

Carbon Footprint 2025

Presentation of results



UNIVERSITÀ
DI TRENTO



Agenda

- ✓ Purpose and Scope
- ✓ University Carbon footprint
- ✓ Carbon Footprint results – *Market based*
- ✓ Key Performance Indicators (KPIs)
- ✓ Emissions trend over time

Purpose and Scope

The document provides a summary of the **Carbon Footprint analysis** conducted for the University of Trento, aiming to quantify greenhouse gas (GHG) emissions for the **year 2025**.

The analysis, conducted in accordance with the **UNI EN ISO 14064-1:2019 standard**, provides a solid foundation for developing effective strategies aimed at reducing climate impact. The results of the analysis can be used for:

- Define **GHG reduction targets**, **measure progress**, and **report on achievements**
- Providing **quantitative information** to transparently report the **university's impacts**, including in public reports such as the **Sustainability Report**
- Identifying **emission hotspots**
- Identifying **mitigation actions**, which often represent cost-reduction opportunities
- Obtaining **certification** from a third-party organization
- Participating in **voluntary** impact reduction **programs**

University Carbon Footprint

Carbon Footprint methodology

Analysis of the University

- Locations, services, supply chain

Identification of organizational boundaries

- Organizational boundary
- GHG reporting boundary

Identification of emission sources

- Classification of emissions according to ISO 14064-1 categories

GHG Emissions Calculation

- Direct and indirect GHG emissions

Results Processing

- GHG emissions Inventory
- Identification of intervention/improvement areas

EMISSION CATEGORIES UNI EN ISO 14064-1:2019



1. COMBUSTION
PROCESSES



2. IMPORTED
ENERGY



3. TRANSPORT



4. MATERIALS/
SERVICES



5. USE/END OF
LIFE



6. OTHER
EMISSIONS

Calculation Scope

Organizational boundaries:

GHG emissions have been determined using the **operational control approach**. This method ensures the inclusion of all emissions from activities and facilities directly managed by UniTrento, providing a comprehensive and accurate assessment of sources under the university's full control.



- Palazzo Sardagna
- Molino Vittoria
- Palazzina DIT
- Palazzo Cavazzani
- Uffici via Rosmini 70
- Litografia
- Res. Bernardo Clesio e Asilo
- Palazzo di Sociologia
- Palazzo di Giurisprudenza
- Palazzo Bonvecchio
- Palazzo di Economia
- Palazzo Paolo Prodi
- BUC
- Spazio Multiuso
- Jean Monnet e Centro Usi Civici
- Cittadella studenti
- Condominio Verdigar
- Palazzo Consolati
- Polo di Mesiano
- Polo di Mesiano - Lab Idraulica
- Laboratori Centro BIC Moduli 4 e 8
- Augsburger Hof
- Povo Zero
- Polo Ferrari 1
- Polo Ferrari 2
- Villazzano via Molini
- Villa Gherta
- Complesso di Mattarello
- Palazzo Fedrigotti
- Palazzo Piomarta
- Trade Center
- Manifattura Edificio 14
- Manifattura Edificio 10
- Manifattura Edificio 6
- Manifattura Be Factory
- Foresterie

Carbon Footprint results

Market based

GHG Inventory 2025: category breakdown

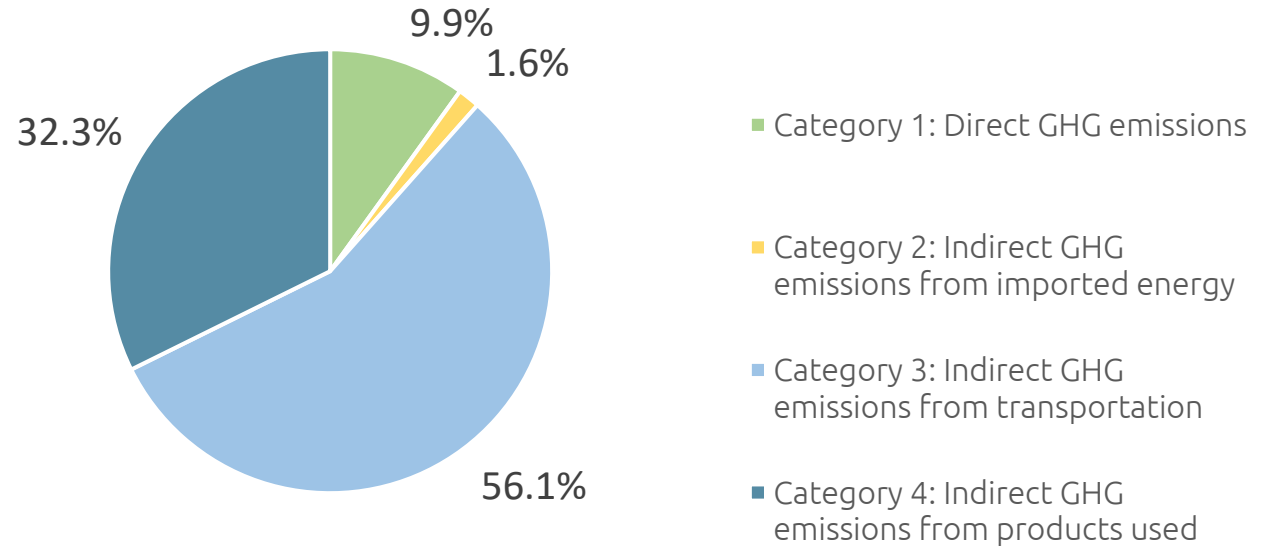
Categories	Emission sources	Emissions [tCO ₂ e]	Category emissions [tCO ₂ e]	Category percentage [%]
Category 1	Combustion of stationary plants	2,789	3,034	9.9%
	Mobile combustion	18		
	Process emissions	13		
	Fugitive emissions	214		
Category 2	Electricity purchased from the grid	0	488	1.6%
	Thermal energy purchased from the grid	488		
Category 3	Staff and student commuting	11,723	17,130	56.1%
	International inbound/outbound mobility	2,206		
	Business travel of employees	3,186		
	Waste transportation	10		
	Upstream of company fleet	5		
Category 4	Purchased goods and services	4,179	9,856	32.3%
	Capital goods	4,995		
	Waste disposal	118		
	Upstream energy	564		

Total emissions 2025	30,508 tCO₂e
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Scope 2 emissions calculated according to the Location based approach amount to 6,946 tCO₂e.

Carbon Footprint results

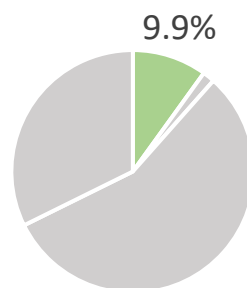
30,508
tCO₂e



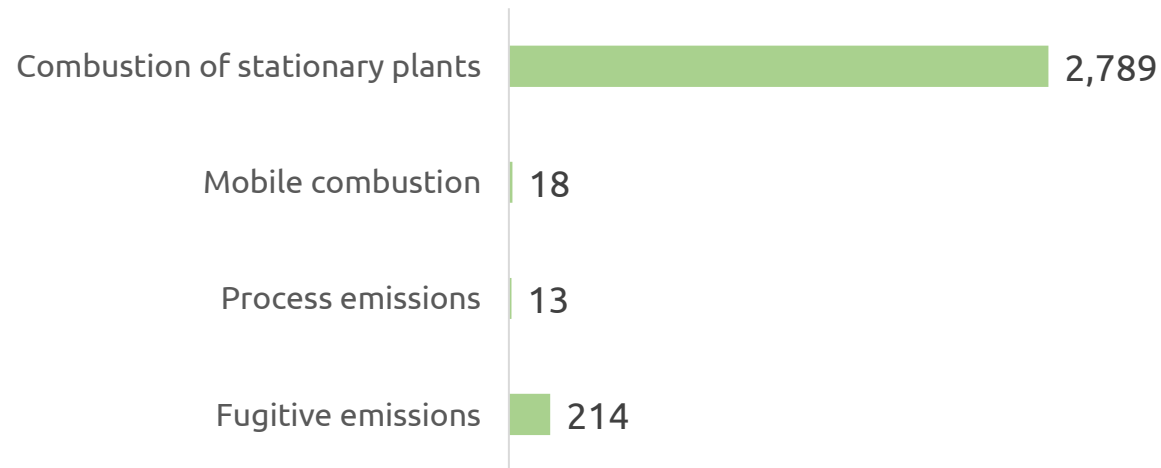
- The largest impacts are associated with **transportation (Category 3)**, accounting for **56.1%** of total emissions.
- **11.5%** of emissions are attributable to **energy consumption**, divided between Category 1 (fuel use, process emissions and fugitive emissions) and Category 2 (imported energy, calculated using the market-based approach). Electricity purchased from the grid for all University facilities does not contribute to the emissions impact thanks to the procurement of **100%** renewable electricity certified through **Guarantees of Origin (GO)**.

Results Analysis – Category 1

3,034
tCO₂e



Category 1 [tCO₂e]



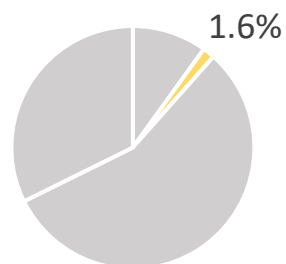
- Category 1 emissions account for **10%** of total emissions
- **Stationary combustion of natural gas** for heating represents the main emission source within this category, contributing approximately **2.8 thousand tCO₂e**. This value is associated with a total consumption of approximately 1.35 million Sm³ of natural gas and 504 kg of diesel fuel.
- In 2025, Category 1 also includes **fugitive emissions**, which were equal to **zero** in 2024, as well as **process emissions**, which were not included in the 2024 GHG inventory.

Results Analysis – Category 2

Market based

488

tCO₂e



Category 2 [tCO₂e]

Imported electricity (MB)

0

Imported thermal energy

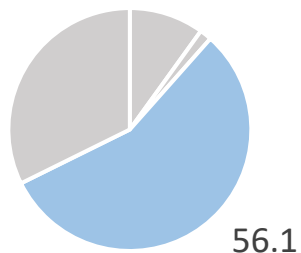
488

- Imported thermal energy (district heating and district cooling) represents the only emission source within Category 2
- For all University facilities, electricity is procured as **100%** renewable and certified through Guarantees of Origin (GO)

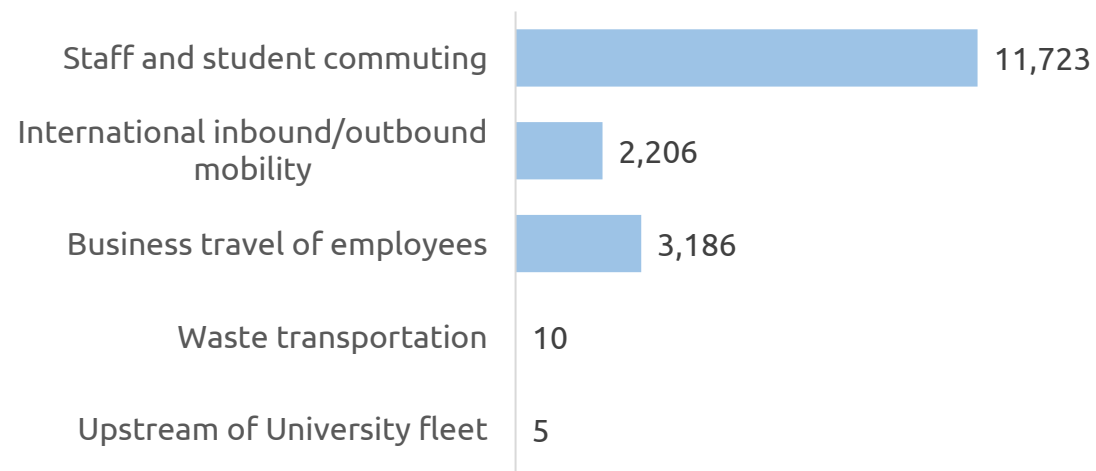
Results Analysis – Category 3

17,130

tCO₂e

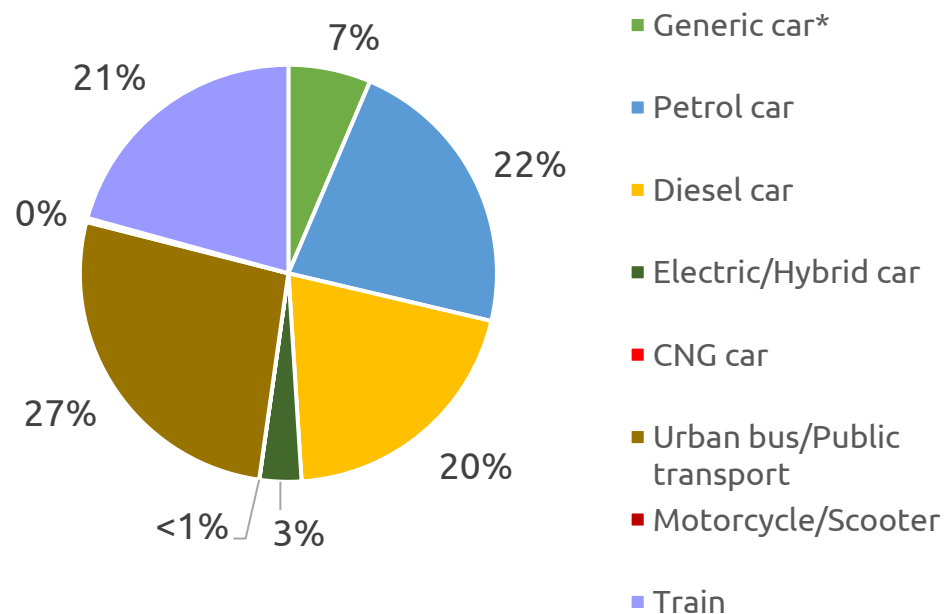


Category 3 [tCO₂e]



- 87% of Category 3 emissions are attributable to **staff and student commuting** and **employee business travel**, accounting for a total of 14,909 tCO₂e
- Among the factors contributing to commuting-related emissions, the largest impact arises from **students' home-to-university travel**, which accounts for 55% of Category 3 emissions and 31% of total emissions

Category 3 Focus – Student commuting

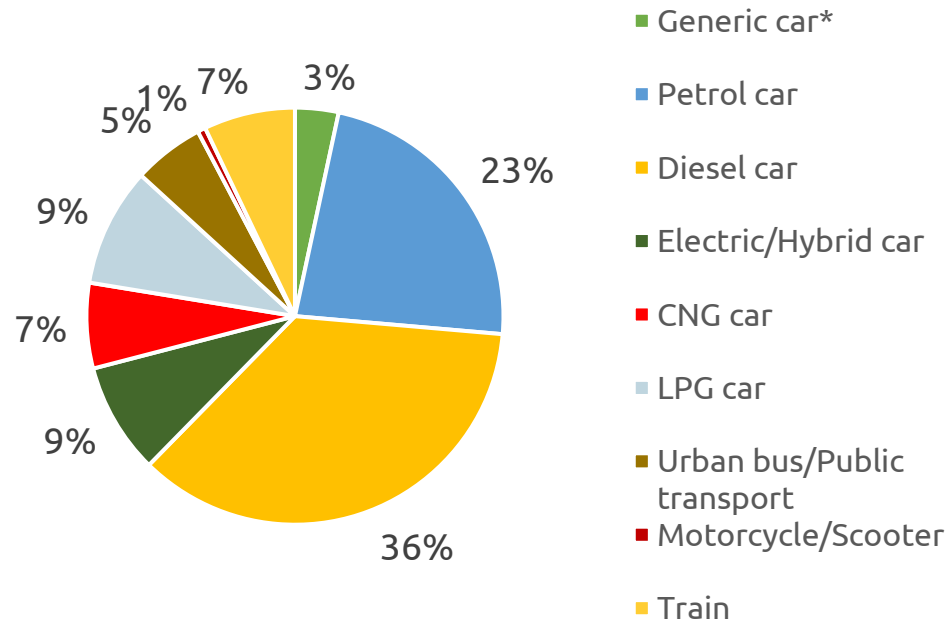


9,428 tCO₂e
55% Category 3

- The total distance travelled annually by students to commute between their homes and University facilities is estimated at approximately **81 million km**. This figure was calculated assuming 30 weeks of attendance per year (approximately 160 days including classes and examinations)
- Approximately 7% of the total calculated kilometres are travelled on foot or by bicycle, resulting in no emissions impact within this category
- Private cars represent the most impactful mode of transport, despite accounting for only 18% of the total distance travelled
- Rail transport is the most efficient mode of transport: although it accounts for 49% of the total distance travelled, it contributes only 21% of Category 3 emissions
- Commuting data for 2025 are based on the **2025 mobility survey**, which provides the most up-to-date information currently available

*Where the vehicle's fuel type is not specified, a precautionary emission factor has been selected, referring to a generic car with an internal combustion engine

Focus Category 3 – Staff commuting



2,295 tCO₂e
13% Category 3

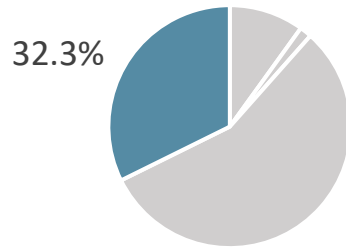
- The total distance travelled annually by employees commuting between their homes and University facilities is estimated at approximately 12 million km. This figure was calculated assuming 45 working weeks per year (approximately 220 working days)
- Approximately 13% of the total calculated kilometres are travelled on foot or by bicycle, resulting in no emissions impact within this category.
- Private cars are both the most widely used and the most impactful mode of transport, accounting for 87% of employee commuting emissions. Nearly 6 million km are travelled by car, representing approximately 50% of the total annual distance travelled
- Commuting data for 2025 are based on the 2025 mobility survey, which provides the most up-to-date information currently available.

*Where the vehicle's fuel type is not specified, a precautionary emission factor has been selected, referring to a generic car with an internal combustion engine

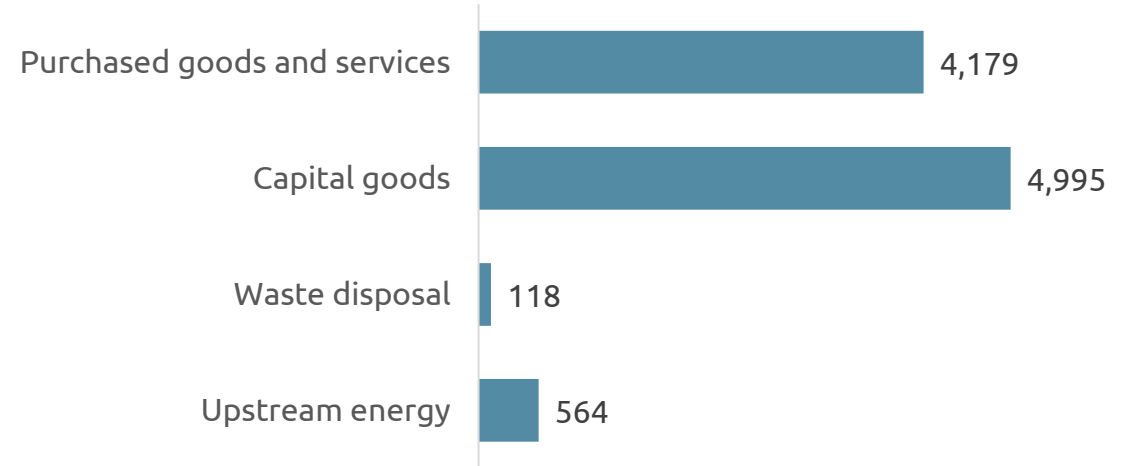
Results Analysis – Category 4

Market based

9,856
tCO₂e



Category 4 [tCO₂e]



- **Capital goods** represent the main source of emissions within Category 4 (51%), with more than €7.2 million spent on miscellaneous equipment.
- **Purchased goods and services** account for 42% of Category 4 emissions, with the largest share associated with construction works across the University campuses, amounting to approximately €6.1 million.
- For both categories, emissions were calculated using a **spend-based approach**.
- Upstream energy emissions were calculated based on the renewable energy generation technologies specified in the *Guarantees of Origin (GO) Cancellation Statements*

Key Performance Indicators (KPIs)

Key Performance Indicators 2025

Market based

For the purpose of monitoring emissions over time, verifying the outcomes of implemented actions, and making comparisons with other universities, the following indicators have been calculated:

- University population: 18,272
- Area*: 232,390 m²

Description		Emissions [tCO ₂ e]	Parameter value	UOM	KPI	UOM
KPI 1	Category 1 and 2 emissions per capita	3,522	18,272	person	0.19	tCO ₂ e/person
KPI 2	Category 3 emissions per capita	17,130			0.94	
KPI 3	Commuting emissions per capita	11,723			0.64	
KPI 4	Total emissions per capita	30,508			1.67	
KPI 5	Category 1 and 2 emissions per unit of area	3,522	232,390	m ²	0.02	tCO ₂ e/m ²

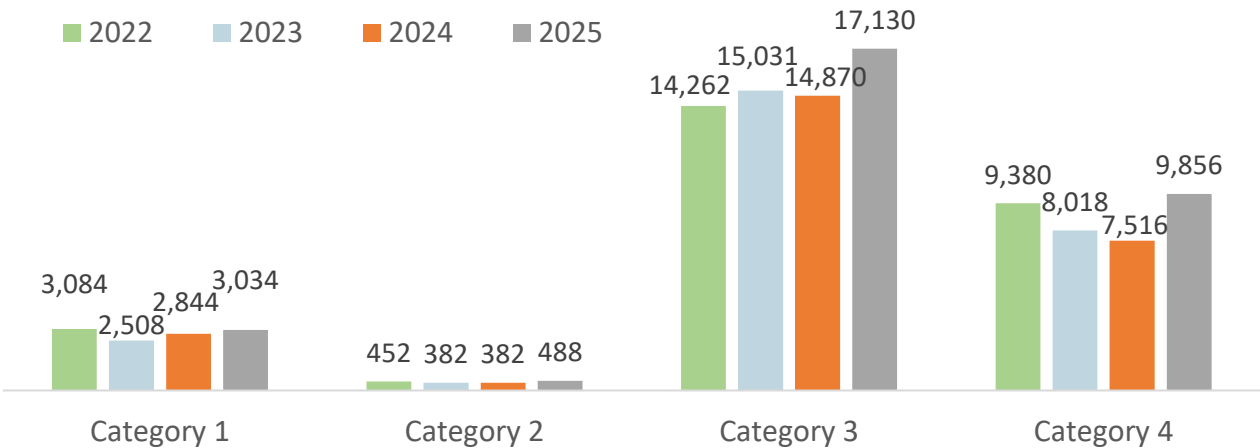
*The square meters included in the perimeter are those considered in the carbon footprint calculation

Emissions trend over time

GHG Inventory 2025 vs 2024 vs 2023 vs 2022

Market based

In 2025, the GHG inventory recorded an increase of 12% compared to 2022, 18% compared to 2023, and 19% compared to 2024.



Categories	2022 [tCO ₂ e]	2023 [tCO ₂ e]	2024 [tCO ₂ e]	2025 [tCO ₂ e]	25 vs 24 [tCO ₂ e]
Category 1	3,084	2,508	2,844	3,034	+190
Category 2	452	382	382	488	+106
Category 3	14,262	15,031	14,870	17,130	+2,260
Category 4	9,380	8,018	7,516	9,856	+2,340
Total GHG	27,178	25,939	25,612	30,508	+4,896

- **Category 1:** emissions increased by 7% compared to 2024, mainly due to the inclusion of fugitive emissions and process emissions; emissions from stationary combustion sources remained broadly stable.
- **Category 2:** emissions increased by 28% compared to 2024, mainly driven by higher consumption of district heating and district cooling
- **Category 3:** emissions increased by 16% compared to 2024, primarily due to an increase in air travel associated with international mobility and employee business travel.
- **Category 4:** emissions increased by 31% compared to 2024, mainly driven by higher expenditure on capital goods (€10.3 million in 2025 compared to €5.8 million in 2024).

KPI trends Over Time

Market based

The following comparison presents the 2025 Key Performance Indicators (KPIs) alongside those of 2024, 2023, and 2022, to monitor emissions performance against the parameters identified as most significant by the University.

Description		Emissions 2025 [tCO ₂ e]	Parameter value 2025	UOM	KPI 2025	KPI 2024	KPI 2023	KPI 2022	UOM
KPI 1	Category 1 and 2 emissions per capita	3,522	18,272	person	0.19	0.18	0.16	0.20	tCO ₂ e/person
KPI 2	Category 3 emissions per capita	17,130			0.94	0.84	0.84	0.79	
KPI 3	Commuting emissions per capita	11,723			0.64	0.63	0.62	0.61	
KPI 4	Total emissions per capita	30,508			1.67	1.44	1.45	1.51	
KPI 5	Category 1 and 2 emissions per unit of area	3,522	232,390	m ²	0.02	0.01	0.01	0.02	tCO ₂ e/m ²