



2025 Green Bond Impact Report

September 2026

Green Bond Impact Report

In accordance with the SpareBank 1 Nord-Norge ("SNN") Green Finance Framework 2024, this document provides:

1. A description of Green Loans
2. The breakdown of Green Loans by nature of what is being financed
3. Metrics regarding Green Loans' environmental impacts

1. Description of Green Loans

SNN intends to allocate the net proceeds of the green finance instruments to a portfolio of new and existing loans in the following categories:

- Green Buildings
- Renewable Energy
- Clean Transportation
- Environmentally Sustainable Management of Living Natural Resources and Land Use

Eligibility Criteria to select the Eligible Green Loan Portfolio are set out in the SNN Green Finance Framework¹. Such Eligibility Criteria are aligned on a best effort basis with the criteria in the EU Taxonomy Climate Delegated Act² for relevant sectors.

SNN has relied on the support of an external consultant (Norconsult ASA) to provide the impact calculations and output for the following categories: Green Buildings, Renewable Energy and Clean Transportation.

2. Breakdown of Green Loans by nature of what is being financed

100% Financial Assets

3. Metrics regarding Loans' environmental impacts

Portfolio-based reporting is prepared in accordance with the ICMA Handbook Harmonized Framework for Impact Reporting (version June 2026)³.

¹ See [here](#) for 2024 SNN Green Finance Framework

² To be found [here](#)

³ To be found [here](#)

Impact overview

Portfolio date: 31 December 2025

Eligible Project Category	Eligible Project Subcategory	Eligible portfolio (NOK m)	Share of Total Financing	Eligibility for Green Bonds	Estimated Annual Energy Savings (in MWh/year) ⁴	Estimated renewable energy produced (GWh/year)	Direct emissions avoided vs baseline in tonnes of CO ₂ e/year (Scope 1) ⁴	Indirect emissions avoided vs baseline in tonnes of CO ₂ e/year (Scope 2) ⁴	Estimated annual reduced emissions (tons of CO ₂ e/year) ^{5 4}	% of fishery stocks with biomass at or above sustainable levels	Other qualitative relevant KPIs
a/	b/	c/	d/	e/	f/	f/	f/	f/	f/	f/	f/
Green Buildings	Residential	9,497	49.95%	100%	9,988.5	/			1,913.9	/	/
	Commercial	1,587	8.35%	100%	11,615.8	/			2,013.7	/	/
Clean Transportation	/	1,900	9.99%	100%	/	/	12,546.2	-151.3	10,137.6	/	/
Renewable Energy	/	2,172	11.42%	100%	/	1,946	/	/	350,553	/	/
Environmentally Sustainable Management Of Living Natural Resources and Land Use	Fisheries (MSC Certification)	2,103	11.06%	100%	/	/	/	/	N/A	+ 24.5% vs Norway	See appendix
	Aquaculture (Global. G.A.P. and ASC Certification)	1,755	9.23%	100%	/	/	/	/	0.28 (vs chicken) 0.7 (vs pork) 5.32 (vs beef) ⁶	/	See appendix
Total		19,013	100%	100%	21,604.3	1,946	12,546.2	-151.3	364,617	+ 24.5% vs Norway	

Portfolio based Green Bond report in accordance with the ICMA Handbook Harmonized Framework for Impact Reporting (version June 2026)

a/ Eligible category under the ICMA Green Bond Principles and LMA Green Loan Principles

b/ Eligible sub-category

c/ Signed amount represents the amount legally committed by the issuer for the portfolio or portfolio components eligible for Green Bond financing

d/ This is the share of the total portfolio that is financed by the issuer

e/ This is the share of the total portfolio costs that is Green Bond eligible

f/ Impact indicators:

- Estimated Annual Energy Savings (MWh/year)
- Estimated renewable energy produced (GWh/year)
- Direct and indirect emissions avoided in tons of CO₂e/year (Clean Transportation only)
- Estimated annual reduced emissions in tonnes of CO₂e/year
- % of fishery stocks with biomass at or above sustainable levels

Note: for certification schemes, the impact is shown at certification level rather than SNN portfolio level due to data availability

⁴ Reported at the underlying asset level. Impact scaled by bank's share of financing is available in the Norconsult impact report found [here](#)

⁵ All reduced/avoided emissions figures are calculated using the European consumption mix. Impact is also provided based on Norwegian consumption mix and Norwegian residual mix in the Norconsult report, available [here](#)

⁶ CO₂ intensity avoided for fish farming compared to other protein sources (g CO₂eq per typical serving (40g))

i. Green Buildings

Methodology Note

Impact calculations are based on information on building category, heated floor area, year of construction, EPC label, calculated energy demand and the bank's financing share. Where the dataset may be incomplete, methodological assumptions are applied.

For the calculation of energy savings, a benchmark energy demand has been established based on the average energy demand of buildings within the same building category and constructed under the same Norwegian building regulations (TEK), determined by the year of construction.

Energy savings are converted into avoided GHG emissions using building category specific emission factors derived from the Norwegian EPC database. Impacts are reported under both the Norwegian and European electricity consumption mix scenarios using emission factors published by NVE.

All impact calculations have been prepared by Norconsult, available [here](#)

Green Residential Buildings

The table below provides an overview of the gross floor area qualifying under the evaluated criteria

Building Category	NZEB – 10%	EPC A / Top 15%
Block of flats [m ²]	31,876	111,640
Small houses and leisure homes [m ²]	33,966	331,189
Total	65,842	442,829

Impact of the residential buildings in the bank's green portfolio is estimated as shown below:

Building Category	Annual Energy Savings [MWh]		Annual GHG emissions avoided [tonne CO ₂ e]	
	Total	Scaled by bank's share of financing	Total	Scaled by bank's share of financing
Small houses and leisure homes	9,069.2	4,701.0	294	152.4
Block of flats	919.3	406.7	30.7	13.6
Total	9,988.5	5,107.7	324.6	166
Total (EU consumption mix)			1,913.9	980.6
Total (Norwegian residual mix)			4,968.1	2,546.2

Green Commercial Buildings

Overview of the gross floor area of the portfolio qualifying under the evaluated criteria

Building Category	NZEB – 10%	EPC A / Top 15%
Office building [m ²]	-	26,146
Hotel building [m ²]	-	21,283
Sports Building [m ²]	-	10,510
Commercial building [m ²]	5,174	66,407
Light industry/workshop [m ²]	-	39,428
Total [m²]	5,174	163,774

Impact of the commercial buildings in the bank's green portfolio

Building Category	Annual energy savings [MWh]		Annual GHG emissions avoided [tonne CO ₂ e]	
	Total	Scaled by bank's share of financing	Total	Scaled by bank's share of financing
Office building	820.9	386.3	22.6	10.6
Hotel building	560.2	273.4	17.1	8.4
Sports Building	183.2	121.5	6	4
Commercial building	6,704.9	4,362.2	177	115.2
Light industry/workshop	3,346.5	1,717.1	150.1	77
Total	11,615.8	6,860.5	372.8	215.1
Total (EU consumption mix)			2013.7	1190.9
Total (Norwegian residual mix)			5,177.0	3,071.9

ii. Renewable Energy

Methodology Note

As of 2025, the renewable energy portfolio comprises hydropower plants and wind power plants.

Avoided GHG emissions are estimated using a baseline referenced approach by comparing the emission intensity of renewable electricity generation with the EU and Norwegian electricity consumption mixes. As well as the Norwegian residual mix.

All impact calculations have been prepared by Norconsult, available [here](#)

The overview of the renewable power plants in the bank's green portfolio

Type of plant	Capacity [MW]		Estimated production [GWh/year]	
	Total	Scaled by bank's share of financing	Total	Scaled by bank's share of financing
Hydropower	421.8	57.7	1,270.9	173.9
Windpower	206.4	22.4	675.1	73.2

The reduction of GHG emissions for renewable power plants compared to baseline emissions

	Reduction of GHG emission compared to Baseline [g CO ₂ eq/kWh]		
	EU consumption mix	Norwegian consumption mix	Norwegian residual mix
Hydropower	6	185	529
Windpower	-8	171	515

Overview calculated impact of the bank's renewable energy assets

	Expected reduced GHG emission compared to baseline [g CO ₂ eq/kWh]		
	EU consumption mix	Norwegian consumption mix	Norwegian residual mix
Total	350,553	2,225	1,019,965
Scaled by bank's share of financing	44,689	458	129,691

iii. Clean Transportation

Methodology Note

Avoided GHG emissions are calculated by comparing the **direct emissions (Scope 1)** from comparable internal combustion engine vehicles (ICEs) and the **indirect emissions related to electric power production (Scope 2)** from financed electric vehicles.

Baseline emission factors for ICEs are derived from the average emission intensity of the displaced vehicle fleet, based on the distribution of diesel and petrol vehicles in the Norwegian vehicle fleet and fuel specific emission factors

Indirect emissions from electric vehicles are estimated using average vehicle energy consumption data published by Statens vegvesen, together with electricity emission factors for the Norwegian and EU electricity consumption mixes.

All impact calculations have been prepared by Norconsult, available [here](#)

Estimated driving distances of the vehicle portfolio:

Category	Number of vehicles	Estimated driving distance [million km/year]	Estimated driving distance [million pkm/year]
Passenger vehicles	5,735	65.1	110.7
Van	245	3.2	4.8
Truck	15	0.5	-
Bus	23	0.8	9.1
Total	6,065	69.7	124.6

Calculated reduction of GHG emissions associated with the bank's electric vehicle portfolio:

Category	Avoided GHG emissions [tonne CO2e]	Avoided GHG emissions scaled by bank's share of financing [tonne CO2e]
Direct emissions	12,546.2	8,559.7
Indirect emissions	-151.3	-107.7
Total	12,394.9	8,452.0
Total (EU consumption mix)	10,137.6	6,844.9
Total (Norwegian residual mix)	5,799.6	3,765.5

iv. Impact of Environmental Certification Schemes

Comment

The impact description and data for the MSC certification were delivered by MSC. A combination of quantitative and qualitative (through case studies) impact assessment is provided in this section.

Fisheries – MSC

Context and background

Fisheries and associated business represent work and income for an estimated 260m people, 2.4 billion people are dependent on seafood as their prime source of animal protein. Simultaneously the UN food and Agricultural Organisation (FAO) estimates that 37,7% of key stocks is in an overfished state⁷. The proportion of overfished key stocks is unfortunately growing. Overfishing and ecosystem degradation have profound impacts on global food security, jobs and trade.

Root causes for the dire situation of many fisheries are poor fisheries management, where public authorities legally allow more fishing than scientifically recommended; poorly controlled fisheries leading to Illegal, Unreported, Unregulated (IUU) activities; and/or failure to effectively share marine resources across borders when stocks migrate internationally. Overcapacity in global fishing fleets relative to the ability of stocks to replenish themselves remains one of the biggest drivers of the global overfishing problem.

The MSC

The Marine Stewardship Council (MSC) is a global, mission driven not-for-profit organisation aiming to contribute to the health and recovery of marine resources, for all that depends on it. The MSC is the world leading standard setter for sustainable wild capture seafood. It is a public education charity registered in the UK and active in 23 countries via its branch offices, with projects in 100 countries.

The MSC developed, owns and maintains the worlds most recognised and credible global sustainability standard for wild capture fisheries⁸. It also developed and operated an improvement program – supporting fisheries to achieve sustainable performance levels, and it owns and maintains a Chain of Custody standard to assure that MSC certified seafood can be traced back to the certified source. Finally, the MSC owns an eco-label which retailers and brands can use at a voluntary basis on seafood products.

The MSC program is the worlds most used independent verification of sustainability of wild caught seafood. It was recognised as a key indicator by the UN convention on Biological Diversity⁹, as well as in the preparatory papers for the UN Sustainable Development Goal (SDG) nr. 14 'Life Below Water' as a credible benchmark which governments and companies could use to measure and track sustainability performance.

The global fisheries sustainability challenge and finance

Capital is a key driver of capacity to fish, process, and trade seafood. Ideally access to capital and financial services is cheaper and easier for companies operating in sustainable well managed fisheries, or trading seafood from sustainable fisheries. Capital and financial services for entities engaged in fishing, processing or selling seafood from origins which is not demonstrably sustainable, should only be available under strict, independently verified and time-bound, recovery conditions.

In September 2019 SpareBank Midt- Norge (SMN) issued its first green bond¹⁰ followed by SpareBank 1 Nord-Norge. This was the first green bond issued worldwide which used certification

⁷ [The State of World Fisheries and Aquaculture](#)

⁸ <https://www.msc.org/standards-and-certification/fisheries-standard>

⁹ [MSC an official biodiversity indicator partner for a second Aichi Target | Marine Stewardship Council](#)

¹⁰ [SpareBank 1 SMN set to offer Norwegian fish-flavoured benchmark – Green, Social and Sustainability Bonds](#)

against the MSC sustainable fishing standard as an indicator of sustainability for investors. It was an important milestone for the sustainability of fisheries. This initiative does not just deliver added value in Norway for companies demonstrably harvesting, processing and selling sustainable seafood, it sets a pathway for the finance industry. It shows that the finance community starts recognising its responsibility, and that it has a fundamental role to play to drive a turnaround of what today is still an unsustainable production and consumption system in many places.

Status update on Fisheries: MSC in Norway and the world

Globally wild-capture fisheries legally harvested an estimated 90 million metric tons in 2024 according to the FAO. A proportion of ~ 16% of that global catch is certified against the MSC standards for sustainable fishing

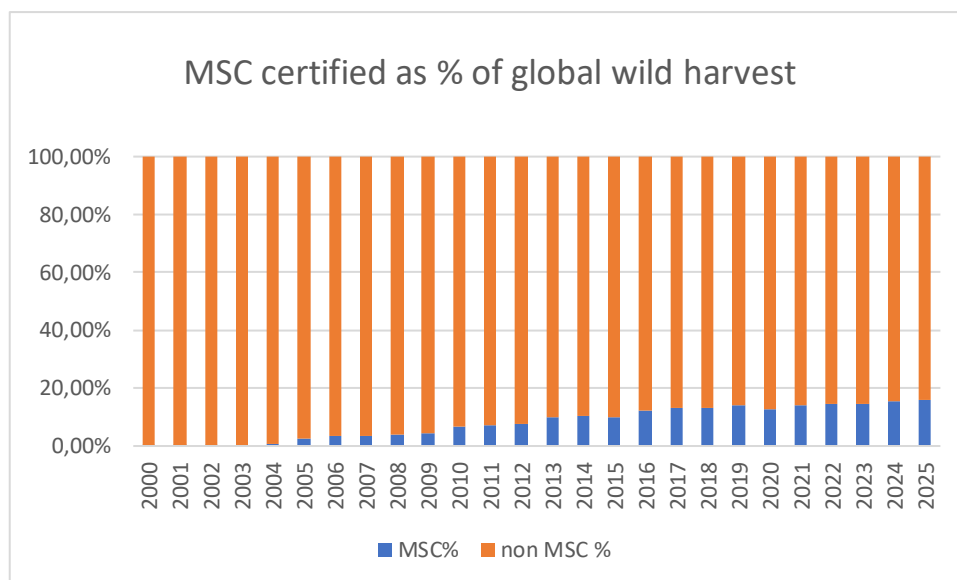


Figure 1: Global catch and estimate % in MSC program as certified 2025

The 16% MSC certified fisheries represent the best-managed part of the global fishing industry. Looking at engagement in the MSC program from a worldwide perspective, figure 2 below shows there is a long way to go in the majority of the world:

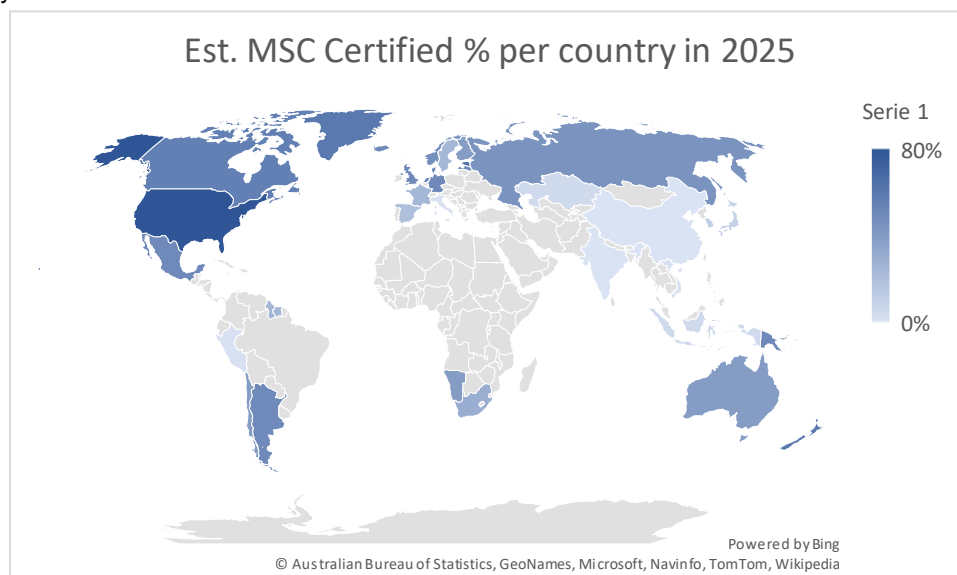


Figure 2: estimated % of catch MSC certified per country, Norway has Ca. 47% of its harvest MSC certified in 2025

Stocks targeted by MSC certified fisheries have *full reproductive capacity, impacts of operations on the ecosystems are well understood and minimised, and the management system for such fisheries is ensuring it stays that way.*

In terms of stock status, data from the UN FAO shows a worrying trend over the past decade. An increasing % of fish stocks for which data is available is in an overfished state or depleted. In its latest global update in 2024, the FAO reported that 37,7% of stocks was over-exploited or depleted¹¹.

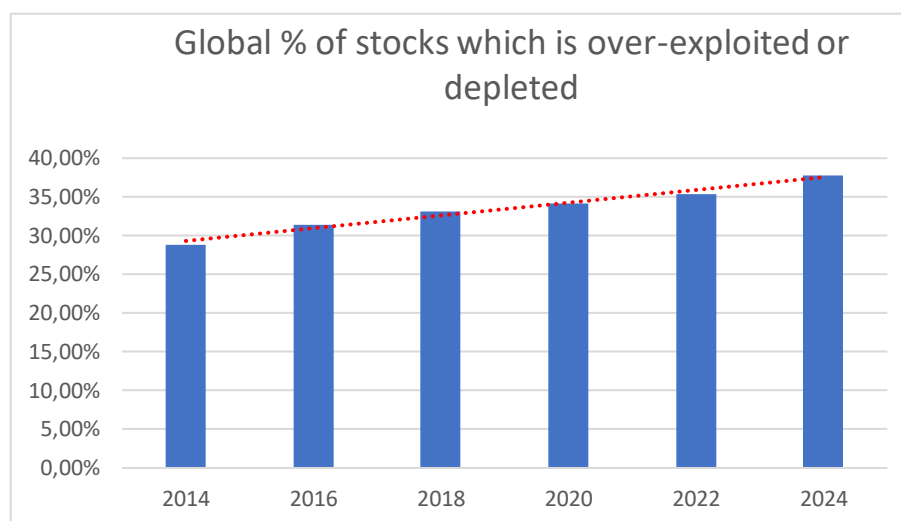


Figure 3: Global % of stocks which is over-exploited or depleted over time, 2024 SOFIA FAO

Comparison between stocks for which biomass estimates are available in Norway (based on ICES or IMR/PINRO Stock assessment and advice reports 2025, where possible), the world (based on FAO SOFIA 2024) and MSC Certified stocks in Norway as subset from Norway (ICES, IMR/PINRO, Norwegian Directorate of Fisheries 2025, and MSC fisheries datahub 2026), shows that stocks of MSC certified fisheries in Norway are higher, compared to the world and to 'all key stocks fished in Norway in 2025'.

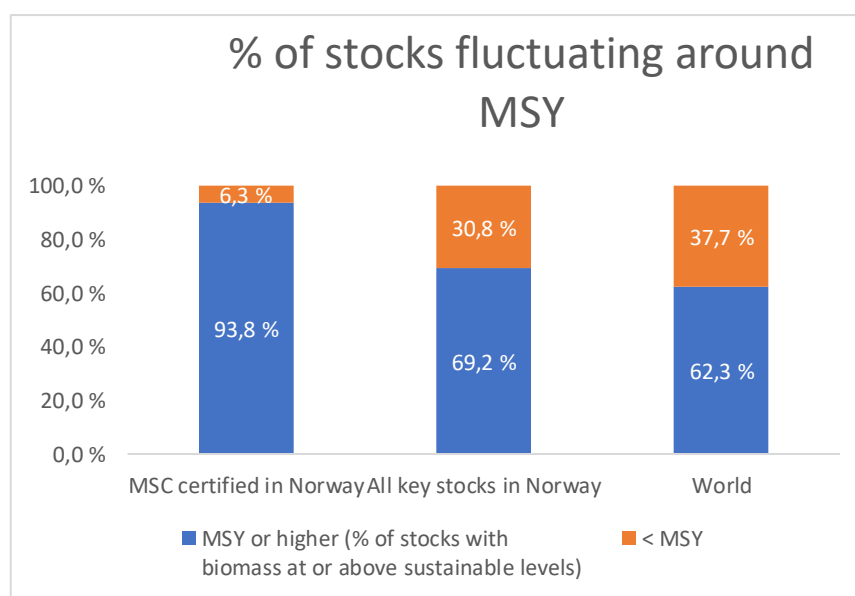


Figure 4: % of stocks with high and low biomass

93,8% of stocks of MSC certified (non-suspended) fisheries in Norway have sustainable biomass, 69,2% of all key stocks fished were estimated to have sustainable biomass in Norway in 2025. 62,3% of stocks are estimated to have sustainable biomass worldwide by FAO. Norway is thus doing better than the 'rest of the world' on average,

¹¹ Extracted from FAO Sofia publications for consecutive years at FAO webpages. [The State of World Fisheries and Aquaculture \(SOFIA\) - Towards blue transformation \(fao.org\)](https://www.fao.org/state-of-world-fisheries).

and stocks of its most important commercial species certified against the MSC standards are good condition. It is important to note that for some stocks where biomass is currently estimated as low by science, management has set lower quota, or even closed the fisheries to preserve it for ecosystem needs, or to facilitate stock recovery.

What is also important is that sustainable fishing entails much more than just high biomass. Impacts of the fishery on the wider environment, the amount of fish taken from a stock, compliance with regulation (legality) and the capacity – and acting – of authorities to manage the fisheries' impacts, all play a key role too. MSC certification covers all these aspects, and annually tests through its 3rd party assurance system if performance is (and has remained) good.

Use of MSC in Norway:

The MSC standards are effectively used by fisheries in Norway to demonstrate sustainability. Table 1 below shows that Norway is ahead of the global performance, in terms of being able to demonstrate independently that fisheries are meeting the MSC standards.

Indicator	Norway	World ex-Norway	World
▪ Seafood (tonnes) covered by MSC certification in 2024	1,019,253	13,237,968	14,257,221
▪ % of seafood volume (wild catch) covered by MSC certification in 2025, out of the total volume of seafood (wild catch) produced	47.0 %	15.1 %	15.7 %
▪ Number of fisheries (UoCs) covered by MSC certification (non-suspended) in a particular year out of the total number of fisheries in the MSC program.	47	1,221	1,268
Indicator	MSC certified in Norway	All key stocks in Norway	World
MSY or higher (% of stocks with biomass at or above sustainable levels)	93.8 %	69.2 %	62.3 %
< MSY	6.3 %	30.8 %	37.7 %

Table 1

MSC certification signifies high sustainability performance. Table 2 shows the assumed 'certification benefit', based on the likelihood that a randomly picked key commercially exploited stock in Norway was estimated at sustainable level (MSY or higher) in 2025. The % of healthy stocks was significantly higher for stocks covered by MSC certification (93.8%) vs 'all key stocks in Norway' (69.2%) or the 'world' (62.3%). That implies a 24.5% difference between MSC certified Norway and non MSC certified categories in Norway, and a 31.5% difference between MSC certified stocks in Norway and the world.

MSC certification benefit	
Difference MSC Norway with world	31.5 %
Difference MSC Norway with non MSC Norway	24.5%

Table 2

Impacts with MSC in Norway in 2025:

In a global context, fisheries management in Norway is functioning comparatively well. Yet, even in a well-off state like Norway improvements are needed in fisheries management. Operationally, fisheries can on many occasions reduce impacts to assure sustainability thresholds are not exceeded.



The MSC standards are used as a tool to identify where such improvements are needed. Recognition of Norwegian fisheries as MSC certified, delivers value from the market to these fisheries, and creates incentives to make improvements. This is MSC's Theory of Change (ToC).

Certified fisheries in Norway had 23 'open' conditions for improvement in the MSC program at end of April 2026, over the past year 3 conditions were closed, and several fisheries were suspended, hence open-conditions were not counted as part of the 2026 data. Most relate to improving the monitoring of (interaction of fisheries) with ETP species and habitats. Some related to development of, or application of, harvest control rules. Suspensions of lumpfish, ling and tusk related to conditions not being closed out in time.

Figure 5: MSC Theory of Change: [msc.org/what-we-are-doing/our-approach/](https://www.msc.org/what-we-are-doing/our-approach/)

Challenges in Norway in 2025:

While the overarching MSC ToC works, and the Norwegian fishing industry is in the process of addressing its open conditions, to deliver sustainability improvements, during 2025 the MSC also observed non-addressed challenges in Norway's fisheries (management) performance. Several new challenges emerged as well. Stock assessments for key commercial species harvested in Norway published in the course of 2025, showed that species such as Northsea Herring, Greenland Halibut in Barents and Norwegian seas, Saithe in the Northsea and Cod in the Northeast arctic, and in particular Northeast Arctic Mackerel are in need of more careful harvesting to either avoid stocks dropping under MSY levels, and/or ensuring recovery to stock to levels where MSY can be produced.

The combined TACs and catches of mackerel, Atlanto-scandian herring and blue whiting *continued* to exceed ICES advice heavily, which especially for Mackerel is driving serious risks for the stock now it dropped <Blim. This is not compatible with best-practice fisheries management, nor sustainable in the long-run according to ICES advice. As a consequence, the majority of Norway's pelagic fisheries have been either suspended or lost their MSC certificates over the past 5 years. Reduced productivity and associated reduced catching opportunities will inevitably affect the livelihoods and business opportunities of many (companies) in Norway.

Companies involved in catching, processing and exporting these pelagic species in Norway, will also face increasing risks for their reputation and may experience serious impacts in the market¹². A broad group of retailers and brands in Europe have made it clear that if the problems are not resolved, and sustainable management is not delivered in specified timeframes, they would reconsider their purchasing decisions of herring, mackerel and blue whiting.

¹² [Waitrose to suspend mackerel sales due to overfishing concerns](#)

Comment

Due to lack of quantitative data, the impact of ASC certified salmon farming is prepared in a qualitative manner.

This section is curated based the ASC website.

Aquaculture – ASC

Context and background on ASC certification

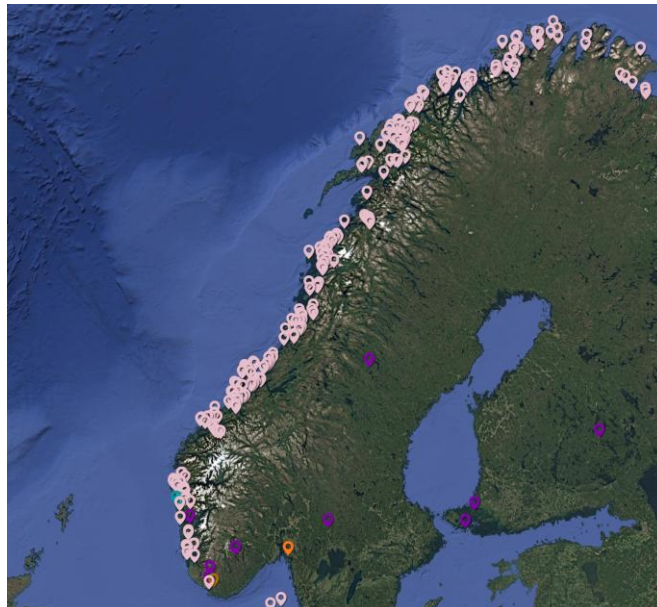
Fish happens to be one of the most efficient converters of feed into high quality food, it has a lower carbon footprint and uses fewer resources than other animal production systems¹³. However, traditional methods of wild capture fishing can't possibly meet the demand. Nearly 90% of global marine fish stocks are fully exploited, overexploited, or depleted¹⁴. Even with sustainable practices, marine fishing has reached the limit of its supply.

The Aquaculture Stewardship Council (ASC) is an independent non-profit labelling organisation that establishes protocols on farmed seafood while ensuring sustainable aquaculture. The ASC provides sustainable and responsible aquaculture producers with a stringent certification and labelling scheme guaranteeing to consumers that the seafood they are purchasing is sustainable for the environment, and socially responsible.

ASC in Norway for salmon farming

ASC certified Norwegian salmon running yearly production volume as per April 2026 stood at 468,000 tonnes.¹⁵

Location of ASC certified farms in Norway:

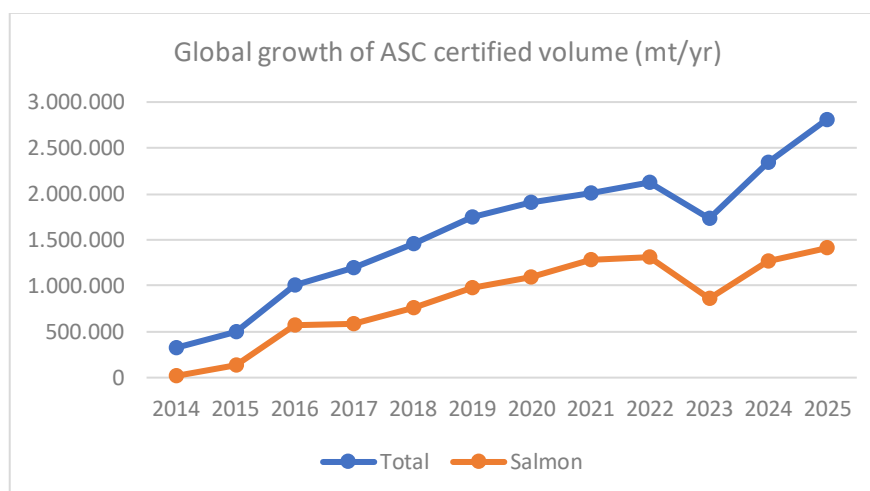


¹³ Source: Béné, C., Barange, M., Subasinghe, R. et al. Feeding 9 billion by 2050 – Putting fish back on the menu. Food Sec. 7, 261–274 (2015), see [here](#)

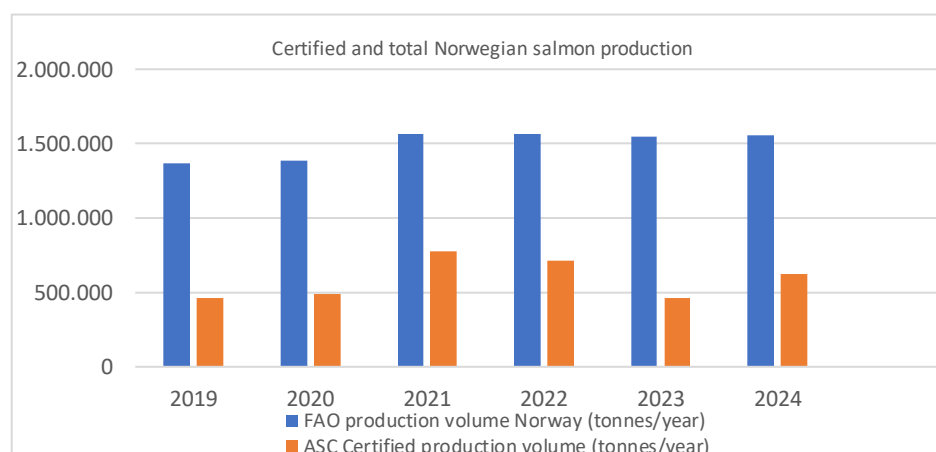
¹⁴ [Global Response to Overfishing and the Role of Geneva – Geneva Environment Network](#)

¹⁵ [Our impact - ASC International](#)

The production volumes are derived from when the farm is third party audited, and takes into account factors such as the current biomass, the last harvest volume, and the hectare area of the cages. This volume fluctuates over time due to: 1) leaving/new farm sites receiving ASC certification, 2) due to adjusted yearly production volumes of certified farm sites or 3) the fact farms do not wish to disclose their certified production volume. The certified production volumes since 2016 can be seen in the chart below.



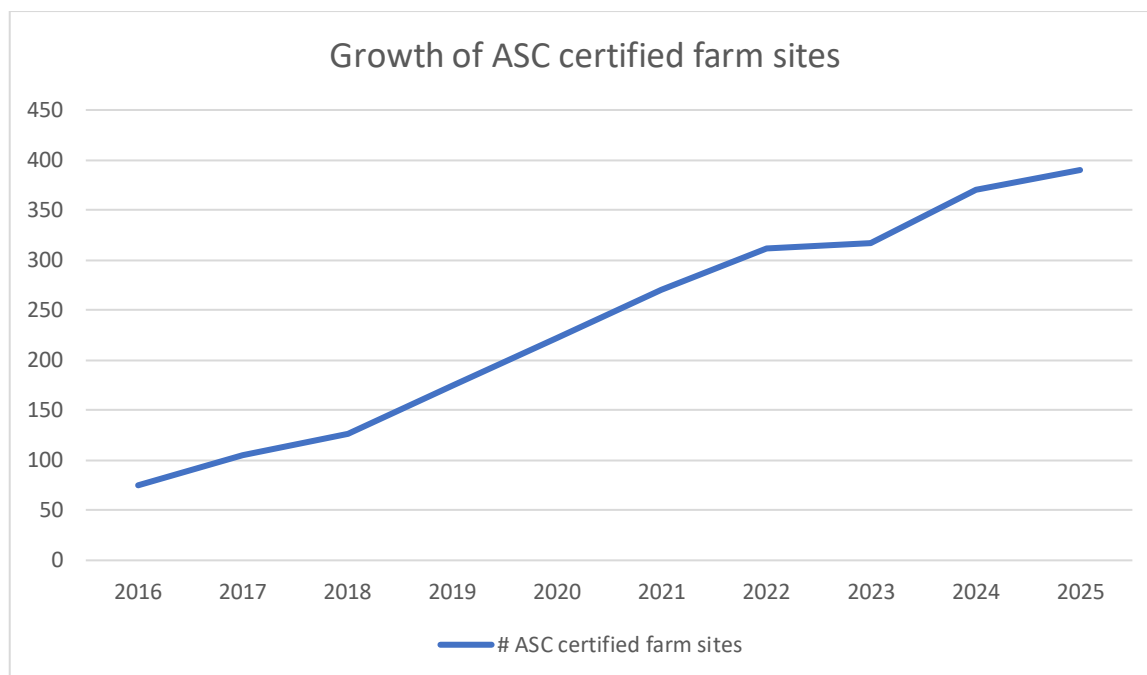
Certified volume of salmon produced in Norway makes up more than a third of overall production when using the FAO production volume¹⁶ as a base. The percentage of certified volume can be seen in the chart below.



The number of ASC certified farms in Norway amounted to 390 in 2025. Certified farms in Norway can be found on ASC's website¹⁷ and the number of certified farms over time can be seen in the chart below.

¹⁶ Food and Agriculture Organization of the United Nations found [here](#)

¹⁷ Map ASC certified farms, see [here](#)



Use of ASC in Norway for salmon farming

Salmon farming has been associated with a number of environmental impacts, such as fish escapes, negative impact on wild salmon, birds and sea mammals, the use of wild fish as ingredient in feed, introduction of diseases and parasites, use of antibiotics and impact of pollution on water quality and the seabed.

An overview of the areas that the ASC certification targets for responsible salmon farming can be found below¹⁸:

- **Biodiversity**

ASC certified salmon farms minimise impacts on the local ecosystem in a number of ways, such as the development and implementation of an impact assessment to protect birds, marine mammals and sensitive habitats, protection of the ecological quality of the seabed, ensuring farms are not sited in High Conservation Value Areas (HCVA) and minimising fish escapes to an absolute minimum. All lethal incidents with wildlife must be made publicly available.

- **Feed**

ASC certification requires salmon farms to adhere to strict limits to minimise the use of wild fish as an ingredient for feed. In addition, the standard requires farms to ensure full traceability back to a responsibly managed source, preferably certified, both for wild fish and soy.

- **Pollution**

ASC certified salmon farms are required to measure various water parameters (phosphorus, oxygen levels, etc.) at regular intervals and remain within set limits. Responsible farming can only take place in water bodies that are classified as 'good' or 'very good' (e.g. by the EU Water Framework Directive). Copper release into the water must be minimised and monitored.

- **Diseases**

ASC certified salmon farms are required to adhere to rigorous requirements to minimise disease outbreaks. In doing so, they must also cooperate with other farmers operating in the same area. A Fish Health Management Plan detailing steps for biosecurity management must be developed under supervision of a veterinarian and implemented on the farm. In addition, the farms need to adhere to low levels of parasites (especially sea lice) and can only use certain medicines under very strict conditions.

¹⁸ Information retrieved from the ASC website, see webpage [here](#).

The use of medicine before a disease is diagnosed (prophylactic use), is prohibited. Producers need to manage farms in such a way that salmon survival rate is high. Instances of unexplained increased mortality, as well as sea lice counts are required to be publicly available.

- Social

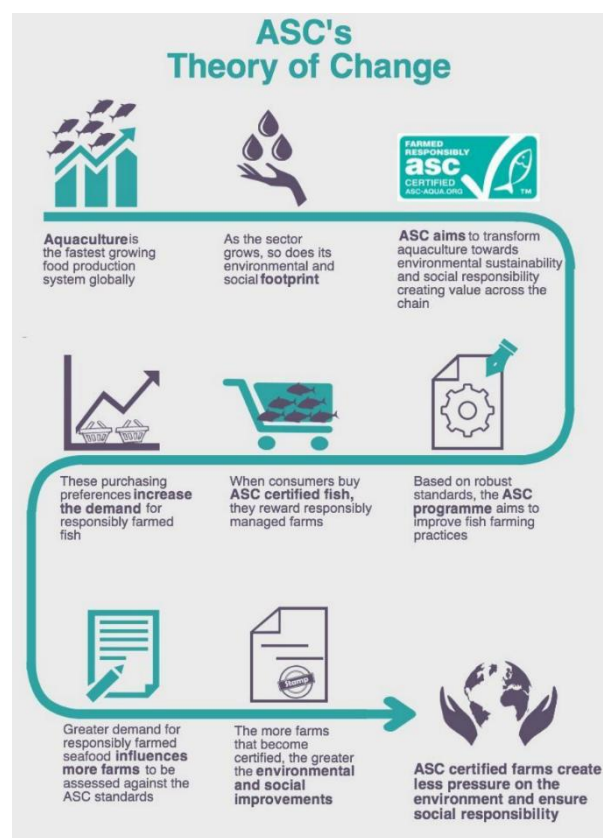
ASC certification imposes strict requirements based on the core principles of the International Labour Organisation (ILO), these include prohibiting the use of child labour or any form of forced labour. All ASC certified farms are safe and equitable working environments where employees earn a decent wage and have regulated working hours. Producers also need to consult (indigenous) communities, inform them about health risks and provide access to vital resources. Similar requirements apply for suppliers of small salmon that are supplied to the ASC certified salmon farms.

ASC Theory of Change¹⁹

ASC certified seafood is raised to meet the highest standards for environmentally and socially responsible practices. ASC traceability controls ensure the provenance of certified farmed seafood.

ASC acts in the marketplace to increase the awareness, value, demand, and distribution of ASC certified seafood. As demand grows, there is an incentive for producers to pursue the recognition and reward that ASC certification offers. As more producers achieve certification, more seafood is farmed responsibly.

This process leads to an aquaculture system that produces more fish for more people with the most responsible environmental stewardship and social responsibility.



¹⁹ [Our impact - ASC International](#)

Methodology note

Due to lack of quantitative data, the GLOBALG.A.P. impact of certified salmon farming is prepared in a qualitative manner.

Aquaculture – GLOBALG.A.P.

Context and background on GLOBALG.A.P. certification

Developed in collaboration with sector stakeholders, Integrated Farm Assurance (IFA) for aquaculture aims to provide producers with clarity on international requirements for responsible farming and facilitate a long-term holistic approach to primary production operations. It covers a wide range of fish, crustacean, mollusc, and seaweed (macroalgae) species. The GFS editions of the standard have consistently achieved Global Food Safety Initiative (GFSI) recognition. IFA is also recognized by the Global Seafood Sustainability Initiative (GSSI) and is aligned with the four pillars of the Food and Agriculture Organization (FAO) Technical Guidelines on Aquaculture Certification, as well as the World Organization for Animal Health (WOAH) Aquatic Animal Health Code. IFA is tried, tested, and trusted around the world – with over 2.8 million metric tons of farmed seafood produced in IFA-certified production processes annually

Core topics in IFA for aquaculture:²⁰

- Food safety
- Farmed aquatic species welfare, management, and husbandry
- Workers' occupational health, safety and welfare
- Environment and biodiversity management
- Mass balance and traceability
- Feed management
- Sampling and testing of farmed aquatic species
- Harvesting and postharvesting operations
- Hygiene
- Site management

Benefits for producers and supply chain stakeholders

- **Food safety:** GLOBALG.A.P. Aquaculture is the only certification scheme recognized by the Global Food Safety Initiative (GFSI) for the farming of fish
- **Environment:** GLOBALG.A.P. Aquaculture is recognized by the Global Seafood Sustainability Initiative (GSSI)
- **Animal Health:** Animal health is ensured at all stages by a comprehensive veterinarian animal health plan which covers broodstock, seedlings, farmed fish, and harvesting and slaughter stages. The GLOBALG.A.P. Aquaculture standard covers the WOAH (The World Organisation for Animal Health) Aquatic Animal Health Code criteria for farms
- **Animal Welfare:** On top of animal health, GLOBALG.A.P. Aquaculture has been recognized as the only international private standard outside the United Kingdom that covers animal welfare practices at harvest and slaughter. Further animal welfare innovative criteria are applied for all production stages
- **Workers Occupational Health & Safety:** Workers are key to efficient operations; appropriate training is included in the requirements
- **Workers Welfare:** GLOBALG.A.P. Risk Assessment on Social Practices is a compulsory assessment

²⁰ [Integrated Farm Assurance for aquaculture](#)

Impact areas²¹

As a leading farm assurance organisation, GLOBALG.A.P. has a meaningful impact on global food production by encouraging responsible practices that strengthen the sustainability and resilience of agricultural supply chains for future generations, these impacts include:

- **Food Safety** – GLOBALG.A.P. standards require producers to implement procedures that manage and minimise food safety risks at farm level. The standards have consistently achieved recognition from the Global Food Safety Initiative (GFSI) and promote robust food safety systems through risk mitigation measures, management plans, and risk-based approaches.
- **Environment** – GLOBALG.A.P. standards help producers manage and minimise environmental risks by reducing toxicity to people and ecosystems, enhancing biodiversity, promoting energy efficiency, optimising waste management, protecting soil health, preserving water resources, and preventing nutrient pollution
- **Workers health, safety and welfare** – GLOBALG.A.P. supports workers' wellbeing by helping producers identify and minimise workplace hazards, establish safe equipment procedures, reduce health risks, guide emergency responses, provide health and safety training, and empower workers to raise concerns through effective communication channels
- **Animal health and welfare** – Impacts through responsible, risk-assessed production processes, promoting animal health and welfare by requiring comprehensive aquaculture health plans, welfare risk assessments, water quality control programmes, and species-specific handling training
- **Supply chain traceability** – GLOBALG.A.P. standards strengthen supply chain traceability through product identification systems, recall and withdrawal procedures, product segregation requirements, product handling rules, input and output verification, subcontractor monitoring, and worker training on chain of custody processes

Capacity building – through training courses, authorized training programs, projects and partnerships, locally targeted events that empower producers, support the implementation of farm assurance solutions and help transform food systems and local communities.

Acquaculture Impact

In aquaculture, producers must demonstrate compliance with requirements spanning site management (e.g., hygiene), worker's health, safety, and welfare (e.g., risk assessment and training), environmental and biodiversity management (e.g., waste, water, escapes and predator exclusion), food safety (e.g., recall and withdrawal), and animal health and welfare (e.g., biosecurity).

For example, for a salmon producer to achieve GLOBALG.A.P. Integrated Farm Assurance (IFA) certification, they must protect animal health through feed, health plans, and holding facilities, safeguard animal welfare through site management and predator exclusion, mitigate biosecurity risks, and implement a traceability system back to stock origin. The producer must also ensure that all persons working on the farm have received appropriate training on animal welfare, handling, and specialized operations such as diving.

²¹ <https://globalgap.org/about/impact-areas-and-claims/>

Aquaculture – CO₂ Impact

The Global Salmon Initiative (GSI) published scientific findings on its website with regards to the carbon footprint of farmed salmon in comparison to on-land livestock. The carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by the production of a product. Carbon footprint is measured in grams of carbon dioxide equivalent (g CO₂eq) per typical serving (40 g) of edible protein of the product. Data are median values.

The conclusion of this study suggested that the farming of salmon is significantly lower in carbon impact compared to other on-land livestock. CO₂e for salmon farming amounted to 0.6 whilst this ranged from 0.88 (chicken) to 5.92 (beef) for the on-land livestock²².



Key Performance Indicators for SNN

The following Key Performance Indicators (KPIs) will be used to assess SNN's contribution to responsible fish farming:

Category / Subcategory	Indicator	CO ₂ intensity avoided vs. chicken	CO ₂ intensity avoided vs. pork	CO ₂ intensity avoided vs. beef	Contribution to SDG
Eco-efficient and circular economy adapted products, production technologies and processes / Fisheries	CO ₂ intensity of protein avoided (g CO ₂ eq per typical serving (40g))	0.28	0.7	5.32	

²² Source: <https://globalsalmoninitiative.org/en/our-progress/sustainability-report/sustainable-food-systems/#carbon-footprint> ; The environmental cost of animal source foods see [here](#)

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