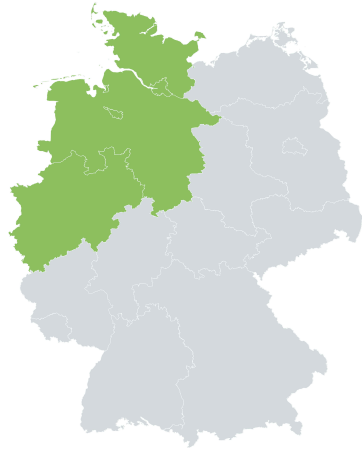




Education Building



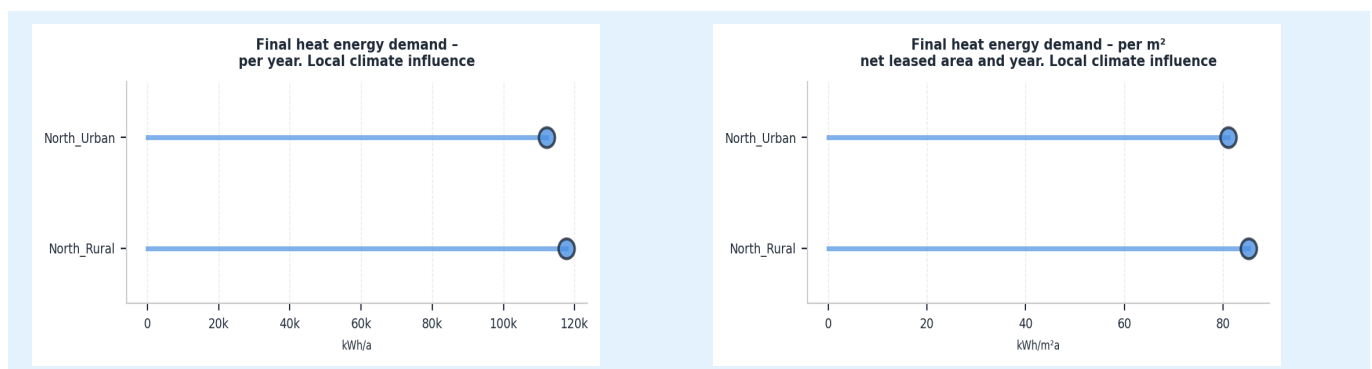
Region	north
Age Class	2002-2009
Net leased area [m²]	1381.5
Bldg Height [m]	6.9
Storeys a.g.	1.8
Storeys b.g.	0.7



Building Performance (KPIs)

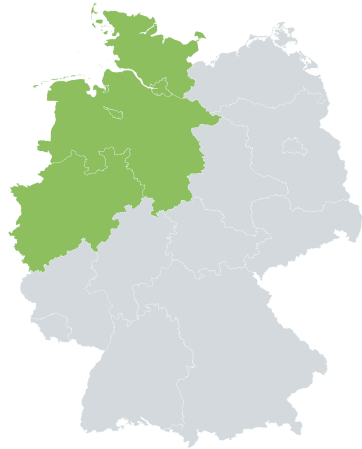
KPI	Mean	95% CI	Unit	CV	n _{Sim}
Final heat energy demand - per year	114881.47	± 1683.64	kWh/a	0.29	810
Final heat energy demand - per m² net leased area and year	83.16	± 1.01	kWh/m²a	0.24	810
Carbon footprint (GWP) from heat energy - per year	28702.44	± 420.65	kgCO ₂ eq,B6/a	0.29	810
Carbon footprint (GWP) from heat energy - per m² net leased area and year	20.78	± 0.25	kgCO ₂ eq,B6/m²a	0.24	810
Life Cycle Carbon footprint (GWP) - over 50 years	1792052.90	± 24355.76	kgCO ₂ eq,full/50a	0.27	810
Life Cycle Carbon footprint (GWP) - per m² net leased area and for 50 years	1297.18	± 14.12	kgCO ₂ eq,full/m²50a	0.22	810

Local Climate Influence

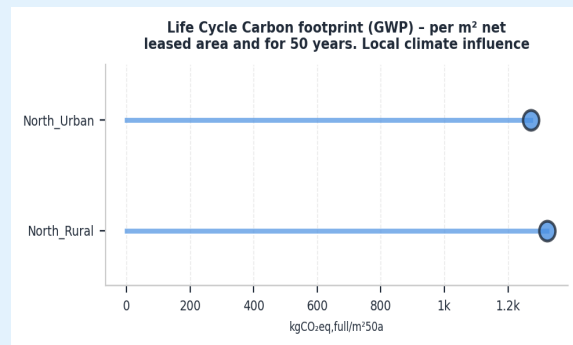
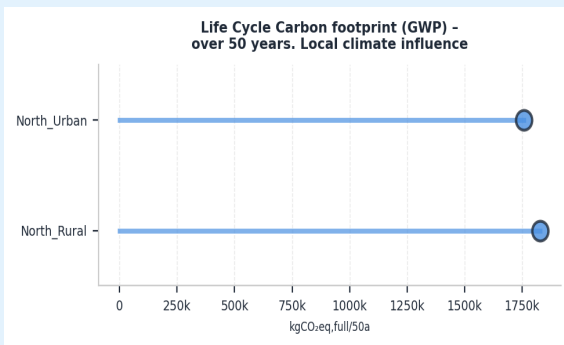
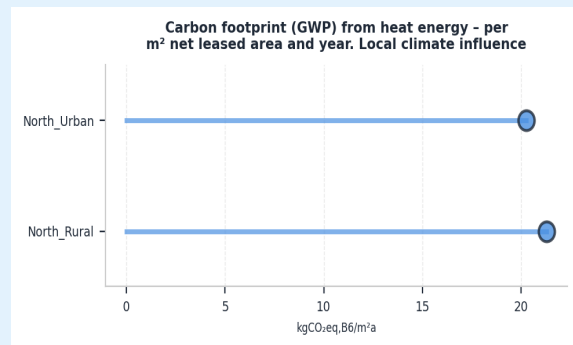
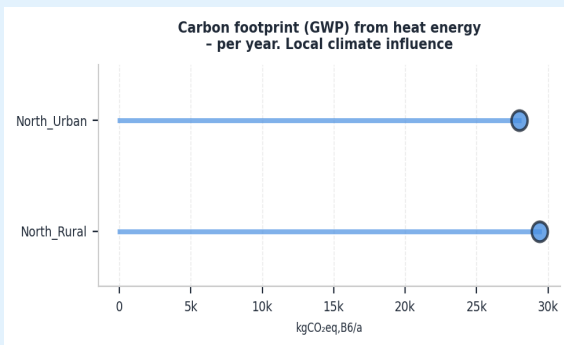




Education Building

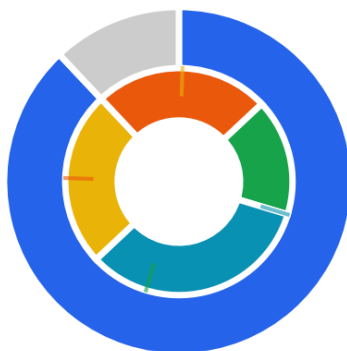


Region	north
Age Class	2002-2009
Net leased area [m²]	1381.5
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Storeys b.g.	0.7



Mean Life Cycle GWP

ABC

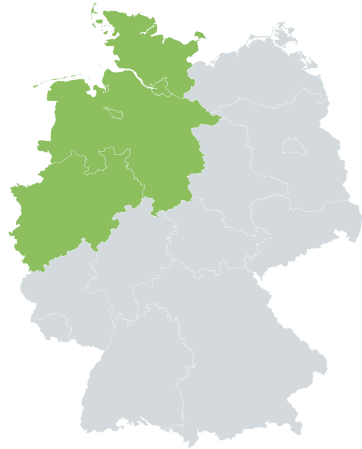


- Operational (88.0%)
- Exterior walls (3.00%)
- Roof (2.00%)
- Foundation (4.00%)
- Windows (3.00%)

Building element	D [kgCO ₂ eq/50a]
Exterior walls	144.6
Roof	-1,531
Foundation	-475.5
Windows	-5,628



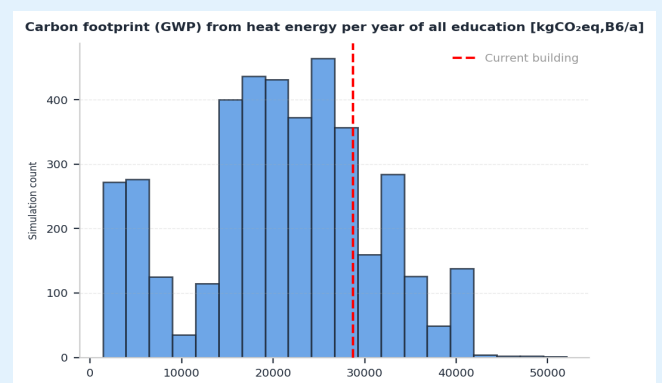
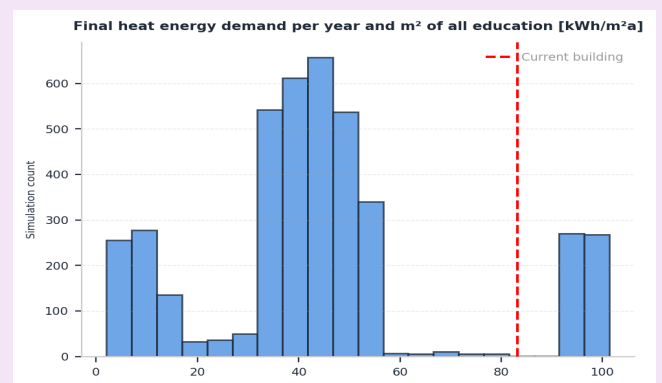
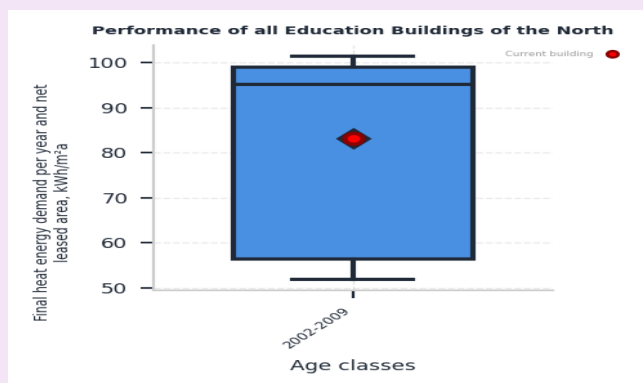
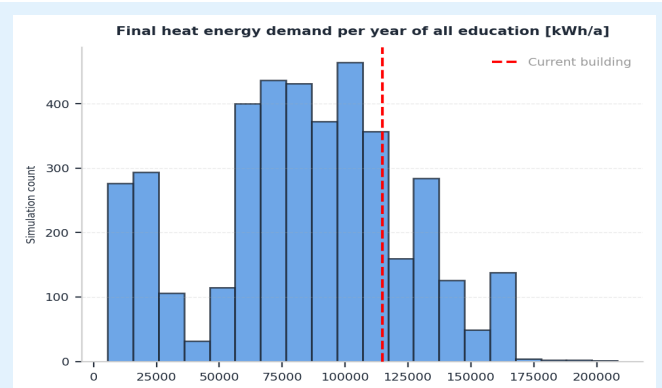
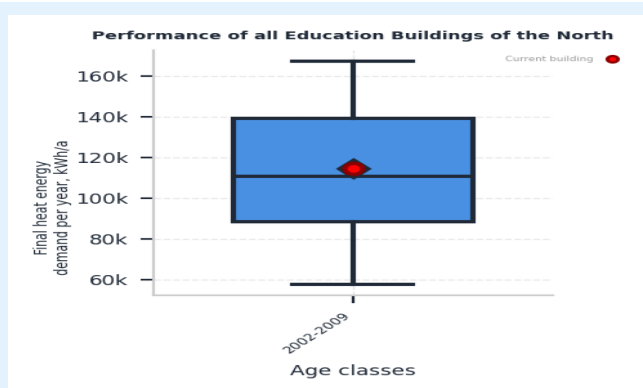
Education Building



Region	north
Age Class	2002-2009
Net leased area [m ²]	1381.5
Bldg Height [m]	6.9
Storeys a.g.	1.8
Storeys b.g.	0.7

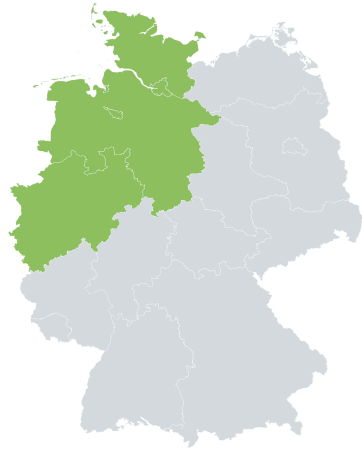


Building Performance





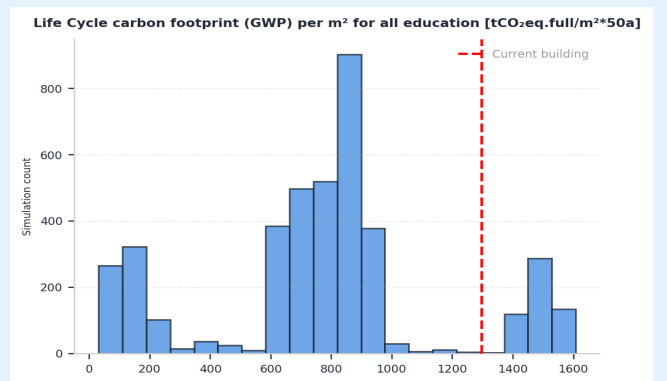
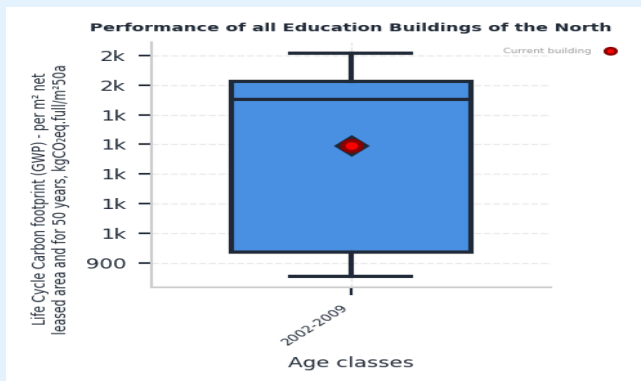
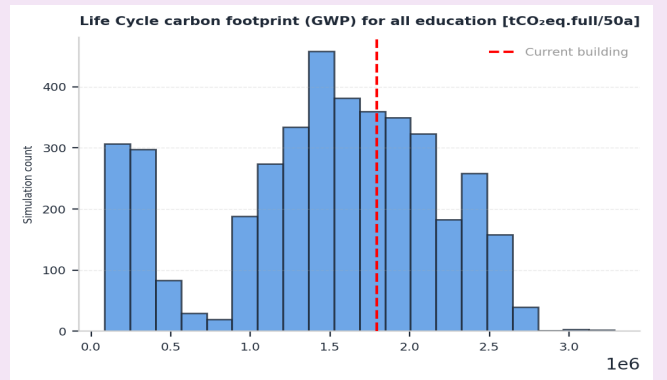
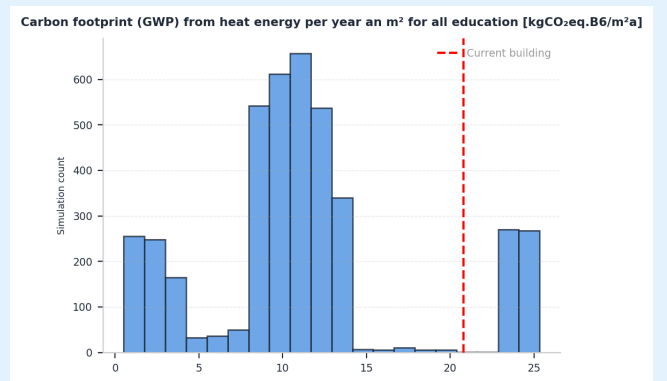
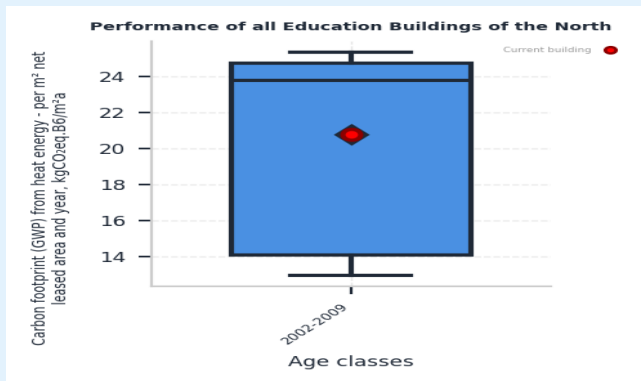
Education Building



Region	north
Age Class	2002-2009
Net leased area [m ²]	1381.5
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Storeys a.g.	1.8
Storeys b.g.	0.7

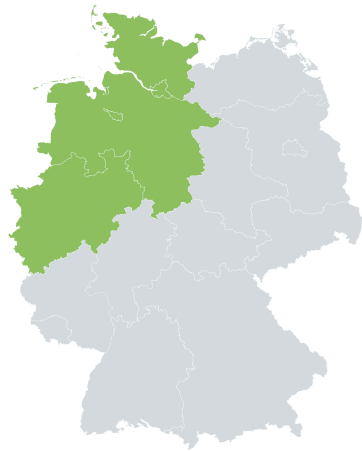


Building Performance





Education Building



Region	north
Age Class	2002-2009
Net leased area [m²]	1381.5
Bldg Height [m]	6.9
Storeys a.g.	1.8
Storeys b.g.	0.7



Exterior Wall

Type: massive

U [W/m²K]: 0.61

Layer	Material Name	t_i [cm]	ρ_i [kg/m³]	λ_i [W/mK]	c_i [J/kgK]	EPD ₁	EPD ₂
0	insulating plaster	2	1291	0.39	1291	5	-
1	concrete_CEM_II_B S325R_wz05	25.625	2420	2.1	1000	8	-
2	EPS_040_15	5.23	15	0.04	1500	1	-

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	5	-
1	reinforced concrete	10	2100	2.04	776	8	-
2	lime plaster	1	1600	0.7	850	1	-

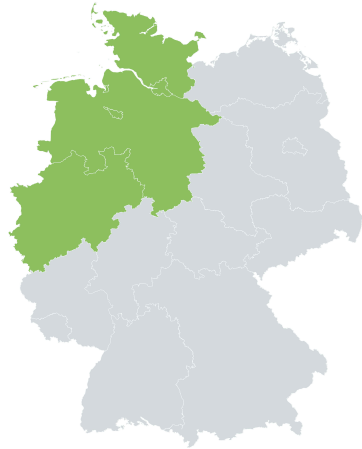
Roof

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	33.2	2400	2.1	776	8	-
2	rafters	8	600	0.13	1500	12	-
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	-



Education Building



Region	north
Age Class	2002-2009
Net leased area [m²]	1381.5
Bldg Height [m]	6.9
Storeys a.g.	1.8
Storeys b.g.	0.7



Foundation

U [W/m²K]: 0.35

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	13	-
1	EPS_040_15	10	15	0.04	1500	1	-
2	concrete_CEM_II_B S325R_wz05	29.6	2420	2.1	1000	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	1940	1.4	1000	13	-
1	EPS_040_15	6	15	0.04	1500	1	-
2	reinforced concrete	29.6	2104	1.94	776	8	-

Window System

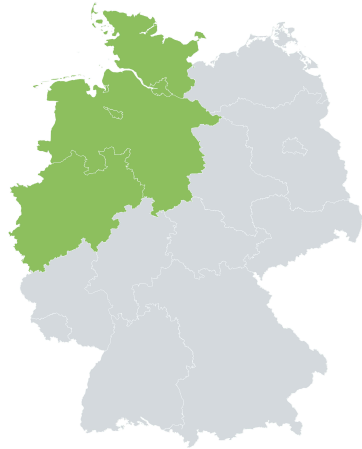
Glazing	EPD _{Gl}	Frame type	EPD _{Fr}	Shading type	EPD _{Sh}
2	11	pvc	4	exterior_variable	2

Heating System

Unit type	Generator	EPD _{HEG}	Heating energy carrier	EPD _{HEC}
per_bldg	boiler_gas_large_condensing	14	gas	6



Education Building



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Bldg Height [m]	6.9
Storeys a.g.	1.8
Storeys b.g.	0.7

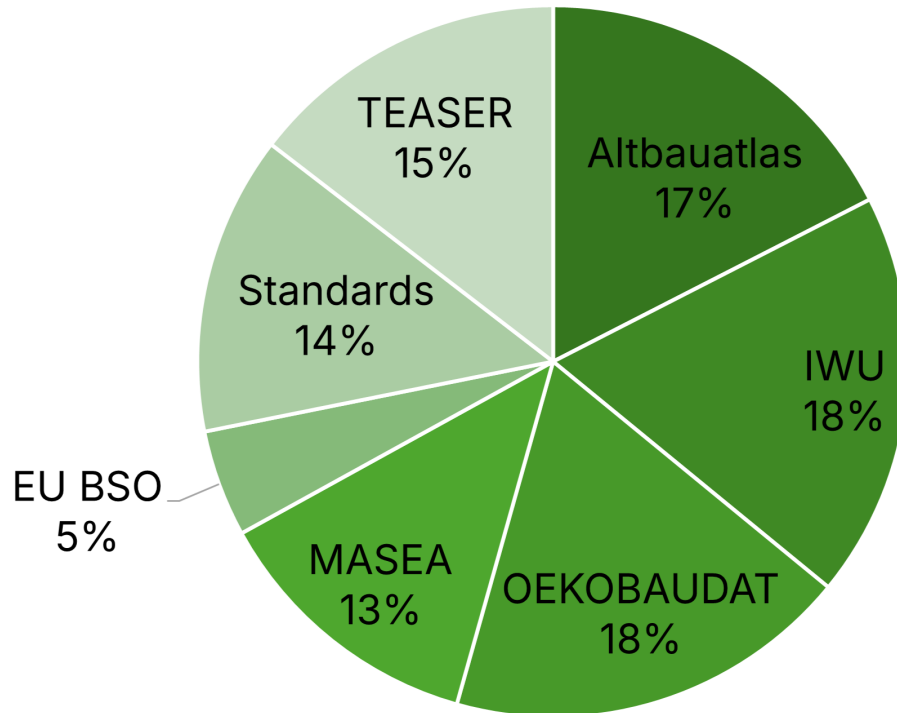


Façade length [m]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
31.67	4.27	30.89	4.61	31.25	4.62	31.69	4.69

Façade area [m²]							
N		S		E		W	
Mean	SE	Mean	SE	Mean	SE	Mean	SE
248.04	47.55	248.08	53.22	230.25	43.74	234.4	44.77

EPD Summary Table

Serial No.	Full UUID	Material Name
1	205b761d-e344-49c3-a3a9-bb1bfd59b916	Expanded Polystyrene (EPS) Foam Insulation (density 15 kg/m³)
2	447dea90-8a8f-44f5-9451-3e15ce5fab10	Sun protection (metal blinds)
3	50d421e2-3a7b-4659-92a4-f20d6a52fcf0	Mineral wool (facade insulation)
4	73de9e80-8ed2-47d8-b5b6-854c84166f24	Window sash PVC-U
5	7e8801e0-c0e4-4995-bf8a-883181f6aa20	ETICS gluing and coating mineral lightweight plaster
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_8	Air layer
10	a6d60a75-7a4e-4dfc-87cc-fd40f68d279a	Roofing tiles (including accessories)
11	dcf38066-e336-46a7-b0a8-b2453dd2872d	Window glass, single
12	efa55966-4f29-4f15-bfec-8c08b3945923	Glued laminated timber
13	fe371be5-c72f-4203-8569-a085ef375ba4	CALCIUM SULPHATE FLOWING SCREED AND CONVENTIONAL CALCIUM SULPHATE SCREED
14	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/

* Building images are generated by AI