



# Proximar Seafood AS Green Financing Second Opinion

April 6, 2021

**Proximar is a Norwegian aquaculture company founded in 2015, which is initiating land-based salmon farming in Japan.** Proceeds from this framework will finance its first production facility, whose construction begins Q1 2021.

**Land-based salmon farming avoids the negative impacts on wild salmon and local marine environment associated with sea-based production.** The largest climate benefit is that Proximar will be able to serve the Japanese market without using airfreight.

**Proximar also aims to address the main drawback of land-based production, namely emissions related to electricity use.** Its foremost strength in this regard is the electricity efficiency it intends to achieve. In addition, it has plans for installing solar panels covering a share of its consumption. Renewable certificates will be purchased covering the remainder of electricity use.

**Proximar has chosen a feed supplier that is committed to moving the salmon feed industry in a more sustainable direction.** In addition, land-based production has the potential to achieve better feed efficiency than sea-based production.

**Sustainability appears to be integrated into the company business model and environmental factors have impacted key investment decisions.** As a company in development, Proximar does not yet have a comprehensive corporate governance structure, however, some key policies are in place and the issuer has expressed a commitment to transparent reporting to investors. As the facility is located on a newly developed industrial park, it is likely that site development has led to some deforestation and it is unclear if there were any biodiversity risks. A more systematic approach to climate risk assessment, a consideration of potential risks of deforestation and local environmental impacts when choosing to locate in a recently created industrial park, as well as some more developed targets, would strengthen governance. The overall assessment of Proximar's governance structure and processes gives it a rating of **Good**.

Because Proximar's core business concept is innovative, addresses local environmental effects of aquaculture, and has the potential to take large steps toward a long-term low-carbon solution for the industry, its Green Finance framework receives a **CICERO Dark Green** shading. This despite the fact that electricity supply in Japan currently comes predominantly from fossil fuels. The rating is premised on the company achieving the very high energy efficiency that it targets. In addition, it reflects the plans regarding solar panels and renewable certificates. Investors should be aware that because the technology is novel and facilities yet to be constructed, there is a risk that the actual environmental performance will not meet the expectations.

## SHADES OF GREEN

Based on our review, we rate the Proximar's green financing framework **CICERO Dark Green**.

Included in the overall shading is an assessment of the governance structure of the green bond framework. CICERO Shades of Green finds the governance procedures in Proximar's framework to be **Good**.



## GREEN BOND and GREEN LOAN PRINCIPLES

Based on this review, this Framework is found in alignment with the principles.



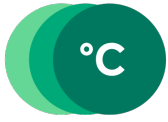


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# 1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated March 5<sup>th</sup>, 2021. This second opinion remains relevant to all green financings and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

## Expressing concerns with 'Shades of Green'

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

### CICERO Shades of Green



**Dark green** is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated.



**Medium green** is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered.



**Light green** is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them.

### Examples



Wind energy projects with a strong governance structure that integrates environmental concerns



Bridging technologies such as plug-in hybrid buses



Efficiency investments for fossil fuel technologies where clean alternatives are not available

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green financing are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green financing framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.



## 2 Brief description of Proximar Seafood AS' green financing framework and related policies

Proximar Seafood AS (“Proximar”) is a Norwegian private limited liability Aquaculture company founded in 2015 and headquartered in Bergen, which is initiating land-based salmon farming at the foot of Mount Fuji in Japan. Construction of its first plant is expected to start in Q1 2021 and production in 3Q 2022, meaning the first fish will be in the market mid-2024. Annual production capacity at this plant will be approximately 5 300 tonnes (head on gutted) when fully operational. Construction of a second plant with capacity of 21 000 tonnes is targeted to start towards the end of 2024. Proceeds from this framework will be allocated to the first plant.

### Environmental Strategies and Policies

Proximar’s core business of land-based production avoids many environmental issues relating to traditional production in sea, and facilitates production close to markets thus reducing transport emissions. In addition, the company aims to have a systematic approach to sustainability, meaning that sustainability is also integrated into how the company plans and intends to conduct the operations.

#### *Transport*

The largest climatic benefit of Proximar’s planned production is avoiding transport of salmon by air from Europe or Chile to Asia. The first plant is planned to serve the Japanese market only. It is located 1 to 2 hours driving distance to Japan’s two largest cities, Tokyo and Yokohama, facilitating distribution directly to customers instead of transportation via hubs. The greater Tokyo area alone is home to approx. 38 million people. Proximar aims to take market shares from the fresh salmon market, which accounts for approximately 20% of salmonid imports to Japan. In 2019, 90% of fresh salmon consumption in Japan was transported from Norway by air, while 86% of frozen or smoked salmon reached Japan by ship from Chile.

#### *Energy efficiency*

Compared with open net-pen aquaculture, land-based production requires more energy for pumps and other water-related infrastructure. Proximar has chosen a recirculating aquaculture system (RAS) from AquaMaof that has a significantly lower energy consumption than other conventional RAS solutions available in the market. Comparisons carried out during the selection process indicated an electricity consumption 30-40% lower than other conventional RAS solutions. Based on design values for the RAS facility and the rest of the building, Proximar estimates that electricity consumption will be 2.8 kWh per kg salmon (live weight equivalent) when the first plant is producing at full capacity. This is a very high efficiency, as a recent report estimated the realistic range to be between 5 and 10 kWh.<sup>1</sup>

#### *Energy supply*

Proximar is working on different solutions to install a rooftop solar PV system on its main building. The solar panels will be designed to cover Proximar’s electricity demand on peak hours of production. Estimates suggests they can generate around 2 MWh/year (equivalent to 11.4% of total demand). Remaining demand will be covered

<sup>1</sup> Winther et al. 2020. Greenhouse gas emissions of Norwegian seafood production in 2017. SINTEF Ocean AS.



by grid-based electricity and the company will purchase certificates of origin to ensure that an amount equal to its consumption is produced from renewable sources.

Proximar will to the extent feasible purchase machinery and equipment which runs on electricity. Fossil equipment, such as emergency backup diesel generators, will not be financed with proceeds from this framework. Land-based aquaculture eliminates the use of boats for feeding, harvesting or transport, thus reducing the use of fossil fuels. All machinery used in its indoors production, including trucks, will be electric.

#### *Water use and wastewater management*

The AquaMaof system can recirculate 99.7% of the water by efficiently removing nitrate and nitrite, resulting in low demand for freshwater and low wastewater volume. Proximar also decided to make additional investments in a denitrification system to further reduce the amount of sludge and the need for new replacement water. Expected demand for freshwater replacement is at around 180 m<sup>3</sup> per day, which is significantly lower than alternative RAS technologies available.

Proximar has chosen the specific geographic location also due to ample supply of freshwater. The facility will be located above one of Japan's largest water reservoirs. The area around the Mount Fuji traditionally registers large amounts of precipitation. Local authorities have carried out test drillings and granted a defined supply of freshwater to Proximar that they estimate to entail no risk of scarcity for drinking water supply.

With a daily demand of 180 m<sup>3</sup> of freshwater replacement, combined with a certain amount of evaporation, the amount of water to be discharged is expected to be somewhat lower than 180 m<sup>3</sup>/day. All water will be treated with UV radiation and ozone before being discharged into a river. The environmental impact has been assessed by the local authorities, which have criteria that are stricter than national standards. Proximar's discharge permit specifies that salinity should be 2.5 ppt. As the salinity in the production will be 10-12ppt, it will be diluted before discharge. Proximar will monitor the water quality in the river and report to local authorities. The issuer has informed us that if negative changes are observed, they will invest in reverse osmosis.

#### *Solid waste management*

Proximar aims to have a systematic approach to sustainability, to take responsibility also for its waste, and promote circularity. The company recognizes that biowaste from fish farming and processing is a source of nutrients as well. Proximar intends to process trimmings and by-products into products for human consumption where possible, with the remainder considered for pet food or refined to fish meal and oil. The company intends to reduce the amount of packaging and non-organic waste to a minimum and to recycle this type of waste in accordance with local best-practice, and has the ambition to use recycled materials in packaging where feasible.

#### *Feed*

Proximar aims to reduce the environmental footprint related to feed procurement. Proximar has developed a code of conduct for feed suppliers and has selected Skretting Japan as its supplier. The specific composition of the feed which will be used has not been decided yet, but Skretting Japan informs that the expected content of soy protein concentrate (SPC) is 20-30%. All SPC in Skretting's products is certified under the ProTerra label, which ensures that soy ingredients do not originate from areas of native vegetation which have been cleared or converted into agricultural areas after 2008. The supplier has in cooperation with ProTerra established a tracing system which allows the tracing of soya beans from Brazil back to the community where they were cultivated. In addition, the Brazilian suppliers of SPC for aquaculture feed have recently committed to become deforestation free across their operations (see Background).



Skretting procures marine contents, fish meals- and oils, from suppliers which are to a large degree certified under the MarinTrust label, formerly known as the Global Standard for Responsible Supply (IFFO RS ), aiming for 100% coverage in 2025. Proximar's choice of feed-supplier has the additional benefit that feed will be produced in Japan, thereby reducing emissions connected to the transport of feed.

Proximar expects to achieve an economic Feed Conversion Ratio of 1.12, which would be significantly below the average for Norwegian aquaculture, which in 2017 was 1.32 (Winther et al. 2020). Land-based aquaculture is expected to achieve better feed efficiency due to faster growth and lower mortality.

### *Fish welfare*

The company aims to eliminate the risk of parasite infections and reduce the risk of disease. These factors have a significant impact on fish mortality and welfare in conventional aquaculture. As a consequence of better control of parasites and diseases, the need for medication is reduced, if not fully removed. All fish-eggs will be disinfected when introduced to the facility. All of the water will be treated with UV radiation and ozone, and will be supplied from secure and disease-free aquifers. The only way for diseases to enter the facility is through the air or by people and equipment. Therefore, the facility will be a strict biosecurity area, with over-pressurized buildings and strict disinfection procedures for people and equipment entering the facility.

Avoiding live transport reduces stress and enhances fish welfare. The AquaMaof system uses to a large extent harvest channels, unlike other RAS systems. These provide a gentler and less stressing handling of fish compared to the conventional pumping of fish.

Proximar anticipates a post-smolt mortality rate of 6%, which is considerably below the 15% rate in Norwegian aquaculture in 2020<sup>2</sup>.

### *Certification*

Proximar intends to obtain certification of its facility under the Aquaculture Stewardship Council (ASC), a voluntary certification scheme on environmental and social criteria. The ASC is currently developing a module specifically for RAS. Additional criteria specific for RAS relate mainly to freshwater use and wastewater discharge. An AquaMaof facility recently constructed in Poland has achieved ASC certification.

### *Construction*

The establishment of Proximar's facilities enjoys strong support from the local municipality. The facility is located in a 37-ha industrial park close to the UNESCO World Heritage site Mount Fuji. The site itself is located in a mountainous area surrounded by forest. The site for the industrial park was prepared prior to Proximar entering a contract with the town. According to Japanese law an EIA is only mandatory for the development of industrial parks larger than 50ha.

The facility building is planned to be certified under the CASBEE standards and the current design is expected to achieve a Built Environment Efficiency (BEE) rank of B+ ("Good"), and 2 out of 5 possible stars on their Lifecycle CO2 rating<sup>3</sup>.

### *Risk reporting and integration*

Proximar has identified key financial and technical risks with the assistance of external consultants.

<sup>2</sup> <https://ilaks.no/dette-er-de-tre-storste-grunnene-til-at-laksen-dor-i-merdene/>

<sup>3</sup> For information on the CASBEE system see: <https://www.ibec.or.jp/CASBEE/english/graphicE.htm>



Annual reports will include environmental indicators, but the specifics have not been determined yet. Proximar informs that it will consider joining the Global Salmon Initiative, an initiative to improve the sustainability profile of the farmed salmon industry.

### Use of proceeds

The net proceeds of the Green Bonds and Loans issued by Proximar Seafood will be used to finance or refinance Eligible Assets and Projects that have been evaluated and selected by Proximar Seafoods in accordance with its Green Financing Framework. As construction has not yet started, the majority of proceeds will finance new investments. The framework contains the following categories: Environmentally Sustainable Aquaculture, Renewable energy to power environmentally sustainable aquaculture, and Waste management. All investments financed under this framework will be allocated to the onshore aquaculture facility in Japan. Fossil fuel equipment, machinery, vehicles, energy production, or related infrastructure will not be financed under the framework.

### Selection

The selection process is a key governance factor to consider in CICERO Green's assessment. CICERO Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the governance process.

Proximar will establish a green finance committee (GFC) with members from management, finance, sustainability and business control. The finance representative is the chair of the committee and the sustainability representative holds a veto.

The GFC will review expenditures and projects on a regular basis and pre-select such expenditures that are aligned with the eligibility criteria detailed in Table 1. These expenditures and projects are added to a green finance register. The GFC will on a regular basis review the green finance register and confirm the alignment with eligibility criteria. Expenditures and projects that are not aligned with eligibility criteria, or that have caused widespread controversies, will be removed from the green finance register.

### Management of proceeds

CICERO Green finds the management of proceeds of Proximar to be in accordance with the Green Bond and Loan Principles.

An amount equal to the net proceeds from issued Green Finance Instruments will be earmarked for financing and refinancing of eligible expenditures as defined by the framework, and as listed in the green finance register. On a regular basis, the GFC will deduct the value of confirmed expenditures and projects listed in the green finance register from the earmarked net-proceeds of outstanding green finance instruments.

Proximar will over the duration of the outstanding green finance instruments build up and maintain an aggregate amount of eligible projects in the green finance register that is at least equal to the aggregate net proceeds of all outstanding green finance instruments.

Any unallocated proceeds will be held in accordance with Proximar's normal liquidity management policy. This policy does not allow investments in assets or instruments directly connected to the fossil energy value chain. The portfolio of unallocated proceeds will be disclosed in public reporting.



## Reporting

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs. Procedures for reporting and disclosure of green finance investments are also vital to build confidence that green finance is contributing towards a sustainable and climate-friendly future, both among investors and in society.

Proximar will annually publish a report on the allocation and impact of Green Finance instruments issued under this framework. Where relevant, Proximar will seek to align the reporting with the latest standards and practices as identified by ICMA and the guidelines in the Nordic Public Sector Issuer's Position Paper on Green Bond Impact Reporting. The CFO will be responsible for the reporting. The company will seek to obtain limited assurance from our auditor that net proceeds have been allocated to investments that are aligned with the Use of Proceeds as described in this framework.

The allocation report will, to the extent feasible, include the following components:

- Balance of outstanding green bonds and loans
- Allocated amounts per year
- Annual and total amounts invested in each category (i.e., on a portfolio basis)
- Examples of investments

Proximar will strive to report on the actual environmental impact of the investments financed under its Green finance framework, and may use the indicators listed in the framework section 5. No indicators relating procurement of feed or transport to market are included. Given that the project is still under development, Proximar will not be able to provide comprehensive reporting on all indicators before commercial operations have been started. If/when actual impact for some reason is not observable, or unreasonably difficult to source, estimated impact will be reported. The impact report will, to the extent feasible, also include a section on methodology, baselines, and assumptions used in impact calculations.





### 3 Assessment of Proximar AS’ green financing framework and policies

The framework and procedures for Proximar AS’ green financing investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where Proximar should be aware of potential macro-level impacts of investment projects.

#### Overall shading

Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in Proximar AS’ green financing framework, we rate the framework **CICERO Dark Green**.

#### Eligible projects under the Proximar AS’ green financing framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green financings aim to provide investors with certainty that their investments deliver environmental returns as well as financial returns. The Green Financings Principles (GBP) state that the “overall environmental profile” of a project should be assessed and that the selection process should be “well defined”.

Category	Eligible project types	Green Shading and some concerns
Environmentally Sustainable Aquaculture	<p><b>Development, construction, operation, maintenance and improvements</b> of “Mount Fuji” onshore aquaculture facility to farm Atlantic Salmon in Japan. Once completed, the facility will house the production stages smolt, grow-out, harvesting and processing.</p> <p><u>Main features of the facility:</u></p> <p><b>RAS AquaMaof technology</b> allowing for 99.7% of freshwater to be recirculated. The amount of new water required is significantly lower than other RAS solutions available.</p> <p><b>Procurement of feed</b> where all soy-ingredients are certified under the ProTerra label and where marine ingredients to a large degree already are certified under the MarinTrust label, formerly known as the Global Standard for Responsible Supply (IFFO RS ) and will be to 100% in 2025.</p> <p><b>Aquaculture Stewardship Council (ASC)</b> certification will be obtained at a later stage.</p>	<p><b>Dark Green</b></p> <ul style="list-style-type: none"> <li>✓ Open net-pen salmon farming is associated with several environmental problems that the land-based facilities avoid (see Strengths).</li> <li>✓ The technology also allows production to take place close to the market, avoiding the need for airfreight.</li> <li>✓ The targeted recirculation rate of 99.7% is better than standard RAS systems (around 97%), thus limiting freshwater use and wastewater discharge.</li> <li>✓ From a climate perspective, the main challenge for land-based aquaculture is the electricity consumption. Proximar intends to achieve a very high energy efficiency (see Background).</li> <li>✓ The discharge of wastewater will follow strict local standards.</li> </ul>



- ✓ Feed production usually accounts for the majority of farmed salmon’s carbon footprint at harvest. In addition, it puts pressure on wild fish stocks.
- ✓ ProTerra certification ensures that the feed does not contain soy grown on recently deforested land. The suppliers of soy for salmon feed have additionally recently committed to make their entire production deforestation-free, which reduces the deforestation risk in the salmon aquaculture supply chain (see Background)
- ✓ MarinTrust requires whole fish inputs to come from well-managed fisheries, which can be documented through inter alia Marine Stewardship Council certification. By-products must not come from threatened species or illegal, unreported or unregulated fisheries.
- ✓ The ASC is regarded as the strictest voluntary certification scheme on environmental criteria (excluding feed).<sup>4</sup> Its standards are stricter than Norwegian regulation, which is already stricter than other national regulations.<sup>5</sup>

Renewable energy to power environmentally sustainable aquaculture



- Development, procurement (including leasing), construction and maintenance of rooftop solar PV systems
- Related equipment, e.g. inverters.
- Related infrastructure, e.g. enforcements of the roof to carry the extra weight of the system.

**Dark Green**

- ✓ On-site PV systems directly addresses the biggest challenge associated land-based production from a climate perspective and have no major environmental or social disadvantages.
- ✓ The company estimates that the PV system could cover around 11% of its total electricity demand.

Waste Management



- Systems and solutions to convert waste-sludge into resources such as agricultural fertilizer for neighbouring farms.
- Systems and solutions to convert organic waste into biogas.
- Systems and solutions including denitrification to reduce organic and non-

**Dark Green**

- ✓ Converting waste to resources increases resource efficiency and is an important elements of a low-carbon future.
- ✓ Using sludge for fertilizer avoids emissions associated with nitrogen fertilizer and improves soil quality.

<sup>4</sup> <https://www.bestfishes.org.uk/buying-salmon/> The comparison does not include Debio, but the Organic Soil Association is assessed to have the strictest criteria on feed.

<sup>5</sup> Vormedal, I. and Gulbrandsen, L. (2018). Business interests in salmon aquaculture certification: Competition or collective action? Regulation & Governance.



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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• organic waste, increase the recycling-rate and the use of recycled materials</li><li>• Systems and solutions to increase the use of trimmings and by-products in products for human consumption, maximising the utilisation of input factors such as energy and feed.</li></ul> | <ul style="list-style-type: none"><li>✓ Using organic waste for biogas is a renewable form of energy production.</li><li>✓ The possibility to utilize sludge are better in land-based systems than in current sea-based systems (Winther et al. 2020).</li></ul> |
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Table 1. Eligible project categories

## Background

### GHG emissions of farmed salmon vs. meat

The carbon footprint of salmon farmed in open net-pens is around 80% lower than that of beef, slightly lower than that of pork, but higher than that of chicken, according to a recent report by the Norwegian research institute SINTEF (Winther et al 2020). Its footprint is higher than that of all wild-caught Norwegian seafood products assessed in the report, except shrimp. These figures do not incorporate emissions from land-use change. As explained below, the aquaculture industry has done more to address land-use change emissions in its supply chain than producers of other animal proteins have.

### GHG emissions land-based vs. sea-based salmon farming

The carbon footprint of farmed salmon is largely made up of three components: feed ingredients, energy use in production, and transport of the final product. Compared with sea-based open net-pen aquaculture, land-based RAS production reduces emissions embodied in feed ingredients and transport, while increasing energy consumption. Whether land-based production has a lower carbon footprint than that of sea-based aquaculture is thus largely determined by the following factors:

- Whether the land-based product replaces an airfreighted product
- The improvement in feed conversion ratio
- Electricity intensity
- GHG emissions factor of electricity

A recent study by SINTEF<sup>6</sup> compares the carbon footprint of salmon from sea-based production in Norway transported to Shanghai versus salmon from land-based production in Shanghai, see Figure 1. As the distance to Tokyo is only slightly longer, the figures are useful for comparison.

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<sup>6</sup> Winther et al. 2020. Greenhouse gas emissions of Norwegian seafood production in 2017. SINTEF Ocean AS.

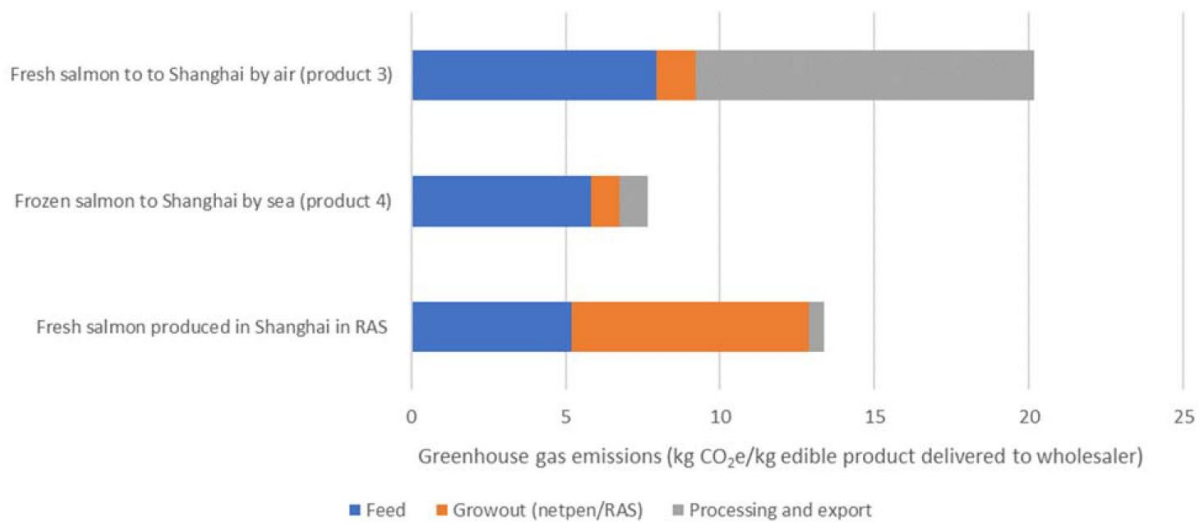


Figure 1: GHG emissions from land-based versus sea-based salmon farming (from Winther et al. 2020)

The report estimates that the footprint *at harvest* is substantially larger for land-based production. For sea-based production, this figure is around 9 kg CO<sub>2</sub>e/kg edible salmon, with feed ingredients accounting for the vast majority. Energy use is thus a minor contributor. The estimate is based on an eFCR of 1.32 which were average figures in Norway in 2017. For land-based production, the report estimates a carbon footprint at harvest of 13 kg CO<sub>2</sub>e/kg edible salmon, of which energy use constitutes the majority. This estimate is based on an eFCR of 1, electricity intensity of 10 kWh/kg liveweight salmon, a grid factor of 0.42 kg CO<sub>2</sub>e/kWh (average European production). The report concludes that “for RAS production to be sustainable in a climate perspective it is critical to achieve a high feed efficiency, become more energy efficient and that they are partly served with renewable energy sources” (Winther et al. 2020, p. 83).

Based on the information provided by Proximar, the company has the potential to achieve these three things, and thus produce salmon with a carbon footprint at harvest comparable with salmon farmed in sea.

The main reason is the expected electricity intensity of only 2.8 kWh. The GHG intensity of electricity is more difficult to assess, as the electricity provider and product has not been chosen yet. According to the Proximar, the energy mix in the electricity provided by Tokyo Electric Power Company (TEPCO) in 2019 was as listed in Table 2. The company plans to install solar panels that it estimates can provide around 11% of its consumption. With this, the company would achieve an emissions intensity very similar to the average European production assumed by SINTEF (0.42), assuming that the category “other” is emissions free. A more conservative figure would be 0.5, assuming some emissions from “other” electricity sources, and lower production from own solar panels. With this figure, the emissions from grow-out would still be reduced by two-thirds relative to SINTEF’s RAS case, cancelling out the GHG penalty for land-based compared to sea-based production at harvest.

The company will also purchase certificates of origin to ensure that an amount equal to its consumption is produced from renewable sources. The company informs us that it is considering different certification schemes from different companies, and that the price premium is 15-30%. While there is generally no direct relationship between renewable certification schemes and installation of new renewable power, Proximar will contribute to incentivizing a greening of the grid over time.



Electricity source	Share in 2019	CO <sub>2e</sub> /kWh
Natural gas	59%	0.483 (IPCC 2018) <sup>7</sup>
Coal	20%	0.961 (IPCC 2018)
Feed-in tariffs	6%	0
Hydro	3%	0
Other renewable	3%	0
Other	8%	?

Table 2: Composition of electricity provided by TEPCO, according to Proximar.

Proximar expects to achieve a feed conversion rate (eFCR) of 1.12, slightly above the SINTEF's assumption for RAS. It is below the average for the industry (1.32), but similar to what the most efficient companies have achieved in sea-based production. Assuming the carbon footprint per kilo feed is the same as for feed used in Norway (see Pitfalls), its carbon footprint embodied in feed will be close to SINTEF's RAS case, and below its sea-based case.

The SINTEF report does not include emissions from construction of production facilities, which are higher for land-based production than for open-net pen farming. A study<sup>8</sup> finds that this adds 0.39kg CO<sub>2</sub> to the carbon footprint of salmon farmed on land and 0.02kg CO<sub>2</sub> in the case of open net-pen farming. In both cases, this is a minor part of the total footprint.

Airfreight of salmon from Norway to east Asia is estimated to result in around 10kg CO<sub>2</sub>/kg salmon, thus more than doubling the final product's footprint, see Figure 1. There has been a large increase in airfreight of Norwegian salmon in recent years, particularly to the USA and Asia. Transport by road or sea is much less emissions intense, typically adding only around 1 kg to the product's footprint. As Proximar is located very close to the market it intends to serve, emissions from transporting its produce will likely be even lower than that.

In summary, based on Proximar's targets and plans, it has the potential to address the main drawback of land-based production, namely higher electricity consumption, and achieve a carbon footprint at harvest similar to sea-based production. When compared with salmon from sea-based production in Norway airfreighted to Japan, Proximar's product will reduce emissions substantially.

### **Certification of soy protein concentrate**

Soy contained in feed purchased under this framework must be certified by ProTerra, to ensure that it is not grown on land converted from native vegetation after 2008. This scheme has relatively strict criteria, but some weaknesses on transparency<sup>9</sup>. It requires physical segregation of certified and non-certified soy, unlike some other forms of certification. A problem with all certification schemes is that major soy producers currently only certify a small share of their production, while the rest may contribute to deforestation. Demand for soy from Brazil, even if certified, risks displacing non-certified production to new agricultural areas. Certification is therefore not seen as a complete safeguard against deforestation risk. The SINTEF report does not distinguish between certified and non-certified soy, because it is currently not possible to quantify the differences in a reliable way.

<sup>7</sup> IPCC 2018. [https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc\\_wg3\\_ar5\\_annex-ii.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-ii.pdf)

<sup>8</sup> Liu, Y. et al 2016. Comparative economic performance and carbon footprint of two farming models for producing Atlantic salmon (*Salmo salar*): Land-based closed containment system in freshwater and open net pen in seawater. *Aquacultural Engineering* 71: 1-12.

<sup>9</sup> Regnskogsfondet & Framtiden i Våre Hender (2017). Fra brasiliansk jord til norske middagsbord. En rapport om soya i norsk laksefôr.



Responding to pressure from the Norwegian aquaculture industry, the Brazilian SPC suppliers recently committed to become deforestation free across their operations, not only in the share that gets certified. This means to not purchase soy grown on land in the Brazilian Serrado deforested after August 2020 or on land in the Amazon deforested after 2006. A system for monitoring, reporting, and verification has been agreed in cooperation with ProTerra and WWF Brazil. SPC is a specialized product for the aquaculture industry. Now that SPC producers are taking the lead in becoming deforestation-free, it means that the deforestation risk is lower in the aquaculture industry than in other animal protein industries that have Brazilian soy in their supply chains, as none of the major soy traders have made similar commitments.<sup>10</sup>

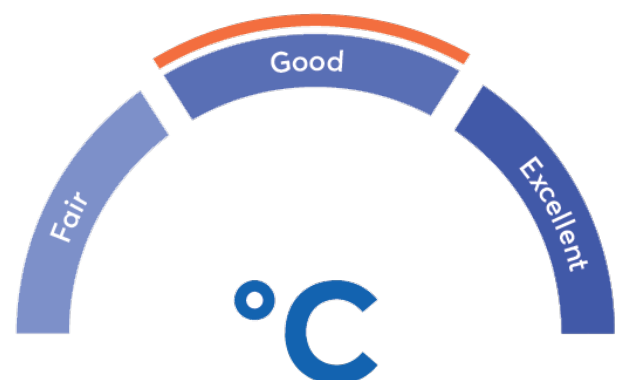
### Governance Assessment

Four aspects are studied when assessing the Proximar's governance procedures: 1) the policies and goals of relevance to the green financing framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

Proximar is a pioneering company in land-based salmon aquaculture and its core business directly addresses two of the main environmental concerns about salmon farming: the impacts on the local marine environment and the use of airfreight. Proximar is a company in development and as such does not yet have a comprehensive corporate governance structure. Some key policies are already in place, including a supplier code of conduct. CICERO Green is encouraged that sustainability appears to be integrated into the company business model and environmental factors have impacted key investment decisions, including the choice of the RAS solution. The company is proactive in limiting its environmental impact in terms of water use and discharge, feed use, packaging, transport, and waste handling. Proximar has taken water availability into account during site selection but has not considered other environmental factors. No EIA was conducted and Proximar does not have information on potential biodiversity or deforestation issues related to the development of the industrial park.

There are currently no public environmental targets or reporting from Proximar, however, the issuer has expressed a commitment to transparent reporting to investors including relevant environmental metrics.

Proximar has not conducted an assessment of climate or sustainability related risks to their business, however, the team has a good understanding of key risks. They consider transition risk to be an opportunity for Proximar as climate-related regulation and consumer preferences are expected to increase costs for foods transported by air, and livestock-farming has a higher climate footprint than aquaculture. The team is aware of the potential for natural hazards including extreme weather and longer-term chronic water stress, which they consider that the site selection and RAS solution mitigate. However, a more systematic approach to climate risk assessment, a consideration of potential risks of deforestation and local environmental impact when choosing to locate in a recently created industrial park, as well as some more developed targets, would be required for a higher score.



<sup>10</sup> <https://www.reuters.com/article/us-brazil-environment-soy-idUSKBN28P2I3>



The overall assessment of Proximar's governance structure and processes gives it a rating of **Good**.

### Strengths

Proximar's business of land-based salmon production in Japan has the potential to address several of the most important climate and environmental issues related to traditional sea-based production.

First, it avoids several local environmental challenges associated with sea-based aquaculture:

- Fish escapes pose a serious threat to wild salmon stocks, as the farmed fish modify the gene pool and outcompete local species.
- The high concentration of salmon in open net-pens allows sea lice to thrive, which also pose a threat to wild salmon stocks, in addition to reducing the welfare of the farmed salmon.
- Delousing is the most important cause for reduced welfare and the second most important cause of mortality among salmon farmed in Norway<sup>11</sup>.
- Chemicals used for delousing may negatively affect wild species such as cod and shrimp, and thus coastal fisheries.
- Effluents and waste negatively affect life on the seabed around fish farms.
- Medicines may kill shrimp and other crustaceans.
- Copper used in antifouling paint for fish farm installations is a toxin polluting the local marine environment.

Second, Proximar will serve the Japanese market without the need for airfreight. This implies a significantly lower total carbon footprint than salmon airfreighted from open net-pen production in Europe or Chile. Avoiding airfreight also reduces the need for packaging during transport.

Third, land-based production is also expected to facilitate somewhat more efficient use of feed (Winther et al. 2020), which is important for lowering the carbon footprint of the final product.

Fourth, Proximar's production is fully electrified (except for emergency generators), in contrast to sea-based production, where fossil fuels still power most vessels and some farms.

Fifth, the potential for recycling sludge is better in land-based than in sea-based systems.

What is more, Proximar also aims to address the main drawback of land-based production, namely emissions related to electricity use. Its foremost strength in this regard is the electricity efficiency it intends to achieve. In addition, it has plans for installing solar panels covering a share of its consumption. Renewable certificates will be purchased covering the remainder of electricity use. The RAS technology chosen by Proximar is also very water efficient, limiting potential problems associated with freshwater use and wastewater discharge.

Finally, Proximar has chosen a feed supplier – Skretting – who is committed to contribute to the development of an industry-based solution to reduce deforestation associated with the primary production of crops. It is a member of the 'Aquaculture Dialogue on Sustainable Soy Sourcing from Brazil', a roundtable created to address the increased scrutiny around Brazilian agriculture practices and deforestation. It is also engaged in the development of novel feed ingredients to replace soy and marine ingredients.

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<sup>11</sup> <https://ilaks.no/dette-er-de-tre-storste-grunnene-til-at-laksen-dor-i-merdene/>



### Weaknesses

Impact reporting does not include any indicators relating to feed use or transport of salmon to market, which are among the most important determinants of farmed salmon's carbon footprint.

### Pitfalls

As the technology is novel and the facilities are yet to be constructed, there is a risk that electricity use and production, as well as feed efficiency, will not meet the company's targets, which would imply higher total GHG emissions than expected. The positive assessment is based strongly on the very high energy efficiency Proximar intends to achieve. As noted, this is well below what a recent report estimated to be the realistic range for the technology. Proximar's target for feed efficiency is closer to what is expected from RAS production in general, and therefore appears realistically achievable. However, there is a risk of mass mortality events with this technology, which would lower feed efficiency.

The emissions intensity of Proximar's electricity is uncertain, as the company has not yet chosen a power supplier and type of renewable certificate. There is therefore a risk that the actual electricity used will embody higher emissions than what has been assumed in this assessment.

The assessment is also premised on the assumption that the feed ingredients sourced by Skretting Japan will achieve the same level of sustainability as those sourced by Skretting Norway. Skretting Japan informs us that they follow the same core sourcing policies as the other Skretting companies, but that minor differences can occur. Skretting Japan also informs that the expected content of Soy Protein Concentrate (SPC) in the feed is 20-30%, and that this will originate from Brazil. This is relatively high compared with the average in Norwegian aquaculture industry, which was 20.5% in 2017 (Winther et al. 2020). As explained in the Background, the Brazilian suppliers of SPC have recently committed to become deforestation free. Assuming no link to deforestation, SPC does not have a particularly high carbon footprint compared to other ingredients. However, if the commitment to no deforestation is not effective, this would increase the total carbon footprint of farmed salmon substantially (Winther et al. 2020), making a high proportion of SPC in feed a weakness.

The Proximar facility is located on a newly developed industrial park and no EIA was conducted prior to the development of the site. The Oyama town has conducted an assessment of "rare creature protection" to identify any endangered species, however, Proximar does not have information on the results of this assessment. According to the issuer, the site was previously partly material storage for a company. It is however likely that the development of the facility site has led to some deforestation. It is unclear if there were any biodiversity risks and if so, how these were managed during preparation of the site.

While the production from facility financed under this framework is intended to serve the domestic market, thus avoiding airfreight, future facilities may also serve other East Asian markets with airfreight.





# Appendix 1: Referenced Documents List

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Document Number	Document Name	Description
1	Proximar Seafood Green Financing Framework March 2021	
2	Investor Presentation January 2020	Presentation of the company. Private and confidential.
3		
4		
5		
6		

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## Appendix 2: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green financing investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green financings, since the market's inception in 2008. CICERO Green is independent of the entity issuing the financing, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD).

