

# GHG Inventory Summarized Results Salmones Camanchaca 2023

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Greenticket

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FIRST PAGE.

Companies play a key role in society in many ways. They have far-reaching financial, environmental and social consequences. Every year the world consumes more resources than the planet can naturally produce. The world's population is likely to grow to more than eight billion people by 2030. Therefore, responsibly consuming natural resources is becoming increasingly important. At the same time, global competition is becoming increasingly intense. While new challenges are arising all the time, such as climate change, political turmoil and the global consequences of the coronavirus pandemic. And let's not forget consumers who are generating pressures by accelerating changes in demand. There are also growing expectations from various stakeholders that the economy should be focused on sustainability.

The aquaculture industry plays a key role in the response to these changes. Therefore, Greenticket has grouped the key challenges to help companies with four strategic issues.

These are decarbonization, the circular economy, social partners and supply chain responsibility.

We know that global social and environmental changes are driving productive sectors to examine their entire value chain with the aim of continuously improving sustainability across their entire business.

Greenticket has adopted this commitment. We help our partners to achieve sustainable growth, generate value and reduce their environmental footprint.

Greenticket Team.

## SUMMARY

The following report summarizes the results of the Greenhouse Gas (GHG) Inventory for Salmones Camanchaca in 2022 based on information provided by the company regarding fuel consumption, electricity, refrigerant gases, waste generation, food consumption, packaging, product sales, logistics and corporate flights. The Greenhouse Gas Protocol was used to quantify emissions, which is validated by the World Resources Institute (WRI) and The World Business Council for Sustainable Development (WBCSD). It separates direct and indirect emissions into three scopes.

Scope	tCO <sub>2</sub> e Market based	tCO <sub>2</sub> e Location Based
Scope 1	23,058	23,058
Scope 2	1,233	5,330
Scope 3	183,193	183,195
<b>Total</b>	<b>207,484</b>	<b>211,583</b>

This exercise found that the company's market-based emissions were **207,484 tons of carbon dioxide equivalent (tCO<sub>2</sub>e)**, which is equivalent to the generation of 4.27 tCO<sub>2</sub>e/tWFE, where Scope 1 represents 11.11% of the Corporate Carbon Footprint<sup>1</sup>, Scope 2 represents 0.59% and Scope 3 represents 88.29%.

These results will help us to monitor the emissions reduction and mitigation strategy by identifying critical emission generation points and implementing solutions.

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<sup>1</sup> The percentages in this report are to 2 decimal places, which is considered significant.

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# 1 INTRODUCTION

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**Aquaculture is part of the solution to sustainable food supplies in the future.**

**But we must continue to develop effective solutions to ensure that the world can feed 10 billion people by 2050, while reducing emissions, curbing deforestation and alleviating poverty.**

Sustainably feeding this growing population requires simultaneously fulfilling three requirements. The world will have to close a 56% gap between the amount of food produced today and the amount required by 2050, according to the World Resources Institute. It must reduce the impact of agriculture on the climate, ecosystems and water. It must ensure that agriculture supports inclusive economic and social development. However, hundreds of millions of people are still hungry today, while agriculture uses almost half the world's vegetated land, and food production generates a quarter of global greenhouse gas emissions. Simultaneously, more than one billion tons of food is lost or wasted each year, while tastes and menus in many parts of the world are driving demand for more resource-intensive foods.

Our research in recent years indicates that aquaculture is key to meeting the food challenges of the future. But we must look beyond the water, to make this sector more sustainable, since our measurements indicate that the real impact on the climate and ecosystems does not occur in fish farming cages, but where the raw materials for fish feed are produced.

We need to develop joint strategies with the entire supply chain. We must sustainably increase feed production by restoring the productivity of degraded land, regeneratively increasing yields, and improving land and water management. To ensure that tastes in the future help to reduce the climate footprint of food.

This report describes the carbon footprint of Salmones Camanchaca. It covers its freshwater, grow out, processing, cold storage, customer deliveries, outsourcing and office activities. Salmones

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

## 2 METHOD

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These results were based on the Greenhouse Gas Protocol, which is the most widely used tool for measuring corporate carbon footprints.

The protocol is endorsed by the WRI and WBCSD, and this report uses an *Operational Control* approach, which measures the GHG emissions attributable to operations that Salmones Camanchaca can control.

The guiding principles of the protocol are:

1. Relevance
2. Integrity
3. Consistency
4. Transparency
5. Precision

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

### 2.1 GHG INVENTORY APPROACH AND PARAMETERS

#### 2.1.1 People responsible for the GHG inventory

This GHG inventory was coordinated by Greenticket using data provided by Salmones Camanchaca.

The corporate carbon footprint report includes emissions from:

1. Outsourcing<sup>2</sup>
2. Administration
3. Hatcheries

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<sup>2</sup> Outsourcing is the proportion of Sur Procesos's emissions assigned to Salmones Camanchaca.

4. Grow out
5. Processing plants
6. Cold storage
7. Customer deliveries

## 2.2 OPERATIONAL BOUNDARIES

After the organizational boundaries have been identified, the emissions in the carbon footprint analysis are specified, which represent the scope.

### - Scope 1 (Mandatory)

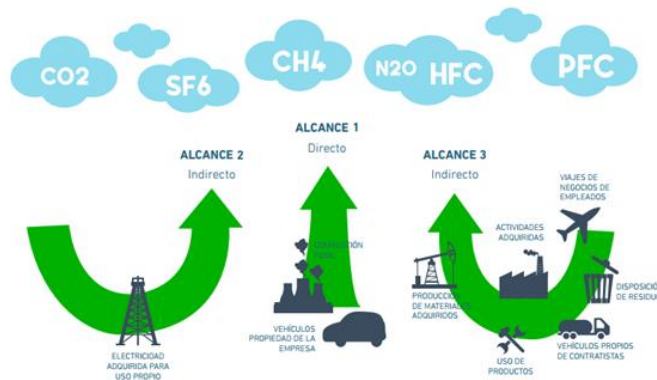
Direct emissions from the company's business, including heat, electricity, steam generated in boilers in the company's facilities, emissions from gases used in refrigeration and air conditioning.

### - Scope 2 (Mandatory)

Indirect emissions from producing the electricity, heat or steam consumed by the organization.

### - Scope 3

Emissions that are a consequence of the organization's business, but come from sources that are not controlled by the organization. For example: Supply chain emissions



Business Area	Scope 1	Scope 2	Scope 3
Hatcheries	Fuel and refrigerant gas consumption	Electricity	Food, waste
Grow out	Fuel consumption	Electricity	Feed, logistics and waste

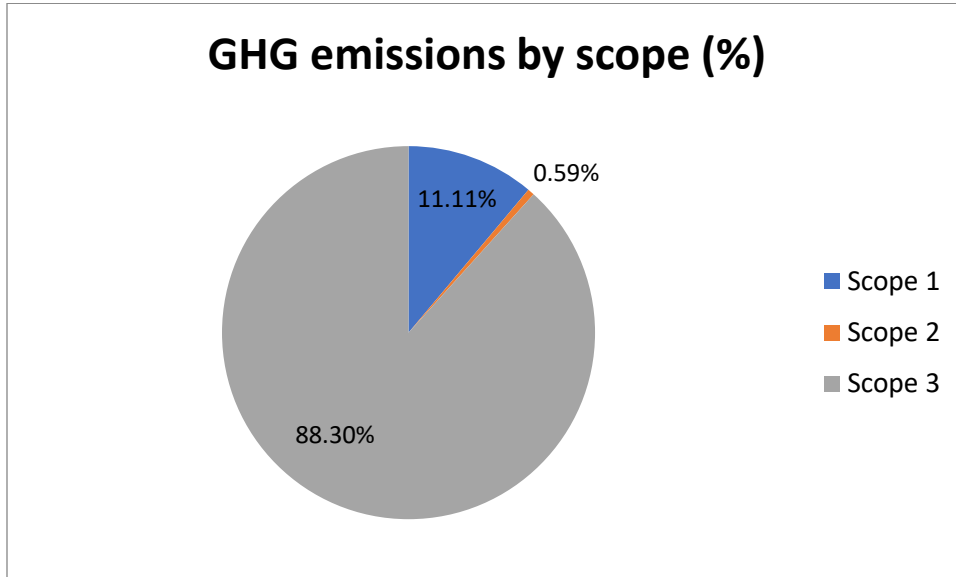
<b>Business Area</b>	<b>Scope 1</b>	<b>Scope 2</b>	<b>Scope 3</b>
Processing plants/Cold storage	Fuel and refrigerant gas consumption	Electricity	Waste, packaging, external cold storage
Administration	Corporate vehicles	Electricity	Transporting staff and waste
Customer deliveries	-	-	Product movement
Outsourcing	-	-	Energy consumption, waste and refrigerants



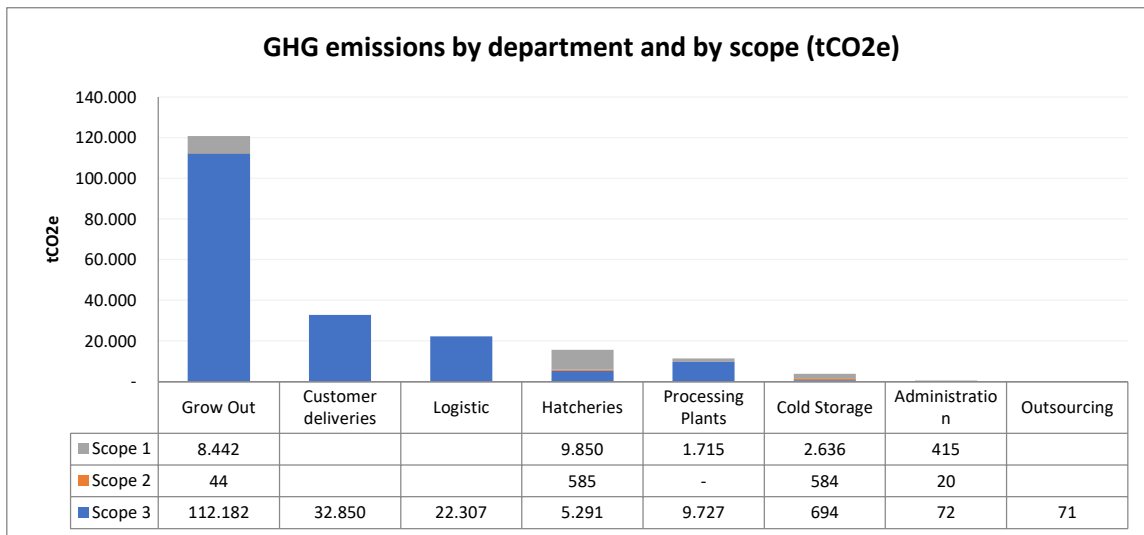
### 3 OVERALL RESULTS AND ANALYSIS

The GHG emissions inventory at Salmones Camanchaca for 2022 totaled **207,486 tCO<sub>2</sub>e**.

The following chart illustrates the distribution by scope:



The results by department indicate that the grow out department contributes 58.16% of Camanchaca Salmon's inventory, followed by the customer deliveries department, which contributes 15.83%, logistics contributes 10.75%, hatcheries 7.58%, processing and cold storage 7.40% and administration and outsourcing 0.28%.

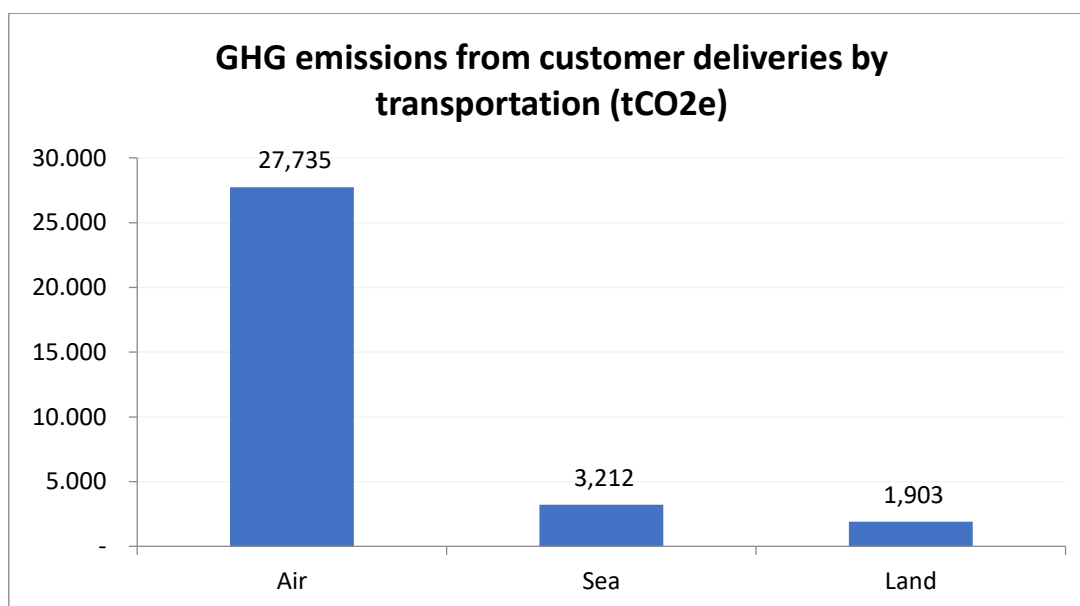


Production was 48,568 tWFE in 2022, resulting in an indicator of 4.27 tCO<sub>2</sub>e/tWFE.

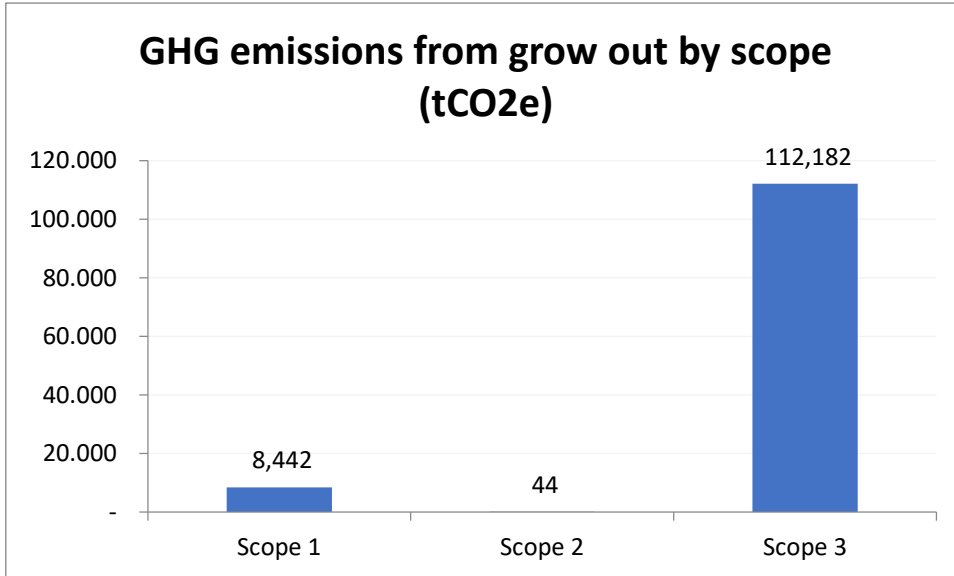
Scope	tCO <sub>2</sub> e/tWFE
Scope 1	0.475
Scope 2	0.025
Scope 3	3.772
<b>Total</b>	<b>4.272</b>

### 3.1 CUSTOMER DELIVERIES

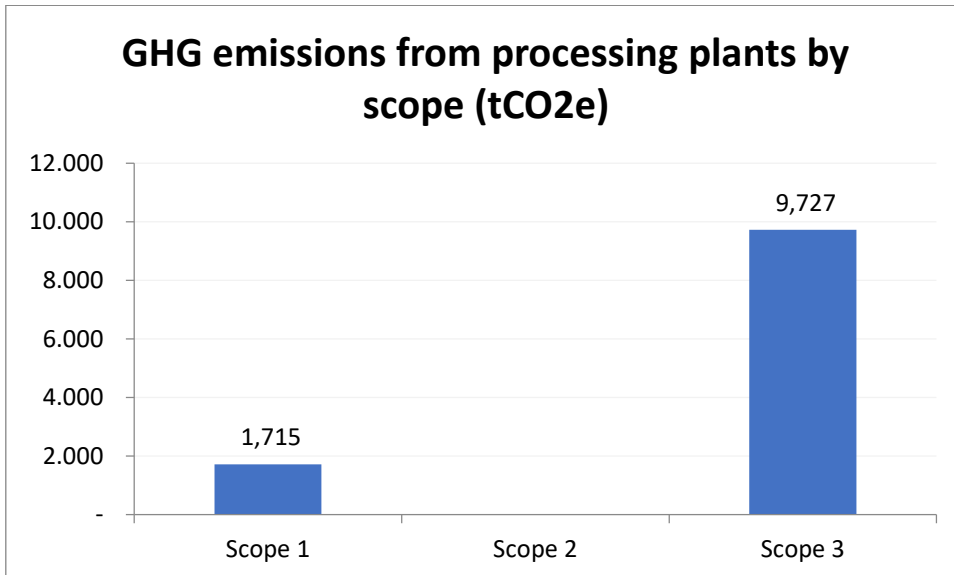
Transportation	Species	Conservation status	Unit	Quantity	tCO <sub>2</sub> e
Air	Coho salmon	Frozen	kg	259	1
	Atlantic Salmon	Frozen	kg	243	1
		Fresh	kg	6,893,687	27,733
Sea	Coho salmon	Frozen	kg	1,475,817	222
	Atlantic Salmon	Frozen	kg	19,795,938	2,991
Land	Coho salmon	Frozen	kg	1,678,899	18
		Fresh	kg	21,029	0
	Atlantic Salmon	Frozen	kg	22,611,614	361
		Fresh	kg	9,817,035	1,523
<b>Total</b>				<b>62,294,521</b>	<b>32,850</b>



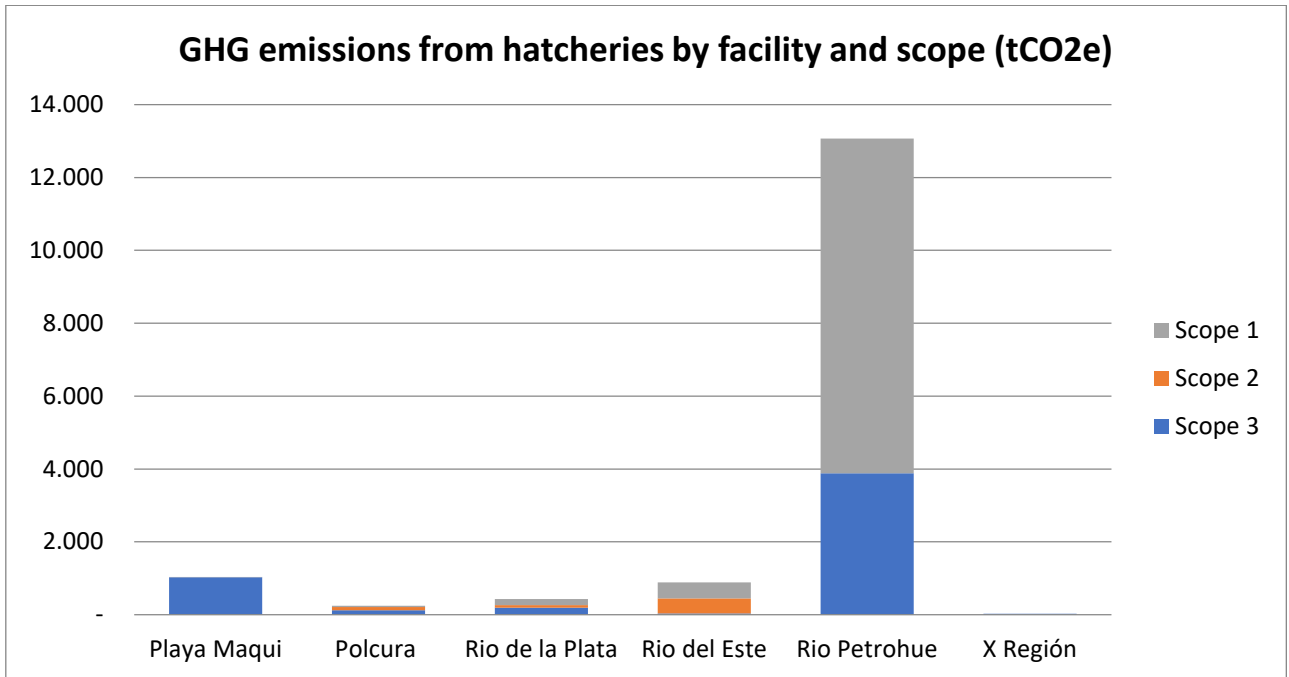
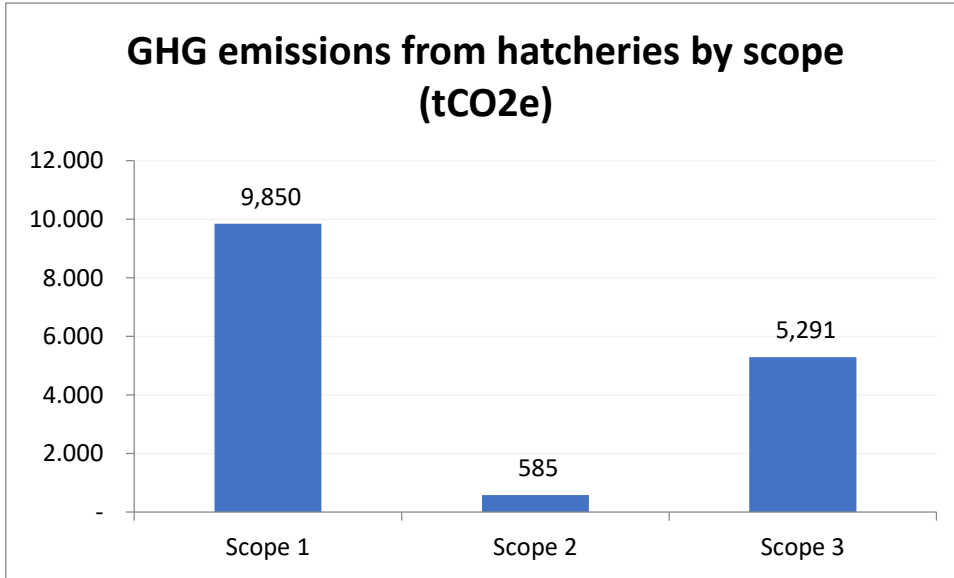
### 3.2 GROW OUT



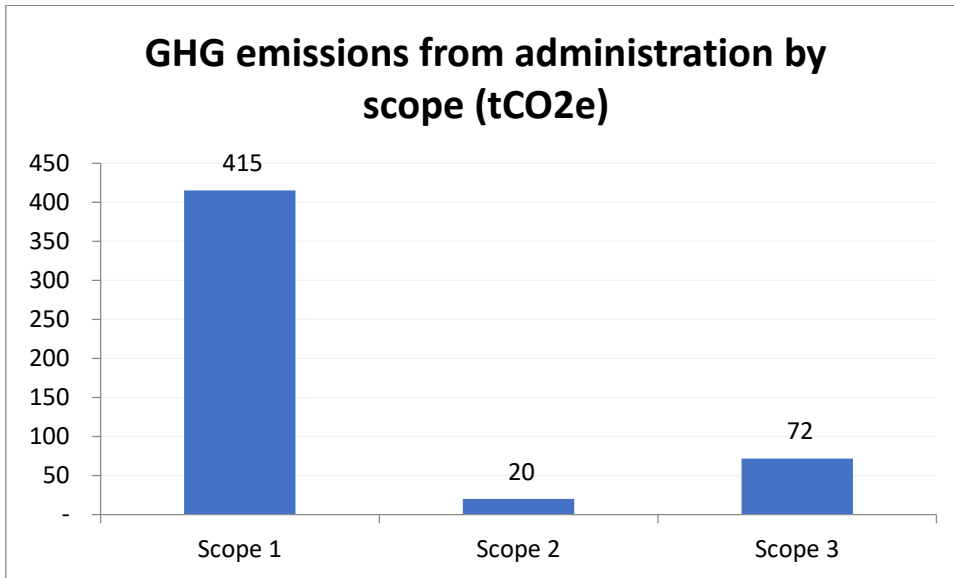
### 3.3 PROCESSING PLANTS



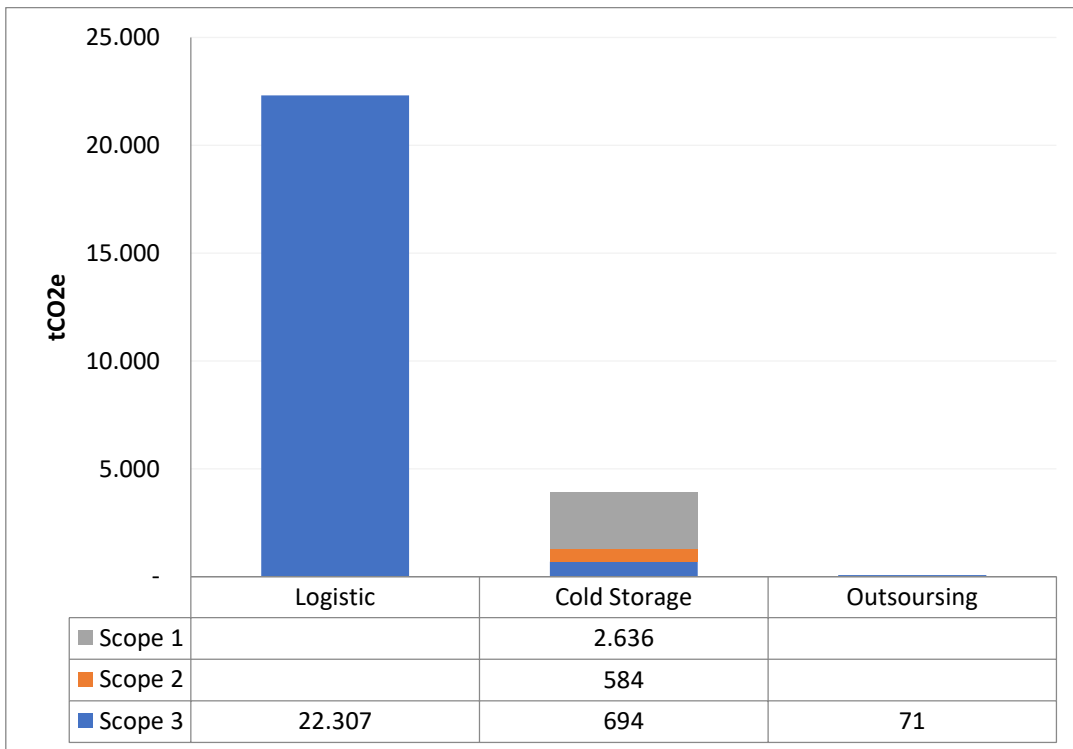
### 3.4 HATCHERIES



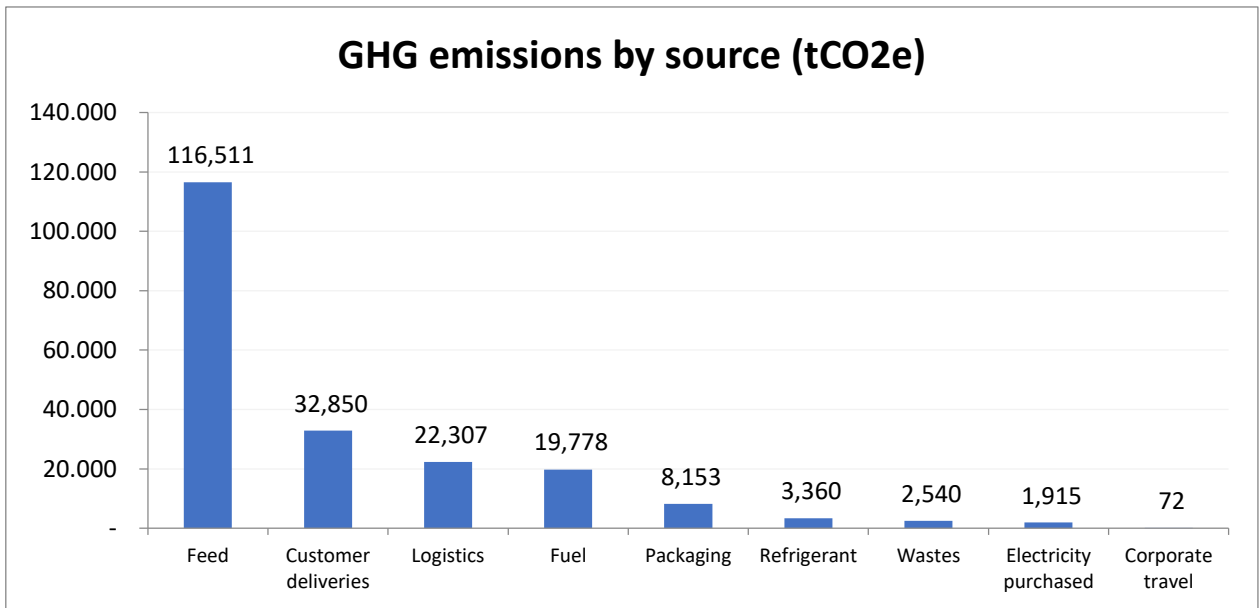
### 3.5 ADMINISTRATION



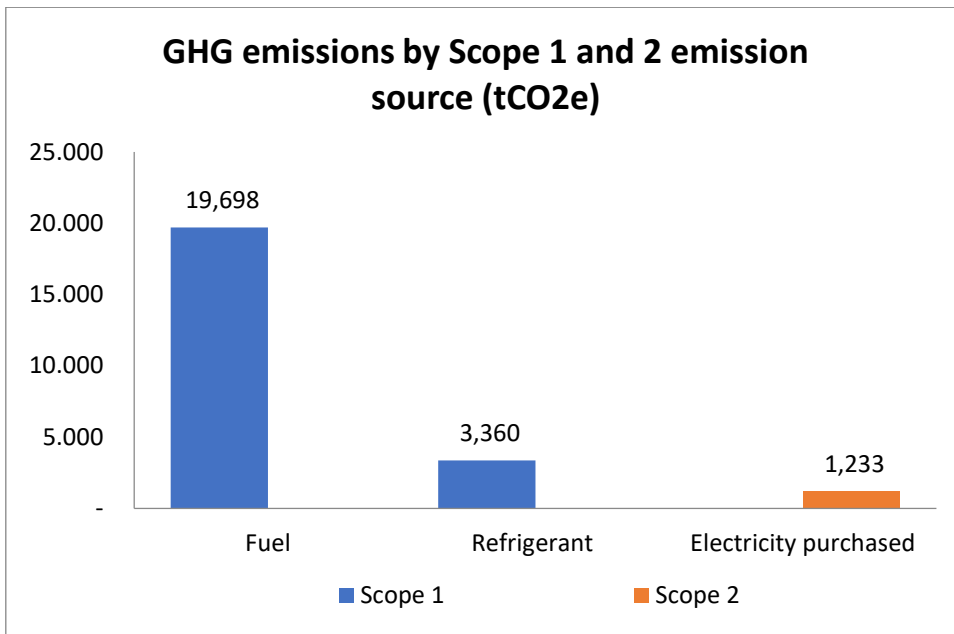
### 3.6 OTHER DEPARTMENTS



## 4 EMISSIONS SOURCES



### 4.1 GHG EMISSIONS BY SCOPE 1 AND 2 EMISSION SOURCE



Department	Scope	Source	Market tCO2e
Hatcheries	Scope 1	Fuel	9,543
		Cold storage	307
	Scope 2	Electricity purchased	585
Grow out	Scope 1	Fuel	8,442
	Scope 2	Electricity purchased	44
Cold storage	Scope 1	Cold storage	2,561
		Fuel	75
	Scope 2	Electricity purchased	584
Processing plants	Scope 1	Fuel	1,222
		Cold storage	492
	Scope 2	Electricity purchased	0
Administration	Scope 1	Fuel	415
	Scope 2	Electricity purchased	20
<b>Total</b>			<b>24,291</b>

## 5 COMPARISON 2021/2022

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Total GHG emissions in 2022 were 3.36% higher than in 2021, as they increased from 200,746 tCO<sub>2</sub>e to 207,484 tCO<sub>2</sub>e.

The largest increase occurred in Scope 3 with 5,750 tCO<sub>2</sub>e. Scope 2 emissions decreased by 26.37%, which is due to a 2.6% decrease in electricity consumption and a 23.06% decrease in the SEN emission factor.

Scope	2019 tCO <sub>2</sub> e	2020 tCO <sub>2</sub> e	2021 tCO <sub>2</sub> e	2022 tCO <sub>2</sub> e
Scope 1	29,995	32,198	21,629	23,058
Scope 2	6,659	4,397	1,674	1,233
Scope 3	384,887	211,614	177,443	183,193
<b>Total</b>	<b>421,541</b>	<b>248,209</b>	<b>200,746</b>	<b>207,484</b>

Even though there were decreases in emissions from some sources such as customer deliveries, purchased electricity, waste and corporate travel, the most significant increase was 9,320 tCO<sub>2</sub>e in logistics, which is due to the arrival of Wellboats.

Emissions Sources	2021 (tCO <sub>2</sub> e)	2022 tCO <sub>2</sub> e
Feed	116,325	116,511
Customer deliveries	35,765	32,850
Fuel	18,137	19,778
Electricity purchased	4,195	1,913
Logistics	12,987	22,307
Packaging	5,733	8,153
Cold storage	3,366	3,360
Waste	4,127	2,540
Corporate travel	113	72
<b>Total</b>	<b>200,746</b>	<b>207,484</b>

An analysis by department indicates that logistics had the greatest increase, which corroborates the results by emissions source.



<b>Department</b>	<b>2021 (tCO2e)</b>	<b>2022 (tCO2e)</b>
Administration	553	507
Hatcheries	15,353	15,714
Grow out	120,751	120,681
Customer deliveries	35,765	32,850
Cold storage	4,414	3,914
Logistics	12,987	22,307
Outsourcing	0	69
Processing plants	10,924	11,442
<b>Total</b>	<b>200,746</b>	<b>207,484</b>

Production continuously declined between 2019 and 2021. Production in 2021 was 41,937 tWFE, while in 2022 it increased to 48,568 tWFE. This represents an increase of 15.81%.

<b>Year</b>	<b>Production volumes</b>
2019	58,063
2020	56,669
2021	41,909
2022	48,591

Therefore, greenhouse gas emissions per ton decreased in 2022.

<b>Scope</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Scope 1	0.52	0.57	0.52	0.47
Scope 2	0.11	0.08	0.04	0.03
Scope 3	6.63	3.73	4.23	3.77
<b>Total (tCO2e/tWFE)</b>	<b>7.26</b>	<b>4.38</b>	<b>4.79</b>	<b>4.27</b>

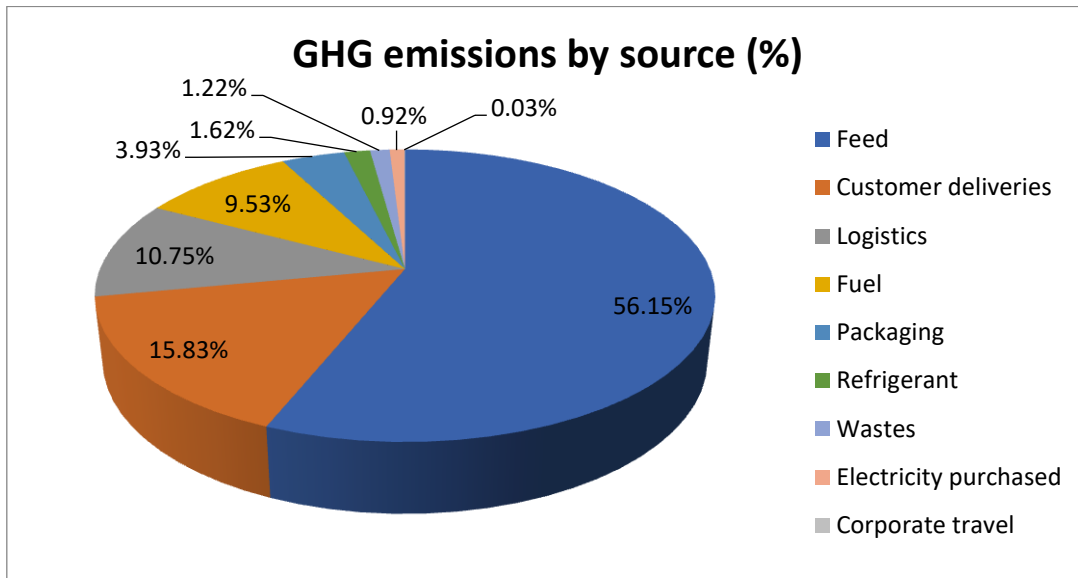
Therefore, greenhouse gas emissions per tWFE reduced by 10.76% in 2022 compared to 2021.

## 6 CONCLUSIONS AND RECOMMENDATIONS

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The GHG Inventory or Corporate Carbon Footprint for Salmones Camanchaca for 2022 analyzes its environmental performance and identifies the critical emissions. As a result measures can be implemented that will reduce its emissions.

The corporate carbon footprint was **207,484 tCO<sub>2</sub>e** from customer deliveries - hatcheries - grow out - processing plants / cold storage - administration and outsourcing.



The company's environmental performance should be monitored, and market trends should be identified to reduce corporate or product emissions. The results should be communicated to *stakeholders* to clarify Salmones Camanchaca's commitment to national and international sustainability within the industry, to strengthen the company's image and to encourage the supply chain to measure their greenhouse gases too.

Energy efficiency systems should be implemented at all facilities and monitored. Ammonia should be preferred at hatcheries and processing plants to avoid increasing Scope 1 emissions. Generating electricity from the company's own non-conventional renewable sources should be analyzed to reduce using fuel. Employees should be involved in improving the company's environmental and sustainability practices, and the company should collaborate with its supply chain to move towards a low-emission industry.

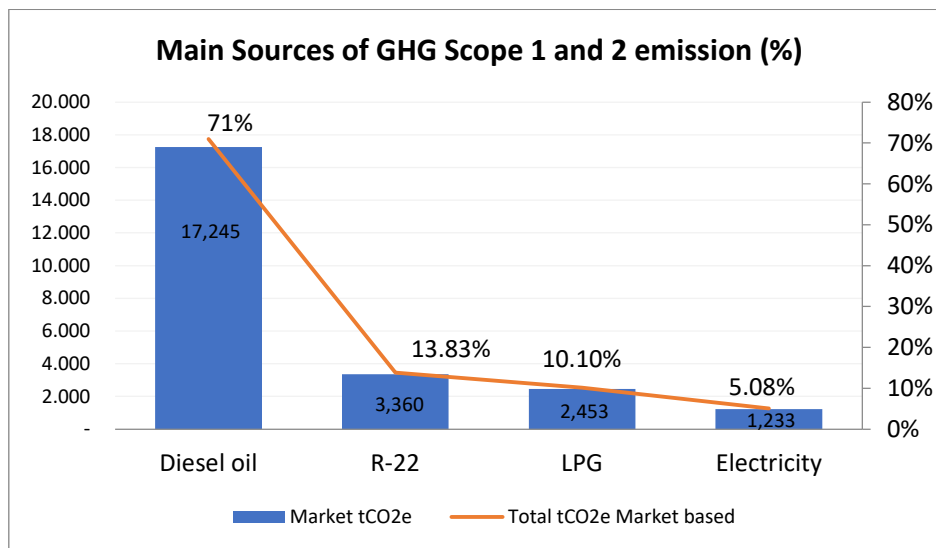
The main emission sources are as follows:

Source	GHG Emissions (tCO <sub>2</sub> e)
Feed	56.15%
Customer deliveries	15.83%
Logistics	10.75%
Fuel	9.53%
Packaging	3.93%
Cold storage	1.62%
Waste	1.22%
Electricity purchased	0.92%
Corporate travel	0.03%
<b>Total</b>	<b>100.00%</b>

The key emissions, excluding Scope 3 emissions, are produced by consuming fuel and electricity.

Main sources of GHG Scope 1 and 2 emissions.

Source	GHG Emissions (tCO <sub>2</sub> e)	Contribution to Scopes 1 and 2
Diesel oil	17,245	71.00%
R-22	3,360	13.83%
LPG	2,453	10.10%
Electricity	1,233	5.08%
<b>Total</b>	<b>24,291</b>	<b>100.00%</b>



## 7 APPENDICES

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### 7.1 EXCLUSIONS

- Emissions from purchased goods such as nets or aquaculture cages have been excluded.

### 7.2 ASSUMPTIONS

- Feed supplier emission factors were provided by feed suppliers.
- Emission factors are Defra.
- Distances traveled were compiled by the consulting team.
- Salmones Camanchaca represents 18% of the emissions associated with Sur Procesos, while it represents 25% of the emissions associated with Frigorífico Pacífico.
- Sur Procesos has renewable energy within its Scope 2.

### 7.3 CLARIFICATION

The 2021 carbon footprint was updated to 200,746 tCO<sub>2</sub>e resulting in a KPI of 4.79 tCO<sub>2</sub>e/tWFE in emissions per market and to 206,188 tCO<sub>2</sub>e per location, due to corrections in GHG emissions for customer deliveries and packaging.