shark and Ray Areas (ISRAs) and supporting the implementation of corresponding management measures will encourage and rapidly normalize uptake of best practice. Moving beyond elasmobranchs and seabirds to other threatened species will be critical for ensuring the resilience of marine ecosystems and seafood operations.

KEY PUBLICATIONS

- Background brief on Endangered Species and Loss of Marine Biodiversity
- Briefs on Seabirds and Elasmobranchs
- Best practices for reducing negative impacts on elasmobranchs and seabirds

We recognise that we need to conduct business responsibly to safeguard and preserve biodiversity, operate and manage existing resources efficiently, and work towards creating balanced, sustainable production and consumption around the world.

Dr. Sujint Thammasart  
COO of Charoen Pokphand Foods (CP Foods)
A strategy for endangered species
In 2021, SeaBOS members established a strategy for addressing negative impacts on endangered species. The first step was to establish a scientific assessment of best practices, published in 2022. SeaBOS companies started to report on risks and impacts on endangered species in 2023 and is developing its risk management approaches. Joint efforts will continue going forward.

Preventing bycatch of seabirds
Fishing companies in the Nissui Group have introduced a variety of measures to prevent the bycatch of seabirds. These include Tori lines (as shown above) - a device that prevents birds from approaching the bait by towing a rope to which streamers and tapes are attached. Other measures include using bafflers (a metal scarecrow) to scare birds away, weights to lower towing lines from bird flight paths; trawling at night when fewer birds are around; managing offal onboard to avoid attracting birds; and, having a bycatch reduction management plan for every vessel.

CASE STUDIES
The seafood industry is dependent on a healthy ocean and healthy marine ecosystems and has a great responsibility in protecting biodiversity and support the restoration of nature. Going forward, SeaBOS is stepping up its joint activities in this Task Force. Current initiatives include contribution to the development of industry specific frameworks for biodiversity and standards for nature based solutions, in addition to developing joint strategies for action. Below are some examples of our ongoing work.

“SeaBOS can be the lever that transforms the fisheries industry. That is my hope for the future.”
Shingo Hamada
President and CEO of Nippon Suisan Kaisha
GOAL 3
Reducing antibiotics use

The inappropriate use of antibiotics in aquaculture threatens both human health and marine ecosystems through its contribution to potential antimicrobial resistance (AMR). SeaBOS is leveraging science and cooperative stewardship to enable transformative change in antibiotics use across global aquaculture operations.

MANAGEMENT APPROACH:
SeaBOS aims to minimise antibiotics use by improving overall health management in aquaculture, adopting preventative practices, and implementing a Code of Conduct for responsible antibiotics use. Through data collection, enhanced farm management practices, disease diagnostics, and the development of preventative strategies and resources like vaccines, we strive to promote transparency and accountability. We work collaboratively with diverse stakeholders, including pharmaceutical companies, veterinarians, intergovernmental agencies, and government departments, to develop and improve stewardship and alternatives to antibiotics.

SEABOS GOALS

1. By October 2021, outline a roadmap to phase out high-risk antibiotics from aquaculture and develop an antibiotic use Code of Conduct. Enhance antibiotic survey data and collaborate with expert organizations on alternatives.

2. Agree to a roadmap for establishing a “SeaBOS Antibiotics Code of Conduct” by October 2022.

3. Extend the Code’s scope to member operations and aquaculture supply chains.

4. Cease the use of HPCIA and CIA in aquaculture unless permitted by national legislation.

5. Commit to annual antibiotic stewardship surveys to monitor progress.
OUR IMPACT
The collective actions of SeaBOS have resulted in increased transparency in antibiotics use. We aim to further reduce antibiotics use in aquaculture by the sharing of best practice and implementation of SeaBOS tools such as the Antibiotics Stewardship Roadmap and Code of Conduct, which includes the phasing out of High Priority Critically Important Antimicrobials (HPCIA) and Critically Important Antimicrobials (CIA) in alignment with World Health Organization standards. Our approach will help reduce the risk of AMR and enhance the health management of aquaculture species, paving the way for a sustainable and responsible seafood industry.

OUR ACTIONS
To reduce antibiotics use, SeaBOS has been developing a Code of Conduct and a roadmap for implementation by our members. In addition, annual reporting of antibiotics usage has been a priority to better inform science and practice on antibiotics in seafood production.

OUR EFFORTS IN REDUCING ANTIBIOTICS USE
In the concerted effort to reduce antibiotic use in aquaculture, SeaBOS member companies have leveraged collective initiatives and individual actions. A standout example in Japan involves Nissui, Maruha Nichiro, and Kyokuyo. This collaboration has the companies joining forces with pharmaceutical company Kyoritsu Seiyaku, government agencies, and the Japan Fisheries Research and Education Agency. Their collective aim is to reduce antibiotic use and develop vaccines that enable transfer away from HPCIA.

Simultaneously, Thai Union has undertaken a project to advocate responsible antibiotic use among Thai shrimp farms, underpinned by a stringent quality assurance system and a policy prohibiting the use of WHO-listed critical antibiotics. They’ve also implemented the SeaBOS tools, such as the Code of Conduct, in their risk management procedures.

Skretting has undertaken an awareness project in Vietnam, focusing on the responsible use of antibiotics and addressing antimicrobial resistance (AMR). This project includes training and a medicine calculator app to provide appropriate dosing recommendations.

Cargill focuses on continuous development of feeds that enhance animal health and welfare, thereby reducing the need for medicated treatments. Antibiotics are only applied in feeds under direction of a veterinary prescription. Cermaq invests in vaccine research for salmonid diseases and screens broodfish against pathogens, only resorting to antibiotics when prescribed by a veterinarian.

Through collaborative and individual initiatives, SeaBOS member companies are proud to demonstrate their strong commitment to reducing antibiotics use, in line with SeaBOS’s goal.
SCIENCE OUTLOOK

Scope, scale and urgency of action
Antibiotic use has contributed to the spread of antimicrobial resistance, an emerging public health crisis estimated by the United Nations to result in up to 10 million deaths annually by 2050. While antibiotics enable greater food production and have importance for animal welfare, considerable scope exists to limit usage by reducing misuse and over-application around the world. Over longer timeframes, the development of vaccines can reduce dependency on antibiotics: in Norway, for instance, vaccines have resulted in the virtual elimination of antibiotics in salmon aquaculture production. Over 600 species are in aquaculture production around the world, but vast gaps exist in knowledge about the quantity and type of antibiotics used in these diverse production systems, hampering action and progress.

Pathways forward
The improper use of antibiotics in aquaculture results in the loss of efficacy of antimicrobials crucial for human healthcare. Focusing on reducing and eventually eliminating the need for Critically Important Antimicrobials for Human Medicine, as identified by the World Health Organization is a crucial priority. A focus on responsible antibiotic use and overall health management is indispensable to ensure the sustainable future of the aquaculture industry. Companies can contribute by providing transparent accessibility of data, engaging in vaccine development, and contributing to eliminating vast knowledge gaps about the frequency and prevalence of antimicrobial resistant genes in production systems around the world.

KEY PUBLICATIONS

- Background brief on Antibiotics in Aquaculture
- Gephart et al. 2021 “Environmental performance of blue foods”

There is the saying that alone you can go fast, but together you can go further. SeaBOS provides a platform for organizations to work together to build sustainability solutions at scale.

Helene Ziv-Douki
President of Cargill Aqua Nutrition
CASE STUDIES

Joint action to reduce the antibiotics use in aquaculture operations is a key priority in SeaBOS. In addition to developing and implementing industry tools and resources, our member companies are engaging in regional partnerships, including with government agencies and the pharmaceutical industry, to effectively develop solutions. SeaBOS became a member of the AMR Multi-Stakeholder Partnership Platform in 2023, working together with organizations such as the Food and Agriculture Organization of the UN, UN Environment Program, World Health Organization and World Organization for Animal Health, to ensure the responsible use of antimicrobials.

Aquaculture is a part of the solution but there are also challenges we need to overcome, and this makes aquaculture attractive for dedicated people who want to make a difference.

Steven Rafferty
CEO of Cermaq Group

Collaboration for vaccine development

Nissui, Maruha Nichiro and Kyokuyo are working together with Japanese government offices and the pharmaceutical industry in Japan to reduce antibiotics use and develop vaccines that enable a transfer away from the use of highest priority critically important antibiotics (HPCIA).

Establishment of Roadmap and Code of Conduct

The SeaBOS Antibiotics Code of Conduct provides strategies for maintaining fish health and welfare and reducing use of antibiotics through preventative practices and interventions. Furthermore, the SeaBOS Antibiotic Stewardship Roadmap guides members in the phasing out of HPCIA and CIA in line with World Health Organization (WHO) standards.
As the world grapples with the realities of climate change, the seafood industry must adapt and contribute to the solution. This involves reducing our greenhouse gas emissions, understanding the changing conditions, and building climate resilience to protect ocean ecosystems and our industry.

**GOAL 4**

**Addressing climate change**

**MANAGEMENT APPROACH:**

Our management approach is two-pronged, focusing on mitigation and adaptation. Firstly, we are committed to reducing greenhouse gas emissions in line with scientific targets. This involves setting and implementing ambitious goals, innovating our operations and supply chains, and reporting publicly on our emissions. Secondly, we’re developing resilience to manage climate-related risks in our operations. This includes collecting and assessing operational data, advancing our understanding of blue carbon ecosystem conservation and restoration, and leveraging financial instruments to support transformation.

**SEABOS GOALS**

1. Set science-based goals and reporting for GHG emissions reduction by October 2021.
2. Announce GHG reduction targets in line with the Paris Agreement by May 2022.
3. Implement and publicize scope 3 emissions and climate resilience actions by October 2022; conduct GHG workshop and surveys in late 2021.
4. Raise awareness of the benefits of dietary shifts as part of the solution to climate change.

**TASK FORCE LEAD**

Adam Brennan
Group Director, Sustainability, Thai Union
OUR IMPACT
Addressing climate change is a key priority for SeaBOS. All our member companies have set science-based climate goals, with five committed to the Science Based Targets Initiative. Our combined actions aim to significantly reduce GHG emissions, and to achieve this, working with customers and suppliers is essential. SeaBOS is also collaborating with organizations such as the UN Global Compact, WWF and the Climate Champions to develop standards and policy recommendations on climate change in the seafood industry. In 2022, we co-developed a guide to help other companies in the industry set science based targets in accordance with the Science Based Target Initiative (SBTi).

COLLABORATIVELY TACKLING CLIMATE CHANGE
All SeaBOS member companies have set science-based targets to reduce their emissions. So far, five have had their targets approved by the Science Based Targets initiative (SBTi). All our member companies are reporting on Scope 1 and 2 emissions, and some have gone further by reporting on Scope 3 emissions.

Thai Union is harnessing innovation with projects focused on sustainability and climate action in aquaculture. For instance, they have integrated solar power and HydroNeo’s smart farm system into their operations. Skretting is committed to SBTi targets across all scopes as well as utilising new ingredients in feed. Nissui is promoting energy-saving measures and renewable energy use while exploring alternative protein products. Maruha Nichiro is installing solar panels at their Utsunomiya Plant and converting to non-CFC refrigeration equipment.

Meanwhile, Dongwon aims to reduce Scope 3 emissions with the establishment of land-based salmon farming. Cermaq has initiated electrification at seawater sites and boats in Norway and is exploring similar opportunities in Canada and Chile. Cargill is dedicated to reducing both its Scope 1 & 2 emissions and relative Scope 3 emissions. Through the SeaFurther™ Sustainability program, they are focusing on decarbonization along their value chains, developing regenerative agriculture with suppliers, and using digital tools to improve feed efficiency.

These concerted efforts by SeaBOS member companies demonstrate our clear and shared commitment to combating climate change. By working collectively and sharing best practices, we are proud to set a precedent for others in the seafood industry and beyond.

OUR ACTIONS
Joint action is critical to address climate change. Below is an overview of actions taken by our member companies, including setting climate targets, and reducing and disclosing GHG emissions.
SCIENCE OUTLOOK
Scope, scale and urgency of action
Climate change represents an existential challenge to humanity, with once-distant projections increasingly becoming a reality. In mid-2023, for instance, nearly half the ocean’s surface area was experiencing marine heatwave conditions, and sea surface temperature spiked to unprecedented levels around the world (see Figure), exacerbating climate change impacts on fisheries and aquaculture production. The IPCC has estimated that more than 99% of the world’s coral reefs would not recover from 1.5 degrees of warming above pre-industrial levels, an alarming prospect given 25% of ocean biodiversity depends on coral reefs during some stage of their life cycle and current emissions reduction policies are expected to result in 3.2 degrees of warming by 2100. Immediate and dramatic reductions are thus urgently needed (see Figure).

Pathways forward
Although the greenhouse gas emissions of SeaBOS members do not represent much at the global level, combined action and substantial emission reductions represent a strong signal to the sector and beyond. All corporations in 2023 should have a public climate target, preferably a science-based target, and consistently report on their Scope 1, 2 and 3 GHG emissions. Leading efforts to standardize reporting methodologies in the seafood sector will contribute to broader action, while investment in the development of green technologies remains crucial. Collaboration with scientists to understand how climate risk translates into financial risk can help mainstream climate risk reduction into fisheries and aquaculture management.

KEY PUBLICATIONS
- Background Brief on Climate Change Impacts on Fisheries and Aquaculture
- Survey of Corporate Climate Change Strategies

To succeed, alignment is crucial.

Thiraphong Chansiri
President and CEO of Thai Union, and Chair of the SeaBOS Association
CASE STUDIES
SeaBOS works actively to strengthen climate resilience in seafood operations and its members are working to reduce their GHG emissions in line with set targets. Below are some examples of the work we do, and we continue to seek out effective collaborations to deliver on our shared commitment for climate action and reduced emissions.

A healthy seafood industry relies entirely on healthy oceans. Without that we have nothing.

Makoto Inoue
President of Kyokuyo

Collective commitment to setting climate targets
All SeaBOS companies have established a climate target, of which five are in accordance with the Science Based Target Initiative (SBTi). Acknowledging the challenge in reducing especially scope 3 emissions, SeaBOS is focusing on aligning efforts across the industry and developing GHG accounting standards that enables adequate measurement of emissions and joint efforts through the supply chain to invest in reduction measures.

Sharing best practices for climate targets
Together with the UN Global Compact and World Wildlife Fund (WWF), SeaBOS has developed a guide for how to set science-based climate targets in the seafood sector, to guide other seafood companies and encourage climate action. The guide is available here.
Plastic pollution poses a grave threat to our oceans, affecting marine life, seafood production, and overall ocean health. With an alarming estimate of 322 million metric tons of plastic produced in 2015, approximately 79% of which is deposited in landfills or entered the natural environment, the urgency to address this global issue has never been more profound.

**GOAL 5**  
**Reducing plastic pollution**

**Management Approach:**

In response to this crisis, SeaBOS developed the “City to Sea” Framework, a comprehensive strategy targeting areas where the seafood industry can significantly reduce plastic pollution. Our management approach leverages scientific insights and harnesses innovative solutions to cut down plastics use. Initiatives such as biennial reporting on our plastics footprints, adoption of alternative materials, reduction, reuse, and recycling of plastics, alongside awareness campaigns, comprise our multi-pronged approach.

**Seabos Goals**

1. Provide at least biennial reporting on plastics packaging footprints, along with shared learning webinars during 2021 on innovative solutions to make plastics lighter; re-use, reduce, recycle, or make plastics compostable.

2. To continue City to Sea plastics strategy including reporting on our plastics footprints and reduction actions by October 2022.
OUR IMPACT
Members’ commitment to understanding and lowering their plastic footprints, combined with practical actions such as coastal cleanup programs and company efforts to reduce our own plastics use have resulted in significant advancements. We’re not only making strides towards reducing our own plastic use, but we’re also raising awareness and advocating for broader industry and governmental commitment to tackle this pressing issue. Together, we are creating a ripple effect towards a plastic-free ocean.

A COLLECTIVE PUSH AGAINST PLASTIC POLLUTION
SeaBOS companies, in their commitment to ocean health, have collectively partnered with the Ocean Conservancy on an international Ocean Cleanup program, demonstrating the significance of industry-wide action against plastic pollution. Through initiatives like a joint cleanup day led by the CEOs of the three Japanese SeaBOS companies, SeaBOS is spotlighting the issue of plastic pollution and reinforcing the importance of ocean stewardship among their workforces.

Beyond collective efforts, individual SeaBOS companies are also embracing innovative approaches to reduce plastic use and manage waste effectively. Thai Union, for instance, has developed reusable models to decrease reliance on single-use plastic packaging. They’ve also partnered with the Global Ghost Gear Initiative to manage and recover discarded fishing gear.

Nissui is taking robust action by introducing non-Styrofoam packaging and enhancing fishing gear management rules using GGGI’s “Best Practice Framework”. Skretting has implemented compostable and post-consumer recycled packaging, underlining the possibilities of sustainable alternatives.

Maruha Nichiro is advancing plastic reduction with a new production management system and strengthened buoy strength for aquaculture. Kyokuyo’s approach includes diligent repair and maintenance to prevent plastic components of fishing nets and buoys from entering the ocean.

CP Foods, have developed reusable Q-pass tanks for transporting shrimp post-larvae and redesigned packaging to reduce plastic usage, while also ensuring product safety and nutritional value. CP Foods is also focussing on reducing plastic use in their farm business and developing alternative packaging designs.

All these actions, alongside SeaBOS’s City-to-Sea framework, demonstrate the initiative’s drive for a holistic approach to tackling ocean plastic pollution, from reducing plastic use, improving waste management and recycling infrastructure, to promoting sustainable packaging alternatives. This collective commitment from SeaBOS companies contributes significantly to the broader vision of sustainable seafood production and a healthy ocean.

OUR ACTIONS
Our member companies are united in their commitment to reduce plastic pollution. Below is an overview of the actions taken by our member companies.

Adopted a Strategy for Reducing Plastics

Disclosed Plastic Consumption

5000 participants in Ocean Cleanup and 25 tonnes ocean plastic removed since 2021
SCIENCE OUTLOOK

Scope, scale and urgency of action
Plastics have become ubiquitous in the environment, including marine ecosystems. Over 300 million metric tons of plastic are produced annually, with nearly 80% expected to enter landfills or the natural environment. An estimated 170 trillion plastic particles are floating in the ocean today, while thirty times as much is thought to have accumulated in sediment on the seafloor. Macroplastics from fishing activities entangle and kill marine life and seabirds, and have also been found to be the most prevalent human debris on coral reefs (see Figure). Meanwhile, microplastics (less than 5 mm in length) have been identified in the bodies of 1,288 marine species including over 750 fish species. According to the 2017 FAO report on Microplastics in Fisheries and Aquaculture, even the “worst-case scenario” of plastic ingestion due to contaminated seafood remained far below allowable daily intake levels for well-studied contaminants such as PCBs, PAHs, DDT, Bisphenol A and PBDEs. Yet, consumers remain deeply concerned about microplastics in their food (e.g. 63% of respondents in a 2020 study by the German government).

Pathways forward
Companies can reduce the flow of plastic to the ocean by implementing comprehensive strategies that focus not just on recycling plastic waste, but systematically reducing use across the entire value chain. Advocating an overall reduction of plastic production and fully utilizing ocean cleanup efforts as a means of communication on broader issues of stewardship, responsibility and care for the environment can amplify the impact of such efforts. Since IUU fishing has also been correlated with incidences of abandoned, lost and discarded fishing gear, concerted efforts to address such activities represent an additional positive impact.

Figure. Distribution of anthropogenic debris on coral reefs of the world. Copyright © 2023, Pinheiro et al., under exclusive licence to Springer Nature Limited.

KEY PUBLICATIONS:

- Background brief on Microplastics in seafood
- Background brief on Ocean Plastic Pollution

We believe that our mission is to keep the ocean clean and protect marine resources for the future. One can make a small difference, but together as a group, we can make a much bigger difference.

Masaru Ikemi
President and CEO, Maruha Nichiro
CASE STUDIES
Every year, millions of tons of plastic enter the ocean, affecting ecosystems and overall ocean health. SeaBOS is working with the Ocean Cleanup to help mitigate this challenge, while implementing our City to Sea strategy to reduce plastic pollution from seafood operations.

Ocean Conservancy | SeaBOS Cleanup
Since 2021, over 5000 employees of SeaBOS member Companies have actively participated in ocean plastic cleanup activities, removing over 25 tonnes of polluting material globally.

City to Sea Framework
SeaBOS developed the “City to Sea” Framework, a comprehensive strategy targeting areas where the seafood industry can significantly reduce plastic pollution.

Japanese Company Collaboration
The three Japanese SeaBOS member companies - Nissui, Maruha-Nichiro and Kyokuyo - collaborated on a beach cleanup event in Tokyo in the summer of 2023. Over 200 staff members took part, including the three company CEO’s.

It was exceptional for three companies that compete, to come together and clean up plastic from the ocean.
Masaru Ikemi
President and CEO, Maruha Nichiro
Appendix – Member company disclosures

Appendix contains individual member Company data disclosures relating to SeaBOS goals for the 2022 annual period. Commentary is provided to describe the data, including comparison with the previous annual period. Footnotes are provided to describe measurement methods and any data limitations. For complete disclosure of individual member Company sustainability data, please refer to its recent sustainability reports via the link provided.
COMMITMENT IN ACTION: CARGILL

At Cargill Aqua Nutrition, we are at the center of aquaculture value chains, allowing us to positively impact the industry – from suppliers to customers and beyond. In 2022, our SeaFurther™ program demonstrated that with a regenerative agriculture pilot with UK suppliers that delivered a 1,000-tCO₂e reduction in emissions for a customer’s feed and fish. In 2023, we are delivering ten times more carbon savings for customers. In fishery supply chains we remain committed to certified sustainable sourcing and supporting FIPs across the globe, despite challenging market conditions. Through global partnerships we are accelerating our delivery of change in the value chains we work in.

Key initiatives
- A regenerative agriculture pilot with UK suppliers delivered a 1,000-tCO₂e reduction in emissions.
- Launch of the Fisheries Improvement Fund with Finance Earth and WWF in early 2023, aiming to deliver $100 million in investment in fisheries across the globe, despite challenging market conditions. Through global partnerships we are accelerating our delivery of change in the value chains we work in.
- Intensive human rights risk assessments launched in key supply chains.

Helene Ziv-Ouiki
President and CEO, Cargill Aqua Nutrition

Disclosures

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<thead>
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<td>Plastic management</td>
<td>In 2022, 99.05% of total feeds (by weight) were free from antibiotic treatment (2021, 99.15%).</td>
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<td>Active ingredient used</td>
<td>In 2022, on average, total feeds with antibiotics contained 26.3g active ingredient per tonne of feed produced (2021, 23.7g/t).</td>
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<tr>
<td>Antibiotic management</td>
<td>Cargill manages antibiotics by only adding to feeds upon receipt of a veterinary prescription and strictly following local laws governing treatment, dosage, and distribution. In addition, treated feeds are manufactured in such a way as to prevent cross-contamination with non-treated feeds or other pathways of product leakage.</td>
</tr>
<tr>
<td>Antibiotic Use¹</td>
<td>Cargill does not own, lease or manage operational sites in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.</td>
</tr>
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<td>Product not treated with antibiotics</td>
<td>Cargill is not aware of any IUCN Red List species and national conservation list species, or their habitats, affected by its own direct operations (factory locations).</td>
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<td>Active ingredient used</td>
<td>Cargill takes an ecosystem approach to fishery management in our supply chains, through the MSC certification scheme. We are engaged in five fishery improvement projects (FIPs) to improve fishery management, four at a basic level and one comprehensive FIP (Peru) which includes changing management approaches and fishing practices to reduce impact on predators including birds and marine mammals.</td>
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<td>Scope 1 GHG emissions were 57,399 tonnes in 2022 (2021, 57,334)</td>
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<tr>
<td>Scope 1 (GRI 305-1)</td>
<td>Location based scope 2 emissions were 19,218 tonnes in 2022 and market based scope 2 emissions were 16,071 tonnes (2021, 16,291 and 23,494)</td>
</tr>
<tr>
<td>Scope 2 (GRI 305-2)</td>
<td>Scope 3 GHG emissions were 985,038 tonnes in 2022 (2021, 1,037,168). All scope 3 categories were assessed, with the main emissions related to purchased goods and downstream transport (categories 1 and 9).</td>
</tr>
<tr>
<td>Scope 3 (GRI 305-3)</td>
<td>GHG Intensity (GRI 305-4) In 2021, GHG emission intensity (based on scope 1 and 2 emissions) was 357 kg CO₂e per tonne fish produced LWE (live weight equivalent) (2021, 317)</td>
</tr>
<tr>
<td>Climate management</td>
<td>Cermaq is working towards our Science Based Targets of 35% reduction across all three scopes. In the countries where we operate, we have assessed the possible reduction activities and implemented a number of electrification, hybridization and energy management projects. In our value chain we are focusing on working with our feed suppliers and transportation partners to identify options for emission reduction.</td>
</tr>
<tr>
<td>Plastic Pollution</td>
<td>Cernaq has implemented a number of plastic reduction, recycling and reuse initiatives, alongside awareness raising throughout its business. A plastic footprint project for salmon farming is being piloted based on the Responsible Plastic Management Standard (RPM standard) and EU plastic Strategy.</td>
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<tr>
<td>Plastic management</td>
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<tr>
<td>Antibiotic Use</td>
<td>Antibiotic use in Norway is almost non-existent, whereas a more challenging fish health situation exists in Canada and Chile. Data is reported on a country basis in the Cermaq annual report.</td>
</tr>
<tr>
<td>Active ingredient used</td>
<td>In 2022, fish were treated with 128 grams of antibiotic active ingredient per metric tonne of fish produced (2021 161g API/tonne LWE)</td>
</tr>
<tr>
<td>Antibiotic management</td>
<td>Our fish health research team is engaged in reducing the need for antibiotics through vaccine development in partnership with pharmaceutical companies. Alongside reducing antibiotic use to minimum effective doses, fish health is actively managed to identify and investigate pathogens, and ensuring any health risks are addressed at our freshwater facilities.</td>
</tr>
<tr>
<td>Endangered Species</td>
<td>Cernaq does not operate in protected areas as defined by the International Union for Conservation of Nature (IUCN). Cernaq operates some farming sites located in areas protected by national legislation.</td>
</tr>
<tr>
<td>Operating sites and natural areas (GRI 304-1)</td>
<td>A total of 65 (Norway 14 and Chile 51) IUCN Red List species or their habitats, are potentially affected by Cermaq’s operations. In Canada, there are 150 marine species identified as “Species of interest” by regulatory agencies that can be found in the general geographic locations of Canadian operations.</td>
</tr>
<tr>
<td>IUCN Red list species affected (GRI 304-4)</td>
<td>Cermaq installs preventive measures and monitoring to reduce the number of interactions with wildlife. Seabed samples must demonstrate that the fauna under the pen has been restored before new fish can enter. In Norway and Canada where salmon is a local wild species, Cermaq engages in wild salmon enhancement programs.</td>
</tr>
<tr>
<td>Biodiversity management</td>
<td>Cermaq is not directly involved in fishing activities. Our code of conduct for feed suppliers requires measures against IUU fishing and through partnerships we support actions and programs addressing IUU fishing.</td>
</tr>
<tr>
<td>IUU and Modern Slavery</td>
<td>Cermaq conducts regular risk assessments related to forced and compulsory risks for individuals in and around its operations. Some risks related to labour conditions in feed and equipment supply chains exist.</td>
</tr>
<tr>
<td>IUU management</td>
<td>Supplier social assessments (GRI 414-1) Cernaq conducts regular investigations, such as workplace audits, to assess working conditions in its own operations and its supply chain. No major new suppliers were engaged in 2022.</td>
</tr>
<tr>
<td>Risk assessments in own operations and supply chain (GRI 409-1)</td>
<td>Labour management</td>
</tr>
<tr>
<td>Supplier social assessments (GRI 414-1)</td>
<td>Cernaq has prioritized measures to reduce the risk of forced or compulsory labour, including conducting dialogues with suppliers regarding human rights violations and decent working conditions; updating contract terms that set requirements for labor rights and respect for human rights, and, requiring feed suppliers to meet the Aquaculture Stewardship Council (ASCO) Feed Standard, including for labour and human rights.</td>
</tr>
</tbody>
</table>

Key initiatives:

- To establish the plastic footprint of a salmon farming operation, Cermaq has registered all plastics used in a smolt facility, a sea site, and a processing plant over a one year period and is using this information to design plastic reduction strategies.
- Cermaq is cooperating with the University Austral in Argentina on using effluents from a salmon farming operation to improve mussel growing in a nearby facility.
- Cermaq is testing a new hybrid barge in Canada for GHG emission reductions, improved air quality and working conditions.

Steven Rafferty
CEO, Cermaq

Read the complete sustainability reporting disclosure here
COMMITMENT IN ACTION: CP FOODS

Protecting our Climate – “Take action towards positive environmental impact throughout our value chain”

Improving Quality Living of People – “Create positive social impact in the lives of Employees and individuals throughout our value chain”

Creating Prosperity Food – “Establish food security with products that promote health and well-being for consumer”

Key initiatives in 2022

• Developed probiotic feed to boost the animals’ immune system and keep them in good health from the inside out, yielding safe and high-quality products for consumers.

• Improve 3,000,000 livelihoods in communities connected to our business activities via various programs e.g. contract farming and Five star

• Commit to Net-zero carbon by 2050 by successfully implementing several programs e.g. contract farming and Five star

GHG Emissions

- Scope 1 (GRI 305-1)2 Scope 1 GHG emissions were 1,483,296 tonnes in 2022 (2021, 2,219,960). Location based scope 2 emissions were 1,197,647 tonnes in 2022 and market based scope 2 emissions were 43,378 tonnes (2021, 59,390 and 44,696).

- Scope 3 (GRI 305-3)2 Scope 3 GHG emissions were 4,412,000 tonnes in 2022.

Climate management

- In 2022, GHG emission intensity (based on scope 1 and scope 2 emissions) was 86 kg CO₂e per metric tonne of product (2021, 97).

Plastic Pollution

- Plastic management

CP Foods is committed to developing a value chain based on Circular Economy principles, efficiently using resources and minimizing packaging waste. We are aiming for 100% of the Company’s plastic food packaging to be reusable or recyclable or upcyclable or compostable by 2025 for Thailand operations and by 2030 for international operations.

Antibiotic Use

- Product not treated with antibiotics

In 2022, 100% of cultured shrimps in our own operations were raised without using antibiotics including the shrimp larvae hatchery and nursery business.

Endangered Species

- Operating sites and natural areas

CPF has conducted a biodiversity risk screening of 351 sites in Thailand which include both terrestrial and marine sites. The findings from the Critical Biodiversity Risk Screening revealed that 3 sites require further assessment to confirm if they are conclusively located in close proximity to critical biodiversity.

IUU and Modern Slavery

- IUU management

CPF does not own or operate fishing vessels and is not directly involved in vessel and sea operations. Currently, 100% of fishmeal used for the company’s feed production in Thailand has been sourced from the by-product of fish processing plants and is certified by the MarinTrust.

- Risk assessments in own operations and supply chain

A total of 632 CPF operational sites (14% of global total) present human rights risks, with five identified human rights issues. All identified sites have mitigation measures and remediation process in place. The Human Rights due diligence process also covers joint ventures as well as mergers & acquisitions.

Supplier social assessments

- (GRI 414-1)

100% of CPF’s Tier-1 suppliers (total of 8,014 suppliers) were assessed for human rights risks, including the risk of forced or compulsory labor. The 18.06% of CPF’s Tier-1 suppliers (1,447 out of 8,014 suppliers) assessed as having potential human rights risks have mitigation measures and remediation processes in place.

Labour management

- CPF treats its employees equally and fairly without discrimination, while fostering diversity and inclusion within the organisation. CPF adheres to ethical recruitment principles, with a particular focus on the related costs for which it is responsible and systematic monitoring of labour agencies for exploitation of migrants.

Prasit Boondoungprasert
President and CEO, Charoen Pokphand Foods

Read the complete sustainability reporting disclosure here

1. Calculated using Thailand Greenhouse Gas Management Organization (Public Organization) emission factors and an operational consolidation approach. 2. The figures are consolidated GHG inventory and intensity of all CP Foods’ businesses – feed mill, farm and processing plant for livestock and aquaculture. Aquaculture business is a part of entire CP Foods’ businesses.
COMMITMENT IN ACTION: DONGWON

2022 was an important year for ESG management for us. To strengthen our work, we reorganized the ESG Management Committee and set three core agendas and five strategic tasks that apply across the entire group. As the parent company of the Dongwon Group, Dongwon Industries is leading the way in sustainability in the fisheries industry by diagnosing its current position and setting sustainable goals. We will make this year a year to enhance the value of Dongwon in all aspects of economic, social, and governance by enhancing our ESG management. We will continue to work together with SeaBOS on the journey toward a sustainable ocean.

Key initiatives in 2022

• Calculated and established GHG emissions targets which complies with SBTI with a 42% reduction by 2030 and net zero by 2050
• Proactively engaged in traceability management, especially focusing on extending scope in MSC from Pacific Ocean to Indian and Atlantic Ocean.
• Dongwon Industries complies with all evolving regulations of international organizations, including WCPFC, ICCAT, IATTC, CCAMLR, and CCSBT, and continues to support environmental policies for sustainable development.

Dongwon supports and strives to comply with the principles of UN Global Compact. Dongwon has its own policy in protecting human rights of workers and eliminating any kinds of forced labour (available on our website) and it also complies with the ILO’s conventions.

Commentary

Dongwon Industries opposes any form of IUU (Illegal, Unreported, Unregulated) fishing and participates in the fight to eradicate IUU fishing. We support the relevant regulations adopted by fisheries organizations to combat IUU fishing by implementing VMS, making observer on-board mandatory and regularly training crew on regulations and IUU fishing cases.

Dongwon has a dedicated plastics management role withing the company (Total Plastic Officer), who is focused on the development and management of plastic reduction initiatives. Dongwon is replacing plastic fishing gear (FADs) with Bio-FADs. Nearly 70% of FADs have been replaced to date with a goal of 100% by 2025. Each BIO FAD equates to roughly 200 kg of avoided plastic. In 2022, Dongwon replaced plastic packaging by 83.8 tonnes compared to 2021. In November 2022, Dongwon signed an agreement with Hyundai Motor Company and Kia Motors to promote eco-friendly plastic recycling, and established a partnership to produce automobile parts through the reutilization of waste fishing nets.

GHG Emissions

Scope 1 GHG emissions were 240,270 tonnes CO2 equivalents in 2022 (2021, 257,179 tonnes).

Scope 2 GHG emissions were 11,427 tonnes in 2022 (2021, 11,285 tonnes).

Scope 3 GHG emissions were 565,492 tonnes in 2022 (2021, 563,545 tonnes). Scope 3 categories included 1-7, 9 & 12.

GHG intensity in 2022 was 23.29 tonnes/KRW 100 million (2021, 36.81 tonnes/KRW 100 million).

In 2020 Dongwon Industries declared its goal of carbon neutrality by 2050 and its plans to achieve the goal, including reduction targets and implementation plans. In addition, we are actively taking the lead in developing technologies to produce low-carbon products such as solar power solutions and advanced materials.

GHG Emissions

GHG Emissions 1

Scope 1 (GRI 301-1)

Scope 2 (GRI 301-2)

Scope 3 (GRI 301-3)

GHG Intensity (GRI 306-4)

Climate management

Plastic Pollution

Plastic management

Antibiotic Use

Product not treated with antibiotics

Active ingredient used

Endangered Species

Operating sites and natural areas (GRI 304-1)

IUCN red list species affected (GRI 304-4)

Biodiversity management

IUU and Modern Slavery

IUU management

Risk assessments in own operations and supply chain (GRI 409-1)

Supplier social assessments (GRI 414-1)

Labour management

2022 Data

GHG Intensity (GRI 305-4) GHG intensity in 2022 was 23.29 tonnes/KRW 100 million (2021, 36.81 tonnes/KRW 100 million).

Scope 3 (GRI 305-3) GHG emissions were 565,492 tonnes in 2022 (2021, 563,545 tonnes). Scope 3 categories included 1-7, 9 & 12.

Scope 2 (GRI 305-2) Location based scope 2 emissions were 11,427 tonnes in 2022 (2021, 11,285 tonnes).

Scope 1 (GRI 305-1) Scope 1 GHG emissions were 240,270 tonnes CO2 equivalents in 2022 (2021, 257,179 tonnes).

Labour management

Calculated using IPCC national inventory guideline by Korea Environment Corporation emission factors and an operational control consolidation approach

Endangered Species

Active ingredient used Not applicable.

antibiotics Not applicable.

Product not treated with antibiotics Not applicable.

Dongwon supports and strives to comply with the principles of UN Global Compact. Dongwon has its own policy in protecting human rights of workers and eliminating any kinds of forced labour (available on our website) and it also complies with the standards of the MSC and other global and local fisheries associations.

The Korean Ministry of Oceans and Fisheries (MOF), the Korea Overseas Fisheries Association (KOF), and the Overseas Fishery Labor Union conduct joint inspections every 3-months to ensure compliance with relevant labour laws and regulations.

1. Calculated using IPCC national inventory guideline by Korea Environment Corporation emission factors and an operational control consolidation approach
COMMITMENT IN ACTION: KYOKUYO

In Kyokuyo, we work to achieve our mission “Aiming to grow together with society, contributing to a healthy and happy lifestyle and food culture based on management of human respect.” In SeaBOS, our efforts are especially focused on ocean plastic reduction and preventing plastics such as fishing nets and buoys from flowing into the ocean from our operating activities. Reduction of plastic usage for packaging by our factories is also a priority. We have set a number of targets to reduce plastic usage for packaging by our factories in Japan in 2022, expanding to overseas factories in 2023. We will continue to openly disclose our efforts and the progress of our group to our stakeholders.

Key initiatives in 2022

- Statement of agreement for TCFD proposal and disclosure of information
- Reduction of plastic usage for packaging by our group factories.

Read the complete sustainability reporting disclosure here
As beneficiaries of the ocean's bounty, we have corporate responsibilities that go beyond mere improvements in productivity and profitability. We must help ensure that marine resources are used sustainably, keeping the seas and the rest of our environment healthy and beautiful for future generations. This determination is what drives us to seek new ways we can solve social challenges through our business activities. We embrace bold innovation as a foundation for sustainable growth and development to ensure that Maruha Nichiro Group will still exist a century from now – and beyond.

**Key initiatives in 2022**

- Second marine resources assessment of suppliers conducted, with the aim to achieve 100% confirmation of the resource status of seafood products handled by the entire Group by FY2030.
- Created a CO₂ emission reduction roadmap to work actively and systematically to further reduce CO₂ emissions.
- Issued Japan's first-ever Blue Bond.

<table>
<thead>
<tr>
<th>Disclosures</th>
<th>Commentary</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHG Emissions</strong></td>
<td>Scope 1 GHG emissions were 87,062 tonnes in 2022 (2021, 99,027)</td>
<td>87,062</td>
</tr>
<tr>
<td>Scope 2 (GRI 305-2)</td>
<td>Market based scope 2 emissions were 144,991 tonnes in 2022 (2021, 149,659)</td>
<td>144,911</td>
</tr>
<tr>
<td>Scope 3 (GRI 305-3)</td>
<td>Scope 3 GHG emissions were 20,430 tonnes in 2022 (Baseline)</td>
<td>6,199,068</td>
</tr>
<tr>
<td>GHG Intensity (GRI 305-4)</td>
<td>Not reported.</td>
<td></td>
</tr>
<tr>
<td><strong>Climate management</strong></td>
<td>Please refer to our TCFD reporting in our Annual Integrated Report (pp39-41)</td>
<td></td>
</tr>
<tr>
<td><strong>Plastic Pollution</strong></td>
<td>Reduction of plastic usage through switching to bioplastics, increasing volume of recycled materials and reduction in demand for plastics. Maruha Nichiro Corporation has set a plastic reduction target of 30% or more by 2030.</td>
<td></td>
</tr>
<tr>
<td><strong>Antibiotic Use</strong></td>
<td>Product not treated with antibiotics</td>
<td></td>
</tr>
<tr>
<td>Active ingredient used</td>
<td>Information withheld from public disclosure due to confidentiality constraints. Reported to SeaBOS.</td>
<td></td>
</tr>
<tr>
<td>Antibiotic management</td>
<td>Information withheld from public disclosure due to confidentiality constraints. Reported to SeaBOS.</td>
<td></td>
</tr>
<tr>
<td><strong>Endangered Species</strong></td>
<td>Three IUCN red list species are affected – Southern Blue Fin Tuna, Short Fin Mako shark and Beaked Redfish. Click here for further information.</td>
<td>3</td>
</tr>
<tr>
<td>Operating sites and natural areas (GRI 304-1)</td>
<td>Manuha Nichiro continuously uses the least amount of antibiotics necessary to ensure animal health. Antibiotics are prescribed by veterinarians and usage is determined by national regulation.</td>
<td></td>
</tr>
<tr>
<td>IUCN red list species affected (GRI 304-4)</td>
<td>Manuha Nichiro is a member of the Japan Business Initiative for Biodiversity, as well as participating in 30 by 30 Alliance for Biodiversity. In addition the Company is a partner member for the Tokyo Bay Restoration Eelgrass Project. Manuha Nichiro is working with the Sustainable Fisheries Partnership to mitigate impacts on affected species and improve the biological status of those species.</td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity management</strong></td>
<td>Maruha Nichiro is a member of the Japan Business Initiative for Biodiversity, as well as participating in 30 by 30 Alliance for Biodiversity. In addition the Company is a partner member for the Tokyo Bay Restoration Eelgrass Project. Manuha Nichiro is working with the Sustainable Fisheries Partnership to mitigate impacts on affected species and improve the biological status of those species.</td>
<td></td>
</tr>
<tr>
<td><strong>IUU and Modern Slavery</strong></td>
<td>Manuha Nichiro Group Supplier Guidelines require suppliers to eliminate IUU fishing and modern slavery in their operations.</td>
<td></td>
</tr>
<tr>
<td><strong>IUU management</strong></td>
<td>Manuha Nichiro Corporation has assessed 50.1% of its suppliers for social impacts, including the risk of forced or compulsory labour. We recognize that ensuring the health and safety of employees leads to improved productivity and employee awareness, and is essential for the sustainable growth of the company. In 2022, we worked to formulate the &quot;Maruha Nichiro Group Guidelines for the Employment of Foreign Technical Interns and Specified Skilled Foreigners&quot;.</td>
<td>50.1%</td>
</tr>
</tbody>
</table>

Human rights and labor practices have been surveyed at 292 factories in Maruha Nichiro's supply chain.

Risk assessments in own operations and supply chain (GRI 409-1)

Supplier social assessments (GRI 414-1)

Labour management

**Masaru Ikemi**
President and CEO, Maruha Nichiro
COMMITMENT IN ACTION: NISSUI

In 2022, the Nissui Group established a new mission, and set a long-term vision (Good Foods 2030) aiming to be a “leading company that delivers friendly foods both for people and the earth” by 2030. Our new mission expresses our continuing commitment toward the future, and we want to leverage the business foundations which have been built by our Fisheries Business to deliver innovative food solutions. Sharing this aspiration as our new mission, we hope to develop innovative food solutions globally which can enrich our lives and help solve social issues.

Key initiatives in 2022

- We have conducted the survey of our procured marine products as whole Nissui Group in order to understand the status of resource and identify the issues to be addressed.
- We have set the policy of procurement in terms of marine products related to endangered species following advice of relevant NGO and specialists.
- We have set the revised Suppliers Guideline and are working on introducing the Grievance Mechanism in order to secure the sustainable supply chains.

Shingo Hamada
President and CEO, Nissui

Read the complete sustainability reporting disclosure here

Disclosures

GHG Emissions

- Scope 1 (GRI 305-1)
- Scope 2 (GRI 305-2)
- Scope 3 (GRI 305-3)
- GHG Intensity (GRI 305-4)
- Climate management

Plastic Pollution

- Plastic management

Antibiotic Use

- Product not treated with antibiotics
- Active ingredient used

Endangered Species

- Operating sites and natural areas (GRI 304-1)
- IUCN red list species affected (GRI 304-4)
- Biodiversity management

IUU and Modern Slavery

- IUU management
- Risk assessments in own operations and supply chain (GRI 409-1)
- Supplier social assessments (GRI 414-1)
- Labour management

2022 Data

- GHG Emissions: 197,713 t CO2e
- Climate management: 0.42 tonnes CO2e per ton of production volume
- Antibiotic Use: 307g/t
- Endangered Species: 7 species
- IUU and Modern Slavery: Supplier Guidelines revised

Commentary

- Scope 1 GHG emissions were 197,713 t CO2e in 2022 (2021, 207,252).
- GHG emission intensity based on Scope 1 and 2 emissions was 0.42 tonnes CO2e per ton of production volume in 2022.
- In 2022, fish were treated with 307 grams of antibiotic active ingredient per metric tonne of biomass produced (2021, 229g/t).
- We have conducted collaborative program with three Japan companies, relevant authorities and a pharmaceutical company to develop new vaccines.
- Nissui has introduced a grievance mechanism for our foreign workers in Japan. Mechanism is accessible on all fishing boats of Nissui group companies for their foreign crew members.

1. Calculated using IEA emission factors used and a financial control consolidation approach.
2. Reported data includes salmon and trout farming. Data of other farmed species are not reported.
3. Information withheld from public disclosure due to confidentiality constraints.
Disclosures

GHG Emissions\(^1\)

| Scope 1 (GRI 305-1) Scope 2 (GRI 305-2) Scope 3 (GRI 305-3) GHG Intensity (GRI 305-4) Climate management |
|---|---|---|---|---|
| Scope 1 GHG emissions were 160,218 tonnes carbon dioxide equivalents (t CO₂e) in 2022 (2021, 148,000). Location based scope 2 emissions were 49,108 t CO₂e in 2022 (2021, 38,000). Market based scope 2 emissions will be reported from 2023 onward. Scope 1 & 2 emissions have increased 23% from 2018 – 2022. Scope 3 GHG emissions were 4.81 million t CO₂e in 2022. Scope 3 emissions have increased 16% from 2018 – 2022. In 2022, GHG emission intensity was 1.92 t CO₂e/ per ton of feed produced (2021, 2.08) |

Plastic Pollution

Plastic management

By 2025, Skretting has the ambition to make 100% of its packaging either recyclable, reusable or compostable.

Antibiotic Use

Product not treated with antibiotics

Active ingredient used

In 2022, Skretting used less than 2,000 kg of CIA active ingredient (2021, 2,137). All of the feeds sold were prescription based.

Antibiotic management

All of Skretting’s medicated feed sales are based on a veterinary prescription with a valid clinical diagnostic, and are produced under controlled, high-quality conditions in separate production lines to avoid the risk of contaminating standard feed. By 2025 Skretting has the ambition of not using antibiotics that are listed in the World Health Organisation’s overview of Critically important antimicrobials for human medicine (CIA) (6th revision).

Endangered Species

Operating sites and natural areas (GRI 304-1)

IUCN red list species affected (GRI 304-4)

Biodiversity management

Skretting is not aware of any operational sites it has in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.

Skretting is not aware of IUCN Red List species and national conservation list species with habitats in areas affected by direct Skretting operations (factory locations).

Skretting is aligned with the SeaBOS Endangered Species Strategy which puts science-based and operational measures in place that, when combined, substantially reduce the risk of harm to endangered elasmobranch (sharks & rays) and seabird species from our own operations; and substantially reduce the risk of harm to these species in operations which are part of our supply chains.

IUU and Modern Slavery

IUU management

Risk assessments in own operations and supply chain (GRI 409-1)

Supplier social assessments (GRI 414-1)

Skretting has a Marine Ingredients Sourcing Policy in place with the ambition of sourcing products that are 100% certified or coming from a Fishery Improvement Project by 2025. The document has a specific section addressing the how to handle the risk of marine ingredients originating from IUU fishing activities.

According to its Marine Ingredients Sourcing Policy, Skretting assessed significant risks for forced or compulsory labour in its supply chain in the following countries: Philippines, Thailand, India, China, Iran, Russia, Mauritania, Mexico, Vietnam, Indonesia and Pakistan. The list will be continuously revised and updated.

Through EcoVadis, suppliers cumulatively contributing to 66% of Skretting’s spend have been assessed, highlighting 33 high-risk suppliers. The risks analysed are environmental, labour and human, ethics and sustainable procurement.

2022 Data

<table>
<thead>
<tr>
<th>GHG Emissions</th>
<th>Commentary</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>160,218</td>
<td>Scope 1 GHG emissions were 160,218 tonnes carbon dioxide equivalents (t CO₂e) in 2022 (2021, 148,000). Location based scope 2 emissions were 49,108 t CO₂e in 2022 (2021, 38,000). Market based scope 2 emissions will be reported from 2023 onward. Scope 1 &amp; 2 emissions have increased 23% from 2018 – 2022. Scope 3 GHG emissions were 4.81 million t CO₂e in 2022. Scope 3 emissions have increased 16% from 2018 – 2022. In 2022, GHG emission intensity was 1.92 t CO₂e/ per ton of feed produced (2021, 2.08)</td>
<td>160,218</td>
</tr>
<tr>
<td>49,108</td>
<td>Skretting has adopted Science-Based Targets. It is committed to reducing its Scope 1 and 2 emissions by 30% and its Scope 3 emissions by 39%, by 2030, compared to 2018 as a baseline.</td>
<td>49,108</td>
</tr>
<tr>
<td>4,810,000</td>
<td>Skretting has the ambition to make 100% of its packaging either recyclable, reusable or compostable.</td>
<td>4,810,000</td>
</tr>
<tr>
<td>1,92</td>
<td>Skretting has the ambition of not using antibiotics that are listed in the World Health Organisation’s overview of Critically important antimicrobials for human medicine (CIA) (6th revision).</td>
<td>1,92</td>
</tr>
</tbody>
</table>

COMMITMENT IN ACTION: THAI UNION

Since its introduction in 2016, Thai Union’s SeaChange® global sustainability strategy has delivered real and lasting changes in the way we operate, from improving seafood traceability and reducing GHG emissions, to advancing ethical labor standards and supporting communities affected by natural disasters and the pandemic. In support of our corporate goal “Healthy Living, Healthy Oceans” and the SDGs, SeaChange® will continue to drive a positive transformation across the global seafood industry through our commitments and programs in Safe & Legal Labor, Responsible Sourcing, Responsible Operations, and People and Communities.

Key initiatives
- Thai Union’s new SeaChange® 2030 Sustainability Strategy launched, including targets and work programs for critical environmental and social issues
- Established GHG emissions targets verified and approved by SBTi with a 42% reduction by 2030 and net zero by 2050
- Entered a partnership with Sustainable Fisheries Partnership and now 81% of tuna sourced by Thai Union is certified by MSC or from a supplier engaged in a FIP towards MSC certification

Thiraphong Chansiri
President and CEO, Thai Union

Read the complete sustainability reporting disclosure here