

Salmones Camanchaca

Greenhouse gases  
2020  
Emissions inventory

Contents

Summary ..... 3

Introduction ..... 4

Context ..... 5

Method..... 7

    General..... 7

    Greenhouse Gas Protocol ..... 8

    Carbon footprint approach and parameters (GHG inventory) ..... 9

        Person responsible for the GHG inventory ..... 9

        Organizational boundaries ..... 9

        Operational boundaries ..... 10

    Operational boundaries ..... 12

        Direct emissions ..... 12

        Indirect emissions ..... 13

Overall results and analysis for Salmones Camanchaca ..... 14

    Scope 1 ..... 18

    Scope 2 ..... 20

    Comparison with previous years..... 22

    Scope 3 ..... 23

        Feed..... 24

        Sent to the customer..... 25

        Diesel oil ..... 26

        Waste ..... 27

        Other Scope 3 emissions ..... 28

## Summary

This carbon dioxide emissions report was prepared according to the greenhouse gas protocol (GHG Protocol), which measured the direct and indirect emissions by Salmones Camanchaca. These totaled **244,378** tons of carbon dioxide equivalent (tCO<sub>2</sub>e) in 2020 including market emission factors for electricity supplies and **247,315** (tCO<sub>2</sub>e) for emissions calculated by location under scope 2.

The analysis was based on 244,378 tCO<sub>2</sub>e and the main source of emissions was identified as salmon feed, which represents 50.86% of the company's GHG inventory. The next largest source was transporting the finished product "Sent to the customer", which represents 22.82%, followed by burning diesel oil under scopes 1 and 3, which represents 16.59%. The Grow out area has the greatest impact on inventory, which represents 53.66% of Salmones Camanchaca's emissions. Scope 3 represents 85.03% of corporate emissions, which is **5.68 times** greater than the sum of the Scope 1 and 2 emissions. Managing supply chain emissions is key to developing sustainable aquaculture.

## Introduction

Sustainable food production is indispensable to meet current and long-term food demand, because "the economic and social progress achieved over the last century has been accompanied by environmental degradation that is endangering the very systems on which our future development depends.

Should the world population reach 9.6 billion people in 2050, the equivalent of nearly three planets could be needed to provide the natural resources required to maintain current lifestyles<sup>1</sup>."

The world's population needs good quality food that does not compromise the ability of future generations to produce their own food. The salmon industry is uniquely positioned to carry out this mission.

---

<sup>1</sup> Responsible production and consumption. Objective 12.  
<https://www.un.org/sustainabledevelopment/es/sustainable-consumption-production/>

## Context

Although Chile accounts for 0.25% of total global emissions, it will be severely affected by climate change due to its diverse geography. As a result, Chile has made an international commitment to reduce its emissions in 2030 by 30% compared to 2007 and to be carbon neutral by 2050.

Chile's geography is excellent for salmon farming, due to the characteristics of its coast, and salmon farming is more efficient than other sources of protein production.	<b>Salmon</b>	<b>Chicken</b>	<b>Pork</b>	<b>Beef</b>
<b>FEED CONVERSION FACTOR</b> Kg of feed to produce 1 kg of animal protein	1.2-1.5	1.7-2	2.7-5	6-10
<b>EDIBLE PROPORTION</b> The edible proportion is calculated by dividing the edible part by the total body weight.	68%	46%	52%	Information not available

Source: Global Salmon Initiative, 2018<sup>2</sup>

However, every kind of food production is associated with an environmental impact that depends on the products, companies and regions involved.

Energy consumed by production releases greenhouse gases (GHG) into the atmosphere, leaving a carbon footprint expressed in tons of carbon dioxide equivalent (tCO<sub>2</sub>e).

	<b>Salmon</b>	<b>Chicken</b>	<b>Pork</b>	<b>Beef</b>
<b>CARBON FOOTPRINT</b> Kg of CO <sub>2</sub> /kg edible	2.9	2.7	5.9	30
<b>WATER CONSUMPTION</b> Liters/kg edible	2,000 <sup>3</sup>	4,300	6,000	15,400

Source: Marine Harvest: Industry Handbook (2018)<sup>4</sup>

<sup>2</sup> GSI, 2018. Sustainability Report Available at <https://globalsalmoninitiative.org/es/reporte-de-sustentabilidad/>

<sup>3</sup> Reflects the water footprint of Scottish farmed salmon fillet, in relation to its weight and its calorie, protein and fat content.

Therefore, measuring the salmon industry's carbon footprint can potentially contribute to reducing this CO2e indicator and improving the industry's sustainability.

This report describes the carbon footprint of Salmones Camanchaca produced by its hatcheries, growing out, processing plants, administrative offices, logistics and product deliveries "Sent to the customer".

The company monitors its performance by measuring its annual carbon footprint, while increasing its transparency standards and its commitment to improving its environmental indicators.

---

<sup>4</sup> Carbon footprint results widely used by the industry to reflect the GHG emitted by salmon farming. Marine Harvest, Mekonnen, M.M. & Hoekstra A.Y. (2010), Ytrestøyl et. al. (2014), SINTEF Report (2009) Carbon Footprint and energy use of Norwegian seafood products, IME (2013). SARF. (2014) Scottish Aquaculture's Utilisation of Environmental Resources

## Method

Greenticket was commissioned by Salmones Camanchaca to measure the carbon footprint of its hatcheries, logistics, grow out sites, processing plants and administrative offices in 2020.

Therefore, Greenticket compiled the consumption of fuels, refrigerants, electricity, feed, medicines, consumables and the transportation of waste, staff and products. The Greenhouse Gas Protocol describes the analysis method used.

## General

The carbon footprint is commonly used as a tool to estimate GHG emissions by various organizations worldwide. They can demonstrate their commitment to the environment by quantifying and reducing their emissions, using energy efficiency measures and reducing their consumption of fossil fuels.

The carbon footprint measures GHG emissions for an activity. Internationally recognized analysis methods are used that represent a worldwide standard for carbon footprint studies.

The purpose of the method is to analyze the physical flows for an activity and estimate its GHG emissions based on calculations and conversions.

The operational emissions by Salmones Camanchaca from its administrative facilities, hatcheries, grow out sites, processing plants, cold storage, logistics and product deliveries "Sent to the customer"<sup>5</sup> were calculated using various emission factors. The emission sources included in this study are described in the table below:

Scope	Emission source	Description	Description
-------	-----------------	-------------	-------------

<sup>5</sup> Transporting finished products is called "Sent to the customer" by the sales team.

Scope	Emission source	Description	Description
1	Direct	Fuel and Refrigerant Gases	Direct emissions from burning fuel at its facilities and using refrigerant gases in company-owned equipment
2	Indirect	Electricity	Indirect emissions from burning fossil fuels in electricity generating plants
3	Indirect	Feed, fuels and electricity for suppliers, medicines, waste generation, and transporting staff, products and waste.	Indirect emissions from using consumables, emissions produced by suppliers and transporting people, waste and finished products to consumer markets.

### Greenhouse Gas Protocol

This study complies with the Greenhouse Gas Protocol (GHG Protocol<sup>6</sup>). The GHG Protocol is a detailed guide to quantifying, reporting, validating and verifying greenhouse gas emissions and removals. It has become a widely used carbon footprint estimation tool supported by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

The guiding principles of the protocol are:

- Relevance
- Integrity
- Consistency
- Transparency
- Precision

This protocol's ultimate goal is to produce a standard indicator that can accurately measure GHG emissions in all sectors. Accordingly, companies using this standard will be able to identify where their carbon footprint is high and consequently will be able to reduce it.

<sup>6</sup> Greenhouse Gas Protocol - Corporate Accounting and Reporting Standard

The gases considered by the protocol when estimating GHG emissions are those listed by the Kyoto Protocol:

- Carbon dioxide
- Methane
- Nitrous oxide
- Hydrofluorocarbons
- Perfluorocarbons
- Sulfur hexafluoride

These emissions are quantified in a GHG inventory and they are expressed in metric tons of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) by international convention.

## Carbon footprint approach and parameters (GHG inventory)

### Person responsible for the GHG inventory

This GHG inventory was coordinated by Greenticket using data provided by Salmones Camanchaca. Greenticket performed data processing, calculations and finally extracted conclusions from the GHG inventory. It also collected information from logistics and administrative activities.

### Organizational boundaries

Setting organizational boundaries requires consistently defining the business units and operations that form the enterprise, for GHG accounting and reporting purposes.

Setting the measurement boundaries means defining which company areas are included in data gathering and calculations. The carbon footprint measurement should include as many of the company's areas as possible.

This GHG emissions inventory is based on the consolidated approach to Operational Control. This approach measures the GHG emissions attributable to operations over which Salmones Camanchaca has full control.

## Operational boundaries

After the organizational boundaries have been identified, the emissions included in the carbon footprint analysis are specified, which represent the scope. There are three differential emission scopes, according to the GHG Protocol.

### SCOPE 1 (MANDATORY)

These are direct emissions from activities controlled by the company. These sources include heat, electricity or steam generated by boilers on the company's premises, chemicals and materials from production processes, emissions from company vehicles, and HCFC emissions from refrigeration and air conditioning equipment.

### SCOPE 2 (MANDATORY)

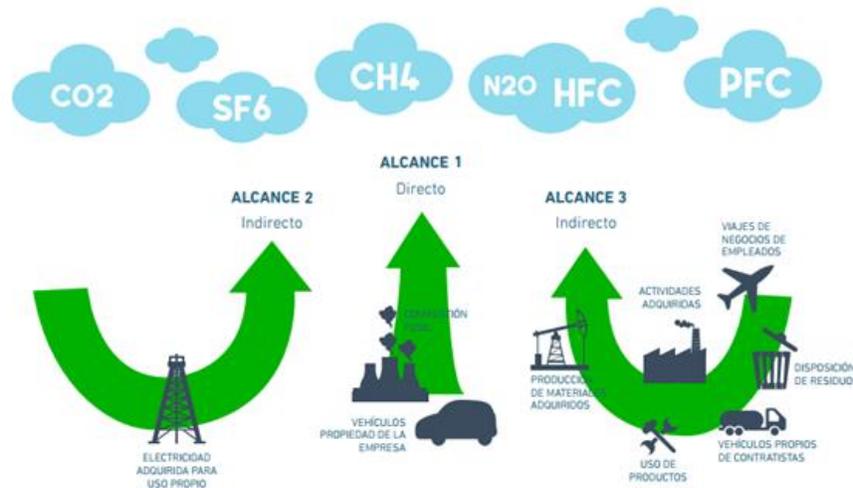
These are indirect emissions from producing the external electricity, heat or steam consumed by the organization. It includes emissions from generating electricity consumed by the company. Emissions under this scope physically occur at the plant where the electricity is being generated, and emission quantification methods are used by market and by location.

### SCOPE 3 (OPTIONAL)

These emissions are a consequence of the organization's activities, but come from sources that are not controlled by the organization. Examples are emissions during waste disposal, transporting staff, business travel, transporting raw materials and finished products.

The GHG Protocol states that emissions under the first two scopes must be quantified, while quantifying Scope 3 emissions is voluntary.

The following diagram summarizes emissions under each of these scopes:



Source: Greenhouse Gas Protocol - Corporate Accounting and Reporting Standard

The following table specifies the GHG emissions produced by business units.

Table: GHG emission categories by scope and activity

Area	Scope 1	Scope 2	Scope 3
Fresh water areas	Fuel and refrigerant gas consumption	Electricity	Feed, medicines, waste, consumables and transporting staff
Grow out sites	Fuel consumption	Electricity	Feed, medicines, transporting staff and waste
Processing plant and cold storage	Fuel and refrigerant consumption	Electricity	Electricity, fuels, transporting staff and waste
Logistics and sent to the customer	Fuel consumption		Fuel consumption when transporting fry, smolts, stocking, cabotage, harvests and finished products
Administration	Fuel consumption	Electricity	Transporting staff and waste

## Operational boundaries

The emissions by fresh water areas, grow out sites, logistics, plants and administration areas were calculated using various GHG conversion factors based on consumables.

### Direct emissions

Scope 1 emissions are produced on-site by sources controlled by the company.

#### FUEL EMISSIONS (SCOPE 1)

These include fuel purchased by the organization that is used in its equipment and vehicles, and gas burned on site. These emission factors have been issued by the UK Department of Food and Rural Affairs (DEFRA), specifically in Defra/DECC (2020)[7](#).

$$Emisiones\ del\ combustible = Cant.\ combustible\ (Lt, Kg) \times Factor\ de\ emisi3n\ \left(\frac{Kg\ CO2e}{Lt, Kg}\right)$$

#### REFRIGERANT EMISSIONS (SCOPE 1)

These are emissions from using refrigerant gases in industrial refrigeration equipment. These emissions are Ammonia, R410A and R-22 used by hatcheries and processing plants. These emission factors have been issued by the UK Department of Food and Rural Affairs, specifically in Defra/DECC (2020)[8](#).

$$Emisiones\ de\ Refrigerantes = Cant.\ Refrigerante\ (Kg) \times Factor\ de\ emisi3n\ \left(\frac{Kg\ CO2e}{Kg}\right)$$

---

[7](#) 2020 Guidelines to Defra's GHG conversion factors for company reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London. Liquid fuels.

[8](#) 2020 Guidelines to Defra's GHG conversion factors for company reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London. Refrigerant & others.

## Indirect emissions

Scope 2 emissions are produced as electricity is consumed. Indirect emissions physically occur at the plant where the electricity is generated. This emission factor relates to non-conventional renewable energy sources, due to the acquisition of 14.1 GWh from certified renewable sources owned by the National Grid.

$$\text{Emisiones de Electricidad} = \text{Consumo eléctrico (Kwh)} \times \text{Factor de Emisión} \left( \left( \frac{\text{KgCO}_2\text{e}}{\text{Kwh}} \right) \right)$$

Scope 3 emissions are produced by the company's supply chain and are voluntarily quantified. The objective in quantifying these emissions is to manage the GHG emissions associated with the salmon's entire life cycle.

$$\text{Emisiones GEI} = \text{Datos de actividad} \times \text{Factor de Emisión}$$

## Overall results and analysis for Salmones Camanchaca

Salmones Camanchaca's business units produce varying environmental impacts. This is due to the nature of the activities of each business unit. Salmon farming takes approximately 22 to 30 months for Atlantic salmon, but also 27 to 31 months for Atlantic salmon, and 20 to 26 months for Coho salmon. Salmon pass through various stages during this process.

### **HATCHERIES**

During the first year the eggs are fertilized and the fish grow to 130 grams or more in a controlled environment. The productive stages cover genetics, reproduction and breeding. These processes produce the Salmones Camanchaca emissions from "Hatcheries".

### **GROW OUT SITES**

After the fresh water stage, the fish are transported to seawater cages where they grow. This process takes between 12 and 18 months for Atlantic salmon, and between 6 to 10 months for Coho salmon. Eventually the fish reach a weight of approximately 3 to 5 kg. These processes produce the emissions from "Grow out sites", which include emissions from burning fuels on pontoons at farming sites, generators, boats, machinery and other equipment, together with the emissions generated by feeding, medicines and vaccines.

### **PROCESSING PLANT AND COLD STORAGE**

After the fish reach an ideal harvest size, they are transported to a plant where they are processed and stored within the cold chain. These processes produce the emissions from the "Processing plant" and include emissions from burning fuels, refrigerant gases, electricity, supplier's emissions, waste and transporting staff and waste.

### **LOGISTICS**

Land and sea logistics are required at each salmon farming stage, and the report distinguishes between those that are the responsibility of the company and logistics services.

### **SENT TO THE CUSTOMER**

Salmon products are packaged, stored and distributed to markets around the world by land, air and sea. These processes produce the emissions from "Sent to the Customer".



**ADMINISTRATION**

The emissions associated with Salmones Camanchaca’s productive areas and "Administration" are quantified, which includes emissions associated with consuming fuel, electricity, and transporting staff and waste.

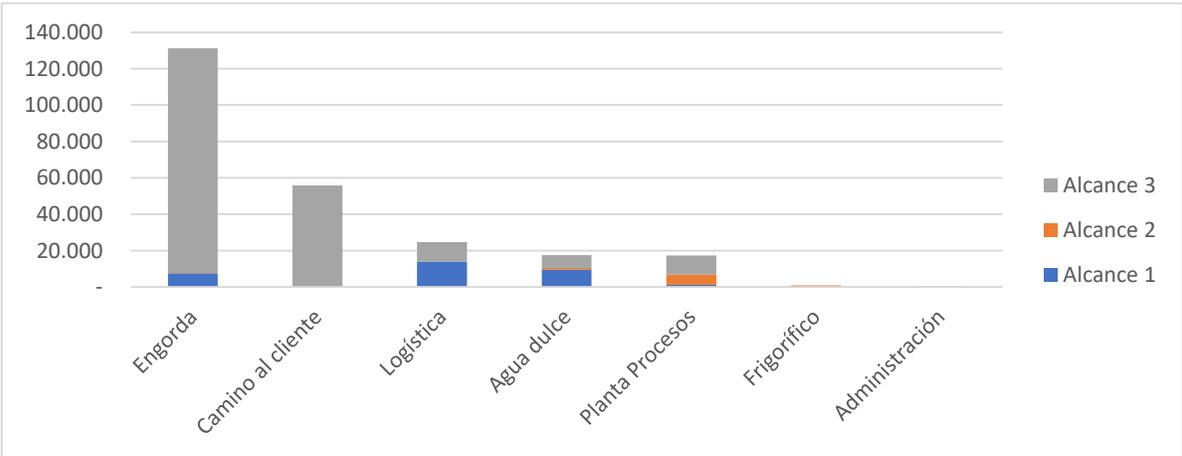
The calculations use two perspectives.

- 1. “Location-based” GHG emissions, which contribute to the Scope 2 inventory by location.

The Salmones Camanchaca GHG inventory based on the National Grid emission factor for facilities supplied with I-REC totaling **247,315 tCO2e**.

Scope	GHG Emissions (tCO2e)
Scope 1	32,198
Scope 2	7,334
Scope 3	207,783
<b>Grand Total</b>	<b>247,315</b>

They are distributed as follows.

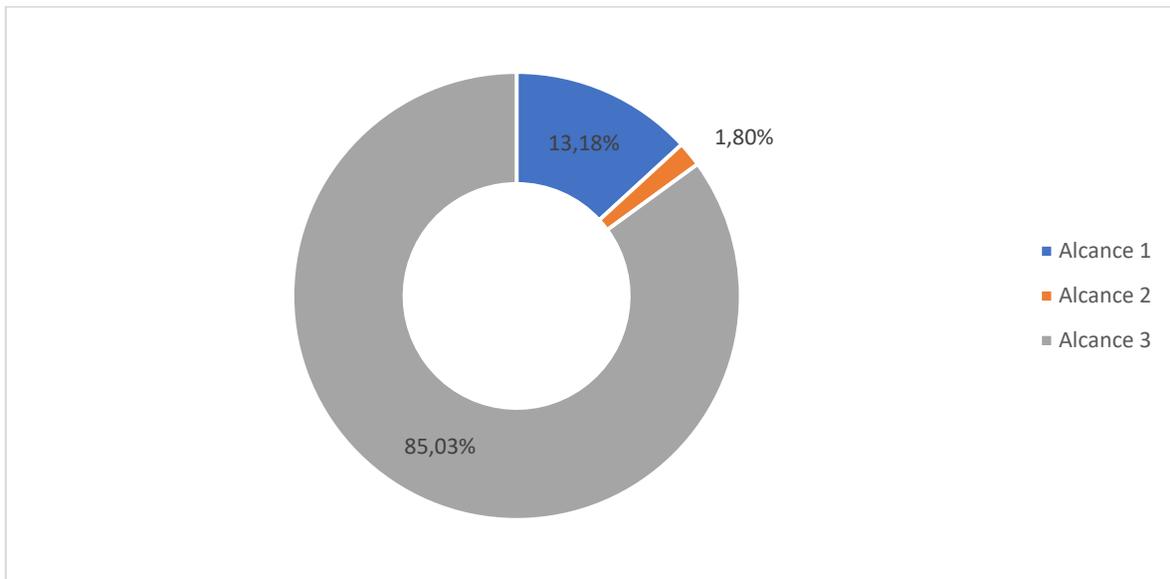


2. "Market-based" GHG, which contribute to the Scope 2 inventory by market.

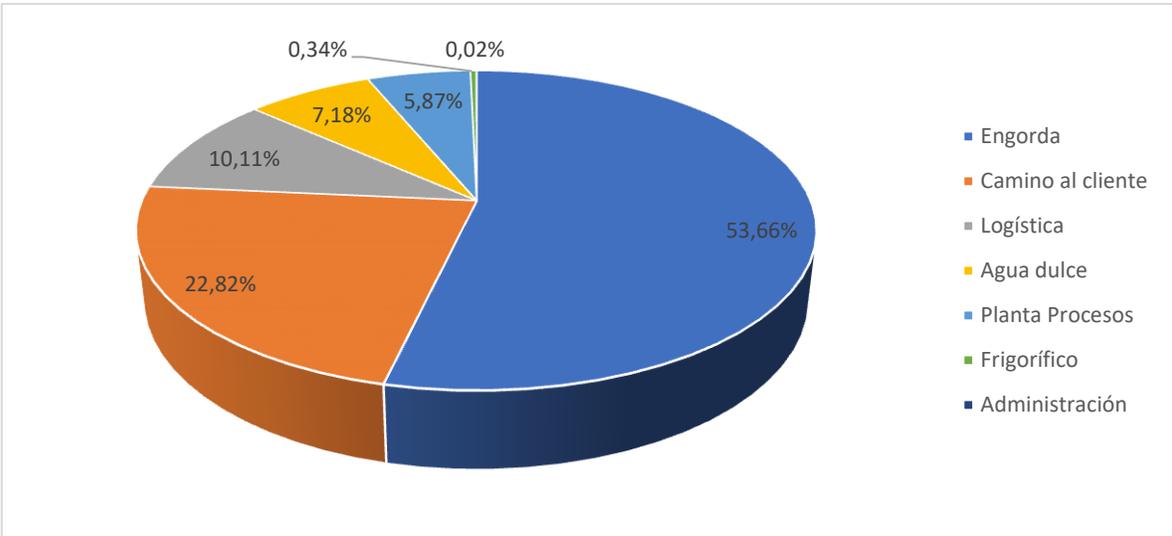
This section describes the Salmones Camanchaca GHG inventory, where NCRE has an emissions factor of zero.

Scope	GHG Emissions (tCO <sub>2</sub> e)
Scope 1	32,198
Scope 2	4,397
Scope 3	207,783
<b>Grand Total</b>	<b>244,378</b>

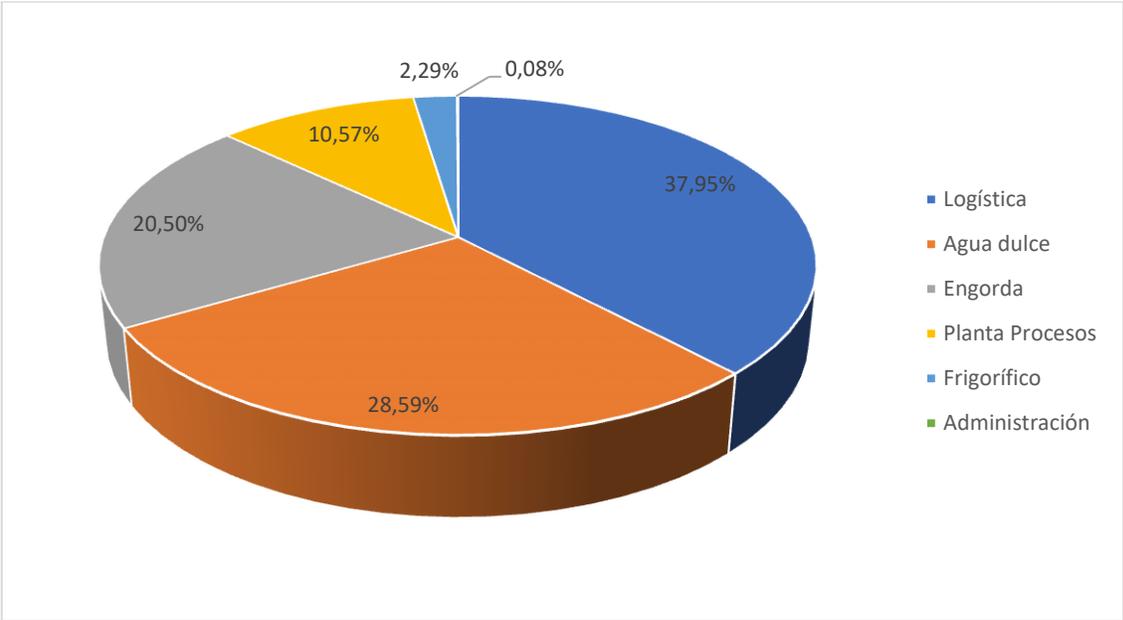
The business stages and methods have now been contextualized. This section presents the overall results of our emissions analysis for 2020, based on the Salmones Camanchaca GHG inventory that totaled **244,378 tCO<sub>2</sub>e**. These emissions are distributed by scope as follows:



"Grow out sites" represent 53.66%, transport of finished product or "Sent to the customer" represents 22.82%, other transport in the "Logistics" category represents 10.11% and the areas of fresh water, processing plants, refrigeration and administration cover the remaining 13.41%, after combining the results of Scopes 1, 2 and 3.



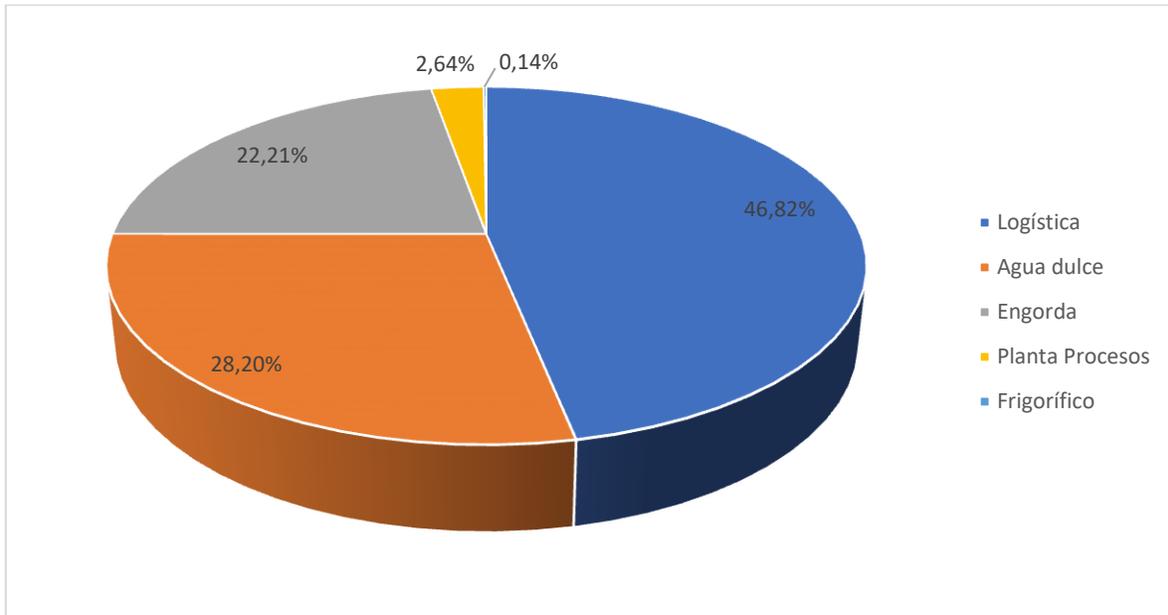
Salmones Camanchaca's climate change strategy is to become carbon neutral under its Scope 1 and 2 emissions by 2025, by implementing measures that reduce and mitigate its carbon footprint. The overall results under Scopes 1 and 2 are presented as follows, in order to efficiently manage the sources of these emissions.



## Scope 1

Direct emissions under Scope 1 total **32,198 tCO<sub>2</sub>e**, equivalent to 13.18% of the company's 2020 GHG Inventory, and comprise fuel consumption and refrigerant gas recharges. Burning diesel, LPG and benzene fuels represent 99.02% of Scope 1 emissions, while recharging refrigerant represents the remaining 0.98%.

The main source of Scope 1 emissions is burning diesel oil. These emissions totaled 29,662 tCO<sub>2</sub>e. The GHG emissions are distributed between the areas as follows:



The Logistics area includes the fuel used by wellboats, cabotage and the company's TAE cards. Implementing measures to reduce diesel oil consumption is key to reducing Salmones Camanchaca's Scope 1 emissions.

### Diesel oil

- Corporate vehicles: Tender by performance and fuel type, assess switching to a hybrid or electric vehicle fleet.
- Assess switching to hydrogen based engines.
- Perform frequent maintenance to avoid inefficiencies.
- Identify logistics suppliers with more efficient fuel consumption.
- Other measures.

28.20% of diesel oil emissions are produced by the Río Petrohué hatchery, which consumed 2,985,000 liters of oil in 2020. This facility is planned to be connected to the National Grid by 2022, so a significant reduction in its fuel consumption is expected.

Grow out sites represent 22.21% of emissions from burning diesel. Banks of batteries could reduce the carbon footprint by efficiently using fuel. Converting electricity generation at marine sites from diesel to LPG could reduce emissions by around 10-15%.

The Ministry of Energy is co-financing green energy projects through the "Ponle Energía a tu Empresa"<sup>9</sup>(Energize your Company) program, to promote national emissions reduction, and encourage companies to increase their competitiveness, reduce energy costs and use environmentally friendly energy. It will co-finance up to 60 million and up to 50% of project costs depending on the project. Applications can be submitted to this program until the end of May 2021. Using clean energy would reduce fuel consumption in general, such as diesel oil, LPG and electricity, as appropriate.

### Refrigerants

2,098 kilograms of the refrigerants Ammonia, R-22 and R-410 were recharged in 2020.

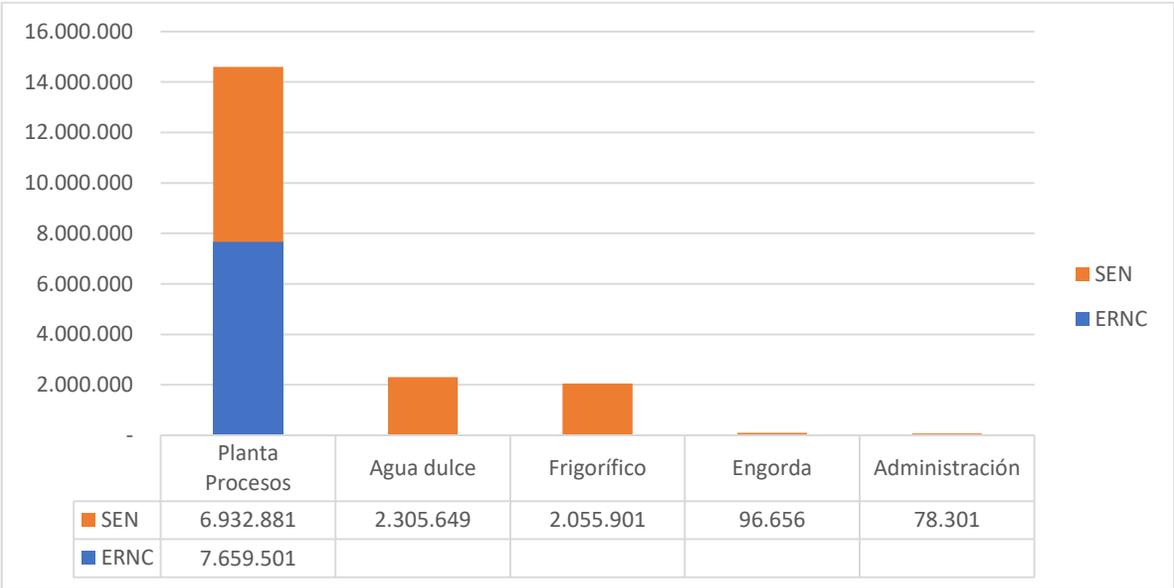
Source	Annual recharge (kg)	GHG Emissions (tCO2e)
<b>NH3</b>	<b>1,925</b>	-
San José	330	-
Tomé	1,595	-
<b>R-22</b>	<b>162</b>	<b>293</b>
Rio de la Plata	-	-
Rio del Este	26	47
Tomé	136	246
<b>R-410</b>	<b>11</b>	<b>24</b>
Rio del Este	11	24
<b>Grand Total</b>	<b>2,098</b>	<b>317</b>

<sup>9</sup> <https://www.ponleenergia.cl/>

### Scope 2

This section covers indirect emissions from generating the electricity used by each facility connected to the National Grid (SEN), which include the fresh water areas, grow out sites, processing plants, cold storage and administration facilities.

It covers National Grid emissions and the contribution from non-conventional renewable sources supplied to processing plants by Colbún.



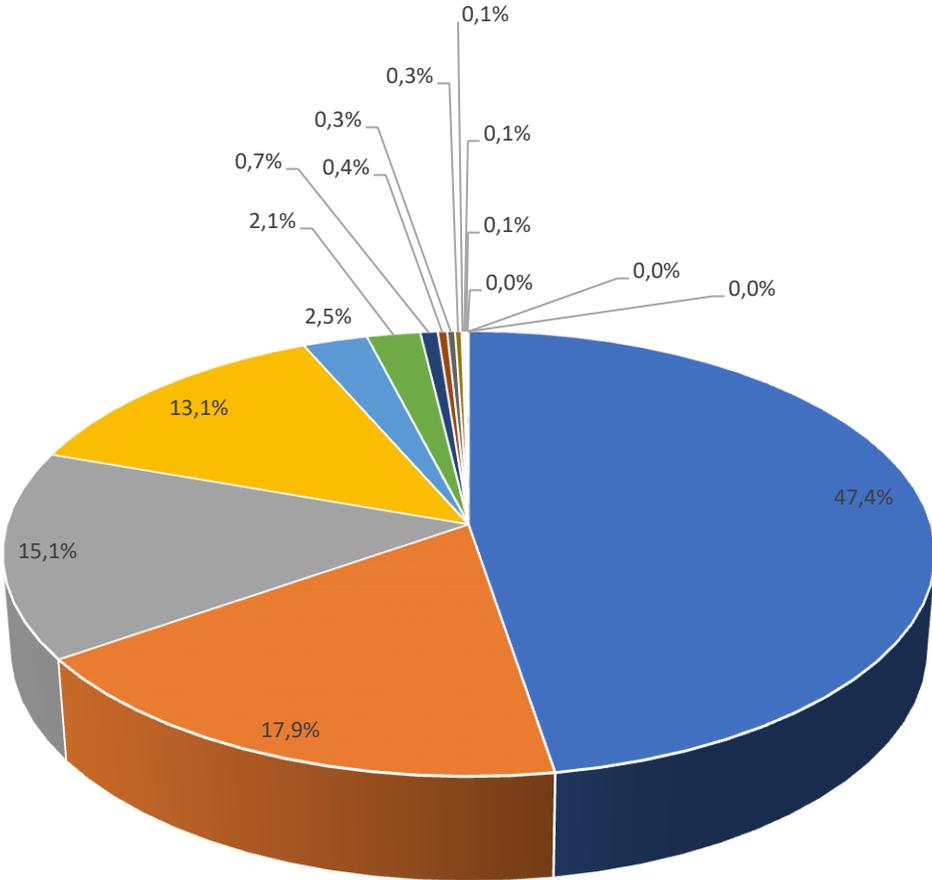
Salmones Camanchaca used 19,129 MWh of electricity from the National Grid during 2020. The associated emissions were **4,397 tCO2e**, which represent 1.76% of the company's GHG inventory<sup>10</sup>.

The plans to reduce Salmones Camanchaca’s emissions include connecting the Río Petrohué hatchery to the National Grid by 2022. This report suggests that this electricity should be supplied from clean sources, which would then be reflected in future emissions measurements.

<sup>10</sup> Accounting for the scope 2 emissions for all the electricity supplied by the National Grid would increase from 4,397 to 7,334 tCO2e.



### Distribution of Scope 2 emissions by facility



- Tomé
- Manchester
- Rio del Este
- San José
- Polcura
- Rio de la Plata
- Oficina Puerto Montt
- Playa Maqui
- Base Terao
- Pangalito(Centros en arriendo)
- Puelche
- Mañihueico
- Contao
- Chagual
- Peñasmo
- Centro Puelche

## Comparison with previous years.

The results for 2019 and 2020 are shown for comparison purposes, excluding the contribution of Scope 3 GHG emissions.

<b>Production WFE</b>	<b>2019 (kg)</b>	<b>2020 (kg)</b>
Coho salmon	4,301,823	3,721,346
Atlantic salmon	53,731,497	52,982,185
<b>Total</b>	<b>58,033,320</b>	<b>56,703,531</b>

A comparative table of Scope 1 and 2 emissions intensity by production is as follows.

<b>Scope</b>	<b>2019 GHG emissions in tCO2e</b>	<b>2020 GHG emissions in tCO2e</b>
Scope 1	29,995	32,198
Scope 2	6,659	4,397
<b>Total (tCO2e)</b>	<b>36,654</b>	<b>36,595</b>
KPI A1 (kgCO2e/kgWFE)	0.517	0.568
KPI A2 (kgCO2e/kgWFE)	0.115	0.078
<b>Total KPI</b>	<b>0.632</b>	<b>0.645</b>

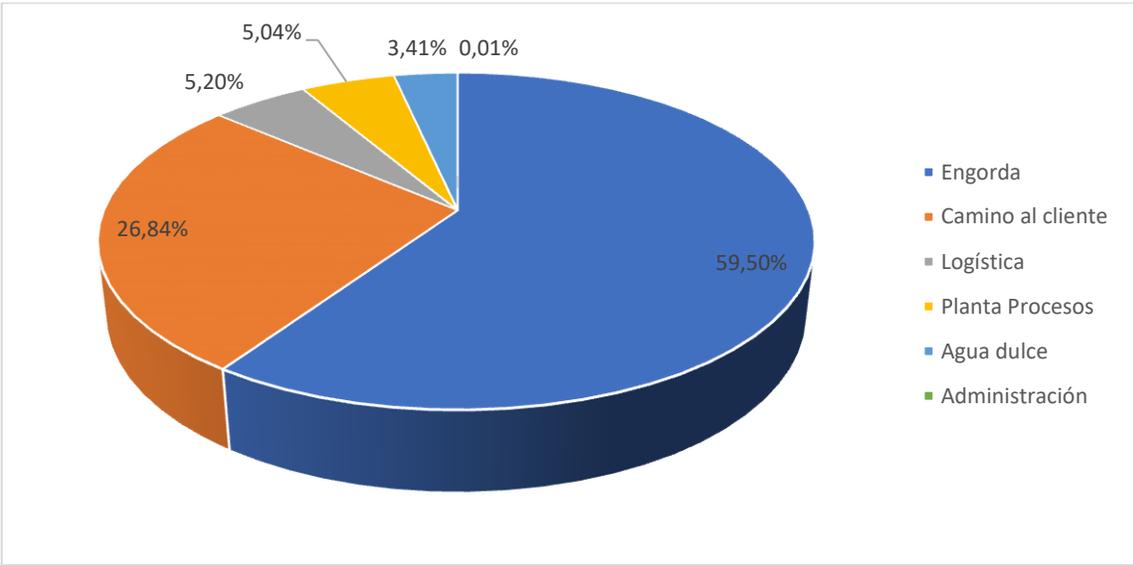
The company's emissions increased by 2.18% with respect to the previous year, as a result of increases in the intensity of its emissions<sup>11</sup> due to fuel consumption in Scope 1, while reducing the intensity of its emissions due to the NCRE supply beginning, which was certified by I-REC.

<sup>11</sup> Intensity indicator calculated from the sum of Scope 1 and 2 emissions compared to production measured in kg WFE.

### Scope 3

Indirect emissions from the supply chain were **207,783 tCO<sub>2</sub>e**, which represent 85.03% of Salmones Camanchaca's GHG inventory for 2020.

The main sources of Scope 3 emissions are the Grow out sites with 123,631 tCO<sub>2</sub>e, followed by transporting finished products to consumer markets or "Sent to the customer" with 55,774 tCO<sub>2</sub>e, Scope 3 logistics emissions produce 10,810 tCO<sub>2</sub>e, processing plants produce 10,464 tCO<sub>2</sub>e, the fresh water area produces 7,077 tCO<sub>2</sub>e and administration produces 27 tCO<sub>2</sub>e.



## Feed

Feed is the main source of indirect emissions, which total 50.06% of Salmones Camanchaca's GHG inventory. This item has a high impact due to raw material extraction, processing, distribution and use in several stages of the salmon's life cycle.

The product carbon footprint is an emission factor reported by Biomar in its Sustainability Report<sup>12</sup>, which follows the European Union's PEF method and includes climate change and land use among its impacts. The result was 1,812 kg of CO<sub>2</sub>e per ton of feed.

This report recommends asking each supplier for a climate change report covering entire product life cycles, to evaluate the impact on raw material extraction, processing, distribution, use and end of life regarding the salmon feed used by Salmones Camanchaca, in order to reduce the uncertainty of this emission factor. This would support managing the scope 3 emissions from the main source of its GHG inventory, which would be aligned with Science Based Targets (SBT).

This would provide:

- *An adequate and transparent disclosure of ingredients and the origin of raw materials.*
- *A product carbon footprint for each phase and species at Salmones Camanchaca.*
- *Emission reduction opportunities*
- *New raw materials: National fly larvae flour.*
- *Other continuous improvement measures in the supply chain.*

The company may be able to reduce its feed emissions if it can reduce its Economic<sup>13</sup> or Biological Conversion Factors, reduce its feed losses, and improve the efficiency of its feeding systems.

Facility	Annual consumption (Tons)	GHG Emissions (tCO <sub>2</sub> e)
Grow out sites	65,967	119,532
Fresh water	2,622	4,751
<b>Grand Total</b>	<b>68,589</b>	<b>124,284</b>

---

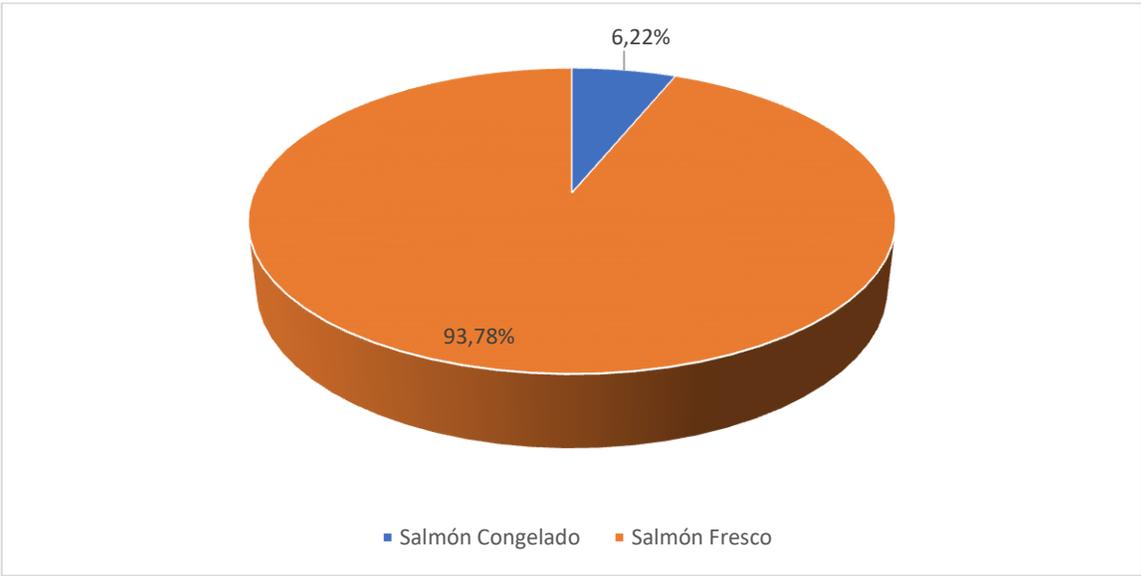
<sup>12</sup> 2019 Sustainability Report, BioMar Group

<sup>13</sup> FCRE 2019: 1.27 for Atlantic salmon and 1.22 for Coho salmon

Sent to the customer

Transporting finished products by the "Sent to the customer" area produces emissions that total **55,774 tCO<sub>2</sub>e**, which represent 22.46% of Salmones Camanchaca's GHG Inventory and 26.25% of its Scope 3 emissions.

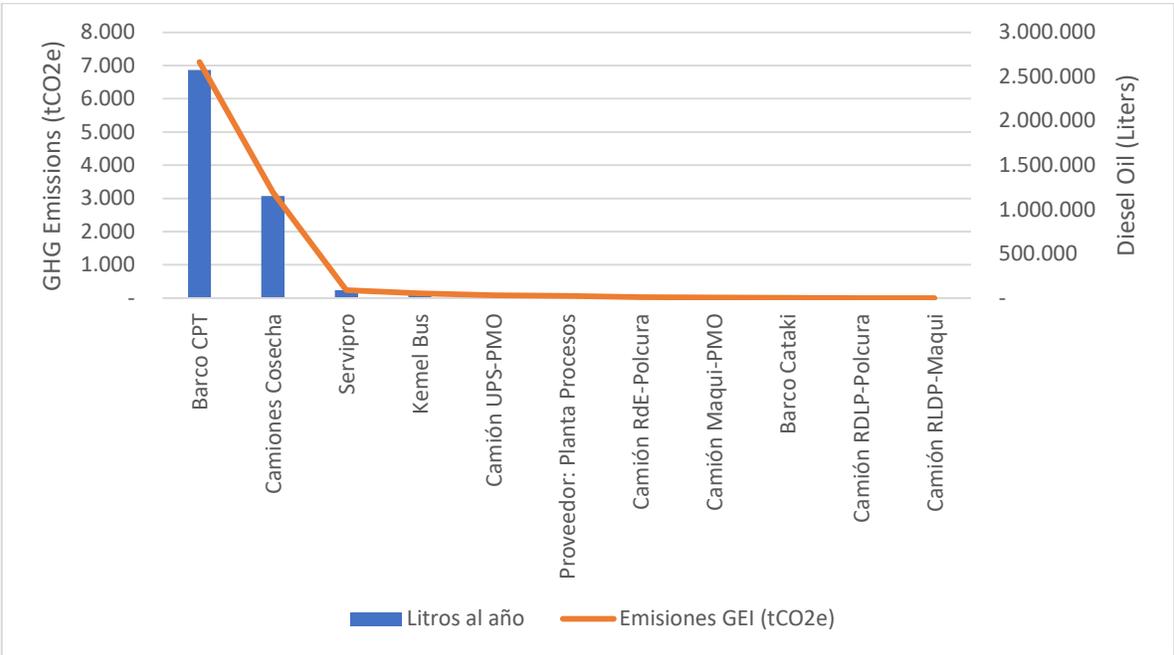
These emissions are due to transporting fresh and frozen products to salmon markets. Transporting fresh products represents 93.78% of the emissions produced by the "Sent to the customer" area, particularly shipping fresh products by air represents 80.91% of these emissions.



This report suggests keeping accurate records of the net and gross weights when transporting finished products, given their size in the GHG inventory and the opportunities to reduce emissions.

Diesel oil

Burning diesel oil under Scope 3 produces **10,876 tCO<sub>2</sub>e**, mainly due to "Logistics", which uses this fuel in wellboats, trucks and staff transport, and it is also used by suppliers.

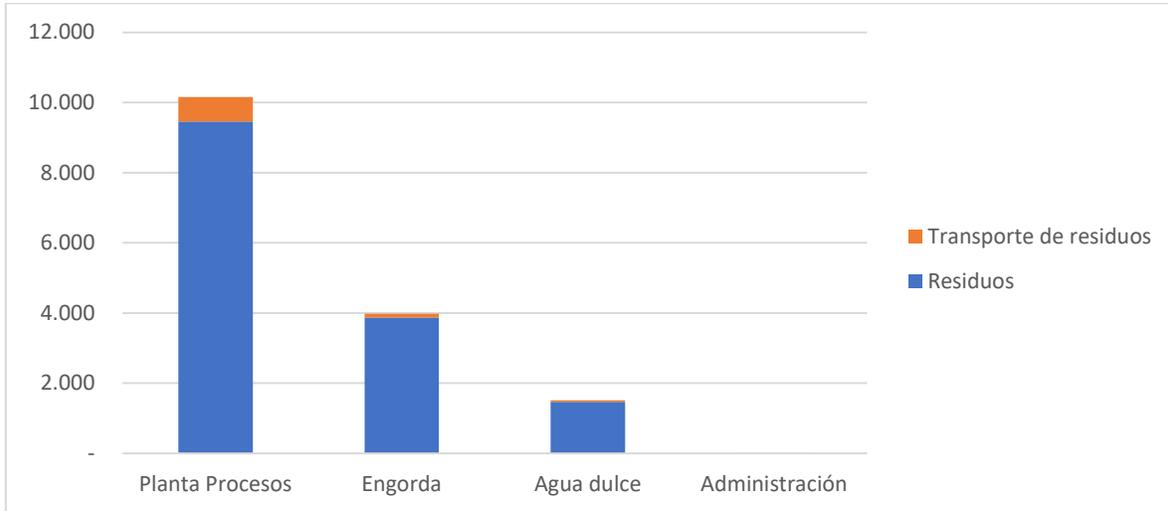


The main emissions from the Logistics area are from CPT suppliers and trucks used during harvesting, which produce 10,285 tCO<sub>2</sub>e. This report recommends that joint solutions be analyzed to reduce fuel consumption and adopt new logistics technologies that produce lower emissions per operation.

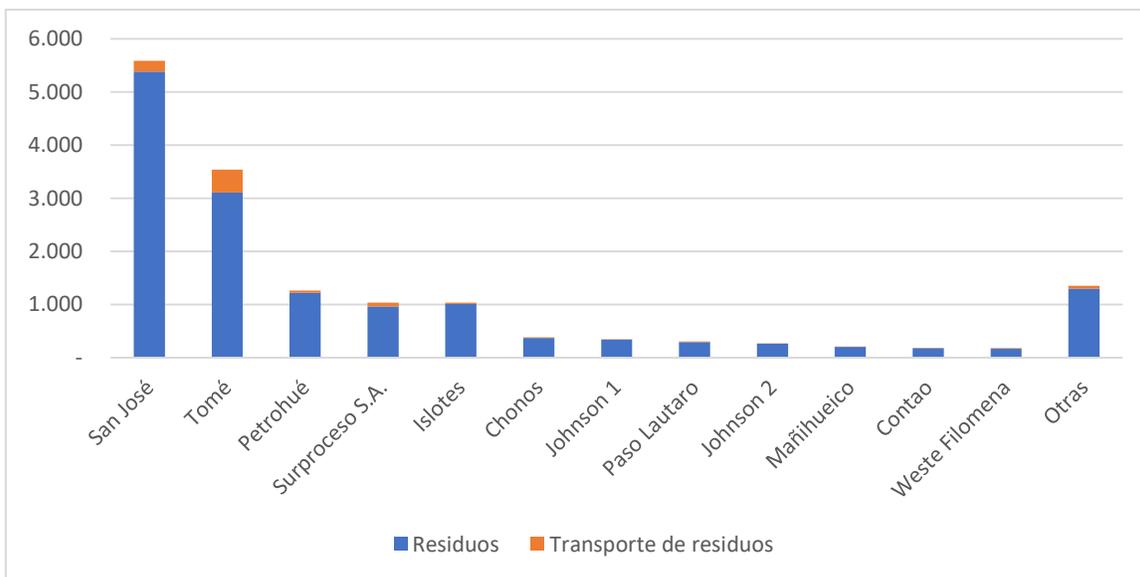
Harvesting trucks produce around 3,180 tCO<sub>2</sub>e. These emissions can be managed by gathering information from suppliers to identify those with more efficient fuel consumption, better logistics routes, and operate Euro 5 or 6 certified fleets, as appropriate. Use hybrid or electric vehicle fleets, if feasible.

## Waste

Generating and transporting waste represents 7.12% of Salmones Camanchaca's Scope 3 emissions at **15,657 tCO<sub>2</sub>e**.



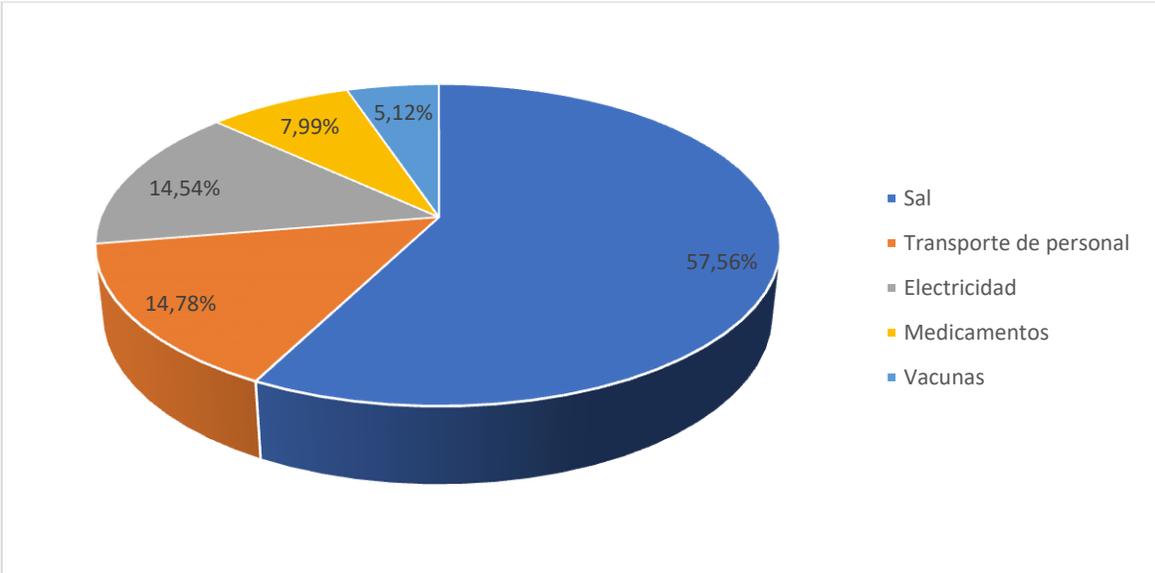
Processing plants are the main source of waste at Salmones Camanchaca, and they represent 64.87% of waste generation and transportation. Grow out sites produce 25.43% and fresh water areas produce the remaining 9.69%. Administration produces an insignificant contribution.



Measures such as increasing recycling, recovering or reusing waste produced by its facilities will reduce Scope 3 emissions, by establishing waste management and reduction targets for each area.

Other Scope 3 emissions

This section presents the results of other Scope 3 emissions that produced **1,192 tCO2e** in 2020, and represented less than 1% of Salmones Camanchaca's GHG inventory. These emissions are as follows:



This report suggests that salt suppliers are asked to quantify emissions based on their product's entire life cycle, in order to quantify salt emissions.

Staff transportation was quantified through an online survey that included up to 3 means of transportation used by company staff during 2020.

Electricity is supplier's electricity consumption during 2020.

Medicines and vaccines were quantified from expenditure in US dollars on pharmaceutical products using the emission factor issued by the Spanish Government for Pharmaceutical Products. This report suggests collecting emissions information by supplier and product to reduce the uncertainty associated with these emissions for future reports.



# Carta de Verificación

Santiago, Mayo, 2021

Salmones Camanchaca S.A.  
Presente

De nuestra consideración:

Hemos realizado la revisión de los siguientes aspectos del Inventario de Emisiones de Gases de Efecto Invernadero para el período 2020, de Salmones Camanchaca.

## Alcance

Salmones Camanchaca ha solicitado a Deloitte la verificación del Inventario de Emisiones de Gases de Efecto Invernadero, para el período 2020.

Dicho informe contempla la estimación de la Huella de Carbono Corporativa de las operaciones sobre las cuales Salmones Camanchaca ejerce total control para el período comprendido entre el 01 de enero de 2020 y 31 de diciembre de 2020. El proceso fue realizado considerando las emisiones GEI de consumo de combustible, gases refrigerantes, consumo de electricidad, consumo de alimento, transporte de producto por vías aéreas, terrestres y marítimas, el petróleo diésel de proveedores logísticos, generación de residuos y transporte, consumo de sal, transporte de personal, electricidad de proveedores y productos farmacéuticos.

Las emisiones totales declaradas en el Inventario de Emisiones de Gases de Efecto Invernadero 2020 Salmones Camanchaca se presentan en la tabla 1.

Método	Alcance 1	Alcance 2	Alcance 3	Total
Mercado	32.198	4.397	207.783	244.378
Ubicación	32.198	7.334	207.783	247.315

## Metodología

Nuestra revisión del Inventario de Emisiones de Gases de Efecto Invernadero, período 2020, fue realizada de acuerdo con las directrices de la norma ISO 14064 Parte 3. Cabe destacar que esta verificación no constituye una auditoría y, en consecuencia, no expresamos una opinión de auditoría sobre esta declaración.

El proceso de revisión consideró la recepción oficial de información, además de las actividades de verificación realizadas a través de procedimientos analíticos y pruebas de revisión que se describen a continuación:

- Recepción de Excel de cálculos "Información consolidada por Alcance Salmones Camanchaca 2020" e informe de emisiones GEI "Informe GEI Salmones Camanchaca 2020 Greenticket", además de carpetas con información y evidencia para cada uno de los alcances.
- Revisión de la consistencia y coherencia de los cálculos para cada uno de los alcances del Inventario de Emisiones de Gases de Efecto Invernadero. Estos fueron verificados mediante muestras aleatorias, presentando las inconsistencias por correos electrónicos.

- Petición y recepción de evidencia no cubierta por el proceso de cálculo del Inventario de Emisiones de Gases de Efecto Invernadero 2020.
- Revisión de la coherencia de información y datos del Inventario de Gases Efecto Invernadero de Salmones Camanchaca.

## **Conclusiones**

- No se ha puesto de manifiesto ningún aspecto que nos haga creer que el Inventario de Emisiones de Gases de Efecto Invernadero realizado por Salmones Camanchaca no ha sido preparada de acuerdo a los estándares internacionales de aplicación.
- Todas las inconsistencias encontradas fueron aclaradas y mejoradas, por ende, no se ha puesto de manifiesto ningún aspecto que nos haga creer que la información proporcionada acerca del Inventario de Emisiones de Gases de Efecto Invernadero contenga errores significativos.

## **Responsabilidades de Salmones Camanchaca y de Deloitte**

- La preparación del Inventario de Emisiones de Gases Efecto Invernadero, período 2020, así como el contenido de este es responsabilidad de Salmones Camanchaca, la que además es responsable de definir, adaptar y mantener los sistemas de gestión y control interno de los que se obtiene la información.
- Nuestra responsabilidad es emitir un informe independiente basado en los procedimientos aplicados en nuestra revisión.
- Este informe ha sido preparado exclusivamente en interés de Salmones Camanchaca, de acuerdo con los términos establecidos en la Carta de Compromiso.
- Las conclusiones de la verificación realizadas por Deloitte son válidas para el Inventario de Emisiones de Gases de Efecto Invernadero de Salmones Camanchaca, período 2020 recibido con fecha 28 de Mayo de 2021.
- El alcance de una revisión de seguridad limitada es sustancialmente inferior al de una auditoría o revisión de seguridad razonable. Por lo tanto, no proporcionamos opinión de auditoría sobre el Inventario de Emisiones de Gases Efecto Invernadero de Salmones Camanchaca Período 2020.

Saluda atentamente a ustedes,



**Fernando Gaziano**  
Socio



[www.deloitte.cl](http://www.deloitte.cl)

Deloitte presta servicios profesionales de auditoría, impuestos, consultoría y asesoría financiera, a organizaciones públicas y privadas de diversas industrias. Con una red global de firmas miembro en cerca de 164 países, Deloitte brinda su experiencia y profesionalismo de clase mundial para ayudar a que sus clientes alcancen el éxito desde cualquier lugar del mundo en donde operen. Los aproximadamente 240.000 profesionales de la firma están comprometidos con la visión de ser el modelo de excelencia.

Esta publicación sólo contiene información general y ni Deloitte Touche Tohmatsu Limited, ni sus firmas miembro, ni ninguna de sus respectivas afiliadas (en conjunto la "Red Deloitte"), presta asesoría o servicios por medio de esta publicación. Antes de tomar cualquier decisión o medida que pueda afectar sus finanzas o negocio, debe consultar a un asesor profesional calificado. Ninguna entidad de la Red Deloitte será responsable de alguna pérdida sufrida por alguna persona que utilice esta publicación.

Deloitte © se refiere a Deloitte Touche Tohmatsu Limited, una compañía privada limitada por garantía, de Reino Unido, y a su red de firmas miembro, cada una de las cuales es una entidad legal separada e independiente. Por favor, vea en [www.deloitte.com/cl](http://www.deloitte.com/cl) acerca de la descripción detallada de la estructura legal de Deloitte Touche Tohmatsu Limited y sus firmas miembro.

Deloitte Touche Tohmatsu Limited es una compañía privada limitada por garantía constituida en Inglaterra & Gales bajo el número 07271800, y su domicilio registrado: Hill House, 1 Little New Street, London, EC4A 3TR, Reino Unido.

© 2021 Deloitte. Todos los derechos reservados.

#### **Oficina central**

Rosario Norte 407  
Las Condes, Santiago  
Chile  
Fono: (56) 227 297 000  
Fax: (56) 223 749 177  
[deloittechile@deloitte.com](mailto:deloittechile@deloitte.com)

#### **Regiones**

Simón Bolívar 202  
Oficina 203  
Iquique  
Chile  
Fono: (56) 572 546 591  
Fax: (56) 572 546 595  
[iquique@deloitte.com](mailto:iquique@deloitte.com)

Av. Grecia 860  
Piso 3  
Antofagasta  
Chile  
Fono: (56) 552 449 660  
Fax: (56) 552 449 662  
[antofagasta@deloitte.com](mailto:antofagasta@deloitte.com)

Los Carrera 831  
Oficina 501  
Copiapó  
Chile  
Fono: (56) 522 524 991  
Fax: (56) 522 524 995  
[copiapo@deloitte.com](mailto:copiapo@deloitte.com)

Alvares 646  
Oficina 906  
Viña del Mar  
Chile  
Fono: (56) 322 882 026  
Fax: (56) 322 975 625  
[vregionchile@deloitte.com](mailto:vregionchile@deloitte.com)

Chacabuco 485  
Piso 7  
Concepción  
Chile  
Fono: (56) 412 914 055  
Fax: (56) 412 914 066  
[concepcionchile@deloitte.com](mailto:concepcionchile@deloitte.com)

Quillota 175  
Oficina 1107  
Puerto Montt  
Chile  
Fono: (56) 652 268 600  
Fax: (56) 652 288 600  
[puertomontt@deloitte.com](mailto:puertomontt@deloitte.com)