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Tracing Fashion to a Responsible Future

FILATURA PAPI FABIO
Carbon Footprint data 2024

Novembre 2025

The company: objectives, boundaries, collected data

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The company

Filatura Papi was founded in 1890 in Faenza; following a devastating fire, the company relocated to the Emilian Apennines, specifically to Gaggio Montano, Bologna, where it is still based today. For more than 130 years Filatura Papi has used increasingly valuable raw materials to produce yarns requested by highly qualified clients in the fashion sector. This is enabled by plants and machinery, located both in Gaggio Montano and external sites, which are the result of constant, cutting-edge research and continuous investments aimed at improving quality and production efficiency.

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Objectives of the study

The study was made with the aim of:

- ✓ Analyze and report greenhouse gas emissions for 2024, in order to measure the company's total environmental footprint Climate Change.

- ✓ Track and quantify emissions related to internal activities, in order to identify company priorities and best practices for reduction and efficiency to be implemented in the new plant

Phases of the study

The creation of the inventory of greenhouse gas emissions by Filatura Papi Fabio involved the following phases:

1. definition of organizational and operational boundaries
2. inventory development through the identification of contributions to direct (Scope 1) and indirect emissions (Scope 2, 3)
3. greenhouse gas emission calculation and removals
4. drafting of emission GHC reports

Boudaries of the study

Filatura Papi Fabio has calculated its own GHG emissions and removal in terms of organization according to the control approach

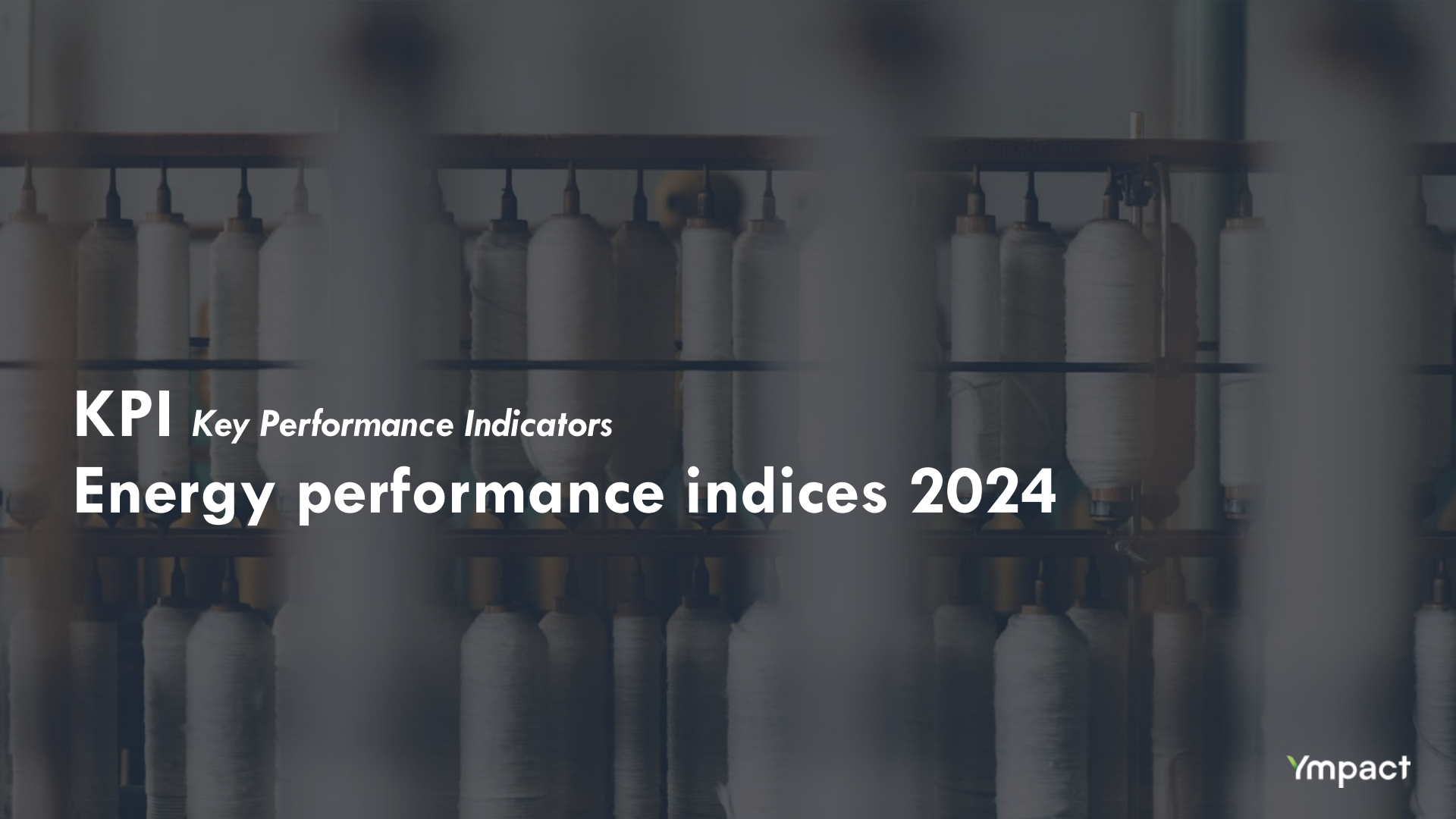
The organization accounts for all emissions and/or removals of GHG over which it has financial and operational control.

The organizational boundaries of this study, in line with the financial reporting perimeter, consider all internal processes and consumption relating to the Filatura Papi Fabio plant Località Vivalle, 193, 40041 Gaggio Montano BO and Via Amalfi, 35, 59013 Montemurlo PO

Data collection

All data collected for each production plant are direct data, regarding:

- consumption of methane gas for combustion and heat generation
- fuel consumption, diesel and petrol, for company fleet vehicles
- refrigerant gas leaks
- electricity consumption from the grid



KPI *Key Performance Indicators*

Energy performance indices 2024

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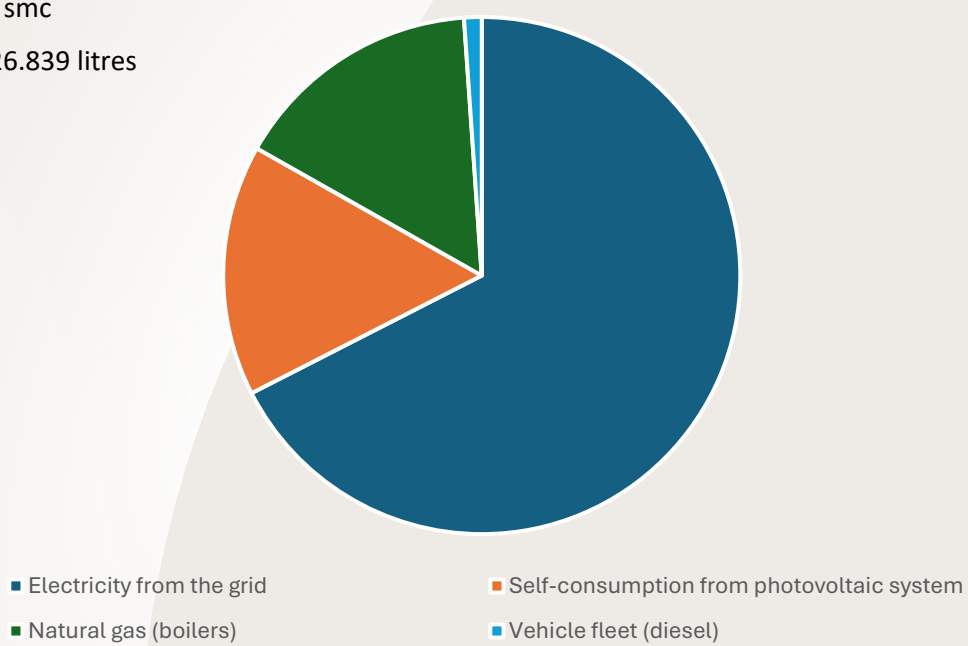
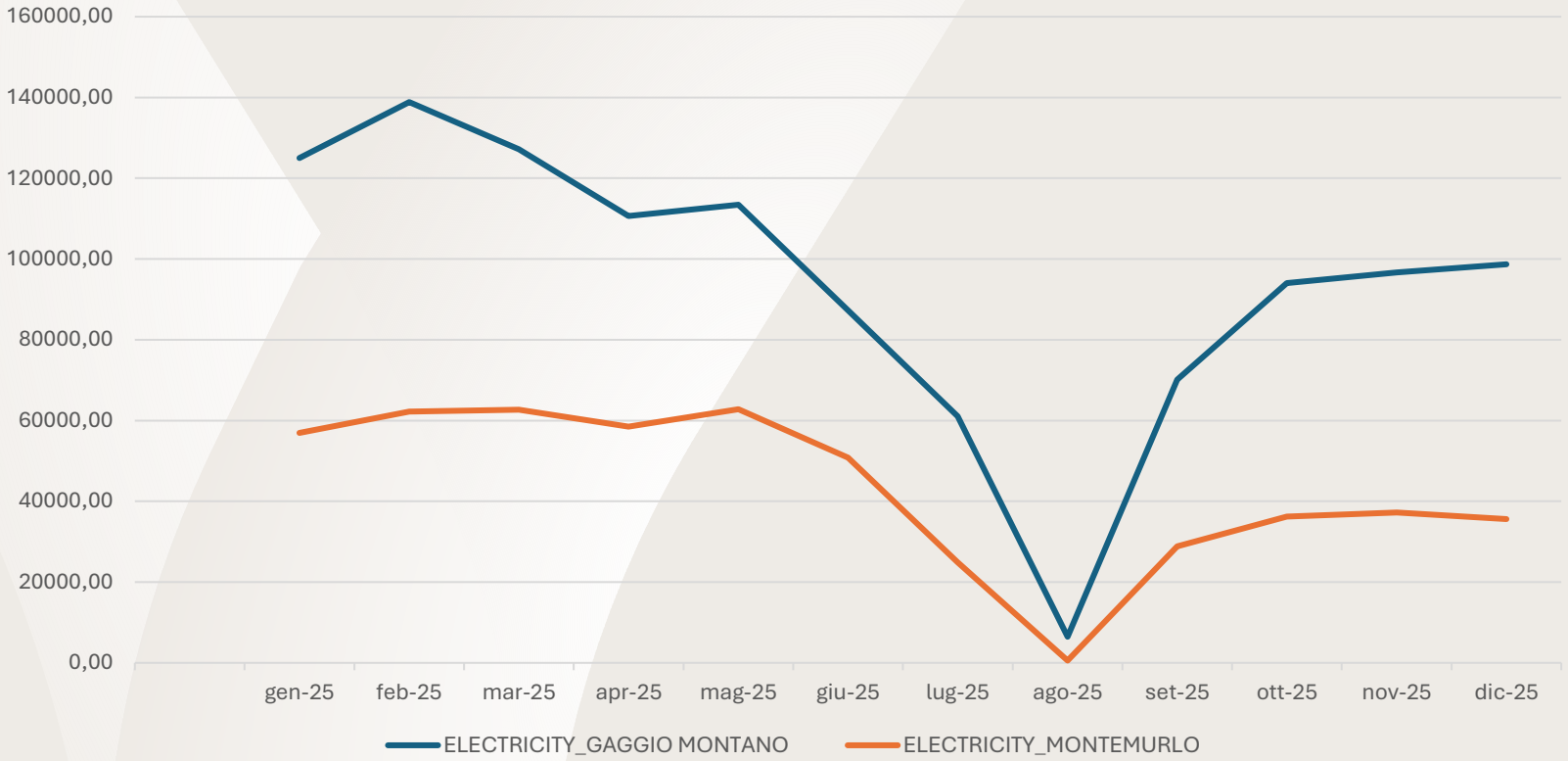
Energy KPI 2024: PRIMARY ENERGY TEP

Please see below energy consumption of 2024:

- electricity consumption from the grid = 1.646.871 kWh
- self-consumption from photovoltaic = 383.344 kWh
- methane gas (boilers) = 52.389 smc
- company vehicle fleet (fuel) = 26.839 litres



ELECTRICITY 2024



GHG Emissions Inventory

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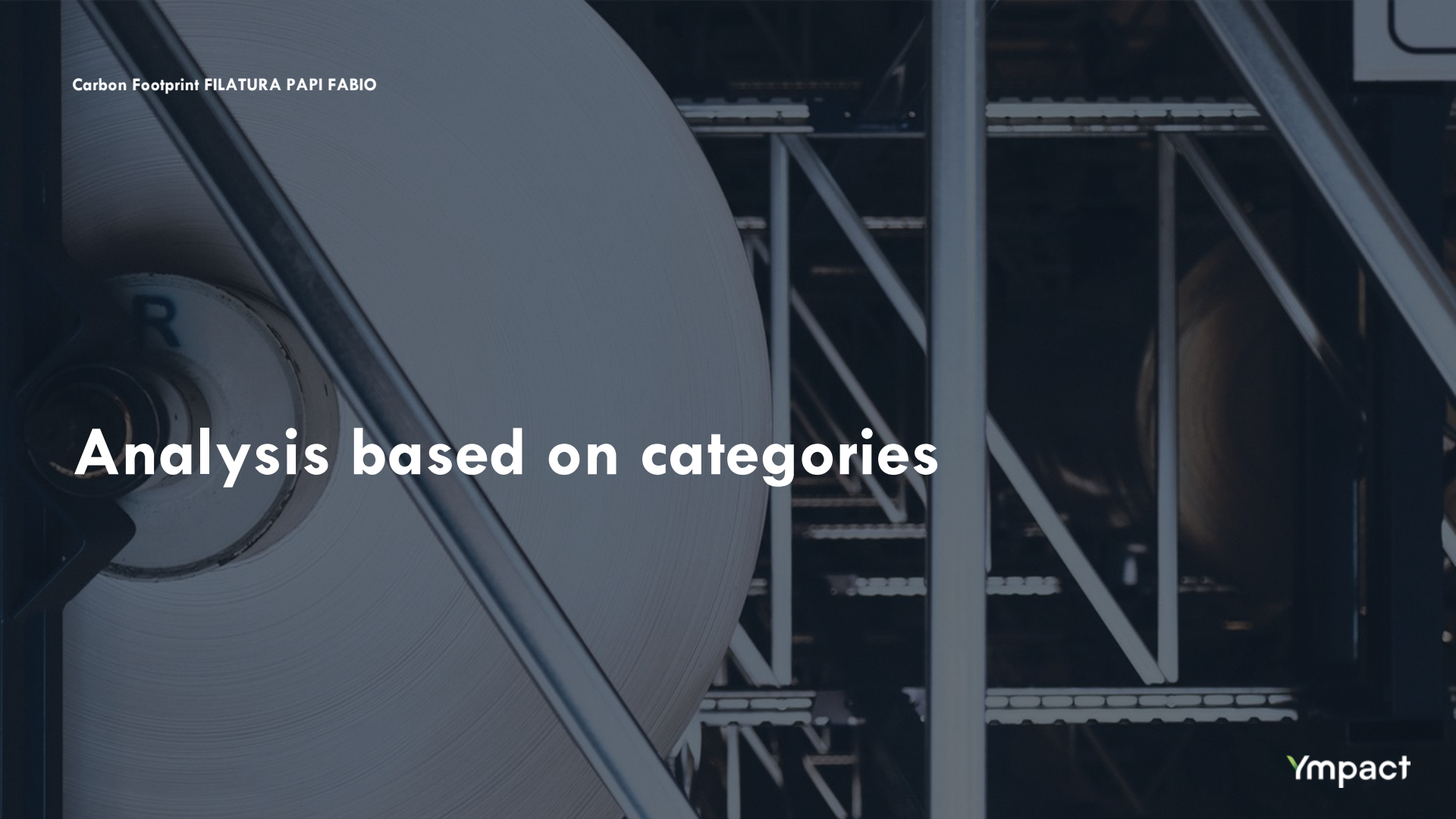
Inventario delle emissioni GHG

Emissions reporting according to 3 different methods:

1. STANDARD ISO 14064-2019
2. GHG PROTOCL in the fashion supply chain
3. 4s PLANET method

Two different scenarios are analysed for each method:

1. **Location based:** Emissions associated with purchasing electricity from the grid are quantified using the emission factor specific to the average national generation mix. The factors are those published by ISPRA.
2. **Marked based**: Emissions associated with purchasing electricity from the grid are quantified using the emission factor of the supplier’s own generation mix



Analysis based on categories

Category 1: **Direct emissions – combustion**

FILATURA PAPI FABIO	**kgCO2e**	**Peso %**
Methane gas	110,491	0,78%
Diesel (automotive)	354.167	2,49%
	464.659	

Category 2: Indirect emissions for energy purchase

Location Based approach

FILATURA PAPI FABIO	kgCO2e	Peso %
electricity consumption from the grid_Gaggio	403.838	1,64%
self-consumption from photovoltaic_Gaggio	-	-
electricity consumption from the grid_Montemurlo	292.738	0,75%
self-consumption from photovoltaic-Montemurlo	-	
TOTAL	**330.206**	

Market Based approach

FILATURA PAPI FABIO	kgCO2e	Peso %
electricity consumption from the grid_Gaggio	1.129.523	2,84%
self-consumption from photovoltaic_Gaggio	348.769	-
electricity consumption from the grid_Montemurlo	517.348	2,06%
self-consumption from photovoltaic-Montemurlo	34.575	
TOTAL	**696.577**	

Category 3-4: Indirect emissions

FILATURA PAPI FABIO	kgCO2e	Peso %
Upstream transport – by truck/by boat	106.167	0,75%
Upstream transport -production processes	22.614	0,16%
Raw material purchases	12..533.087	88,16%
Packaging and chemical products and water consumption	119.928	0,84%
Wastes	3.077	0,02%
Supply Chain	289.575	1,90%
TOTAL	**13.054.450**	

CARBON INTENSITY

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Carbon Intensity

Carbon intensity is an index that qualifies the equivalent CO2 emissions per product unity produced in the year under analysis.

In 2024 Filatura Papi Fabio's production was **876.656** kg

Making a comparison with the above mentioned value and quantities of two different approaches (Location & Market Based, of 13.849.315 kg.CO2e and of 14.215.686 kg.CO2e) we obtain the following result:

Method	**kgCO2e/kg**
Location Based	21,72
Market Based	22,29

Carbon Footprint
Summery reporting

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ISO 14064

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ISO 14064

Location Based

	TOTAL	
Category	**kgCO2e**	%
Cat. 1 Direct emissions	464.659	3.4%
Cat. 2 Electricity	330.206	2.38%
Cat. 3&4	13.054.450	94,26%

Market Based

	TOTAL	
Category	**kgCO2e**	%
Cat. 1 Direct emissions	464.659	3,27%
Cat. 2 Electricity	696.577	4,90%
Cat. 3&4	13.054.450	91,83%

GHG PROTOCOL

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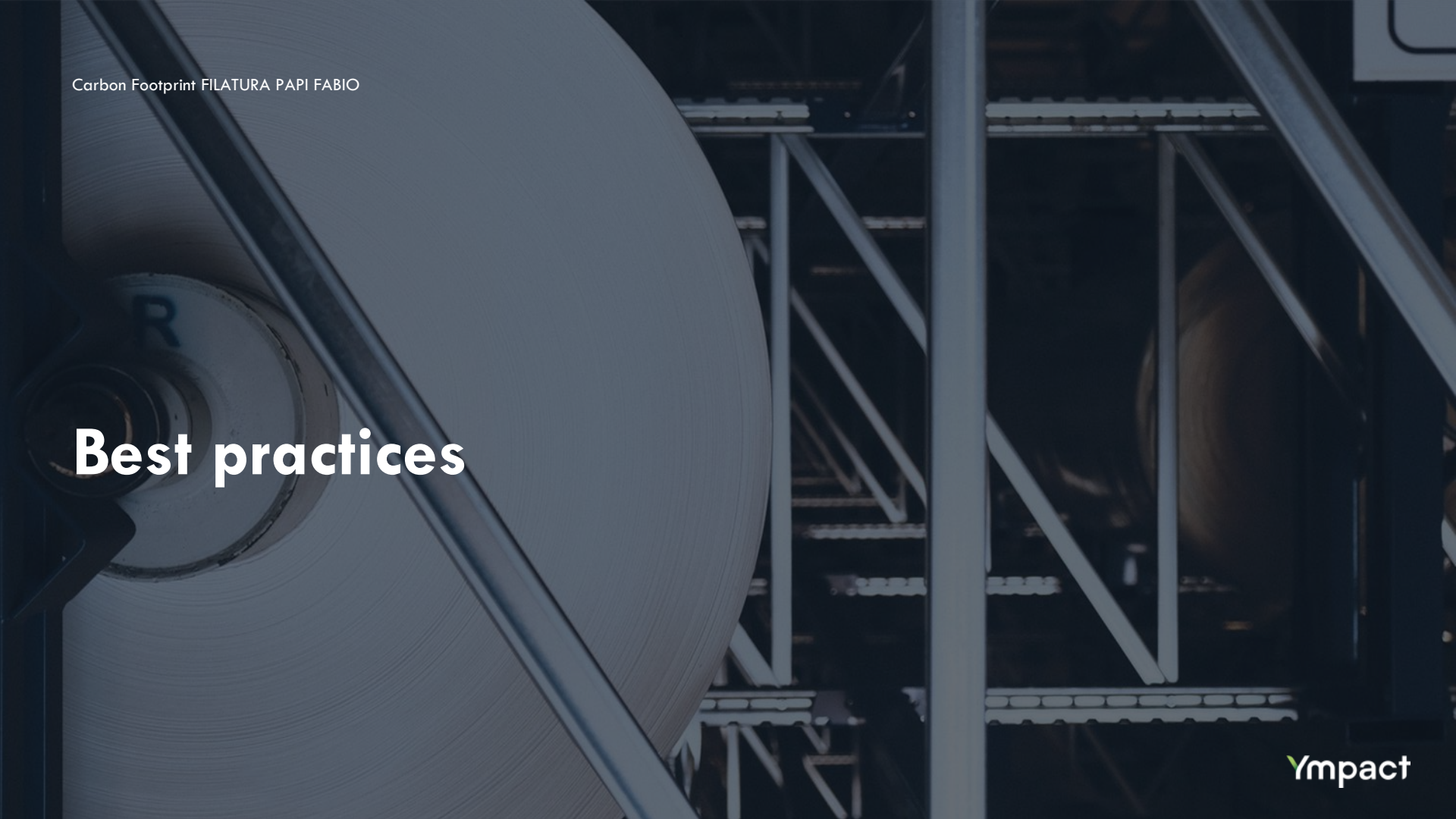
GHG PROTOCOL

Location Based

	TOTALE	
SCOPE	**kgCO2e**	%
Scope 1	464.659	35,3%
Scope 2	330.206	25,1%
Scope 3	251.787	19,1%
Supply Chain	269.576	20,5%

Market Based

	TOTALE	
SCOPE	**kgCO2e**	%
Scope 1	464.659	27,6%
Scope 2	696.577	41,4%
Scope 3	251.787	15,0%
Supply Chain	269.576	16,0%



Best practices

Best practices

Toward an efficient with low-emissions production plant

In the context of the ecological transition and the growing attention to environmental sustainability by brands and consumers, energy efficiency and the reduction of GHG emissions represent fundamental strategic levers also for manufacturing companies such as Filatura Papi Fabio.

The goal is to make the existing production site increasingly sustainable, efficient and competitive through targeted interventions on systems and energy supplies.

Suggested solutions have the aim to.

- reduce Scope 1 and Scope 2 emissions
- increase energy efficiency
- promote the self production of energy from renewable sources
- promote 100% renewable energy use
- optimize operating costs in the middle to long term
- strengthen corporate reputation and the possibility of accessing green incentives

Best practices

	Compressor replacement	Photovoltaic system in Montemurlo	Boiler replacement	Renewable electricity purchase
Description	Compressors replacement with new generation, high efficiency models, reducing electric consumption and energy losses.	Photovoltaic system installation for the self-production of renewable energy and the reduction of dependence on the electricity grid	New boiler installation at high efficiency in order to optimize natural gas use and to reduce thermal consumptions	Switching to purchasing 100% guaranteed electricity from renewable sources with Guarantees of Origin (GO)
Year	2023	2024	2025	2026/2028
Expected saving	The adoption of new-generation compressors allows for more efficient management and reduced energy losses. **In the short term**, this results in savings on electricity consumption and improved operational control, while in **the medium term**, the investment translates into lower service costs and greater system reliability.	Photovoltaic system reduces dependence on the electricity grid and guarantees a stable amount of energy from renewable source. In **the short term** it allows to reduce the electricity bill costs, in **the medium term** it strengths the company's production autonomy and economic resilience to energy price fluctuations.	The new high-efficiency boiler allows for a more rational use of natural gas and a reduction in direct emissions. In **the short term**, it improves thermal efficiency and system safety, while in **the medium term**, it helps contain energy costs and reduce the environmental impact of production activities.	The decision to source exclusively from renewable sources consolidates Filatura Papi Fabio's commitment to low-emission production. **In the short term**, it represents a strategic decision in line with customer and market expectations, while in **the medium term**, it will become a cornerstone for the overall de-carbonization of the plant.

Confronto anni da 2022 a 2024

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Year comparison

GHG PROTOCOL	Year 2022 [kgCO2eq]	Year 2023 [kgCO2eq]	Year 2024 [kgCO2eq]	Delta 2022/2024 %	Delta 2023/2024%
Scope 1	291.760	444.785	464.659	59%	4%
Methane gas consumption	128.484	133.806	110.491	-14%	-17%
Fuel consumption	163.276	310.979	354.168	117%	14%
Scope 2	898.394	989.756	696.577	-22%	-30%
Electric energy from grid consumption	870.161	965.191	696.577	-20%	-28%
Photovoltaic consumption	28.234	24.565	-	-100%	-100%
Scope 1+2	1.190.154	1.434.541	1.161.236	**-2%**	**-19%**
Scope 3	409.351	264.532	251.787	**-38%**	**-5%**
Scope 3_Supply Chain	-	169.368	269.575,71		59%
Total	**1.599.505**	**1.868.442**	**1.682.599**	**5%**	**-10%**

Year comparison on annual production

GHG PROTOCOL	Year 2022 [kgCO2eq]	Year 2023 [kgCO2eq]	Year 2024 [kgCO2eq]	Delta % 2022/2024	Delta % 2023/2024
Scope 1	0,39	0,66	0,73	86%	10%
Methane gas consumption	0,172	0,20	0,173	0%	-13%
Fuel consumption	0,22	0,46	0,56	153%	19%
Scope 2	1,21	1,48	1,09	-9%	-26%
Electric energy from grid consumption	1,17	1,44	1,09	-7%	-24%
Photovoltaic consumption	0,04	0,04	-	-100%	-100%
Total Scope 1&2	1,60	2,14	1,82	**14%**	**-15%**
Scope 3	0,55	0,40	0,39	**-28%**	**0%**
Scope 3_Supply Chain	-	0,25	0,42	-	67%

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