

# Carbon Footprint study of 4 ICL Iberia products in 2024

According to ISO 14067:2018

April 2025



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## 1. INTRODUCTION

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This report has been developed by Anthesis as requested by ICL Iberia with the aim to describe the Carbon footprint of four of their products. To do this, the ISO 14067:2018 Carbon Footprint<sup>1</sup> standard will be followed. The study will help ICL Iberia to know the carbon footprint of its products and detect key aspects of improvement to reduce its impact.

### ICL Iberia (ICL)

ICL Iberia is the only company that produces potassium sales in Spain. It is dedicated to its extraction, treatment and marketing. Headquartered in Súria (Barcelona), ICL Iberia has a workforce of 758 workers.

These mines represent one of the most important potash reserves in Western Europe. In addition, the facilities of the company are directly connected by train and truck to the Port of Barcelona.

In 2007, the company received the ISO 14001:2004 certification, which was updated in 2016 with the new ISO 14001:2015 version<sup>2</sup>. This certification validates the correct application of the necessary measures for an adequate environmental management of the business and industrial activity. As part of their commitment to transparency in sustainability and CSR, they publish a comprehensive CSR report annually in accordance with the Global Reporting Initiative (GRI) guidelines. This report includes extensive information on policies, initiatives, measurable objectives and performance in each of the relevant CSR areas: environment, safety, product stewardship, business ethics, workplace diversity, social contribution and much more.

### Carbon Footprint of Products (CFP)

According to ISO 14067 Greenhouse gases-Carbon footprint of products, the carbon footprint of a product is the sum of GHG emissions and GHG removals in a product System, expressed as CO<sub>2</sub> equivalents and based on a life cycle assessment using the single impact category of climate change.

The quantification of the carbon footprint of a product (CFP) will assist in the understanding and action to increase GHG removals and reduce GHG emissions throughout the life cycle of a product. The ISO 14067 details principles, requirements, and guidelines for the quantification of CFPs, i.e. goods and services, based on GHG emissions and removals over their life cycle. Requirements and guidelines for the quantification of a partial CFP are also provided.

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<sup>1</sup> ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

<sup>2</sup> ISO 14001:2015 Environmental management systems — Requirements with guidance for use

## 2. GOAL AND SCOPE DEFINITION

### 2.1 Study goal

The aim of this report is to calculate the Carbon footprint of four of ICL Iberia products following the ISO 14067:2018 Carbon Footprint standard.

### 2.2 Study <sub>scope</sub>

#### 2.2.1 Analysed products

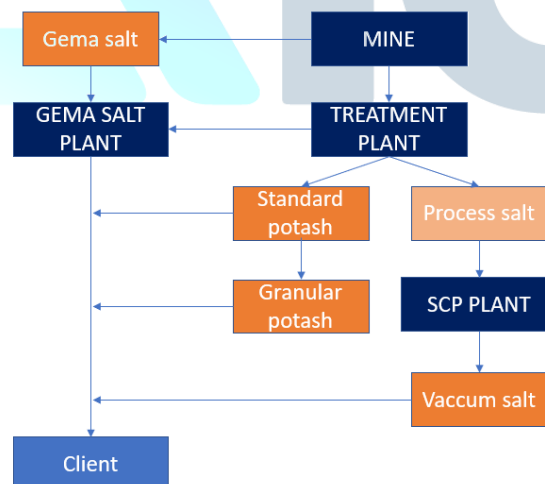
ICL Iberia works in specialized products in the field of fertilizers and in the electrochemical industry from the base of the 2 products up to now: salt and potash, which are extracted from inside the mining galleries of the Catalan Potassic Basin.

The products under study are:

1. Gema salt
2. Standard potash
3. Granular potash
4. Vacuum salt

The four products are extracted from the same mine, as shown in figure 1. However, the procedures followed the extraction by each one is different. The Gema before being distributed to customers goes through the Salt Gema plant where it is crushed. The rest of the salt extraction goes through the treatment plant to become Standard and Granular potash. On the treatment plant part of the Standard potash is treated to become Granular potash. Finally, when the process salt passes through the Crystallization plant (SCP plant) is transformed to Vacuum Salt.

Figure 1 Production system under study



#### 2.2.2 Declared and functional unit

The functional unit assesses the carbon emissions to a functional parameter of a product, allowing the quantification and comparison with other references as well as for establishing a common base for the interpretation of the results.

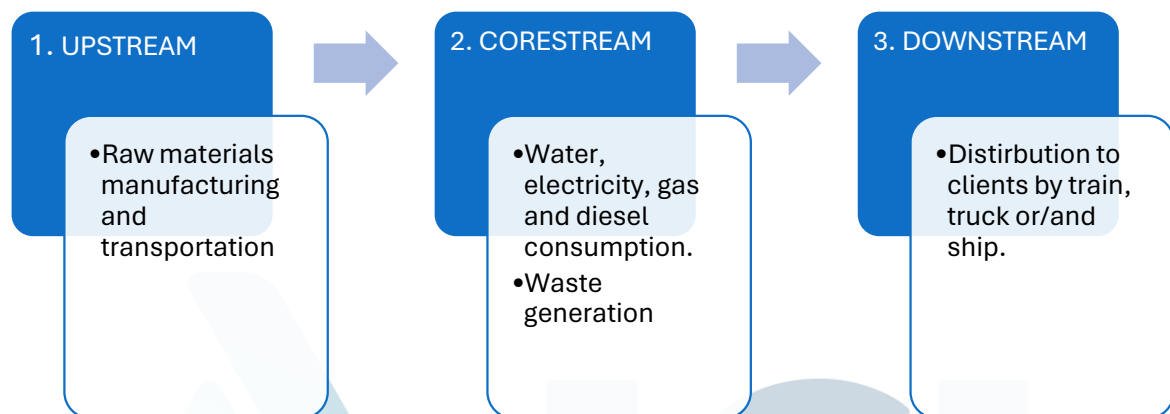
The declared unit is **"1t of product"**.

### 2.2.3 System boundaries

In the life cycle of any product, there are always multiple systems interacting interdependently which would need to be considered (all processes are linked to others that happen before or after). In complex systems, assess all these processes would imply to study a worldwide system including processes with a despicable contribution in the assessed system. Thus, it is necessary to establish its limits or boundaries.

This study considers a “cradle to gate” scope which includes the following upstream, core and downstream stages. The processes included within the boundaries are illustrated in Figure 2 and further explained below.

Figure 2 System under study.



About the time coverage, this is intended to represent the entire life cycle manufacturing, distribution, and waste production of the product made in the calendar year 2024.

### 2.2.4 Product life cycle stages

#### ➤ **Upstream: Raw material supply**

This stage considers the extraction and processing of raw materials. For this study, it accounts for the extraction and processing of all agents added to the products. Thus, the datasets representing this stage considers the materials processing operations, the embodied energy, the waste treatments, and the emissions arising from these procedures.

Besides, the transportation of the agents from the suppliers to ICL Iberia manufacturing plants is also included in the assessment.

#### ➤ **Core: Product manufacturing**

This stage includes all the electricity, water, gas, and diesel consumption involved in the manufacturing of the final products at the ICL Iberia’s plants. In addition, it includes all the wastes produced at the manufacturing plants during the production of the salts and potashes.

#### ➤ **Downstream: Distribution**

The distribution stage includes the transportation of the final products to ICL Iberia’s clients by truck, train and ship.

### 2.2.5 Allocation

According to the ISO 14044:2006, in the case where it's not possible to allocate the production process in unitary processes, a physical allocation can be carried out to assess the specific inputs and outputs.

Several products are totally or partially manufactured in the same production plant. Because of this, a physical allocation has been conducted to allocate the impacts on resources consumption and waste plant generation.

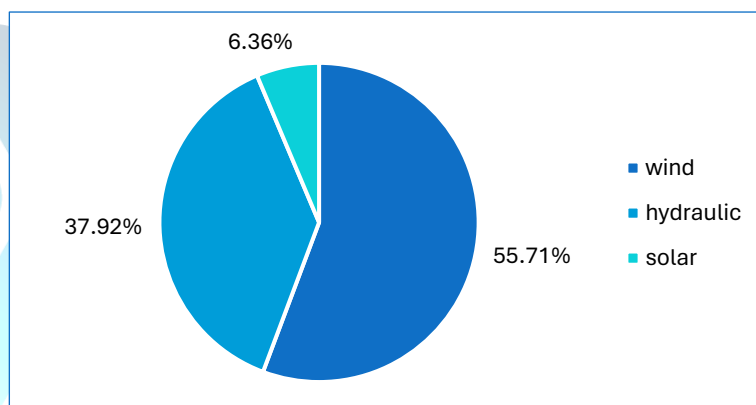
Thus, all the inputs and outputs have been assessed according to the total production of the manufacturing plant for the reference year.

### 2.2.6 Assumptions and considerations

In this section the assumptions included in the study are detailed:

- The electric mix hired of ICL Iberia and included in the study is made up of renewable sources. Figure 3 presents the renewable electric mix distribution of ICL Iberia.

**Figure 3 Energy source distribution of the electric mix included in the study.**



- The transportation by train from the ICL Iberia installations to Barcelona's port (client) is assumed to be 100% by electric train.
- The scope of the distribution of the products that are transported by ship ends at the ports of the countries where are sold.

### 2.2.7 Critical revision

Neither this report nor its results, have as an objective to be used in assertive comparisons presented publicly, thus it has not been revised by a third-party panel of experts.

### 2.2.8 Cut-off criteria

The processes listed below have not been included:

- Manufacture of equipment used in production, buildings, or any other capital goods.
- Business trips.
- Maintenance activities at the ICL Iberia plant and research and development.
- Transportation of the staff to and within the plant.
- Diffuse particle emissions during the transport and storage of raw materials.
- Long-term emissions.

## 3. GOAL AND SCOPE DEFINITION

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### 3.1 Data gathering

Primary data has been collected from different departments from the manufacturing plants of ICL Iberia. Secondary data comes from Ecoinvent 3.10 database. The inventory has been modelled using the software Simapro 9.6.0.1 (PRé Consultants). For a better representation of an attributional system approach a “Cut-off” approach is used on Ecoinvent database. All data is referencing 2024.

### 3.2 Data gathering

Table 1 shows inventory data from each process and Ecoinvent’s datasets used for modelling.



Table 1 Life cycle inventory for the FU: 1 ton of each product

INPUT MATERIAL / PROCESSING	GEMA SALT	STANDAR D POTASH	GRANULA R POTASH	VACUUM SALT	DATASET
UPSTREAM					
FLOUCULANTE SCP MAGNAFLOC LT30				8.73E-03	Polyacrylamide {GLO}  production   Cut-off, U
HIDRÓXIDO SÓDICO LÍQUIDO AL 20%		5.38E-01	5.38E-01		Sodium hydroxide, without water, in 50% solution state {RER}  chlor-alkali electrolysis, membrane cell   Cut-off, U
HIPOCLORITO SÓDICO AL 15% EN IBC DE 1000				1.05E-01	Sodium hypochlorite, without water, in 15% solution state {RER}  chlor-alkali electrolysis, average production   Cut-off, U
CLORURO CÁLCICO 77% "FLAKES" GR. ALIMENT				1.26E+00	Calcium chloride {RoW}  soda production, solvay process   Cut-off, U
FERROCIANURO SÓDICO GRADO ALIMENTARIO					Hydrogen cyanide {RER}  production   Cut-off, U
FLOUCULANTE FLOTACIÓN MAGNAFLOC LT25		1.19E-02	1.19E-02	1.38E-02	Polyacrylamide {GLO}  production   Cut-off, U
ETILHEXANOL		6.94E-01	6.94E-01		Ethylene {RER}  unsaturated hydrocarbons production, steam cracking operation, average   Cut-off, U
ACEITE AGIP OSO 68		1.37E+00	1.37E+00		Lubricating oil {RER}  lubricating oil production   Cut-off, U
ANTIESPUMA.CONTRA.CUR/818 IBC DE 1.000 L				1.53E-01	Chemical, organic {GLO}  chemical production, organic   Cut-off, U
FERROCIANURO SODICO TECNICO 99,5 %	3.72E-02				Hydrogen cyanide {RER}  hydrogen cyanide production   Cut-off, U
GOMA GUAR FSD3 5500 CPS, EN SACOS DE 25		1.15E-01	1.15E-01		Chemical, organic {GLO}  production   Cut-off, U
ACEITE CASTROL WHITEMOR WOM 65, 1000 L		7.77E-02	7.77E-02		Lubricating oil {RER}  production   Cut-off, U
REACTIVO FLOTACION ARMAC HT - AKZO NOBEL		1.53E-01	1.53E-01		Chemical, organic {GLO}  production   Cut-off, U
REACTIVO FLOTACION NORAMAC SHP - ARKEMA		1.12E-01	1.12E-01		Fatty acid {GLO}  tall oil refinery operation   Cut-off, U
OXIDO DE CALCIO (CaO)				1.72E+01	Quicklime, milled, packed {RER}  market for quicklime, milled, packed   Cut-off, U
CARBONATO SÓDICO DENSO (NA2CO3)				2.95E+01	Sodium bicarbonate {RER}  soda production, solvay process   Cut-off, U
C01002000 - ACEITE AGIP YC			2.96E+00		Lubricating oil {RER}  production   Cut-off, U

ETILENGLICOL		2.66E-03	2.66E-03		Ethylene glycol {RER}  ethylene glycol production   Cut-off, U
ACIDO CITRICO 1-H ALIMENTARI, SAC 25 KG					Citric acid {RER}  citric acid production   Cut-off, U
ACEITE AGIP OSO 68 (BIDONS 180 KG)		1.14E-02	1.14E-02	1.32E-02	Lubricating oil {RER}  production   Cut-off, U
Raw materials transportation					Transport, freight, lorry 16-32 metric ton, EURO6 {RER}  transport, freight, lorry 16-32 metric ton, EURO6   Cut-off, U
<b>CORE</b>					
Electricity	3.07E+01	8.72E+01	8.72E+01	3.21E+02	ICL_electric mix
Diesel	9.01E-01	1.90E+00	1.90E+00	2.20E+00	Diesel {Europe without Switzerland}  diesel production, petroleum refinery operation   Cut-off, U
Water (River)	7.31E+00	4.86E+02	4.86E+02	5.63E+02	Water, river, ES
Water	7.40E+00	2.19E+01	2.19E+01	2.69E+02	Tap water {Europe without Switzerland}  market for tap water   Cut-off, U
Gas		7.58E+00	7.58E+00	1.27E+01	Natural gas, low pressure {ES}  natural gas pressure reduction, from high to low pressure   Cut-off, U
120301 - LÍQUIDS AQUOSOS DE NETEJA		2.87E-03	2.87E-03	3.32E-03	Wastewater, average {Europe without Switzerland}  treatment of wastewater, average, wastewater treatment   Cut-off, U
130205 - OLIS USATS	5.04E-03	1.47E-02	1.47E-02	1.70E-02	Waste mineral oil {Europe without Switzerland}  treatment of waste mineral oil, hazardous waste incineration   Cut-off, U
150105 - ENVASOS COMPOSTOS	3.05E-05	8.88E-05	8.88E-05	1.42E-04	Municipal solid waste {ES}  treatment of municipal solid waste, incineration   Cut-off, U
150110 - ENVASOS BUIT CONTAMINATS	4.76E-04	1.65E-02	1.65E-02	1.91E-02	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
150202 - ABSORBENTS		1.53E-03	1.53E-03	1.77E-03	Hazardous waste, for incineration {Europe without Switzerland}  treatment of hazardous waste, hazardous waste incineration, with energy recovery   Cut-off, U
160214-42 - GRANS APARELLS PROFESSIONALS	4.93E-04	1.13E-03	1.13E-03	1.31E-03	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
160214-52 - PETITS APARELLS PROFESSIONALS		2.60E-04	2.60E-04	3.01E-04	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
160504 - Gasos en recipients a pressió	1.30E-05	1.21E-04	1.21E-04	2.74E-04	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
160506 - PRODUCTES QUÍMICS DE LABORATORI		2.37E-04	2.37E-04	2.75E-04	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
160508 - PRODUCTES QUÍMICS ORGÀNICS REBUTJATS	1.29E-04	1.07E-03	1.07E-03	1.24E-03	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U

160601 - BATERIES Pb	3.96E-03	8.74E-03	8.74E-03	1.01E-02	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
160708 - RESIDUS QUE CONTENEN HIDROCARBURS	8.64E-03	1.90E-02	1.90E-02	2.20E-02	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
170107 - RUNA	1.54E-02	9.29E-02	9.29E-02	1.07E-01	Inert waste {RER}  treatment of inert waste, sanitary landfill   Cut-off, U
170405 - FERRALLA	8.95E-02	2.46E-01	2.46E-01	2.85E-01	Waste reinforcement steel {CH}  treatment of waste reinforcement steel, sorting plant   Cut-off, U
170411 - CABLE ELÈCTRIC	9.97E-04	3.38E-03	3.38E-03	3.92E-03	Waste electric and electronic equipment {GLO}  treatment of waste electric and electronic equipment, shredding   Cut-off, U
170503 - TERRES I PEDRES QUE CONTENEN SUBSTÀNCIES PERILLOSES		7.06E-03	7.06E-03	8.17E-03	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
170605 - FIBROCIMENT		9.71E-03	9.71E-03	1.12E-02	Inert waste {RER}  treatment of inert waste, sanitary landfill   Cut-off, U
191204 - PLÀSTIC I CAUTXÚ	9.02E-04	3.95E-02	3.95E-02	4.57E-02	Waste plastic, mixture {CH}  treatment of waste plastic, mixture, sanitary landfill   Cut-off, U
200101 - PAPER-CARTRÓ	4.68E-03	1.74E-02	1.74E-02	2.51E-02	Waste paperboard {CH}  treatment of waste paperboard, municipal incineration FAE   Cut-off, U
200102 - VIDRE		8.10E-04	8.10E-04	9.38E-04	Waste glass sheet {Europe without Switzerland}  treatment of waste glass sheet, collection for final disposal   Cut-off, U
200121 - FLUORESCENTS	3.32E-05	1.53E-04	1.53E-04	2.45E-04	Used Li-ion battery {GLO}  treatment of used Li-ion battery, pyrometallurgical treatment   Cut-off, U
200123 - Equips rebutjats que contenen clorofluorocarburs	1.27E-04	5.99E-04	5.99E-04	6.93E-04	Hazardous waste, for underground deposit {DE}  treatment of hazardous waste, underground deposit   Cut-off, U
200133 - PILES, BATERIES I ACUMULADORS	4.15E-06	3.09E-05	3.09E-05	8.42E-05	Waste mineral oil {Europe without Switzerland}  treatment of waste mineral oil, hazardous waste incineration   Cut-off, U
200138 - FUSTA	1.74E-02	6.09E-02	6.09E-02	7.05E-02	Waste wood, untreated {GLO}  treatment of waste wood, untreated, open burning   Cut-off, U
200139 - PLÀSTICS	2.70E-03	2.41E-02	2.41E-02	3.10E-02	Mixed plastics (waste treatment) {GLO}  recycling of mixed plastics   Cut-off, U
200199 - MESCLA DE RESIDUS MUNICIPALS	3.19E-02	9.12E-02	9.12E-02	1.23E-01	Municipal solid waste {ES}  treatment of municipal solid waste, incineration   Cut-off, U
160107 - FILTRES D'OLI				3.84E-04	Hazardous waste, for incineration {Europe without Switzerland}  treatment of hazardous waste, hazardous waste incineration, with energy recovery   Cut-off, U
160213-51 - Equips rebutjats que contenen components perillosos diferents dels especificats en els codis 160209 a 160212		7.67E-04	7.67E-04	8.88E-04	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
160214-62 - APARELLS INFORMÀTICA I TELECOMUNICACONS	2.29E-04	5.05E-04	5.05E-04	5.85E-04	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U

191202 - METALLS FERRIS	1.48E-03	3.26E-03	3.26E-03	3.77E-03	Waste reinforcement steel {CH}  treatment of waste reinforcement steel, sorting plant   Cut-off, U
191203 - METALLS NO FERRIS	2.82E-04	2.71E-03	2.71E-03	3.13E-03	Waste reinforcement steel {CH}  treatment of waste reinforcement steel, sorting plant   Cut-off, U
200136-42 - GRANS APARELLS		5.35E-04	5.35E-04	6.20E-04	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
200136-52 - PETITS APARELLS		1.13E-03	1.13E-03	1.31E-03	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
200136-62 - APARELLS INFORMÀTICS	5.54E-06	1.08E-03	1.08E-03	1.27E-03	Used industrial electronic device {GLO}  treatment of used industrial electronic device, mechanical treatment   Cut-off, U
Wastewater	1.47E-07				Wastewater, average {Europe without Switzerland}  treatment of wastewater, average, wastewater treatment   Cut-off, U
Waste transportation to treatment plant	5.35E-03	2.71E-02	2.71E-02	3.19E-02	Transport, freight, lorry 16-32 metric ton, EURO6 {RER}  transport, freight, lorry 16-32 metric ton, EURO6   Cut-off, U
<b>DOWNSTREAM</b>					
Truck client distribution	3.51E+01	2.05E+02	6.73E+01	1.20E+02	Transport, freight, lorry 16-32 metric ton, euro6 {RER}  market for transport, freight, lorry 16-32 metric ton, EURO6   Cut-off, U
Train client distribution	3.97E+01	4.55E+01	6.09E+01		Transport, freight train {Europe without Switzerland}  electricity   Cut-off, U
Ship client distribution	3.62E+03	2.95E+03	4.61E+03		Transport, freight, sea, container ship {GLO}  transport, freight, sea, container ship   Cut-off, U

## 4. DATA QUALITY REQUIREMENTS

Data quality requirements used in this study are presented in Table 2 below.

**Table 2 Data quality requirements used in this study.**

<b>Integrity</b>		All relevant processes from the different products have been used, these represent the specific situation for each of them.
<b>Consistency</b>		To assure consistency, data with the same level of detail and developed under the same methodological assumptions have been used.
<b>Reproducibility</b>		Methods and data used have been described so that any independent professional could reproduce the calculation.
<b>Representativity</b>	<b>Temporal coverage</b>	Specific inventory data are based on average data from 2024. Emission factors were retrieved from the Ecoinvent v3.10 database updated in 2024.
	<b>Geographic coverage</b>	Specific data about the products have been provided by the manufacturer itself, representative of ICL Iberia. On the other side, generic data has been used, whenever possible, from Spain or Europe.
	<b>Technological coverage</b>	Specific data reflect the physical reality of the declared product since they have been provided by the manufacturer itself.



## 5. DATA QUALITY REQUIREMENTS

### 5.1 Assessment method

Global Warming Potential (GWP) was assessed to determine carbon footprint of the four products under the scope of the Carbon Footprint Study, in accordance with ISO 14067:2018.

The GWP was determined as fossil, biogenic and land use change, according to the Baseline model of 100 years of the IPCC (2021).

The methodology used for the impact assessment is the “IPCC 2021 GWP100 V1.00” from the IPCC report "AR6 Climate Change 2021: The Physical Science Basis" and considering 100 years for emissions and removals. According to the ISO 14067 the following impact categories should be studied (Table 3).

**Table 3 Carbon footprint impact categories**

Potential environmental impacts	Description	Acronym	Units
Global warming – fossil	GHG emissions derived from fossil fuels.	GWP-fossil	kg CO <sub>2</sub> eq
Global warming – biogenic	GHG emissions derived from biomass.	GWP-biogenic	kg CO <sub>2</sub> eq
Global warming – land use	GHG emissions derived from change in human use or management of land.	GWP-luluc	kg CO <sub>2</sub> eq

The most important inherent limitation of CFP is the focus on climate change as the single impact category and should be considered for decision making.

### 5.2 Life cycle impacts results

The carbon footprint impact for each product is presented in table 4 and break down in the following tables in the different impact categories and lifecycle stages. The next tables also include another category called “GWP-total” which summarizes the carbon footprint of the product by adding the impact of the previous impact categories.

**Table 4 Carbon footprint of the products under study.**

Products	GWP-total	Unit
Gema salt	42.82	kg CO <sub>2</sub> eq
Standard potash	74.73	kg CO <sub>2</sub> eq
Granular potash	74.30	kg CO <sub>2</sub> eq
Vacuum salt	86.56	kg CO <sub>2</sub> eq

**Table 5 Gema salt carbon footprint results per lifecycle stage**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	2.95E-01	1.57E+00	4.06E+01	4.25E+01
GWP-biogenic	kg CO <sub>2</sub> eq	2.24E-04	4.06E-02	2.67E-03	4.35E-02
GWP-luluc	kg CO <sub>2</sub> eq	2.84E-07	2.65E-01	2.98E-03	2.68E-01
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq</b>	<b>2.95E-01</b>	<b>1.87E+00</b>	<b>4.07E+01</b>	<b>4.28E+01</b>

**Table 6 Standard potash carbon footprint results per lifecycle stage**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	4.67E+00	9.05E+00	6.01E+01	7.38E+01
GWP-biogenic	kg CO <sub>2</sub> eq	7.21E-03	1.19E-01	3.54E-03	1.29E-01
GWP-luluc	kg CO <sub>2</sub> eq	2.76E-03	7.54E-01	3.70E-03	7.61E-01
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq</b>	<b>4.68E+00</b>	<b>9.93E+00</b>	<b>6.01E+01</b>	<b>7.47E+01</b>

**Table 7 Granular potash carbon footprint results per lifecycle stage**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	8.99E+00	9.05E+00	5.54E+01	7.34E+01
GWP-biogenic	kg CO <sub>2</sub> eq	1.03E-02	1.19E-01	3.88E-03	1.33E-01
GWP-luluc	kg CO <sub>2</sub> eq	5.17E-03	7.54E-01	4.37E-03	7.64E-01
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq</b>	<b>9.01E+00</b>	<b>9.93E+00</b>	<b>5.54E+01</b>	<b>7.43E+01</b>

**Table 8 Vacuum salt carbon footprint results per lifecycle stage**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	4.60E+01	1.88E+01	1.81E+01	8.29E+01
GWP-biogenic	kg CO <sub>2</sub> eq	4.65E-01	4.09E-01	6.20E-04	8.75E-01
GWP-luluc	kg CO <sub>2</sub> eq	9.58E-03	2.78E+00	4.46E-04	2.79E+00
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq</b>	<b>4.65E+01</b>	<b>2.20E+01</b>	<b>1.81E+01</b>	<b>8.66E+01</b>

Annex 1 shows the carbon footprint of Gema salt, Standard potash and Granular potash without including the ship transportation in the distribution stage (Downstream).

## 6. INTERPRETATION OF THE RESULTS

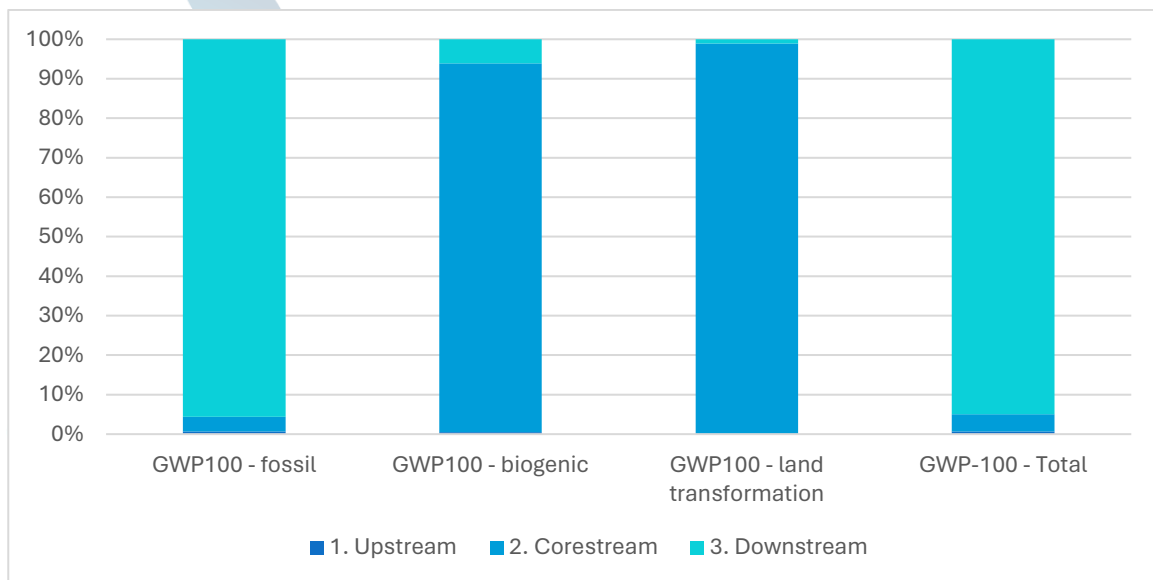
An interpretation of the results obtained in the project is included in this chapter. The environmental impacts of the different products have been analysed and compared.

### 6.1 Products carbon footprint

#### Gema salt

The distribution of the environmental impact generated by the lifecycle of the Gema salt is presented in the Figure 4. For the GWP-fossil the “3.Downstream” lifecycle is the stage with the most impact, representing the 96% of the total, as it includes the use of fuels during the distribution to clients. The “2.Core” stage, which includes the product manufacturing and waste treatment of the plant, has the major impact for the impact categories of GWP-biogenic (93%) and land transformation (99%) as a result of the use of renewable energy. However, for the total footprint of the Gema salt (GWP-total) the distribution included in the “3.Downstream” (95%) stage has the highest impact, followed by the “2.Core” (4%) and the “1.Upstream” (1%) stages.

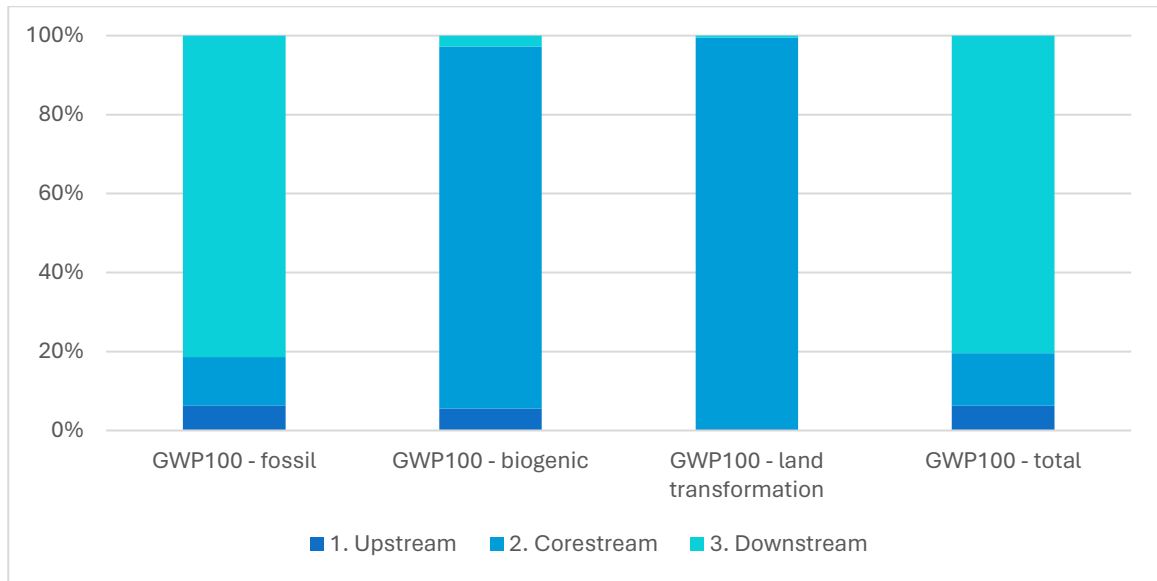
Figure 4 Gema salt results per lifecycle stage in relative terms



#### Standard potash

Figure 5 represents the environmental impact distribution per lifecycle of the Standard potash. For the impact category of GWP-fossil the distribution has the highest impact (81%) as the phase includes a large amount of fuel consumption. For the GWP-biogenic and GWP-luluc categories the major contributor is the “2.Core” stage (92 and 99%, respectively). Considering the global footprint of the product, represented by the GWP-total category, the “3.Downstream” phase has the highest impact (80%), followed by the “2.Core” (13%) and the “1. Upstream” (6%) stages.

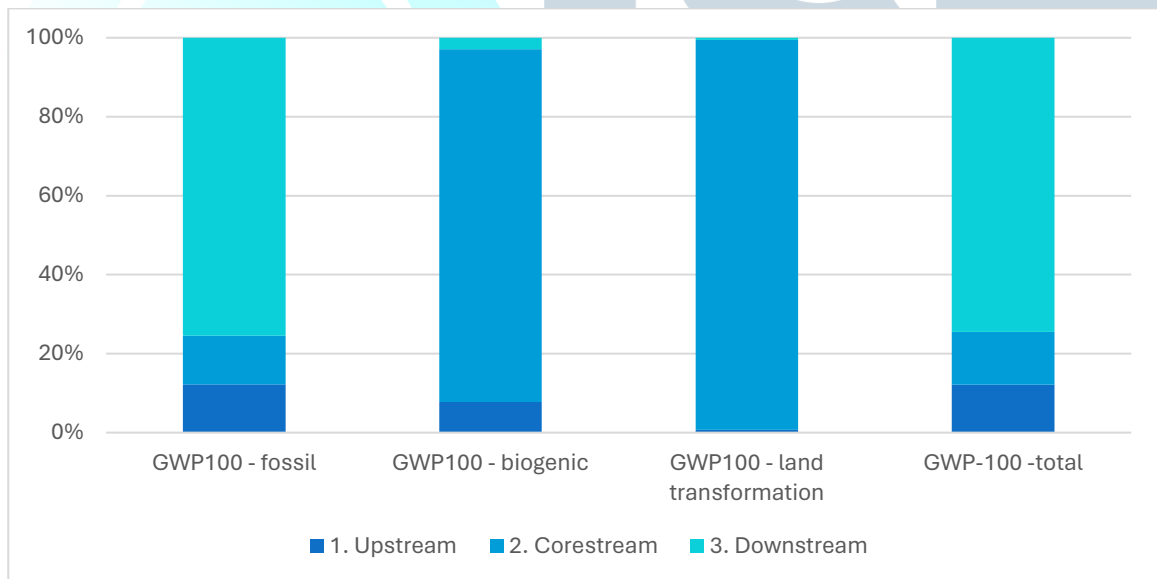
**Figure 5 Standard potash results per lifecycle stage in relative terms**



### Granular potash

Figure 6 represents the distribution of the environmental impact generated by the production of the Granular potash. The distribution stage represents the 75% of the impact for the impact category of GWP-fossil, followed by the product manufacturing (12%) and the raw material supply (12%). For the GWP-biogenic and GWP-luluc categories, the major contributor is the “2.Core” stage (89% and 99% of impacts, respectively). Finally, in the global overview of the product’s footprint (GWP-total) the distribution stage has the highest impact (75%), followed by the manufacturing of the product (13%) and the raw material supply (12%) stage.

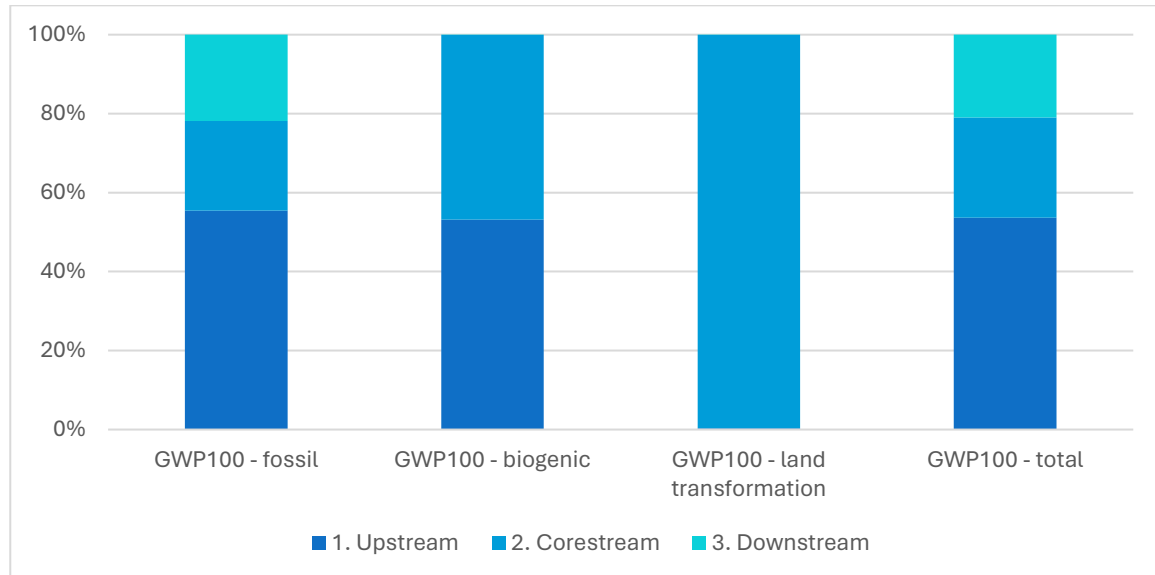
**Figure 6 Granular potash results per lifecycle stage in relative terms**



### Vacuum salt

Figure 7 represents the environmental impact distribution per lifecycle of the Vacuum salt. The “1.Upstream” lifecycle stage contributes approximately 55% and 53% of the impacts to the GWP-fossil, and GWP-biogenic categories, respectively. It is also 54% of the total impacts to GWP-total. For the GWP-luluc category, the major contributor is the “2.Core” stage, with almost 100% of impacts.

Figure 7 Vacuum salt results per lifecycle stage in relative terms

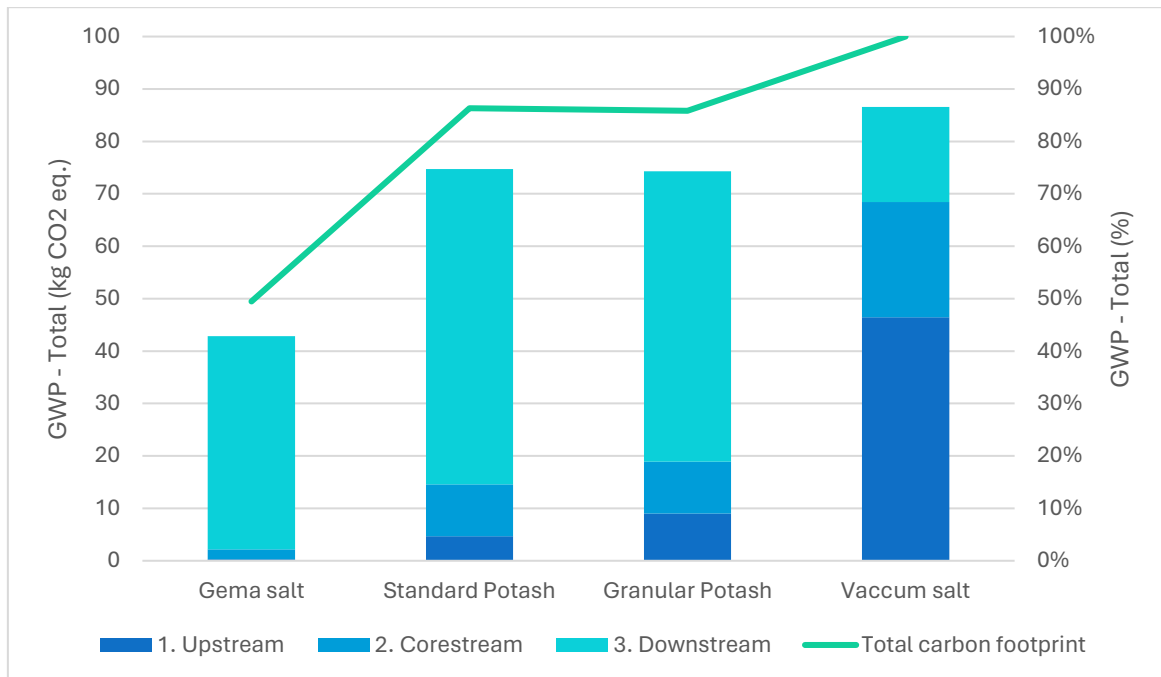


## 6.2 Product carbon footprint comparison

Figure 8 presents a comparison of the carbon footprint of the four products in absolute and relative values distributed across the lifecycle’s stages, whereas figure 8 presents the same comparison in relative terms to allow for a better perception of the contribution of every product to each lifecycle stage.

The Vacuum salt is the product generating the highest carbon footprint impact. It emits 86.56 kg CO<sub>2</sub> eq. However, a significant reduction of impacts per kilogram of product has been achieved in 2024 when compared to 2023, when the impact of the vacuum salt was that of 134.72 kg CO<sub>2</sub> eq. per ton of salt. The second most impacting product is the Standard potash which emits 74.73 kg CO<sub>2</sub> eq., 14% less compared to the Vacuum salt. The Granular potash emits 74.30 kg CO<sub>2</sub> eq. per ton, having similar impacts to the Standard potash. Lastly, the Gema salt emits 42.82kg CO<sub>2</sub> eq. per ton produced, 51% less than the Vacuum salt.

**Figure 8 Carbon footprint impact (GWP-total) per ton of product comparison between the products under study per lifecycle stage in absolute and relative terms**



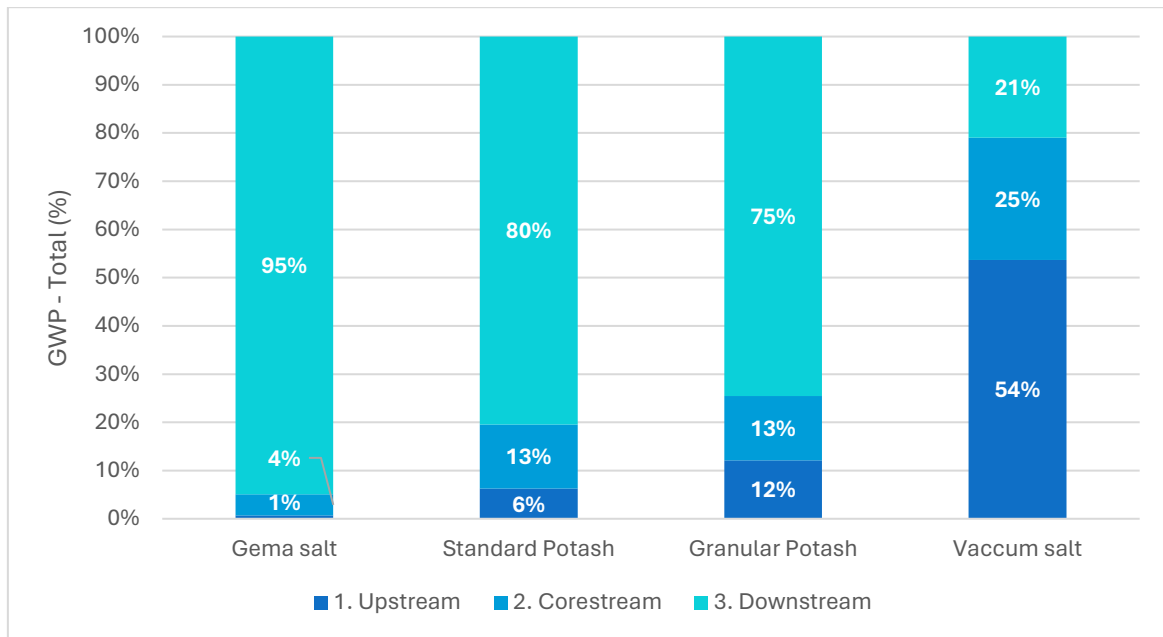
The figure 9 presents a comparison of the carbon footprint of the four products in relative values distributed by the lifecycle's stages of the study.

Regarding the raw material supply, Gema salt has the lowest impact (1%) because it's the product needing the least reagents. In fact, it only includes sodium ferrocyanide. The difference in impacts attributed to the upstream stage between the Standard (6%) and Granular (12%) potash is due to the latter having an additional reagent, specifically Agip Oil, and also requiring higher quantities of all other raw materials per kilogram of product than the Standard potash. The upstream phase has the highest impact for the Vacuum salt (54%) because the product undergoes more processing than the other salts and therefore more reagents are required for its manufacture. For the same reason, the "2. Core" stage has the highest relative impact for the Vacuum salt.

Concerning the distribution stage, the Vacuum salt is the only product which is solely distributed by road, with no amounts being shipped by train or by sea. Therefore, it is transported for less kilometres per ton produced than the other salts, causing the "3. Downstream" life cycle stage to represent only 21% of its carbon footprint, the lowest for the distribution phase among all products studied. In contrast, both potashes are distributed worldwide by ship, train and truck, causing the distribution stage to add up to 80% and 75% of the impacts for the Standard and the Granular variants, respectively. For the Gema salt, the impacts of the distribution escalate to 95%.

Distribution by sea proves to be the less carbon-intensive alternative among the transport options used for ICL's products, with only about 0.01 kg CO<sub>2</sub> eq. per tkm transported. Transport by train also causes low volumes of emissions, with approximately 0.02 kg CO<sub>2</sub> eq. per tkm transported. Therefore, both are good alternatives to road transport, which causes over 0.15 kg CO<sub>2</sub> eq. per tkm. In 2024, the impacts of the "3. Downstream" phase per ton of product have been lower than in 2023 since more tkm have been covered by ship or train than by truck than in the previous year. Distribution emissions are 22% lower than in 2023 for the Gema and Vacuum salts, 9% lower for the Standard Potash, and remain almost the same for Granular Potash.

**Figure 9 Carbon footprint impact (GWP-total) comparison between the products under study per lifecycle stage in relative terms**



## 7. CONCLUSIONS

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This report presents the carbon footprint of four of ICL Iberia's products following the ISO 14067:2018 Carbon Footprint standard. The study considers a "cradle to gate" scope including the following stages: raw materials supply and transportation to the processing plant (upstream), manufacturing of the product and waste treatment (core) and distribution of the end products to the clients (downstream). The declared unit is "1t of product" and the data is referred to 2024.

The carbon footprint of the Gema Salt, Standard Potash and Granular Potash have a similar distribution of impacts across the lifecycle stages included in the scope. The "3. Downstream" stage including the distribution to clients is the most impacting phase with a contribution between 75-95% of the total impact, followed by the "2.Core" stage, with a 13% of the impact for the potashes, and 4% for the Gema salt. The raw material supply has the lowest impact for the Gema salt (1%) because it is the less processed product and requires a lower amount of reagents in comparison to the other salts. The difference in impacts attributed to the upstream stage between the Standard (6%) and Granular (12%) potash is due to the latter having an additional reagent, specifically Agip Oil, and requiring higher quantities of all other raw materials per kilogram of product than the Standard potash.

For the Vacuum salt, which shows a significantly different distribution of impacts due to a lower share of emissions coming from the downstream phase, the most impactful life cycle stage is the "1.Upstream" (54% of total emissions). The "2. Core" and "3.Downstream" stages contribute 25% and 21% of total emissions, respectively.

The Vacuum salt is the product with the highest carbon footprint because it requires greater use of energy for manufacturing (core) and higher quantities of impact-intensive raw materials (upstream). Sodium carbonate and calcium oxide are the raw materials causing the highest emissions, contributing 88% of the upstream phase's impacts.

Except for the Vacuum salt, which is distributed to clients located closer, the downstream stage is the most impactful across all studied products due to the usage of fossil fuels. However, distribution impacts per ton of product are globally lower in 2024 than in 2023 as more tkm have been covered by ship or train than by truck.

## ANNEX 1

The following table presents the carbon footprint of Gema salt, and both potashes in 2024 without including the impact of the maritime distribution in the “3.Downstream” stage.

**Table 9 Gema salt carbon footprint results per lifecycle stage without including the distribution by ship.**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	2.95E-01	1.57E+00	6.02E+00	7.88E+00
GWP-biogenic	kg CO <sub>2</sub> eq	2.24E-04	4.06E-02	1.54E-03	4.24E-02
GWP-luluc	kg CO <sub>2</sub> eq	2.84E-07	2.65E-01	1.99E-03	2.67E-01
GWP-total	kg CO <sub>2</sub> eq	2.95E-01	1.87E+00	6.02E+00	<b>8.19E+00</b>

**Table 10 Standard potash carbon footprint results per lifecycle stage without including the distribution by ship.**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	4.67E+00	9.05E+00	3.20E+01	4.57E+01
GWP-biogenic	kg CO <sub>2</sub> eq	7.21E-03	1.19E-01	2.62E-03	1.28E-01
GWP-luluc	kg CO <sub>2</sub> eq	2.76E-03	7.54E-01	2.90E-03	7.60E-01
GWP-total	kg CO <sub>2</sub> eq	4.68E+00	9.93E+00	3.20E+01	<b>4.66E+01</b>

**Table 11 Granular potash carbon footprint results per lifecycle stage without including the distribution by ship.**

Impact Category	Units	Upstream	Core	Downstream	Total
GWP-fossil	kg CO <sub>2</sub> eq	8.99E+00	9.05E+00	1.13E+01	2.93E+01
GWP-biogenic	kg CO <sub>2</sub> eq	1.03E-02	1.19E-01	2.44E-03	1.31E-01
GWP-luluc	kg CO <sub>2</sub> eq	5.17E-03	7.54E-01	3.10E-03	7.62E-01
GWP-total	kg CO <sub>2</sub> eq	9.01E+00	9.93E+00	1.13E+01	<b>3.02E+01</b>