CEPSA

2023

CARBON FOOTPRINT REPORT
ISO 14064-1:2018

Moving together

towards a new future

Chemicals

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01

Strategy

01. Strategy

Cepsa continues this year 2024 with its inventory verification plan at the organizational level of Greenhouse Gas (GHG) emissions under the framework of ISO 14064- 1:2018 in line with its Positive Motion. The verification includes the emissions of the following GHGs: carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), as well as the fugitive emissions from transportation and fugitive emissions as of hydrofluorocarbons (HFCs) or others from the refills of refrigeration systems.

The process of inventory verification has been carried out in Sustainability & Energy Transition Area with the accreditation of AENOR with a limited level of assurance and a threshold of maximum relative importance of 5%.

With this report:

- Under our strategy and commitment to reduce our CO_2 emissions, we adopt rigorous monitoring and volunteer audit of these emissions to enhance our transparency and rigor in communication of emissions.

  Positive Motion Strategy is accompanied by Sustainability Plan in Cepsa. Our Sustainability Plan is Cepsa's roadmap to promote positive impact and sustainability through our actions linked to environmental, social, and good governance (ESG) criteria, which transversally involve all areas of the company.

Sustainability Plan | Cepsa

Cepsa has updated its policy framework and new climate action policy is available in www.cepsa.com

This Policy aims to establish a framework to articulate the Company's strategy and business model in a manner consistent with its commitment to carry out the necessary climate actions, aligned with the energy transition and a low-carbon economy.

Strategy 2030, towards the energy transition - Cepsa

Our Commitments:

- Establish, monitor, and validate by a third-party CO_2 emissions and abatement plan targets.
- Integrate climate change in the company strategy and in all businesses decision-making processes.
- Design carbon mitigation and adaptation plan considering the entire value chain.
- Keep climate-related objectives as monetary reward parameter.

02

Reporting Topics

2.1 Boundaries
2.2 Scope

02. Reporting Topics

2.1 Boundaries

Following emissions are reported under this report

- This report groups **direct GHG emissions** (CO_2, CH_4, N_2O and refrigerant gases) from the facilities, including combustion, process, fugitive emissions, and emissions from mobile sources. Emissions from facilities's wastewater treatment plants have also been included (Category 1).

- **Indirect emissions** by purchased steam and electricity of the facilities included in the scope of this verification (Category 2).

- Likewise, this 2023 report includes the **indirect emissions** of the **value chain** corresponding to scope 3 under the GHG Protocol Methodology and under ISO 14.064-1:2018 (Categories 3-6).

Greenhouse gas emissions sources have been identified and grouped in accordance with the ISO 14064-1:2018 standard. This standard lists six categories of emissions and differs somewhat from earlier categorisation in line with the Greenhouse Gas Protocol's Scopes 1 through 3.

- Category 1: Direct GHG emissions and removals
- Category 2: Indirect GHG emissions from imported energy
- Category 3: Indirect GHG emissions from transportation
- Category 4: Indirect GHG emissions from products used by the organization
- Category 5: Indirect GHG emissions associated with the use of products from the organization
- Category 6: Indirect GHG emissions from other sources

This report, although drawn up in parallel, is developed within the framework of the principles established by Cepsa regarding the quantification of GHG and the establishment of objectives to reduce GHG emissions.

Significance and Materiality

It is necessary to define and explain own predetermined criteria for the significance of indirect emissions, considering the intended use of the inventory.

Factors for consideration in assessing significance and materiality include:

- Magnitude or Size of the emissions
- Level of Influence on the emission source
- Difficulty in obtaining data
- Poor validity in available estimation approaches

Whilst all of the above would be considered in materiality assessments, the criteria that would mandate disclosure of emissions sources as significant is:

a) Where there is a single source with estimated emissions likely to be at least 1% of its category. In this case, that emissions source must be included.
b) Where the total of 'insignificant' sources has estimated emissions likely to be at least 5% of total emissions. In this case, enough of the 'insignificant' emissions must be included until the estimate of excluded emissions is below 5%.

2.2 Scope

Chemicals

Cepsa's petrochemical activity is developed in a dynamic of maximum integration with Refining. In this way, products of high added value are manufactured, which are converted into raw materials for other industries and with multiple final ap-plications: detergents, synthetic fibers, pharmaceutical products, among others.

The manufacture of basic petrochemical products is carried out at the Gibraltar - San Roque and La Rábida Energy Park in Cepsa, which can produce more than 1 million tonnes per year of these derivatives. After the distillation of crude oil, the processing units of the refineries obtain raw materials (benzene, toluene, and xylene) for other processes, as well as intermediate and final products, such as solvents, propylene, and sulphur. Cepsa Química, after the processing of these products, dis-tributes and commercializes the final products worldwide.

- Cepsa Química Puente Mayorga

Puente Mayorga Plant, which is located in San Roque (Cádiz), produces linear alkylbenzene (LAB), sulphonic acid (LABSA) for the production of detergents, n-paraffin, dearomatized solvents and heavy alkylates as rolling oils in various industries.

- Cepsa Química Palos de la Frontera

Palos de la Frontera Plant is located in Palos de la Frontera (Huelva) and processes benzene and propylene to produce cumene, phenol, acetone and alphamethylstyrene. Phenol and acetone are used in the manufacture of resins, high-tech plastics, synthetic fibers, pharmaceuticals, and a long list of final applications.

- Cepsa Chemical Shanghai

Shanghai Plant is located in Lot C4 of Shanghai Chemical Industry Park (SCIP). It processes benzene and propylene to produce cumene, phenol, acetone and cumene. Phenol and acetone are used in the manufacture of resins, high-tech plastics, synthetic fibers, pharmaceuticals, and a long list of final applications.

- Cepsa Chemical Bécancour

Bécancour Plant is located in the Bécancour Industrial and Port Park in southern Quebec. Linear alkylbenzene (LAB) is produced there, compound used in the manufacture of biodegradable detergents as well as other secondary products of commercial and industrial utility. The alkylation of benzene with olefins for the production of LAB also implies the production of heavy alkylate bottoms made up mainly of dialkylbenzenes, mainly used as refrigerant additives and for the production of highly hydrophobic surfactants.

- Cepsa Química Deten

Deten Química Plant is located in Polo Petroquímico de Camaçari (Bahía). Linear alkylbenzene (LAB) is produced there, compound used in the manufacture of biodegradable detergents as well as other secondary products of commercial and industrial utility. The sulphonation of the LAB leads to the formation of the corresponding sulphonic acid (LABSA).

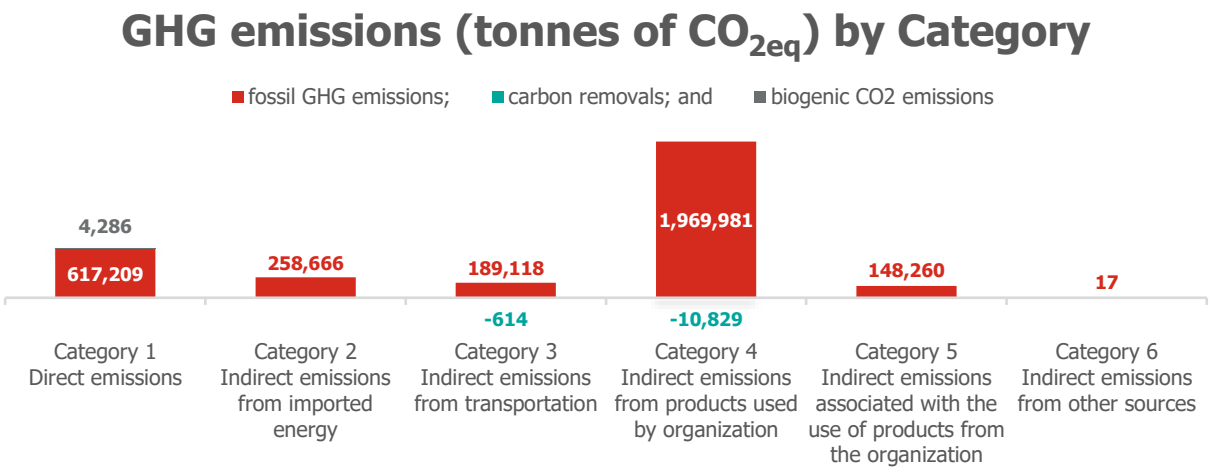
03

Emissions Data and Methodology

03. Data and Methodology

3.1. Emissions Data

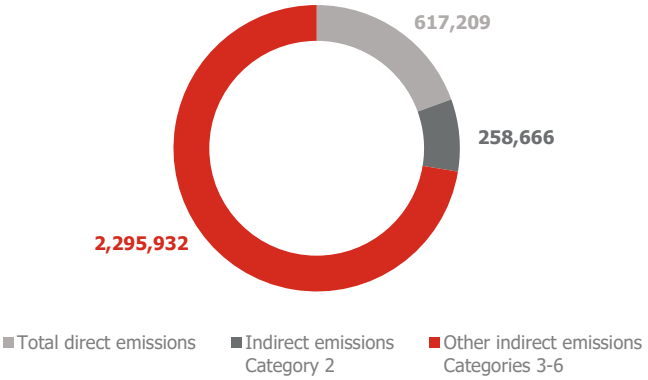
The general distribution of emissions among the above mentioned ISO 14064-1:2018 for the year 2023 categories is shown in the following graph, according to the materiality criteria.



Where,

- **Total fossil GHG emissions account to 3,171,807 tonnes of CO_{2eq}.** This sum of emissions includes -11,444 tonnes of CO_{2eq} due to carbon removals and excludes the biogenic emissions which accounts to 4,286 tonnes of CO_{2eq}.
- It is seen that **Category 4 contributes to the most emissions**, specifically the emissions from purchased products. This is followed by Category 1 and 2.
- Indirect emissions corresponding to Category 2, emissions from purchased energy is shown in the graph as **market-approach calculation**. This category accounts to 239,668 tonnes of CO_{2eq} under location-approach calculation.

Now, the percentage distribution graphs for carbon footprint by scope show that **indirect emissions account for the largest percentage** of emissions calculated.



The breakdown of **direct emissions** is shown in the following table where the equivalent tons of CO_2 are broken down according to the contribution of each business unit.

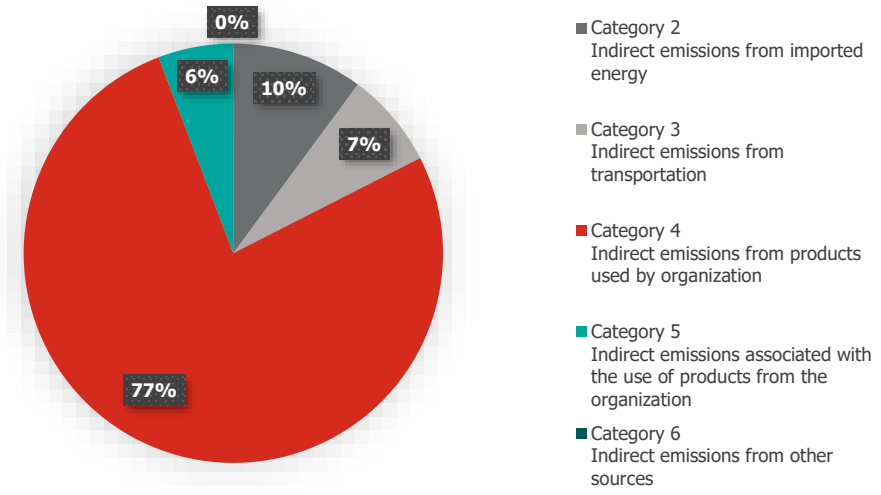
Direct emissions per source, GHG tonnes	Total, CO_2e emissions	CO_2	CH_4 as CO_2e	N_2O as CO_2e	Refrigerant gases as CO_2e
Combustion stationary sources	570,236	566,966	330	2,941	
Flaring	4,270	4,269	1	1	
Process emissions	2,077	2,077	0	0	
Combustion mobile sources	3,513	3,492	12	9	
Wastewater treatment facilities	30,441		29,634	807	
Gas distribution fugitive emissions	7,461	12	7,449	0	
Fugitive refrigerant	3,496				3,496
Where, total fossil GHG emissions; and	**617,209**	**572,530**	**37,426**	**3,757**	**3,496**
biogenic CO_2 emissions	**4,286**	**4,286**			

Indirect emissions associated with Categories 2-6 are summarized in the following table, differentiating between location- based and market-based methods.

Indirect emissions per category, CO_2e tonnes	market approach	location approach
Category 2 (purchased energy)	**258,666**	**239,668**
fossil GHG emissions	258,666	239,668
Category 3 (transport) (1)	**188,504**	**188,504**
fossil GHG emissions; and	189,118	189,118
carbon removals	*-614*	*-614*
Category 4 (products used) (1)	**1,959,151**	**1,959,151**
fossil GHG emissions; and	1,969,981	1,969,981
carbon removals	*-10,829*	*-10,829*
Category 5 (use of products)	**148,260**	**148,260**
fossil GHG emissions	148,260	148,260
Category 6 (others)	**17**	**69**
fossil GHG emissions	17	69
Total, fossil CO_2e emissions;	**2,566,041**	**2,547,096**
Total, fossil CO_2e emissions (1); and	**2,554,598**	**2,535,652**
Total, biogenic CO_2 emissions	**0**	**0**

(1) *Including carbon removals (-)*

Within the section of **indirect emissions,** the following graph shows the distribution of indirect emissions from Category 2 to Category 6. As previously indicated, the results of emissions associated with electricity have been carried out according to the market-approach methodology.



3.2. Methodology

Category 1. Direct emissions

- Combustion emissions in stationary sources; GHG emissions according to:
  For Spanish facilities, the reporting methodology is aligned with the EU ETS (European Emission Trading Scheme) and national inventory emission factors.
  The Shanghai Plant follows a Carbon Market through Shanghai's Emissions Trading Scheme for its reporting methodology.
  In Bécancour, the Cap-and-Trade emissions allowances system prescribes a Reporting Methodology that accounts for equivalent CO_2.
  The EU-PRTR Concawe Methodology is applied for the Deten Plant.

  Emissions of CH_4 and N_2O in stationary sources are also calculated in accordance with the EU-PRTR Concawe Methodology. GWP of CH_4 (27.9) and N_2O (273) GHG according to IPPC AR6 Global Warming Potentials.

- Flaring emissions in facilities; GHG emissions reported according to the same methodologies as those described for combustion emissions at stationary sources.

- Process emissions in facilities; CO_2 according to Methodology European Reporting under EU ETS. Activity data are reported following the EU Methodology regulation.

- Combustion emissions in mobile sources: activity data coming from internal registers or from supplier service, and national inventory emission factors for considered GHG.

- Wastewater treatment plant emissions.
  Methane produced in the anaerobic reactor and nitrous oxide as intermediate in the nitrification-denitrification process.
  The quantification methodology is based on own discharge parameters and IPCC Guidelines for wastewater treatment and discharge default factor.

- Gas distribution fugitive emissions. Activity data reported according to the same methodologies as those described for combustion emissions at stationary sources and IPCC Guidelines for emission factors; transport & ERM (natural gas) fugitive emissions.

- Fugitive emissions of refrigerant gases. GHG according to IPPC AR6 GWPs (100-years). Activity data reported under refill and maintenance evidence.

Category 2. Indirect emissions from imported energy

Associated emissions to purchased electricity and steam in facilities under scope. Activity data are reported under carbon markets verified data or invoices. Emission factor of indirect emissions due to steam come from operational data.

Emission factor for power are reported under market-based and location-based criteria.

Categories 3-6. Indirect emissions from value chain

Following subcategories as energy and purchased fuels, raw materials and services (category 4), upstream transportation of raw material and downstream transportation and distribution (category 3), use of sold products and waste management (category 5), upstream leased asset (category 6) have consistent activity data for their calculation as they are verified in other categories to carry out emission calculations.

Category 3. Indirect GHG emissions from transportation

3.1. Subcategory Indirect emissions by transport and distribution upstream

The quantification methodology used for calculating emissions is based on raw materials activity data and emission factors from Ecoinvent database.

It accounts for 7,754 tonnes of CO_{2eq}.

3.2. Subcategory Indirect emissions by transport and distribution downstream

The quantification methodology used for calculating emissions is based on the sold products activity data and emission factors from Ecoinvent database.

It accounts for 180,526 tonnes of CO_{2eq}.

3.3. Subcategory Indirect emissions caused by employees commuting to work

The quantification methodology used for calculating emissions is based on activity data from commuting survey (2022) and emission factors from DEFRA database.

It accounts for 839 tonnes of CO_{2eq}, but as it will be explained in section 4.2 Emissions Removal Actions, 614 tonnes of CO_{2eq} have been removed through carbon credits based on nature-based projects, so only 224 tonnes of CO_{2eq} have been considered in this subcategory.

3.4. Subcategory Indirect emissions caused by business travel

The quantification methodology used for calculating emissions is based on activity data from travel agencies reports and emission factors from DEFRA database.

It accounts for 679 tonnes of CO_{2eq}, but due to the materiality criteria it has been considered non-significant.

Category 4. Indirect GHG emissions from products used

4.1. Subcategory Indirect emissions from purchased products

The quantification methodology is based on the same basis than upstream transport subcategory, with crude oil, chemical products, additives and renewable raw materials being purchased products.

It accounts for 1,780,230 tonnes of CO_{2eq}.

4.2. Subcategory Indirect emissions from purchased consulting services

The quantification methodology used for calculating emissions is based on consulting services cost activity data and emission factors of business services.

It accounts for 2,497 tonnes of CO_{2eq}.

4.3. Subcategory Indirect emissions from purchased energy

As upstream emissions of purchased fuels and electricity and transmissions and distribution losses

The quantification methodology used for calculating emissions is based on diesel, electricity and steam consumption activity data and emission factors from DEFRA database.

It accounts for 145,403 tonnes of CO_{2eq}.

4.4. Subcategory Indirect emissions from third-party disposal and treatment of wastes generated in operations

The quantification methodology used for calculating emissions is based on official declaration of managed wastes, internal register or/and water discharged to third party treatment plant as activity data and emission factors from DEFRA database.

It accounts for 41,850 tonnes of CO_{2eq}.

Category 5. Indirect GHG emissions from use of products

5.1. Subcategory Indirect emissions from the processing of sold products

The quantification methodology used for calculating emissions is based on chemical sold products as activity data. For the processing of those chemicals, the emission factors used are the actual processing ratios provided by our clients.

Due to this limitation and to the lack of access to these data in databases, this subcategory only includes sales for which reliable emission factors are available. Consequently, it is estimated that only about 5% of chemical sales are covered in this report. Action plans are currently being developed to address this problem.

It accounts for 148,260 tonnes of CO_{2eq}.

Category 6. Indirect GHG emissions from other sources

6.1. Subcategory Indirect emissions from the upstream leased assets.

Involving emissions in Cepsa's headquarters in Madrid.

The quantification methodology used for calculating emissions is based on natural gas and electricity invoices as activity data and national emissions inventory and electricity labeling for emission factors.

It accounts for 17 tonnes of CO_{2eq}, under market-based approach.

3.4. Exclusions and Uncertainty

Exclusions

In 2023 exercise no exclusions in emissions reporting.

Uncertainty

Uncertainty in the emissions is a combination of the uncertainties in the activity data, the different primary data per emissions, and the emission factors.

Next, data for elementary flows is qualitatively evaluated, taking into account considerations such as precision, integrity, representativeness and coherence, among others. For this, a scale (A – D) is established in which A corresponds to verified data and D would be estimates.

Data for elementary flows	Data quality	Explanation
Category 1. Direct emissions		
Activity data	**A**	Most emissions under regulated system
Emission factors	**A**	Most emissions under regulated system
Category 2. Indirect emissions from imported energy		
Activity data	**A**	Invoices
Emission factors	**A**	Electricity labeling of electricity trading companies
Category 3. Indirect GHG emissions from transportation		
Activity data	**B**	Internal records and travel agencies report
Emission factors	**B**	Database
Category 4. Indirect GHG emissions from products used		
Activity data	**A**	Regulated systems and financial planning
Emission factors	**B**	Database and own Product Carbon Footprints (PCF)
Category 5. Indirect GHG emissions from use of products		
Activity data	**B**	Financial planning
Emission factors	**A**	Clients EFs
Category 6. Indirect GHG emissions from other sources		
Activity data	**A**	Invoices
Emission factors	**A**	National Inventory EFs and electricity labeling

3.5. Base Year

As part of our ongoing commitment to enhancement, Cepsa included its international chemical facilities for the first time last year, so it was decided to establish the base year in 2022.

In 2023 exercise, total emissions decreased around 13% compared to 2022. This diminish is attributed to lower activity and emission factors actualization to latest versions.

04

Emissions Reduction and Removal Actions

4.1 Emissions Reduction
4.2 Emissions Removal

04. Reduction and Removal

4.1 Emissions Reduction Actions

Cepsa has certified energy efficiency actions in the facilities. The certified energy efficiency projects are included in the Energy Management System audited under the international standard **ISO 50001** and are included in the Efficiency Plans of the business unit.

- Cepsa Química Palos de la Frontera (Huelva)

vii. **Change of AMS plant operational mode**. This initiative consisted of modifying the operational mode of the columns to reduce energy consumption in heat exchangers.

Project implementation in June 2023, resulting in a direct emissions reduction of 618 tonnes of CO_{2eq}.

- Cepsa Química Deten (Brazil)

viii. **Improving the efficiency of thermal exchange in the PACOL unit**. A combined load preheater was installed in order to improve the efficiency of the thermal exchange in reactor.

Project implementation in November 2023, resulting in a direct emissions reduction of 135 tonnes of CO_{2eq} during reporting year.

In addition, another series of measures related to process optimization have also been carried out, which have resulted in final energy savings in the year 2023. The emissions from these initiatives are analyzed and reported through the electrointensive report, in accordance with the regulation (RD 1106/2020 - Statute of electrointensive consumers) and required by the Administration. The GHG emissions avoided through the operational measures implemented have amounted to 9,026 tonnes of CO_{2eq}.

4.2 Emissions Removal Actions

During 2023-year Cepsa has implemented some removal actions affecting indirect emissions in value chain.

4.2.3. Renewable raw material carbon absorption

The absorption of carbon by renewable materials during their growth phase is accounted for when these materials are utilized for chemical production without any associated combustion. During this year, palm kernel oils (CPKO and PKO) have been processed in Chemical facilities to produce sustainable linear alkylbenzenes (NextLab portfolio).

10,829 tonnes of CO_{2eq} have been removed due to the renewable raw materials processed in 2023, helping our clients to achieve their challenging targets dedicated to reducing climate change impact. These emissions have been considered **carbon removals in Category 4** Indirect GHG from products used, and subcategory purchased products.

4.2.4. Employees commuting offset

As part of the launch of the Sustainable Employee Plan, Cepsa has offset the emissions from Commuting of employees nationwide 2023 with the forestry CDM project: Reforestation as Renewable Source of Wood Supplies for Industrial Use in Brazil.

The proportional part of the voluntary cancellation corresponding to this report, with the reporting boundaries described in chapter 2.1 Boundaries, amounts to 614 tonnes of CO_{2eq}, expressed as **carbon removal in Category 3** Indirect GHG from transportation, and subcategory emissions caused by employees commuting to work.