



Retail Building



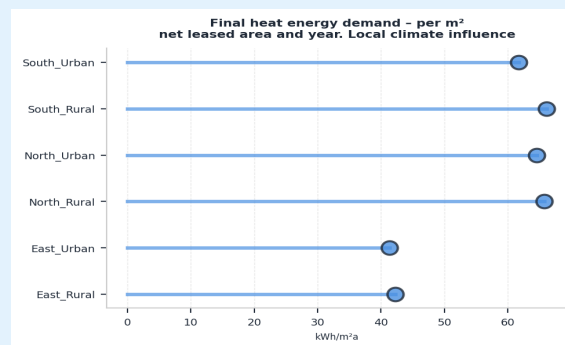
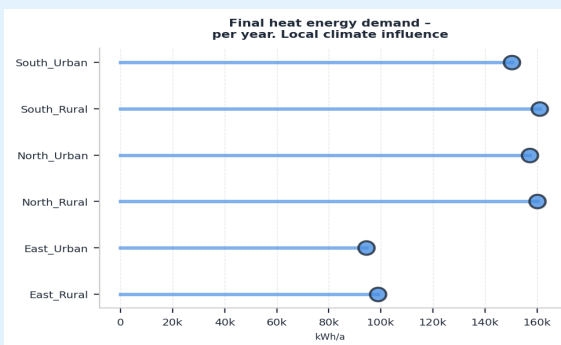
Net leased area [m²]	2434.6
Bldg Height [m]	6.8
Storeys a.g.	1.5
Storeys b.g.	0.7



Building Performance (KPIs)

KPI	Mean	95% CI	Unit	CV	n _{Sim}
Final heat energy demand - per year	126801.40	± 4196.04	kWh/a	0.69	2160
Final heat energy demand - per m² net leased area and year	53.18	± 1.06	kWh/m²a	0.47	2160
Carbon footprint (GWP) from heat energy - per year	31742.85	± 1046.15	kgCO ₂ eq,B6/a	0.69	2160
Carbon footprint (GWP) from heat energy - per m² net leased area and year	13.32	± 0.26	kgCO ₂ eq,B6/m²a	0.46	2160
Life Cycle Carbon footprint (GWP) - over 50 years	1911360.01	± 62413.39	kgCO ₂ eq,full/50a	0.68	2160
Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years	802.57	± 15.65	kgCO ₂ eq,full/m²50a	0.46	2160

Local Climate Influence

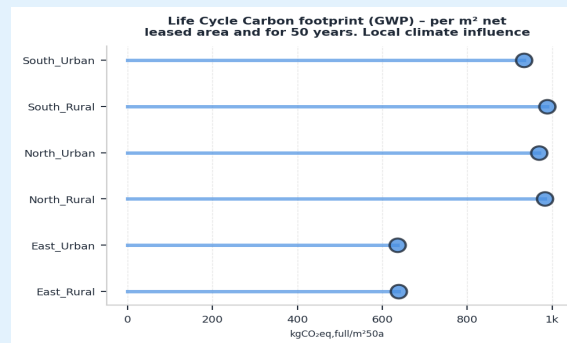
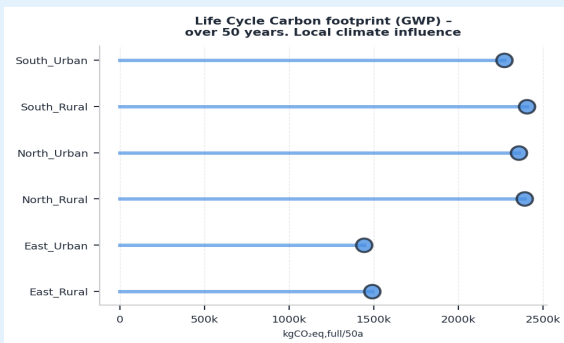
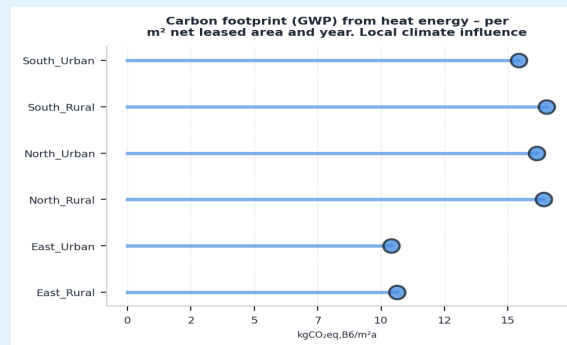
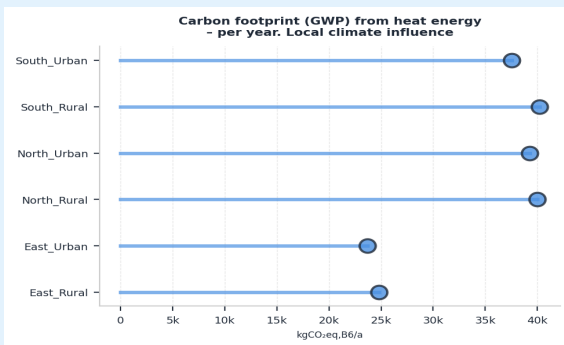




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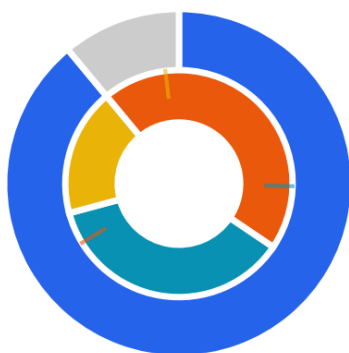


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Mean Life Cycle GWP

ABC



- Operational (89.0%)
- Exterior walls (5.00%)
- Foundation (4.00%)
- Windows (2.00%)
- Roof (0.00%)

Building element	D [kgCO ₂ eq/50a]
Exterior walls	1,798
Roof	1,218
Foundation	1,254
Windows	-8,324



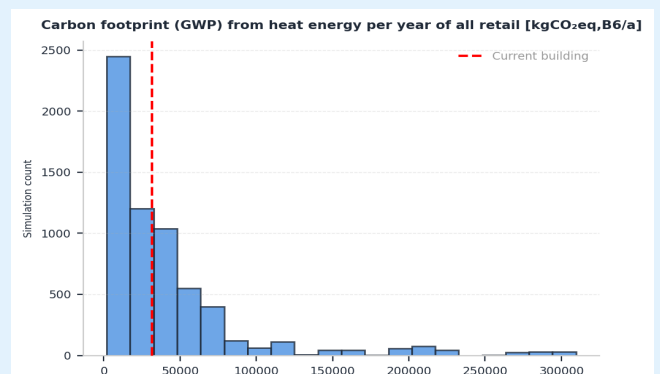
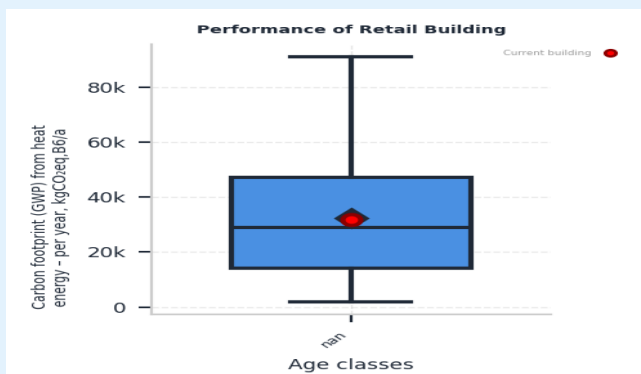
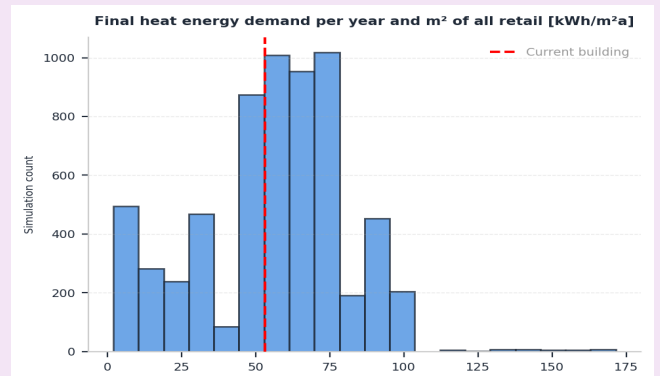
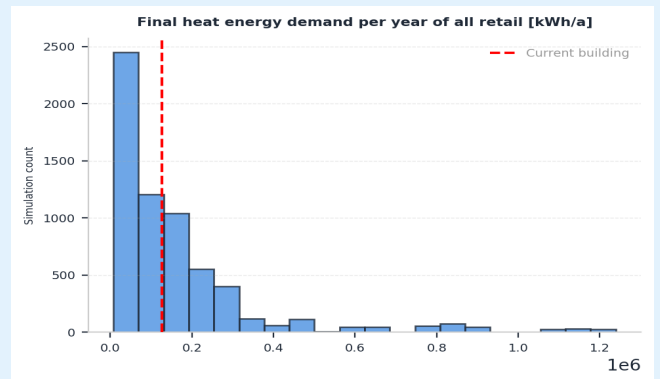
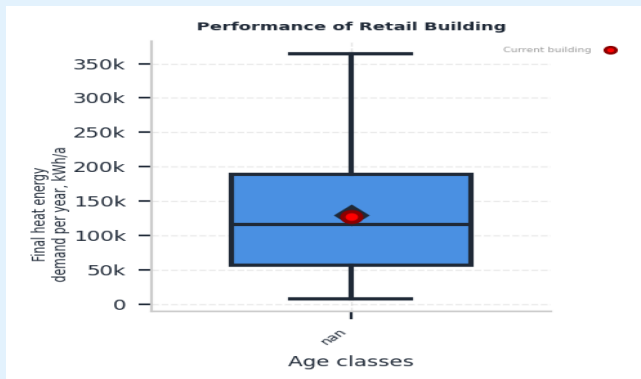
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Net leased area [m ²]	2434.6
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Building Performance





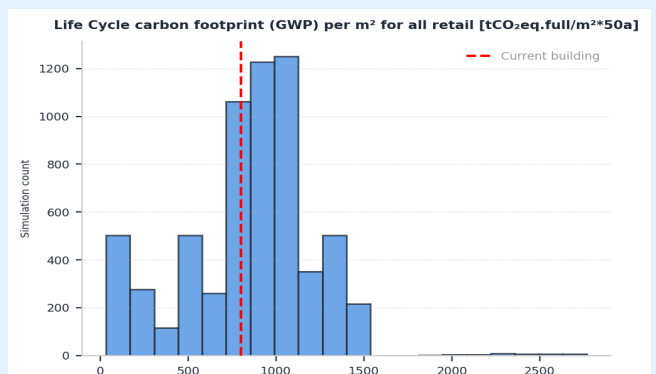
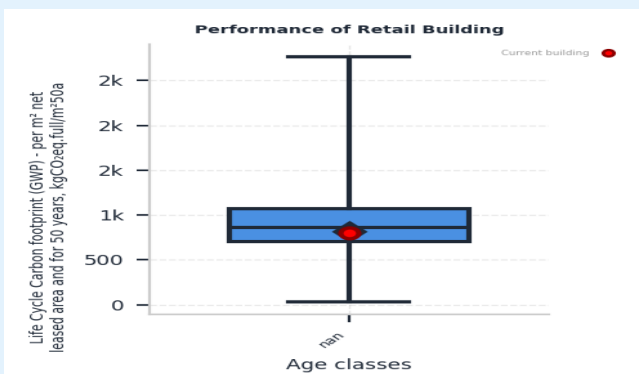
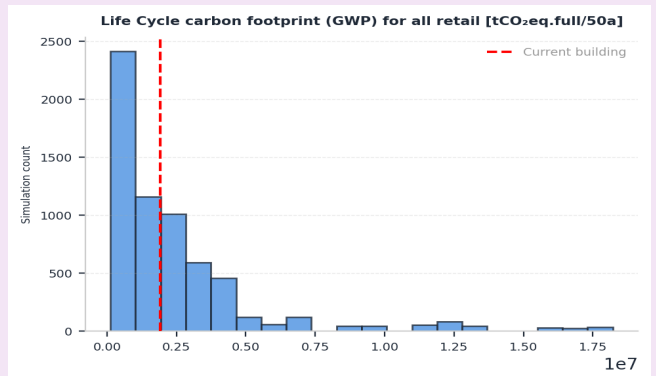
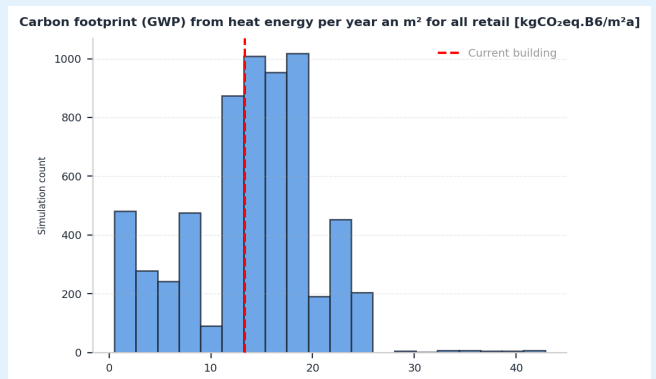
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Building Performance





Retail Building



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Exterior Wall

Type: massive

U [W/m²K]: 0.25

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	interior plaster	1	1400	0.7	850	7	-
1	precast reinforced concrete	35.625	2400	2.04	776	8	-
2	mineral wool	5	60	0.04	850	5	-
3	resting air layer	6	1.184	0.026	1.005	10	-
4	concrete weather shell	12	2400	2.04	776	8	-

Interior Wall

U [W/m²K]: 4.04

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	lime plaster	1	1600	0.7	850	7	-
1	reinforced concrete	10	2100	2.04	776	8	-
2	lime plaster	1	1600	0.7	850	5	-

Roof

U [W/m²K]: 0.18

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	interior plaster	1	1400	0.7	850	7	-
1	reinforced concrete	22	2400	2.04	776	9	-
2	hardwood	8	600	0.14	1500	15	-
3	mineral wool	10	60	0.04	850	5	-
4	moving air layer	6	1.184	0.026	1.005	10	-
5	bituminized felt	1	1200	5	1000	4	-



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Foundation

U [W/m²K]: 0.69

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	floating cement screed	4	1940	1.4	1000	16	-
1	stone wool	10	60	0.09	840	1	-
2	reinforced concrete	18.5	2104	1.94	776	8	-

Floor

U [W/m²K]: 4.04

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	floating cement screed	4.5	2200	2	1000	16	-
1	EPS_040_15	6	15	0.04	1500	2	-
2	reinforced concrete	20.688	2104	1.94	776	8	-

Window System

Glazing	EPD _{Gl}	Frame type	EPD _{Fr}	Shading type	EPD _{Sh}
2	14	aluminium	13	-	-

Heating System

Unit type	Generator	EPD _{HEG}	Heating energy carrier	EPD _{HEC}
per_bldg	ventilation_heating_and_cooling_small	3	R410a	11

HVAC System

Converter	EPD _{HEC}	Ventilation heating	Ventilation cooling	Energy source	EPD _{HES}
boiler_gas_large_condensing	17	yes	no	gas	6



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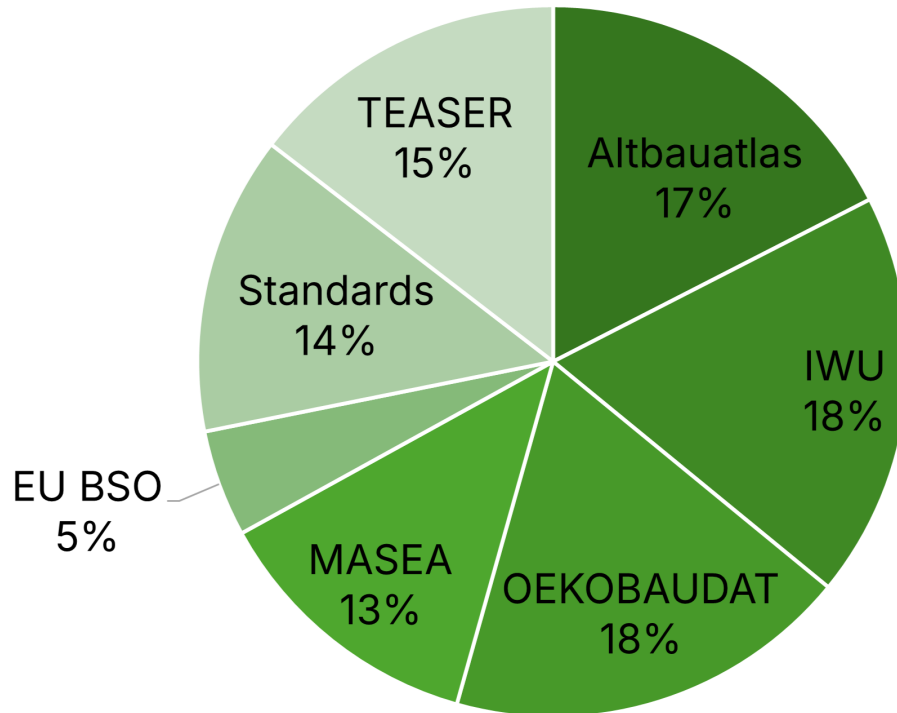


Façade length [m]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
35.2	10.96	35.53	12.06	35.26	11.34	34.17	11.42

Façade area [m²]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
264.09	100.66	264.34	107.43	267.43	99.19	258.77	101.05

EPD Summary Table

Serial No.	Full UUID	Material Name
1	155a3b83-ed73-4462-a4f1-69ce64e24981	Mineral wool insulation (high bulk density range)
2	205b761d-e344-49c3-a3a9-bb1bfd59b916	Expanded Polystyrene (EPS) Foam Insulation (density 15 kg/m³)
3	214f9360-6b24-496c-afaa-07348538b790	Ventilation centralized per 5000 m3/h
4	27ccffb8-02ec-466d-b925-f6db91d4ef71	Bitumen sheets G 200 S4
5	50d421e2-3a7b-4659-92a4-f20d6a52fcf0	Mineral wool (facade insulation)
6	84aa7483-9824-49a9-a3e3-f9fb092ea7b7	Use - 1 kWh of final energy from gas calorific value (according to GEG)
7	9a670d29-efb9-4fde-95ab-182a0b1e7280	Lime gypsum interior plaster
8	Synthetic_2	Concrete C30/37 with reinforcement steel
9	Synthetic_7	Ready-mix concrete C30/37 with reinforcement steel
10	Synthetic_8	Air layer
11	a9ab7d02-744c-4269-b3e1-a9fc7304e95e	Refrigerant R410a
12	cc071698-9d73-4315-b470-e13dfcdba10a	Chiller (500kW)
13	d0e0f205-2f4d-4c7f-b63a-23a9abd6e60a	Aluminium frame profile, powder coated
14	dcf38066-e336-46a7-b0a8-b2453dd2872d	Window glass, single
15	e131431f-4d99-4d7a-ae0a-744a06de3524	Hardwood lumber - kiln dried (German average)
16	fe371be5-c72f-4203-8569-a085ef375ba4	CALCIUM SULPHATE FLOWING SCREED AND CONVENTIONAL CALCIUM SULPHATE SCREED
17	fe91b985-60da-45dc-b3fd-29b9e632d49f	Gas condensing boiler120-400 kW (upright unit)



Data source	Link
Altbauatlas	https://www.altbauatlas.de/index.php
OEKOBAUDAT	https://www.oekobaudat.de/en.html
IWU	https://datenbasis.iwu.de/ https://wohngebaeuedaten2016.iwu.de/
MASEA	https://www.masea-ensan.de/
TEASER	https://ebc-tools.eonerc.rwth-aachen.de/en/teaser
EU BSO	https://building-stock-observatory.energy.ec.europa.eu/database/

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