



IMD Carbon Footprint Report

Scope 1 & 2 results
14/10/2022

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- Present an overview of the carbon footprint situation of IMD Lausanne
- Identify the hotspots creating the majority of carbon emissions

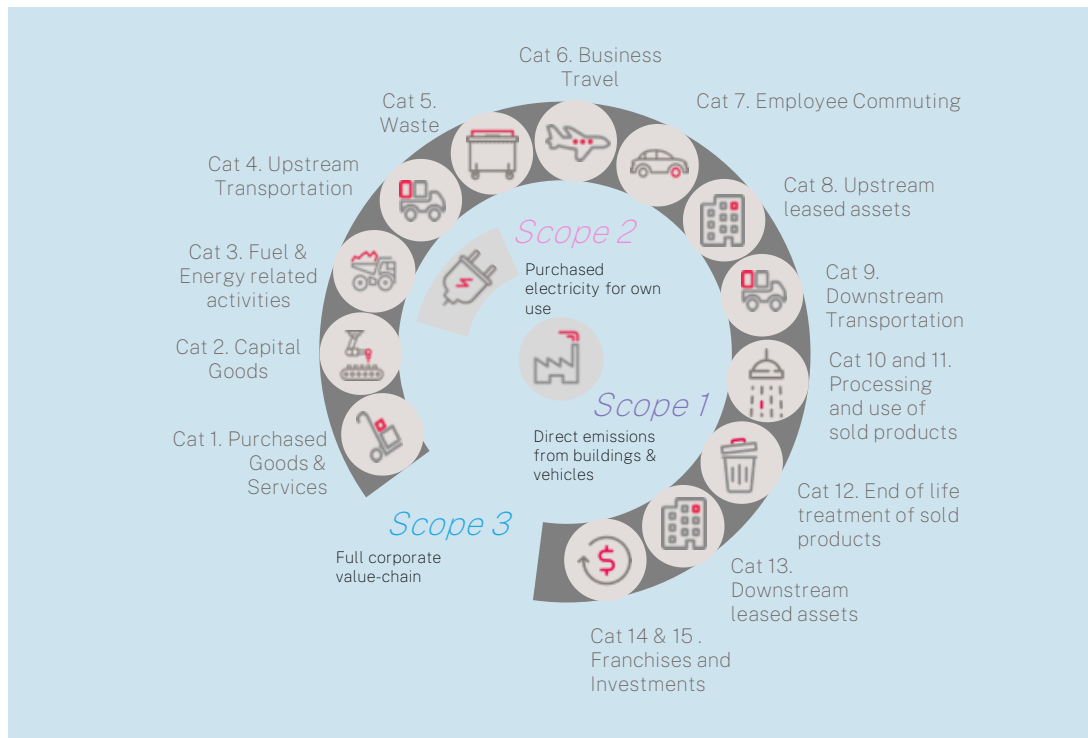
This audit includes Scope 1 and Scope 2 emissions, and conforms with the internationally recognised standards of the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard from the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), and ISO 14064.

② Scope



GHG FOOTPRINTING METHODOLOGY

INFORMING AN ACCURATE BASELINE FOR YOUR STRATEGY



The categories proposed by the [GHG Protocol](#) provide a wide scope for accounting carbon emissions along the value chain of an organization.

The scope is divided into three parts:

- Scope 1 (direct)
- Scope 2 (indirect)
- Scope 3 (indirect)

1

CAMPUS



3

SCOPES



Scope 1 : direct emissions from building and vehicles



Scope 2 : purchased electricity and heat for own use



Scope 3 : full corporate value chain

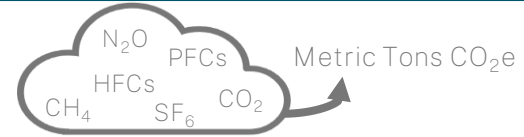
③ Results



Split between scopes

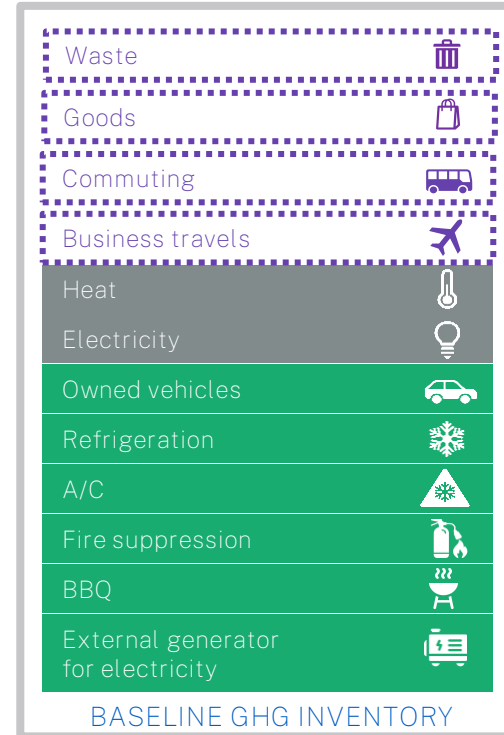
Greenhouse gas inventory

As of now, only the scopes 1 and 2 are considered in this study. Scope 3 will be taken into account later on and the GHG results will be updated.



- Scope 1** *Direct emissions*
- Scope 2** *Indirect emissions*
- Scope 3** *Indirect emissions*

Scope 3 is currently under development



Definitions



Name	Scope	Definition
Owned vehicles	1	All company-owned or operated vehicles, engines and equipment that generate GHG emissions through the combustion of various fuels while moving from one location to another. They include vehicles used on roads for transportation of employees or distribution trucks as well as off-road vehicles, engines and equipment used for many other purposes.
Refrigeration	1	All HFC, PFC and other types of refrigerants used in refrigerated trailers and air conditioning units should be accounted for in company-owned and -controlled equipment. This includes refrigerated transport, industrial process refrigeration, cold storage warehouses, mobile air conditioning.
A/C	1	
Fire suppression	1	Fire Suppression emission sources can range in scale from a small portable fire extinguisher to a large-scale fire suppression system for an office building or warehouse. The emissions are caused by chemicals (e.g., HFCs, CO ₂) emitted from fire suppression devices during use, maintenance, and disposal.
BBQ	1	All company-owned or operated barbecues and/or grill.
External generator for electricity	1	All company-owned or operated external generators.
Heat	2	All acquired and consumed heat that may either be produced from electricity or through a non-electrical process such as solar thermal heat or thermal combustion processes (as with a boiler or a thermal power plant) outside the company's operational control.
Electricity	2	Electricity purchased by the company (eg. green mix, standard mix, autoproduction) that is used to operate machines, lighting, electric vehicle charging, and certain types of heat and cooling systems.



Carbon footprint summary of scope 1 and 2

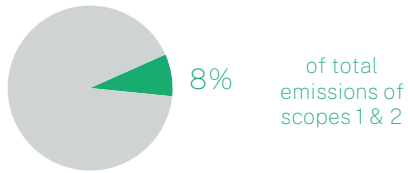
Scope 1



Emissions from operations that are owned or controlled by the reporting company (incl. owned vehicles, direct fugitive emissions, direct air emissions).

55 t

CO₂ emissions



8% of total emissions of scopes 1 & 2

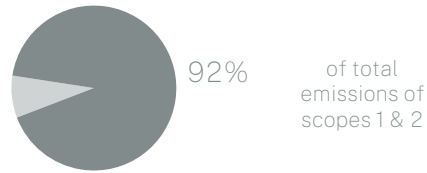
Scope 2



Emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting

607 t

CO₂ emissions



92% of total emissions of scopes 1 & 2

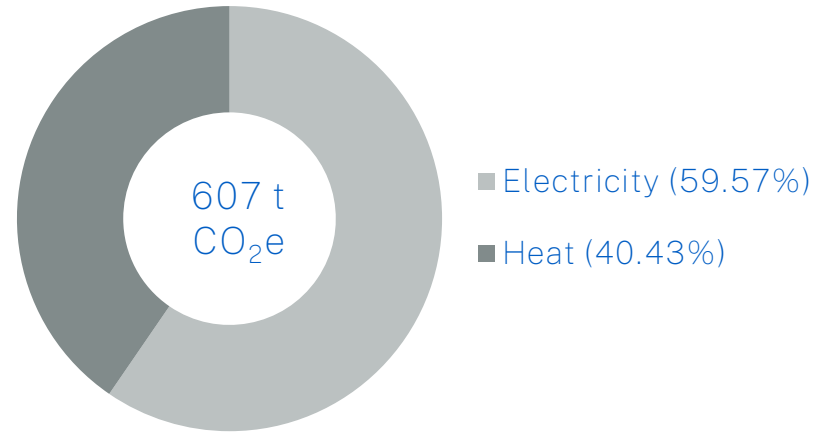
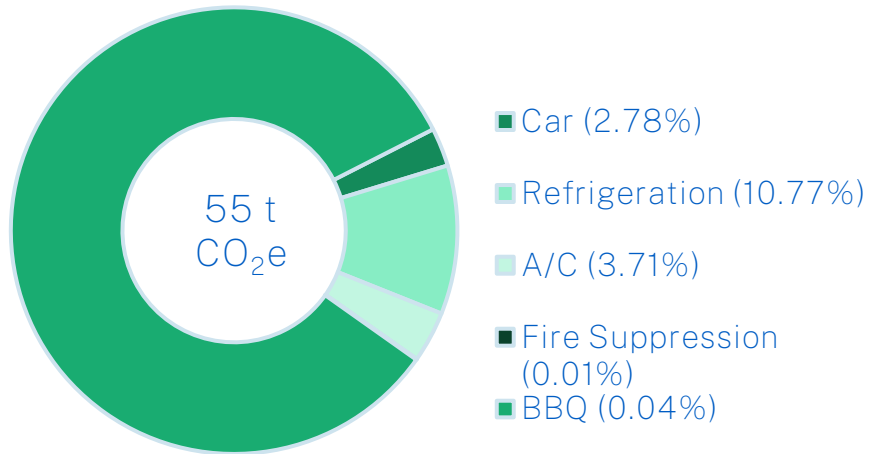
Scope 3



All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

IS NOT TAKEN INTO ACCOUNT YET

Distribution of the CO2 impact according to scope 1 and 2



④ Assumptions



Key hypothesis | General

Phase	Hypothesis
Scopes	<ul style="list-style-type: none">• Only scopes 1 and 2 are considered in this case.
Campus	<ul style="list-style-type: none">• Only the IMD campus based in Lausanne is considered.

Key hypothesis | Scope 1



Phase	Hypothesis
Car	<ul style="list-style-type: none">Gasoline car.
Refrigeration	<ul style="list-style-type: none">The CO₂e impacts for this category were calculated with the help of the GHG protocol calculation sheet.Domestic refrigeration : most common used gas is R744, with a charge of 0.30 kg.Industrial Refrigeration including food processing and cold storage uses R404A gas, with a charge of 0.30 kg.Positive cold room (restaurant) uses R449A gas, with a charge of 2.00 kg.Negative cold room (restaurant) uses R404A gas, with a charge of 2.00 kg.
A/C	<ul style="list-style-type: none">The CO₂e impacts for this category were calculated with the help of the GHG protocol calculation sheet.Mobile air conditioning uses R410A gas, with a charge of 0.50 kg.Air conditioning (residence building) uses R22 gas, with a charge of 1.00 kg.Air conditioning (Bellerive 32 building) uses 3 types of gas : R22, R32 and R410A, all with a charge of 1.00 kg.
Fire suppression	<ul style="list-style-type: none">The CO₂e impacts for this category was calculated with the help of the GHG protocol calculation sheet.The fire extinguisher uses CO₂ gas, and usually has a refrigerant charge between 2.00 and 5.00 kg. For this study, we used a charge of 3.50 kg.
BBQ	<ul style="list-style-type: none">BBQ uses propane gas.
External generator for electricity	<ul style="list-style-type: none">Generators uses diesel.



Key hypothesis | Scope 2

Phase	Hypothesis
Electricity	<ul style="list-style-type: none"><li data-bbox="444 316 1477 343">• External grid, standard mix, with an emission factor 0.112 kgCO₂e (Nativa Lausanne).
Heat	<ul style="list-style-type: none"><li data-bbox="444 393 772 420">• District gas, natural gas.

⑤ Conclusion



Total greenhouse gases	661.26 tCO₂e	
	tCO ₂ e	%
GHG scope 1	54.62	8.26%
Owned vehicles	1.52	0.23%
Refrigeration	5.88	0.89%
A/C	2.02	0.31%
Fire suppression	0.00	0.00%
BBQ	0.02	0.00%
External generator for electricity	45.17	6.83%
GHG scope 2	606.64	91.74%
Electricity	361.39	54.65%
Heat	245.25	37.09%

This GHG inventory for scopes 1 and 2 on Lausanne campus shows net emissions of 662 tCO₂e for the year 2021.

Scope 2 is 10X more impactful than scope 1, with a total of 55 tCO₂e for scope 1 and 607 tCO₂e for scope 2.

The major emissions sources in scope 1 are related to the external generators for electricity with 83% of the total scope 1 emissions. The lowest come from fire suppression which is inferior to 1% of the total scope 1 emissions.

In scope 2, the electricity consumption represents the highest emissions with 60% of the total scope 2 emissions. Heat represents 40% of the total scope 2 emissions.

⑥ Sources



- https://ghgprotocol.org/scope_2_guidance
- <https://ghgprotocol.org/corporate-standard>
- <https://www.epa.gov/climateleadership/ghg-inventory-development-process-and-guidance>
- https://www.epa.gov/system/files/documents/2022-09/Simplified_Guide_GHG_Management_Organizations.pdf
- <https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>
- <https://www.epa.gov/sites/default/files/2020-12/documents/fugitiveemissions.pdf>
- <https://energieplus-lesite.be/donnees/froid-alimentaire4/puissances-frigorifiques-des-chambres-froides-d1/>



EA - Environmental Action is a mission driven research consultancy. EA is leading the development of plastic footprint methodologies and data | www.e-a.earth

- Fully independent, project funded organization
- Mission driven team
- Connected to businesses and real world
- Lead by scientific excellence

EA has recently launched PLASTEAX, the first global database providing high quality polymer & application specific data on plastic waste management and leakage. PLASTEAX is born of the need to provide more transparency in the plastic space | www.plasteax.org

About EA | Our current positive impact

- EA is a mission driven, non for profit, research consultancy (Association registered under the swiss law, registered in canton de Vaud)
- EA has developed a leading expertise in the field of plastic pollution with 11 related peer reviewed reports and publications published since 2017, the development of multiple guidances/tools and the launch of PLASTEAX in 2021.
- EA strives for projects that have an impact and contribute to accelerate the transition toward a more sustainable future.

75'000

EA has demonstrated in multiple projects how a science based and data driven approach can trigger disruptive change. Our report "Primary Microplastics in the Ocean" published in 2017, was by far the most downloaded IUCN report of all time, with over 75'000 downloads. It shed light on the primary microplastic importance within the plastic pollution arena and allowed for disruptive change in the tyre industry.

100

EA has developed the first plastic footprint methodology (The marine Plastic Footprint, IUCN 2020) and (The Plastic Leak Project, 2020). The approach is now used by more than 100 leading companies worldwide to assess their plastic footprint.

25

EA has developed for UNEP and IUCN the National Guidance for Plastic Pollution and Shaping Action (2020), now in used by over 25 countries to support their effort toward less plastic pollution.

3x

In 2020, together with 25 other leading global plastic experts, EA has co-authored the breaking the plastic wave report (and Science publication). First report of its kind to demonstrate that without fast and bold action the plastic pollution will *triple* by 2040. Current commitments are far from sufficient to curb plastic leakage.

1

In 2021, EA has launched PLASTEAX with the intention to disclose best in class polymer specific waste management and leakage data at country level. PLASTEAX has been launched with the intention to bring more transparency in the plastic space and as a key step to transition toward a society with close to zero plastic leakage.