



Culture Building



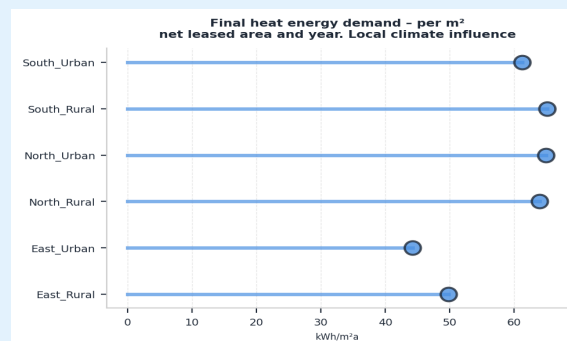
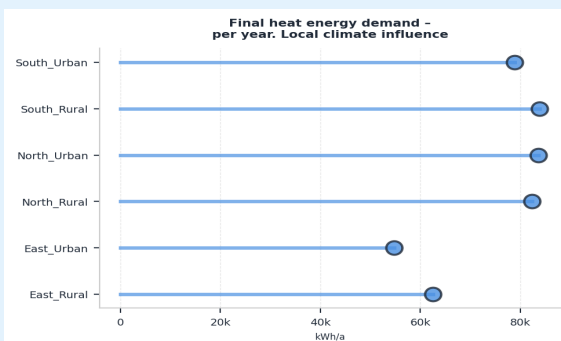
Net leased area [m²]	1287.8
Bldg Height [m]	7.6
Storeys a.g.	1.5
Storeys b.g.	0.4



Building Performance (KPIs)

KPI	Mean	95% CI	Unit	CV	n _{Sim}
Final heat energy demand - per year	70414.80	± 1415.26	kWh/a	0.52	3240
Final heat energy demand - per m² net leased area and year	55.43	± 0.66	kWh/m²a	0.36	3240
Carbon footprint (GWP) from heat energy - per year	17605.23	± 353.22	kgCO ₂ eq,B6/a	0.52	3240
Carbon footprint (GWP) from heat energy - per m² net leased area and year	13.86	± 0.16	kgCO ₂ eq,B6/m²a	0.36	3240
Life Cycle Carbon footprint (GWP) - over 50 years	1143713.19	± 23326.47	kgCO ₂ eq,full/50a	0.53	3240
Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years	899.71	± 10.98	kgCO ₂ eq,full/m²50a	0.37	3240

Local Climate Influence

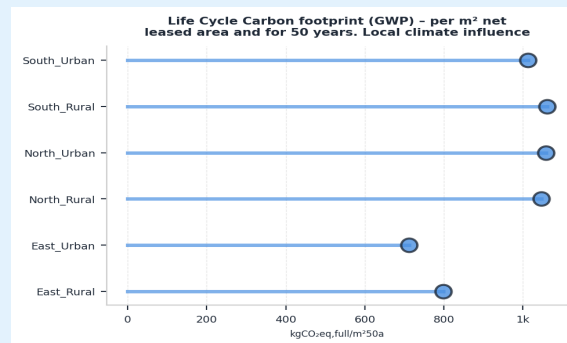
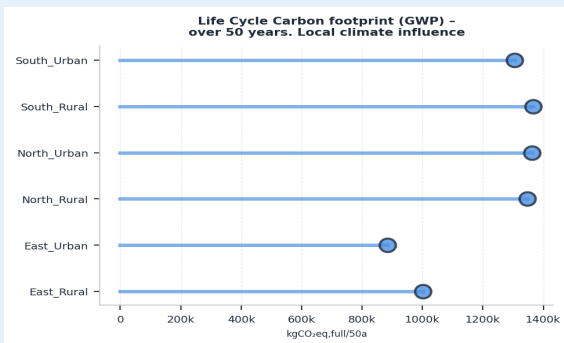
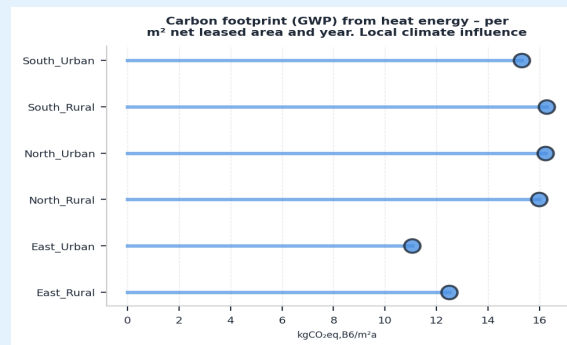
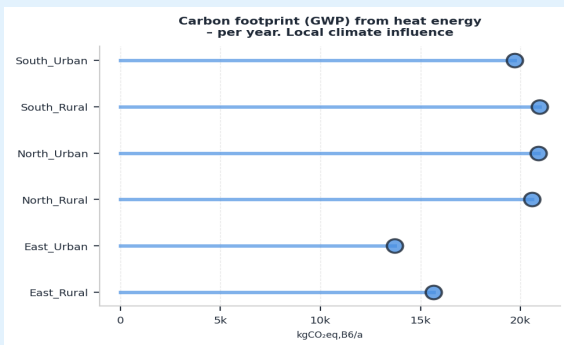




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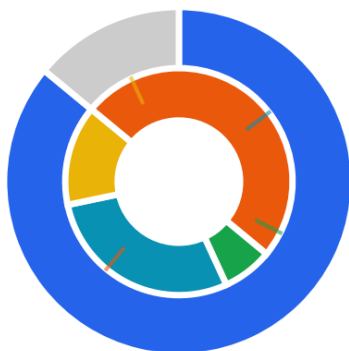


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Mean Life Cycle GWP

ABC



- Operational (86.0%)
- Exterior walls (7.00%)
- Roof (1.00%)
- Foundation (4.00%)
- Windows (2.00%)

Building element	D [kgCO ₂ eq/50a]
Exterior walls	1,400
Roof	-963.9
Foundation	725.0
Windows	-2,774



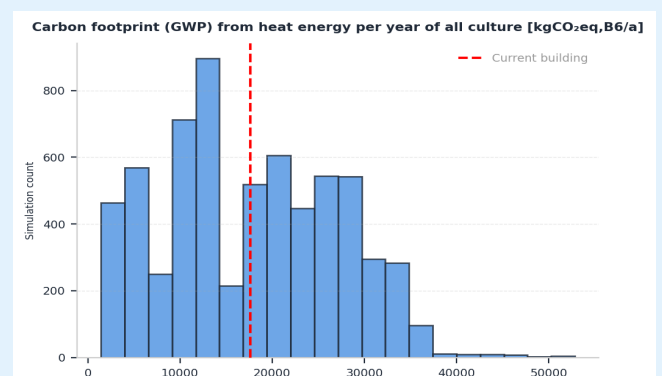
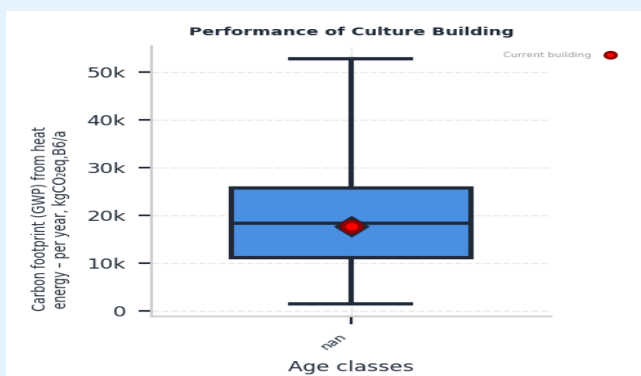
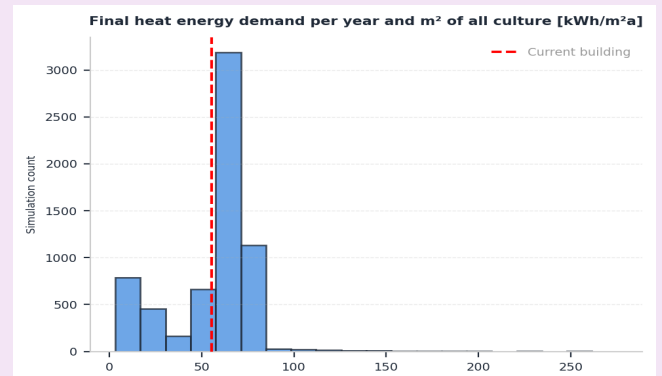
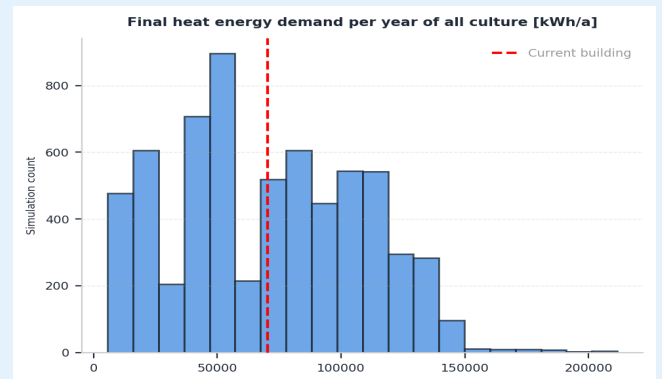
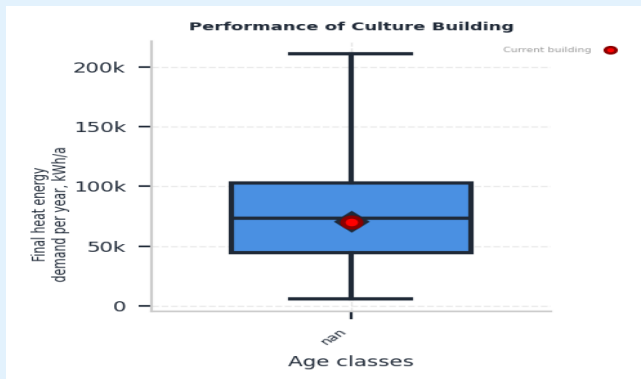
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Building Performance





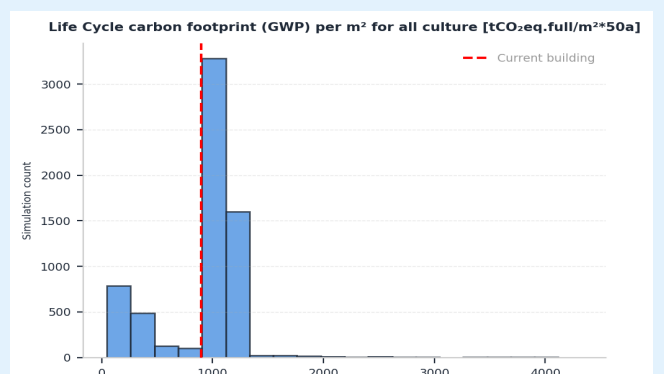
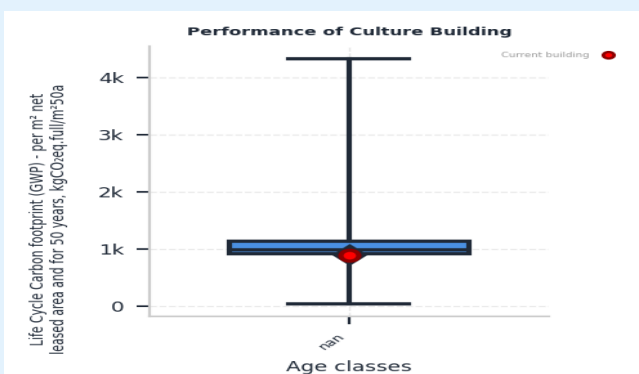
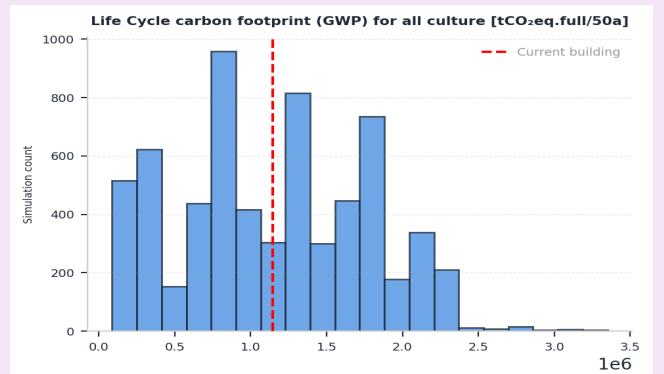
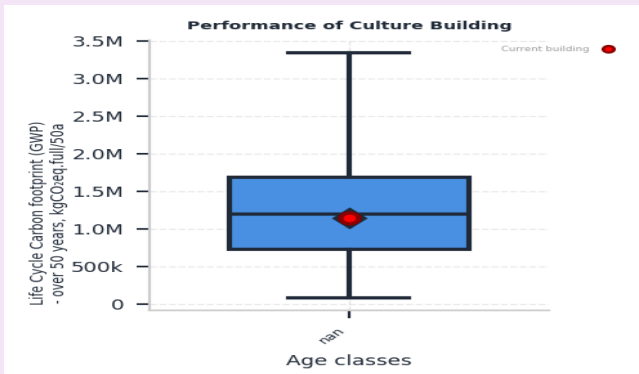
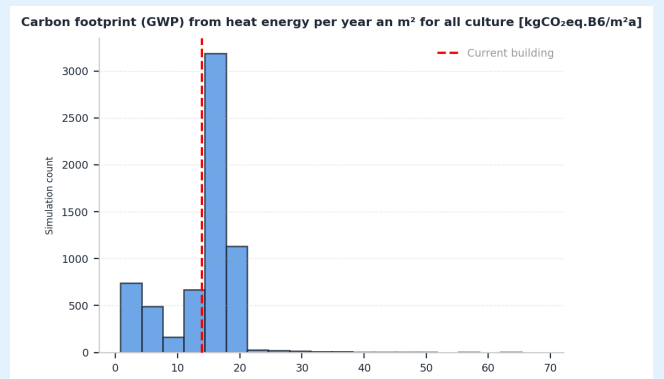
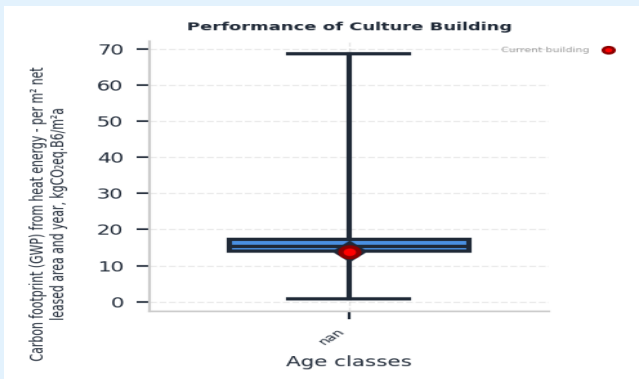
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Building Performance





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Exterior Wall

Type: massive

U [W/m²K]: 0.22

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	32.75	2400	2.04	776	8	-
2	mineral wool	7.5	60	0.04	850	3	-
3	resting air layer	6	1.184	0.026	1.005	9	-
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	3	-

Roof

U [W/m²K]: 0.17

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	29	2400	2.1	776	8	-
2	rafters	8	600	0.13	1500	13	-
3	mineral wool	10	60	0.04	850	3	-
4	moving air layer	6	1.184	0.026	1.005	9	-
5	roof tiles	2	1786	0.55	889	10	-



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Foundation

U [W/m²K]: 0.68

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	14	-
1	stone wool	10	60	0.09	840	1	-
2	reinforced concrete	22	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	14	-
1	EPS_040_15	6	15	0.04	1500	2	-
2	reinforced concrete	24.875	2104	1.94	776	8	-

Window System

Glazing	EPD _{Gl}	Frame type	EPD _{Fr}	Shading type	EPD _{Sh}
2	12	pvc	4	-	-

Heating System

Unit type	Generator	EPD _{HEG}	Heating energy carrier	EPD _{HEC}
per_bldg	boiler_gas_large_condensing	15	gas	5

HVAC System

Converter	EPD _{HEC}	Ventilation heating	Ventilation cooling	Energy source	EPD _{HES}
ventilation_heating_and_cooling_large	6	yes	yes	R410a	11



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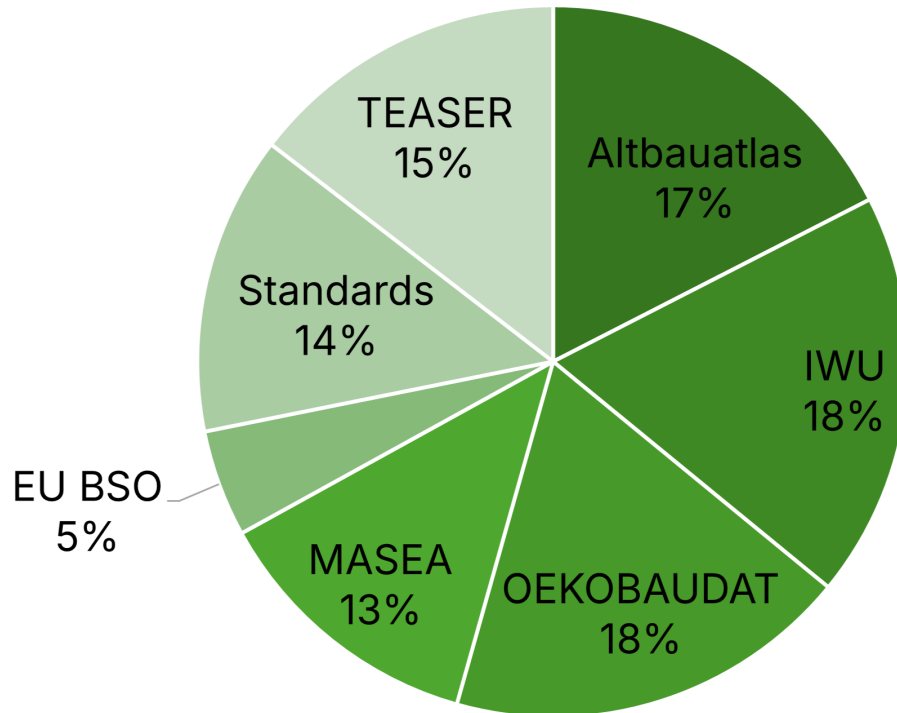


Façade length [m]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
27.74	6.88	27.85	6.95	26.38	5.79	26.28	5.69

Façade area [m²]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
239.56	80.99	242.34	80.68	220.83	64.12	218.3	62.76

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	50d421e2-3a7b-4659-92a4-f20d6a52fcf0	Mineral wool (facade insulation)
4	73de9e80-8ed2-47d8-b5b6-854c84166f24	Window sash PVC-U
5	84aa7483-9824-49a9-a3e3-f9fb092ea7b7	Use - 1 kWh of final energy from gas calorific value (according to GEG)
6	859c3c83-2654-44a9-9f90-6f01f3f203d8	Ventilation centralized per 30000 m³/h
7	9a670d29-efb9-4fde-95ab-182a0b1e7280	Lime gypsum interior plaster
8	Synthetic_2	Concrete C30/37 with reinforcement steel
9	Synthetic_8	Air layer
10	a6d60a75-7a4e-4dfc-87cc-fd40f68d279a	Roofing tiles (including accessories)
11	a9ab7d02-744c-4269-b3e1-a9fc7304e95e	Refrigerant R410a
12	dcf38066-e336-46a7-b0a8-b2453dd2872d	Window glass, single
13	efa55966-4f29-4f15-bfec-8c08b3945923	Glued laminated timber
14	fe371be5-c72f-4203-8569-a085ef375ba4	CALCIUM SULPHATE FLOWING SCREED AND CONVENTIONAL CALCIUM SULPHATE SCREED
15	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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