

Environmental
profile of building elements
details per variant

1. Exterior Wall

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9. *Summary*
Building professionals and the government currently have to resort to foreign environmental classification systems to acquire an insight into the Environmental Performance of Materials used in Buildings and Building Elements (MMG: Milieugerelateerde Materiaalprestatie van Gebouw(element)en). However, often the tools and information involved are not transparent and/or not specifically related to the Flemish-Belgian building context. This publication proposes a database of environmental profiles of 115 variants of building elements, all of which are specific for the Flemish-Belgian building context. It offers an open and transparent presentation of the MMG method of determination that was used as the basis for the calculation of the environmental profiles. Although the resulting building materials methodology is far from final, it is a dynamic model (including a determination method) that will be fine-tuned and expanded in the future. In that context, this publication should be perceived as a communication tool to facilitate the dialogue with stakeholders in the future.

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12. *Other titles on this subject*
Milieugerelateerde Materiaalprestatie van Gebouwelementen (MMG report) (www.ovam.be/bouwmaterialenmethodiek)

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Environmental profile of building elements:
details per variant

2. Exterior wall

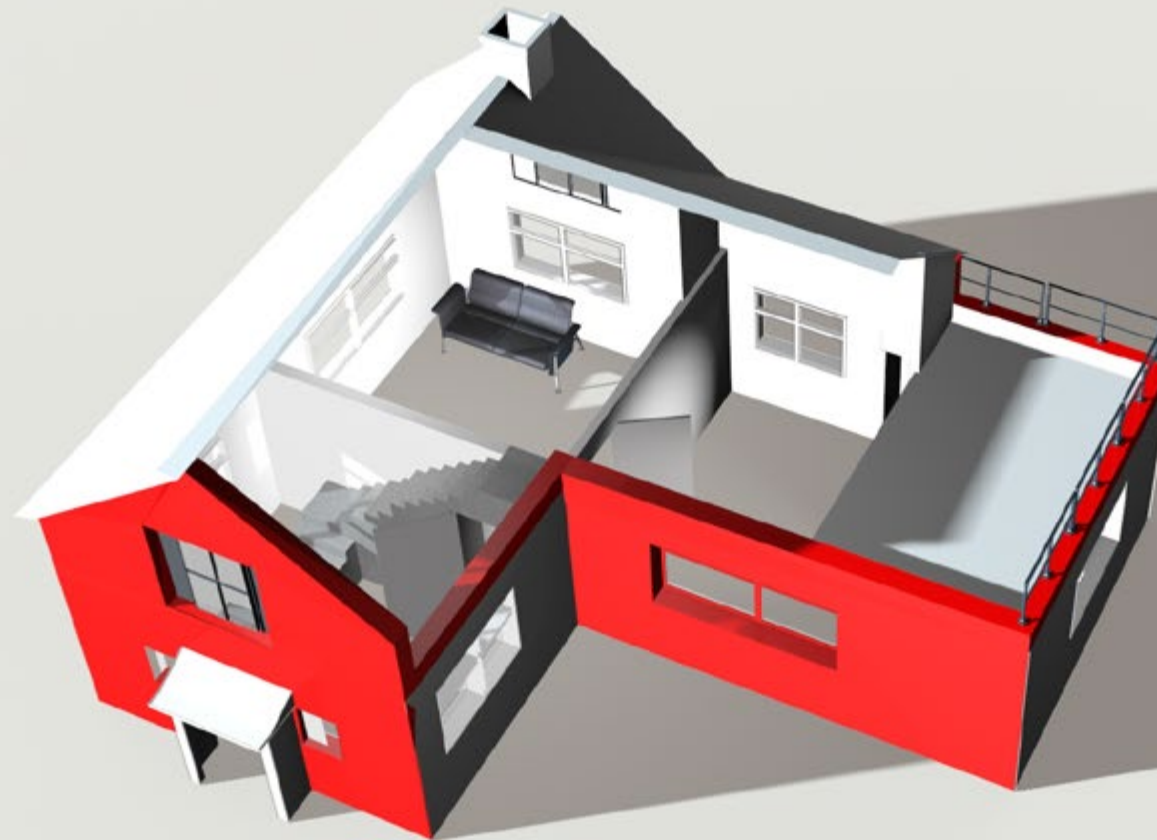


Table V 2: overview of the composition of the variants “exterior wall”

(21)+ exterior wall (load-bearing and non-load-bearing): environmental impact per m ² of wall, 25 types (from outside inwards =>)						
1	EW1 timber frame RW14 facing brick	facing brick (clay)	timber frame (14 cm)	RW (complete filling)	plasterboard	acrylic paint
2	EW2 timber frame RW22 facing brick	facing brick (clay)	timber frame (22cm)	RW (complete filling)	plasterboard	acrylic paint
3	EW3 timber frame cellulose22 facing brick	facing brick (clay)	timber frame (22cm)	cellulose (complete filling)	plasterboard	acrylic paint
4	EW4 timber frame RW14 fibre cement board	fibre cement boards	timber frame (14 cm)	RW (complete filling)	plasterboard	acrylic paint
5	EW5 FJI cellulose24 facing brick	facing brick (clay)	FJI 24cm	cellulose	plasterboard on wooden lathwork	acrylic paint
6	EW6 FJI cellulose36 facing brick	facing brick (clay)	FJI 36 cm	cellulose	plasterboard on wooden lathwork	acrylic paint
7	EW7 FJI cellulose36 roughcast gypsum blocks	roughcast on wood fibre board	FJI 36 cm	cellulose	OSB+ gypsum blocks	acrylic paint
8	EW8 timber frame RW14 planks	untreated cedar planks	timber frame (14 cm)	RW (complete filling)	plasterboard	acrylic paint
9	EW9 concrete stone hollow RW7.5 facing brick	facing brick (clay)	concrete stone1 (hollow)	RW1 - 7.5 cm (U = 0.38)	gypsum plaster	acrylic paint
10	EW10 concrete stone hollow RW22 facing brick	facing brick (clay)	concrete stone1 (hollow)	RW2 - 22 cm (10+12) (U = 0.15)	gypsum plaster	acrylic paint
11	EW11 concrete stone hollow PUR5 facing brick	facing brick (clay)	concrete stone1 (hollow)	PUR1 - 5 cm (U = 0.37)	gypsum plaster	acrylic paint
12	EW12 concrete stone hollow PUR15 facing brick	facing brick (clay)	concrete stone1 (hollow)	PUR2 - 15 cm (7+8) (U = 0.14)	gypsum plaster	acrylic paint
13	EW13 concrete stone full RW7.5 facing brick	facing brick (clay)	concrete stone2 (full)	RW1 - 7.5 cm (U = 0.38)	gypsum plaster	acrylic paint
14	EW14 hollow brick insul RW6 facing brick	facing brick (clay)	hollow brick Clay1 (insulating)	RW1 - 6 cm (U = 0.39)	gypsum plaster	acrylic paint
15	EW15 hollow brick insul RW8 roughcast	roughcast	hollow brick Clay1 (insulating)	RW1 - 8 cm (U = 0.35)	gypsum plaster	acrylic paint

(21)+ exterior wall (load-bearing and non-load-bearing): environmental impact per m ² of wall, 25 types (from outside inwards =>)						
16	EW16 hollow brick insul EPS7 roughcast	roughcast	hollow brick Clay1 (insulating)	EPS1 - 7cm (U = 0.38)	gypsum plaster	acrylic paint
17	EW17 hollow brick RW7.5 facing brick	facing brick (clay)	hollow brick Clay2 (common)	RW1 - 7.5 cm (U = 0.35)	gypsum plaster	acrylic paint
18	EW18 hollow brick insul RW6 facing brick loam plaster	facing brick (clay)	hollow brick Clay1 (insulating)	RW1 - 6 cm (U = 0.40)	loam plaster	/
19	EW19 concrete stone hollow PUR5 concrete stone	facing brick (concrete)	concrete stone1 (hollow)	PUR1 - 5 cm (U = 0.37)	gypsum plaster	acrylic paint
20	EW20 aircrete30 facing brick	facing brick (clay)	aircrete 1: 30 cm (thickness to attain epb level)	/	gypsum plaster	acrylic paint
21	EW21 aircrete48 roughcast	roughcast	aircrete 48 cm	/	gypsum plaster	acrylic paint
22	EW22 aircrete30 RW14 facing brick	facing brick (clay)	aircrete: 30 cm	RW - 14 cm (req'd thickness to attain U=0.15 in combination with aircrete)	gypsum plaster	acrylic paint
23	EW23 calcarenite RW7.5 facing brick	facing brick (clay)	calcarenite (glued)	RW1 - 7.5 cm (U = 0.35)	gypsum plaster	acrylic paint
24	EW24 hollow brick concrete prefab panel	sandwich panels in concrete with PUR filling		gypsum plaster	acrylic paint	
25	EW25 concrete insitu RW7.5 concrete board	architectural concrete slab	reinforced concrete (in situ) - 14 cm	RW1 - 7.5 cm (U = 0.39)	gypsum plaster	acrylic paint

* vapour barriers and wind screens are added where necessary

Table CEN 2: overview of the individual CEN indicators for the variants 'exterior wall'

	climate change	ozone depletion	acidification (land)	eutrophication	photochem. oxidant form.	depletion non-fossil	depletion fossil
	kg CO2 eq	kg CFC-11 eq	kg SO2 eq	kg PO4--- eq	kg C2H4	kg Sb eq	MJ, net cal
Exterior wall							
EW1 timber frame RW14 facing brick	2,53E+02	1,92E-05	3,59E-01	1,29E-01	3,18E-02	5,94E-04	4,03E+03
EW2 timber frame RW22 facing brick	2,10E+02	1,63E-05	3,82E-01	1,38E-01	3,04E-02	6,03E-04	3,26E+03
EW3 timber frame cellulose22 facing brick	2,07E+02	1,63E-05	3,42E-01	1,33E-01	2,81E-02	7,64E-04	3,22E+03
EW4 timber frame RW14 fibre cement board	2,42E+02	2,43E-05	3,27E-01	1,31E-01	3,09E-02	6,30E-04	3,94E+03
EW5 FJI cellulose24 facing brick	1,70E+02	1,36E-05	2,81E-01	1,03E-01	2,12E-02	7,70E-04	2,57E+03
EW6 FJI cellulose36 facing brick	1,47E+02	1,20E-05	2,90E-01	1,10E-01	2,01E-02	8,89E-04	2,15E+03
EW7 FJI cellulose36 roughcast gypsum blocks	1,60E+02	1,09E-05	3,05E-01	1,06E-01	2,25E-02	3,23E-03	1,95E+03
EW8 timber frame RW14 planks	2,28E+02	1,76E-05	3,33E-01	1,32E-01	3,10E-02	6,08E-04	3,87E+03
EW9 concrete stone hollow RW7.5 facing brick	3,36E+02	2,32E-05	3,83E-01	1,15E-01	3,17E-02	2,51E-04	4,86E+03
EW10 concrete stone hollow RW22 facing brick	2,07E+02	1,41E-05	3,94E-01	1,15E-01	2,46E-02	2,60E-04	2,62E+03
EW11 concrete stone hollow PUR5 facing brick	3,36E+02	2,27E-05	3,83E-01	1,16E-01	3,29E-02	2,54E-04	4,81E+03
EW12 concrete stone hollow PUR15 facing brick	2,23E+02	1,37E-05	4,01E-01	1,20E-01	2,98E-02	2,72E-04	2,78E+03
EW13 concrete stone full RW7.5 facing brick	3,42E+02	2,38E-05	4,05E-01	1,22E-01	3,26E-02	2,86E-04	4,94E+03
EW14 hollow brick insul RW6 facing brick	3,30E+02	2,40E-05	3,51E-01	1,08E-01	3,29E-02	1,88E-04	5,03E+03
EW15 hollow brick insul RW8 roughcast	3,14E+02	2,22E-05	4,52E-01	1,28E-01	3,58E-02	1,05E-03	4,73E+03
EW16 hollow brick insul EPS7 roughcast	3,24E+02	2,25E-05	3,31E-01	1,01E-01	4,34E-02	9,99E-04	4,91E+03

	climate change	ozone depletion	acidification (land)	eutrophication	photochem. oxidant form.	depletion non-fossil	depletion fossil
	kg CO2 eq	kg CFC-11 eq	kg SO2 eq	kg PO4--- eq	kg C2H4	kg Sb eq	MJ, net cal
EW17_hollow brick_RW7.5_facing brick	3,15E+02	2,30E-05	3,76E-01	1,15E-01	3,30E-02	1,98E-04	4,69E+03
EW18_hollow brick_insul_RW6_facing brick_loam plaster	3,16E+02	2,25E-05	2,86E-01	8,43E-02	2,99E-02	1,36E-04	4,86E+03
EW19_concrete stone_hollow_PUR5_concrete stone	3,27E+02	2,14E-05	3,59E-01	1,07E-01	2,99E-02	2,83E-04	4,66E+03
EW20_aircrete30_facing brick	3,58E+02	2,55E-05	4,14E-01	1,32E-01	3,46E-02	3,87E-04	4,90E+03
EW21_aircrete48_roughcast	3,49E+02	2,45E-05	4,38E-01	1,37E-01	3,32E-02	1,26E-03	4,64E+03
EW22_aircrete30_RW14_facing brick	2,45E+02	1,74E-05	4,27E-01	1,34E-01	2,86E-02	3,97E-04	2,93E+03
EW23_calcarenite_RW7.5_facing brick	3,13E+02	2,37E-05	3,65E-01	1,09E-01	3,28E-02	2,53E-04	4,71E+03
EW24_hollow brick_concrete prefab panel	2,80E+02	1,78E-05	6,11E-01	2,54E-01	5,71E-02	4,08E-04	3,61E+03
EW25_concrete_insitu_RW7.5_concrete board	3,45E+02	2,26E-05	4,31E-01	1,70E-01	4,70E-02	2,32E-04	5,13E+03

Table CEN+ 2: overview of the individual CEN+ indicators for the variants 'exterior wall'

	human toxicity	particulate matter formation (PM)	Ionising radiation (humans)	ecotox. (terrestrial)	ecotox. (fresh water)	ecotox. (marine)	land occupation (forest)	land occupation (urban)	land transf. (nature)	land transf. (rainforest)	water
	DALY	DALY	DALY	kg 1,4-DB eq	kg 1,4-DB eq	kg 1,4-DB eq	species.yr	species.yr	species.yr	species.yr	m ³
Exterior wall											
EW1 timber frame RW14 facing brick	1,56E-05	1,88E-04	3,34E-07	3,00E-02	4,89E-01	5,87E-01	6,88E-03	3,63E-08	5,60E-08	5,50E-09	5,71E-01
EW2 timber frame RW22 facing brick	1,69E-05	2,12E-04	3,32E-07	3,32E-02	5,17E-01	5,91E-01	6,88E-03	4,72E-08	6,18E-08	5,30E-09	6,04E-01
EW3 timber frame cellulose22 facing brick	1,65E-05	1,76E-04	3,15E-07	3,30E-02	5,06E-01	5,81E-01	6,88E-03	4,53E-08	5,77E-08	5,12E-09	5,54E-01
EW4 timber frame RW14 fibre cement board	1,83E-05	1,67E-04	3,77E-07	3,33E-02	5,42E-01	6,56E-01	2,78E-02	3,90E-08	5,62E-08	6,19E-09	6,65E-01
EW5 FJI cellulose24 facing brick	1,23E-05	1,45E-04	2,46E-07	1,73E-02	4,15E-01	4,75E-01	6,88E-03	2,53E-08	3,79E-08	4,78E-09	4,45E-01
EW6 FJI cellulose36 facing brick	1,34E-05	1,58E-04	2,47E-07	1,91E-02	4,42E-01	4,89E-01	6,88E-03	2,93E-08	3,83E-08	4,66E-09	4,74E-01
EW7 FJI cellulose36 roughcast gypsum blocks	1,47E-05	1,73E-04	2,49E-07	2,74E-02	4,69E-01	5,13E-01	2,43E-02	3,41E-08	1,93E-08	2,43E-09	7,41E-01
EW8 timber frame RW14 planks	1,68E-05	1,80E-04	3,43E-07	4,47E-02	5,16E-01	6,14E-01	1,66E-02	8,04E-08	8,90E-08	4,88E-09	5,15E-01
EW9 concrete stone hollow RW7.5 facing brick	1,35E-05	1,83E-04	3,51E-07	1,43E-02	3,70E-01	4,95E-01	6,88E-03	1,90E-08	4,68E-08	4,80E-09	1,01E+00
EW10 concrete stone hollow RW22 facing brick	1,38E-05	2,08E-04	3,03E-07	1,37E-02	3,94E-01	4,52E-01	6,88E-03	1,97E-08	3,87E-08	4,05E-09	1,03E+00
EW11 concrete stone hollow PUR5 facing brick	1,35E-05	1,73E-04	3,38E-07	1,49E-02	4,09E-01	5,01E-01	6,88E-03	1,79E-08	4,37E-08	4,64E-09	1,10E+00
EW12 concrete stone hollow PUR15 facing brick	1,39E-05	1,82E-04	2,74E-07	1,59E-02	5,19E-01	4,83E-01	6,88E-03	1,66E-08	3,11E-08	3,69E-09	1,30E+00

	human toxicity	particulate matter formation (PM)	Ionising radiation (humans)	ecotox. (terrestrial)	ecotox. (fresh water)	ecotox. (marine)	land occupation (forest)	land occupation (urban)	land transf. (nature)	land transf. (rainforest)	water
	DALY	DALY	DALY	kg 1,4-DB eq	kg 1,4-DB eq	kg 1,4-DB eq	species.yr	species.yr	species.yr	species.yr	m ³
EW13 concrete stone full RW7.5 facing brick	1,44E-05	1,98E-04	3,63E-07	1,48E-02	3,97E-01	5,25E-01	6,88E-03	2,06E-08	4,89E-08	5,41E-09	1,03E+00
EW14 hollow brick insul RW6 facing brick	1,20E-05	1,61E-04	3,12E-07	1,36E-02	3,37E-01	4,63E-01	6,88E-03	1,44E-08	4,24E-08	3,83E-09	5,36E-01
EW15 hollow brick insul RW8 roughcast	1,62E-05	2,64E-04	3,96E-07	1,47E-02	4,88E-01	6,06E-01	2,51E-02	2,17E-08	4,17E-08	4,85E-09	8,83E-01
EW16 hollow brick insul EPS7 roughcast	1,23E-05	1,53E-04	3,29E-07	2,28E-02	9,08E-01	5,90E-01	2,51E-02	1,50E-08	2,83E-08	4,26E-09	6,96E-01
EW17 hollow brick RW7.5 facing brick	1,29E-05	1,75E-04	3,15E-07	1,39E-02	3,61E-01	4,75E-01	6,88E-03	1,54E-08	4,25E-08	3,84E-09	5,55E-01
EW18 hollow brick insul RW6 facing brick loam plaster	9,74E-06	1,37E-04	2,69E-07	5,70E-03	2,63E-01	3,92E-01	3,69E-04	1,20E-08	4,01E-08	3,45E-09	3,88E-01
EW19 concrete stone hollow PUR5 concrete stone	1,30E-05	1,66E-04	3,36E-07	1,47E-02	3,93E-01	4,86E-01	6,87E-03	1,90E-08	4,34E-08	5,09E-09	1,31E+00
EW20 aircrete30 facing brick	1,54E-05	1,85E-04	4,22E-07	1,49E-02	4,32E-01	5,48E-01	6,88E-03	1,96E-08	3,32E-08	4,94E-09	9,63E-01
EW21 aircrete48 roughcast	1,70E-05	2,13E-04	4,64E-07	1,58E-02	5,08E-01	6,18E-01	2,54E-02	2,30E-08	2,01E-08	5,65E-09	1,21E+00
EW22 aircrete30 RW14 facing brick	1,58E-05	2,11E-04	3,81E-07	1,45E-02	4,58E-01	5,14E-01	6,88E-03	2,03E-08	2,64E-08	4,30E-09	9,82E-01
EW23 calcarenite RW7.5 facing brick	1,23E-05	1,76E-04	3,18E-07	1,56E-02	3,58E-01	4,83E-01	6,88E-03	1,78E-08	4,73E-08	5,16E-09	8,62E-01
EW24 hollow brick concrete prefab panel	3,70E-05	3,54E-04	4,97E-07	2,06E-02	1,24E+00	1,28E+00	6,51E-03	3,14E-08	5,13E-08	2,88E-09	1,85E+00
EW25 concrete insitu RW7.5 concrete board	2,88E-05	2,61E-04	4,08E-07	1,73E-02	8,36E-01	9,75E-01	6,51E-03	2,26E-08	4,86E-08	2,93E-09	1,62E+00

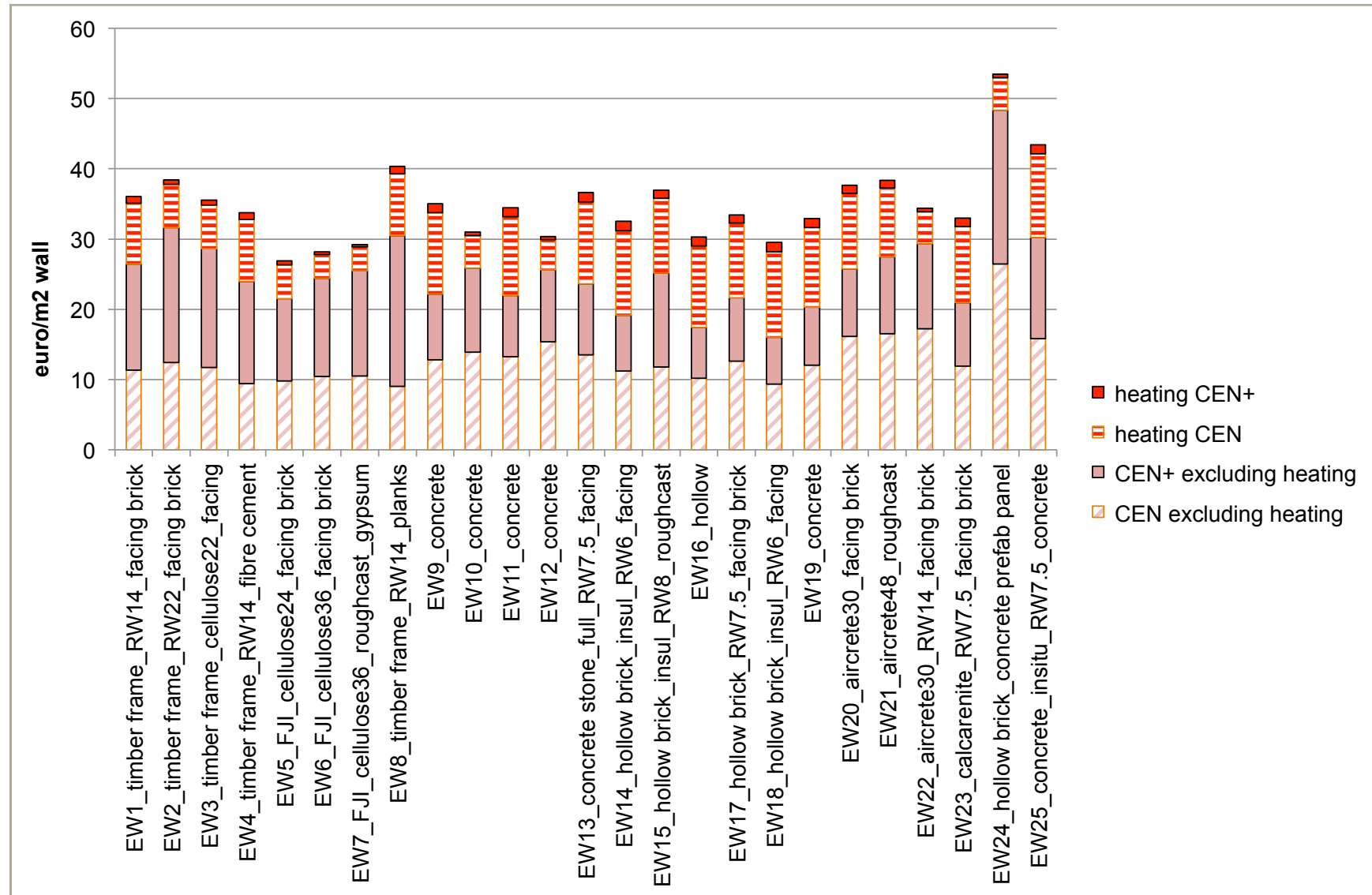


Figure E 2: Aggregated environmental profiles (split up into CEN and CEN+) of several building element variants "exterior wall", expressed in monetary units and distinguishing between purely materials-related and heat-transfer-related environmental impact.

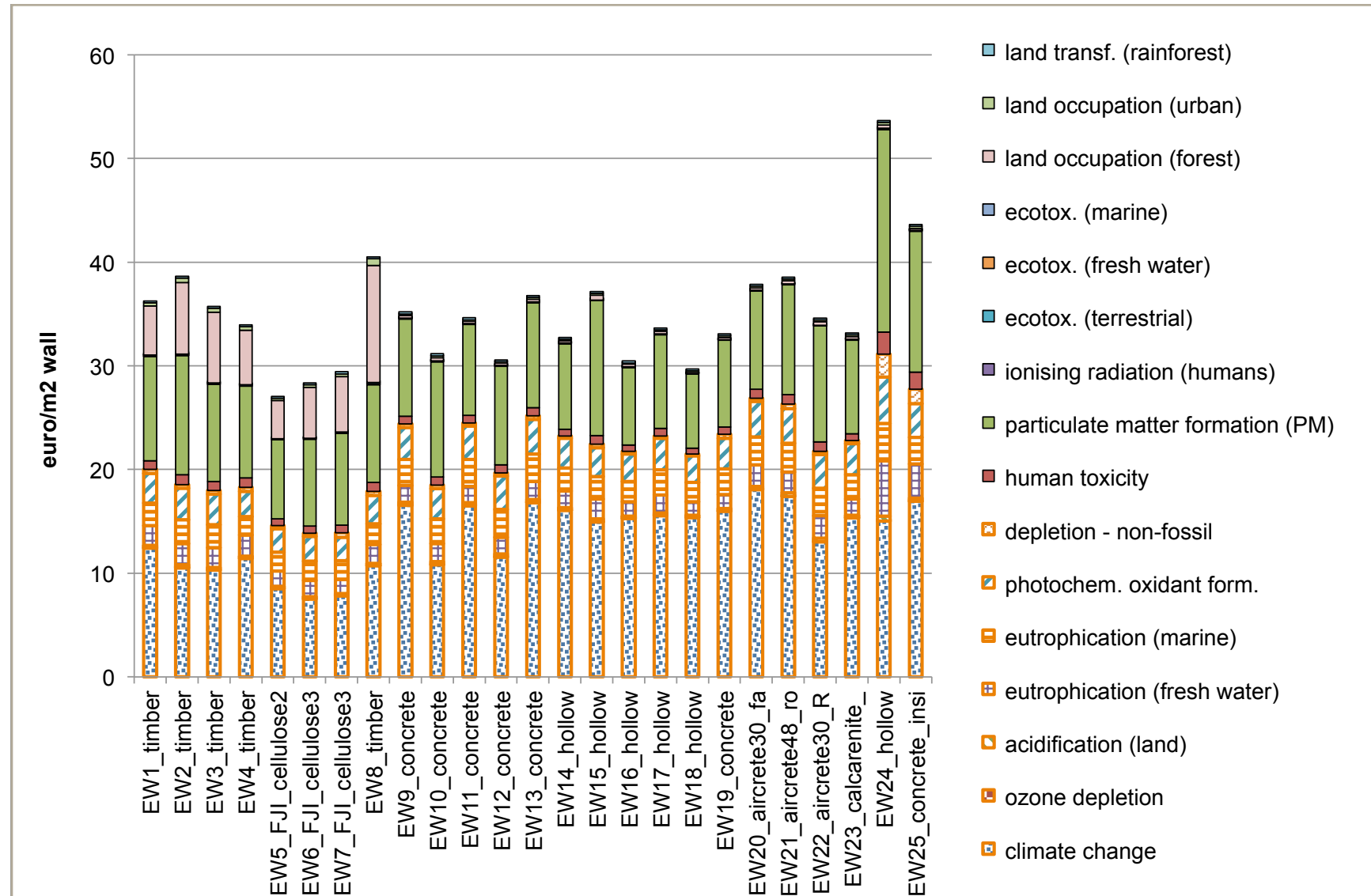


Figure I 2: Aggregated environmental profiles (split up into CEN and CEN+) for several building element variants 'exterior wall' per environmental indicator, expressed in monetary units.

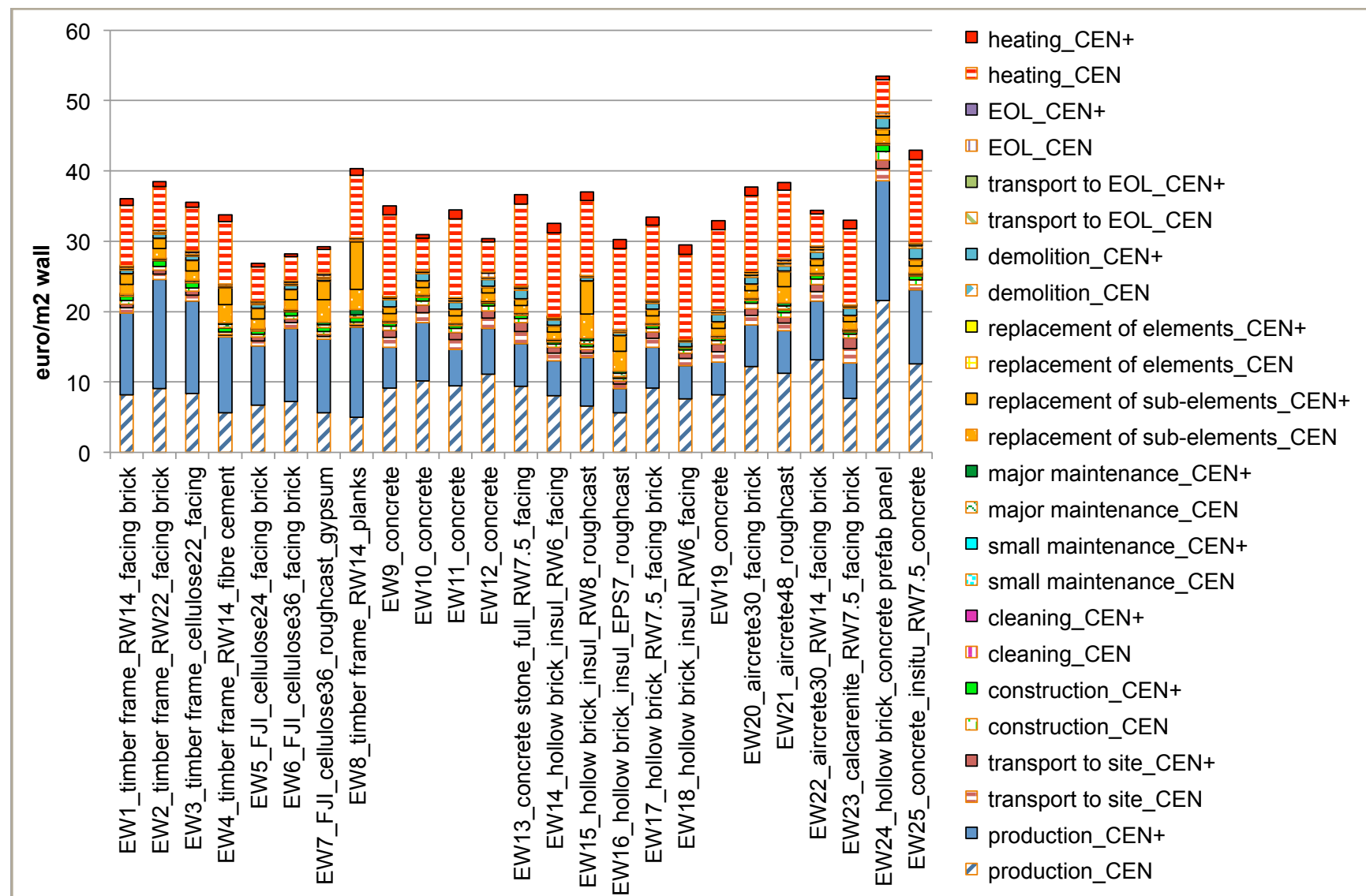


Figure L 2: Aggregated environmental profiles (split up into CEN and CEN+) for several building element variants 'exterior wall' per life cycle stage, expressed in monetary units.

2.1. EW1_timber frame_RW14_facing brick

Table 2.1: overview of the detailed composition of variant 'EW1_timber frame_RW14_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW1_timber frame_RW14_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.027	0.14	0.326	0.43
outer wall - loadbearing - primary part - wood skeleton (on site) - 14 cm - belgian mix	m ²			120	necessary	0.973		na	
Thermal insulation between wood skeleton - blanket, batt - anorganic fiber - rock wool - 14cm	m ²			120	necessary	0.973	0.14	0.056	2.45
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall finishes, external - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

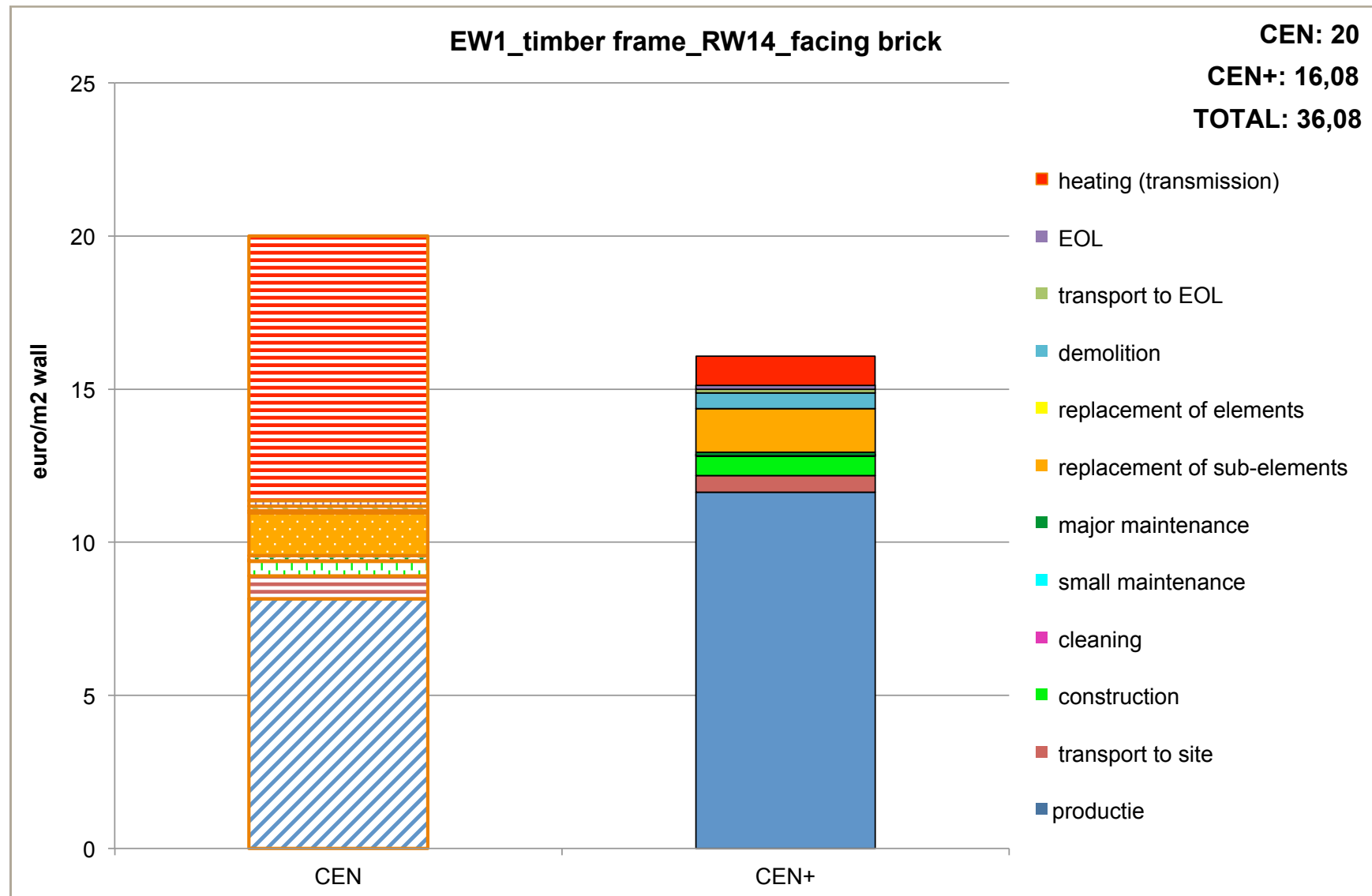


Figure exterior wall 2.1.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW1_timber frame_RW14_facing brick' per life cycle stage, expressed in monetary units.

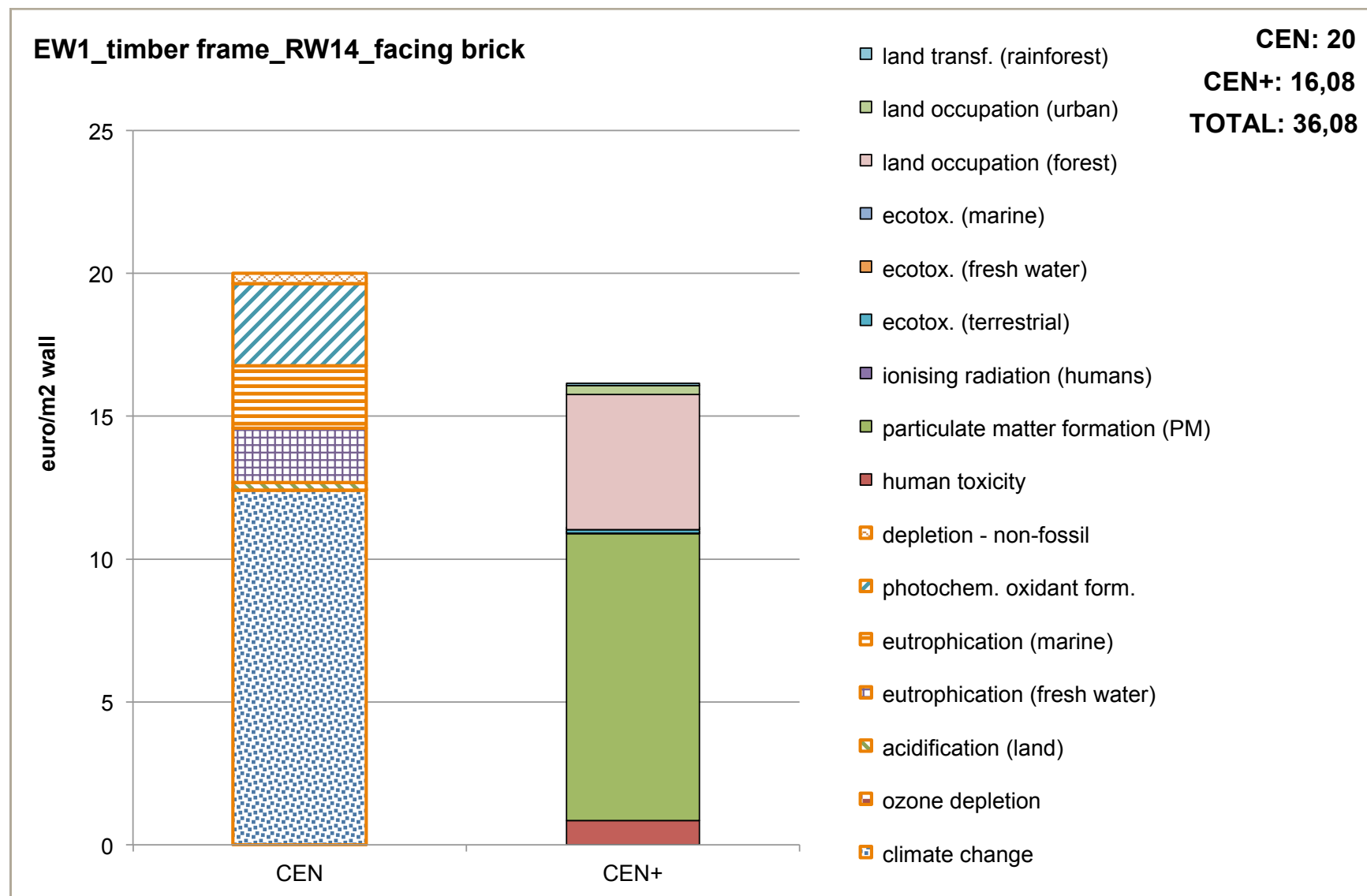


Figure exterior wall 2.1.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW1_timber frame_RW14_facing brick' per environmental indicator, expressed in monetary units.

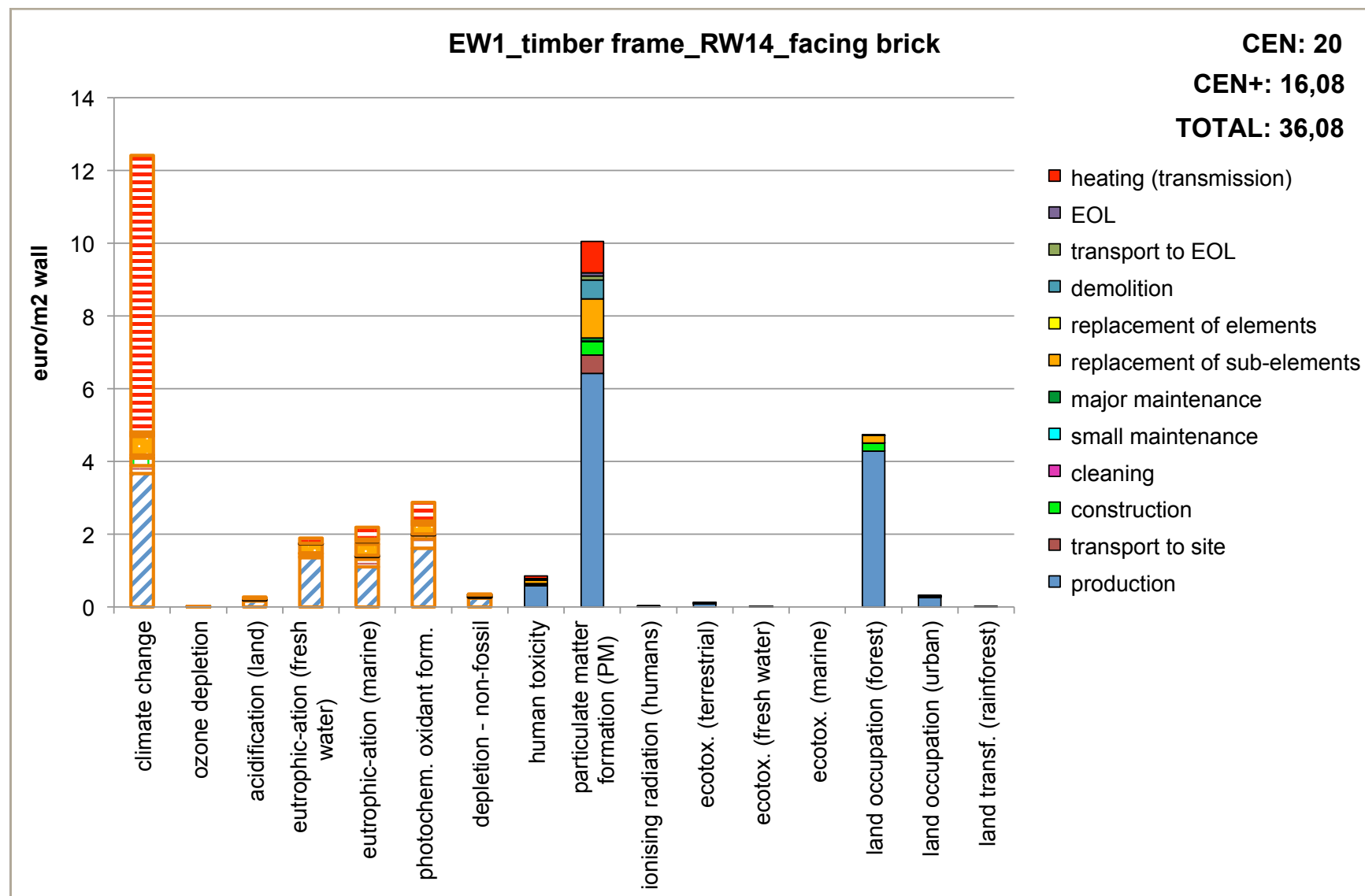


Figure exterior wall 2.1.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW1_timber frame_RW14_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.2. EW2_timber frame_RW22_facing brick

Table 2.2: overview of the detailed composition of variant 'EW2_timber frame_RW22_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW2_timber frame_RW22_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.037	0.14	0.326	0.43
outer wall - loadbearing - primary part - wood skeleton (on site) - 22 cm - belgian mix	m ²			120	necessary	0.973		na	
Thermal insulation between wood skeleton - blanket, batt - anorganic fiber - rock wool - 22cm	m ²			120	necessary	0.973	0.22	0.056	3.96
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall finishes, external - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

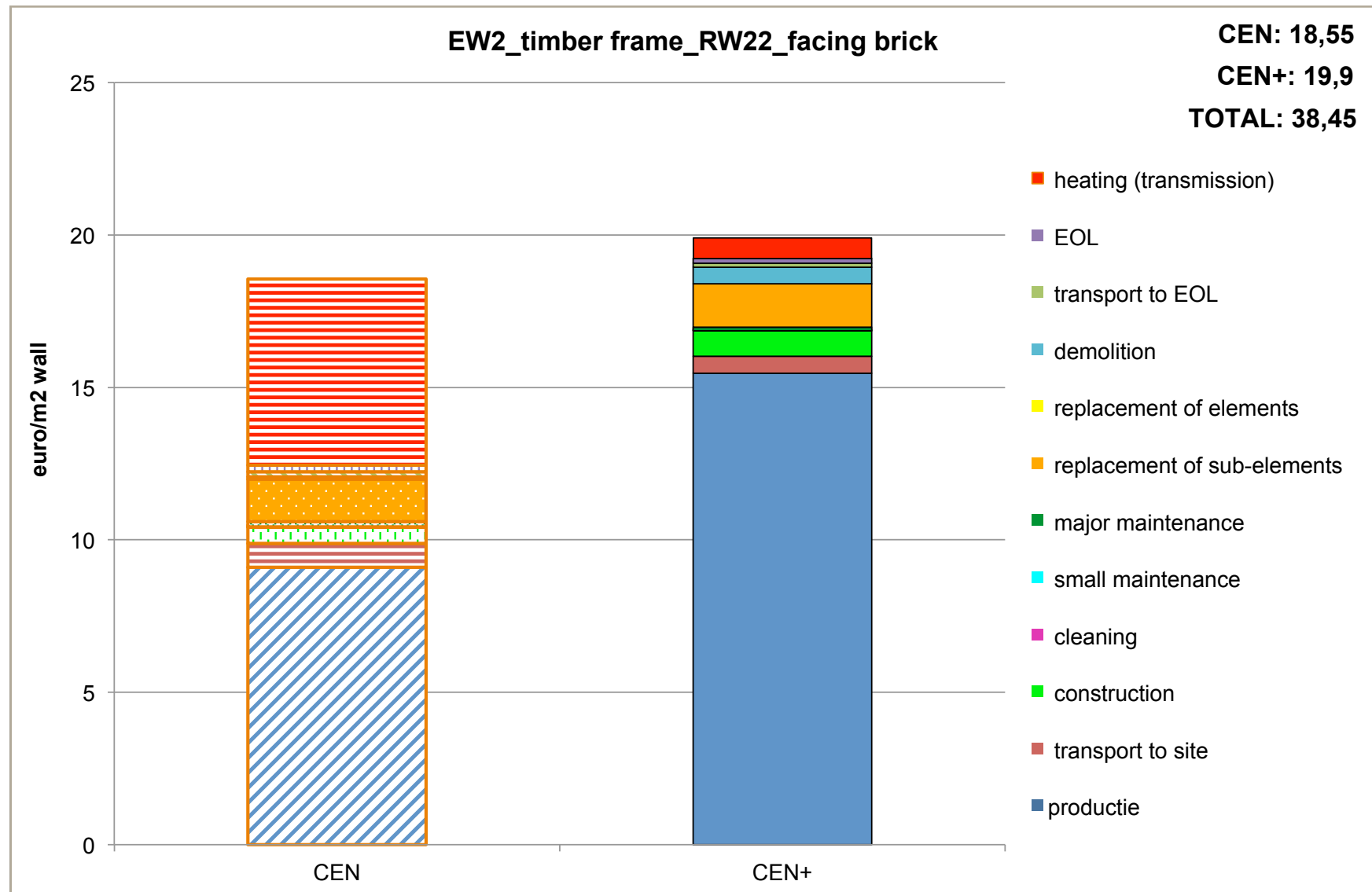


Figure exterior wall 2.2.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW2_timber frame_RW22_facing brick' per life cycle stage, expressed in monetary units.

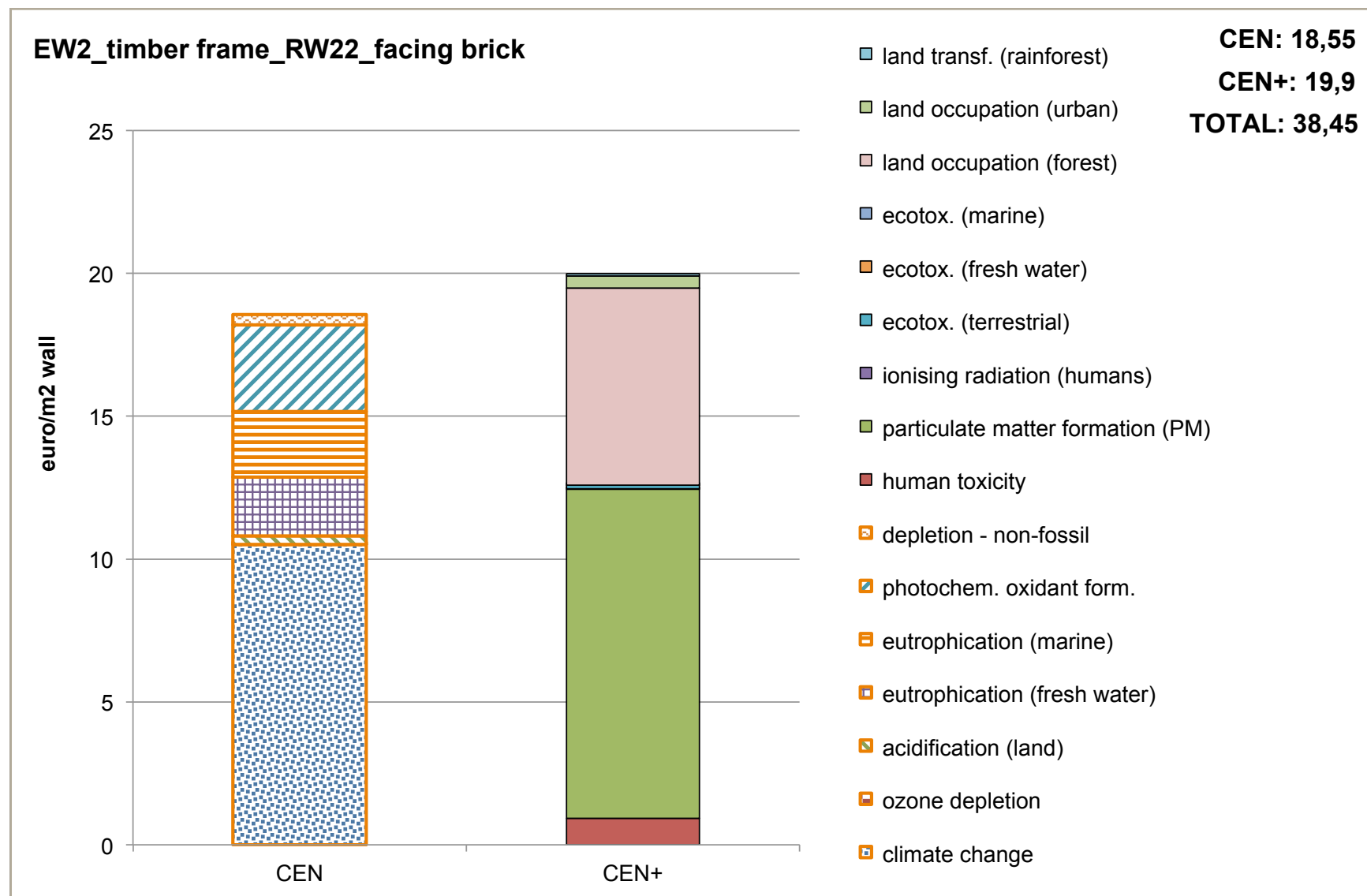


Figure exterior wall 2.2.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW2_timber frame_RW22_facing brick' per environmental indicator, expressed in monetary units.

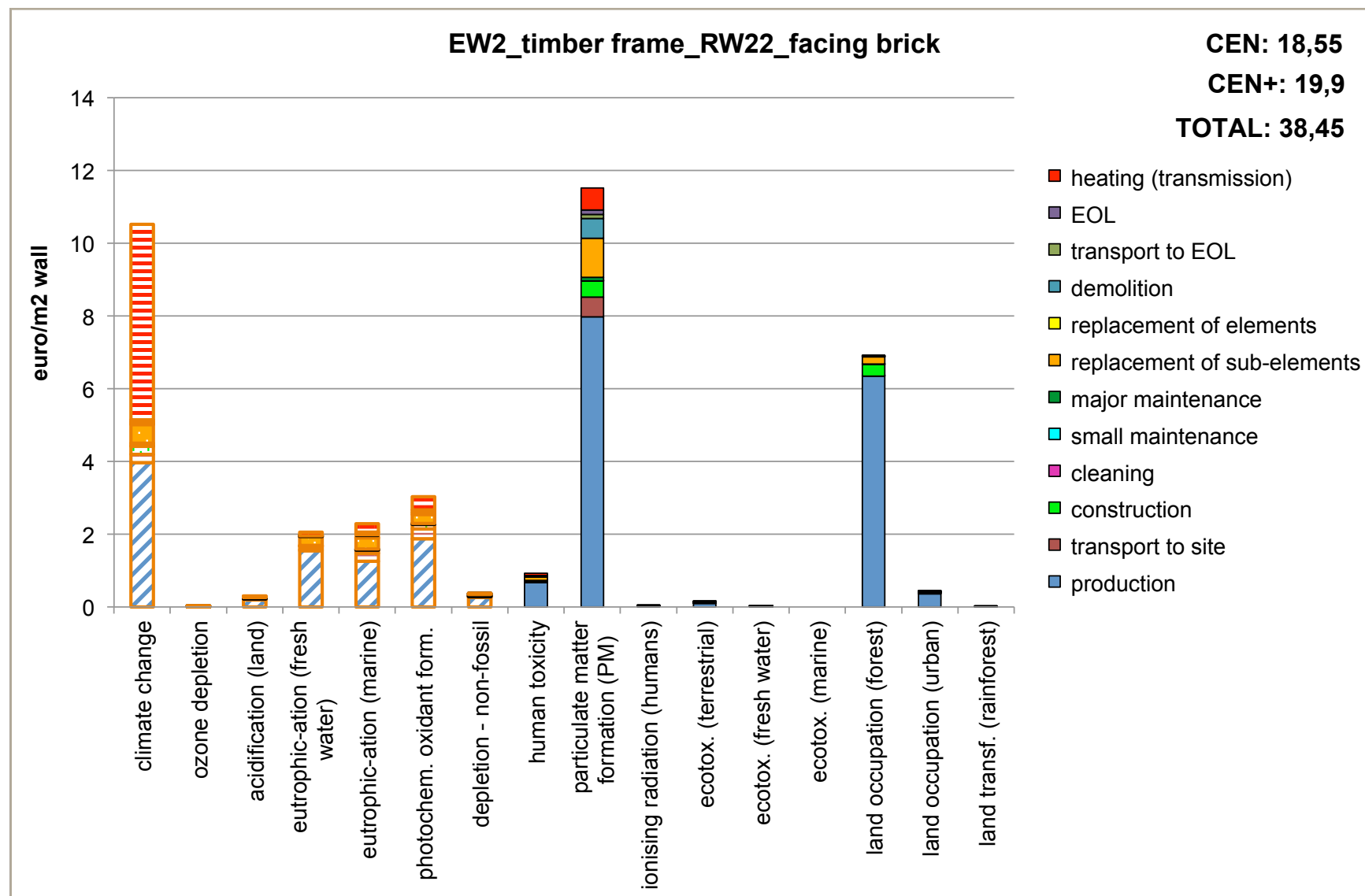


Figure exterior wall 2.2.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW2_timber frame_RW22_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.3. EW3_timber frame_cellulose22_facing brick

Table 2.3: overview of the detailed composition of variant 'EW3_timber frame_cellulose22_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW3_timber frame_cellulose22_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.037	0.14	0.326	0.43
outer wall - loadbearing - primary part - wood skeleton (on site) - 22 cm - belgian mix	m ²			120	necessary	0.973		na	
Thermal insulation between wood skeleton - cellulose flakes - 22cm	m ²			120	necessary	0.973	0.22	0.057	3.85
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall finishes, external - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

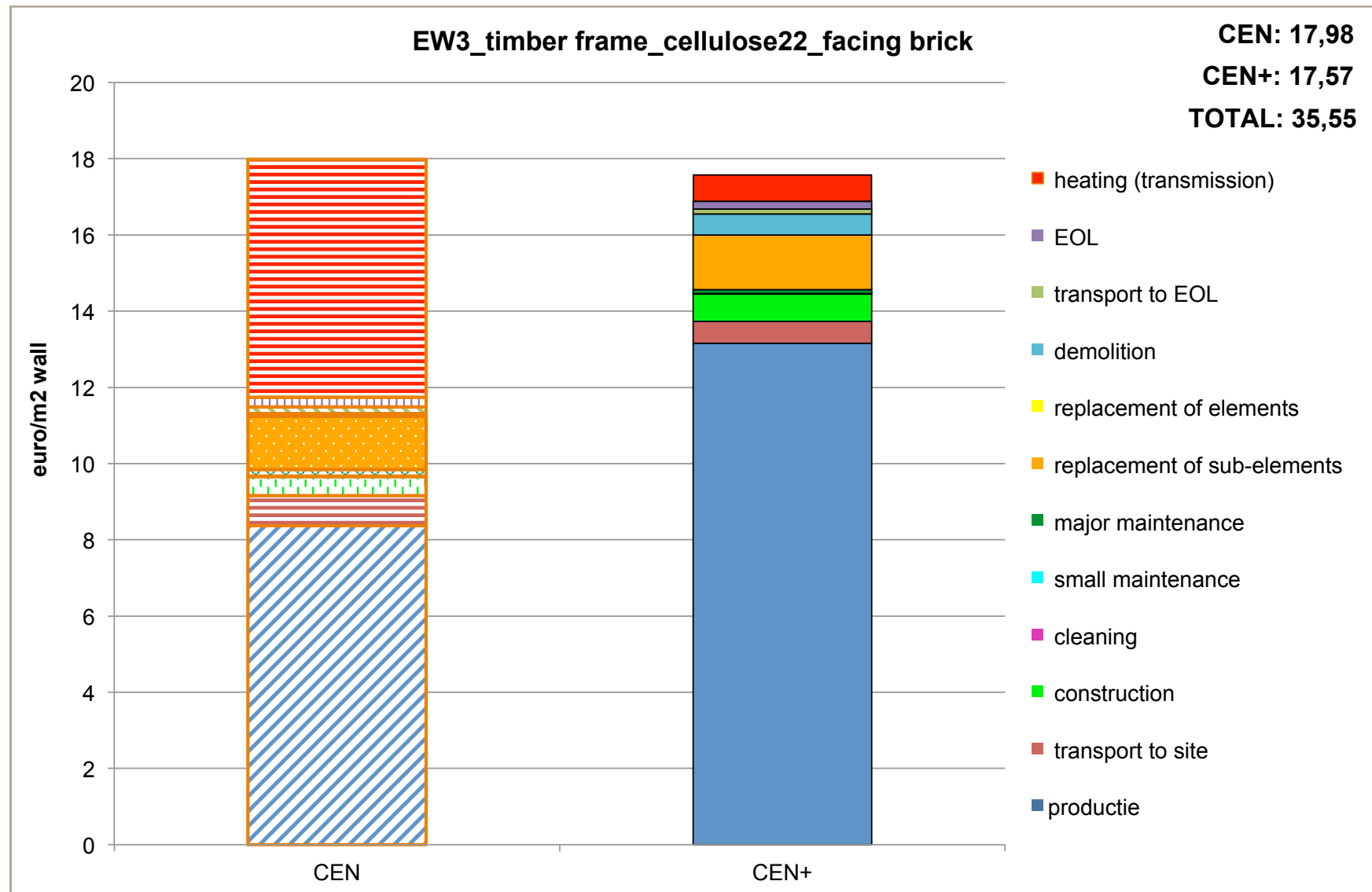


Figure exterior wall 2.3.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW3_timber frame_cellulose22_facing brick' per life cycle stage, expressed in monetary units.

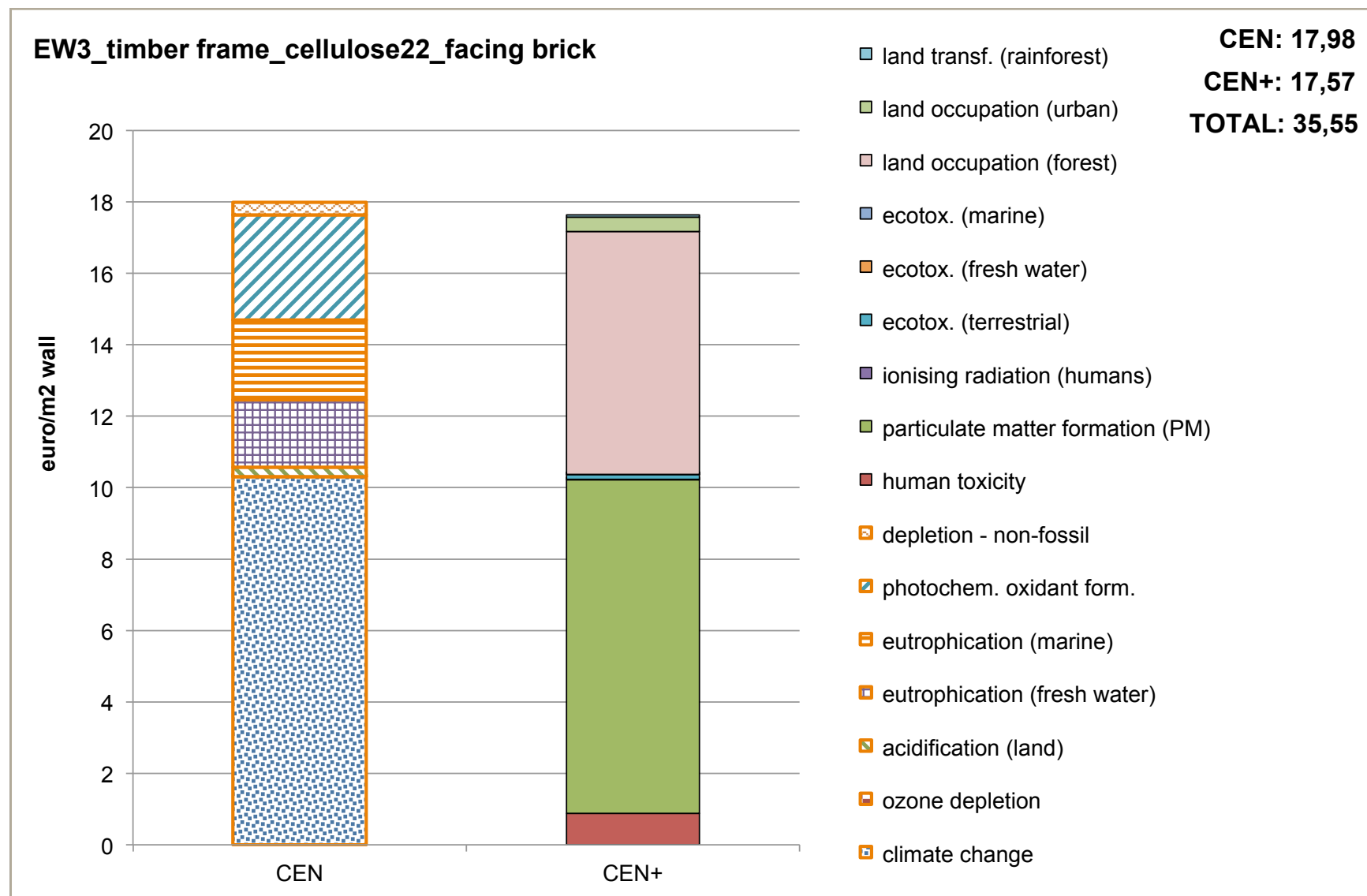


Figure exterior wall 2.3.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW3_timber frame_cellulose22_facing brick' per environmental indicator, expressed in monetary units.

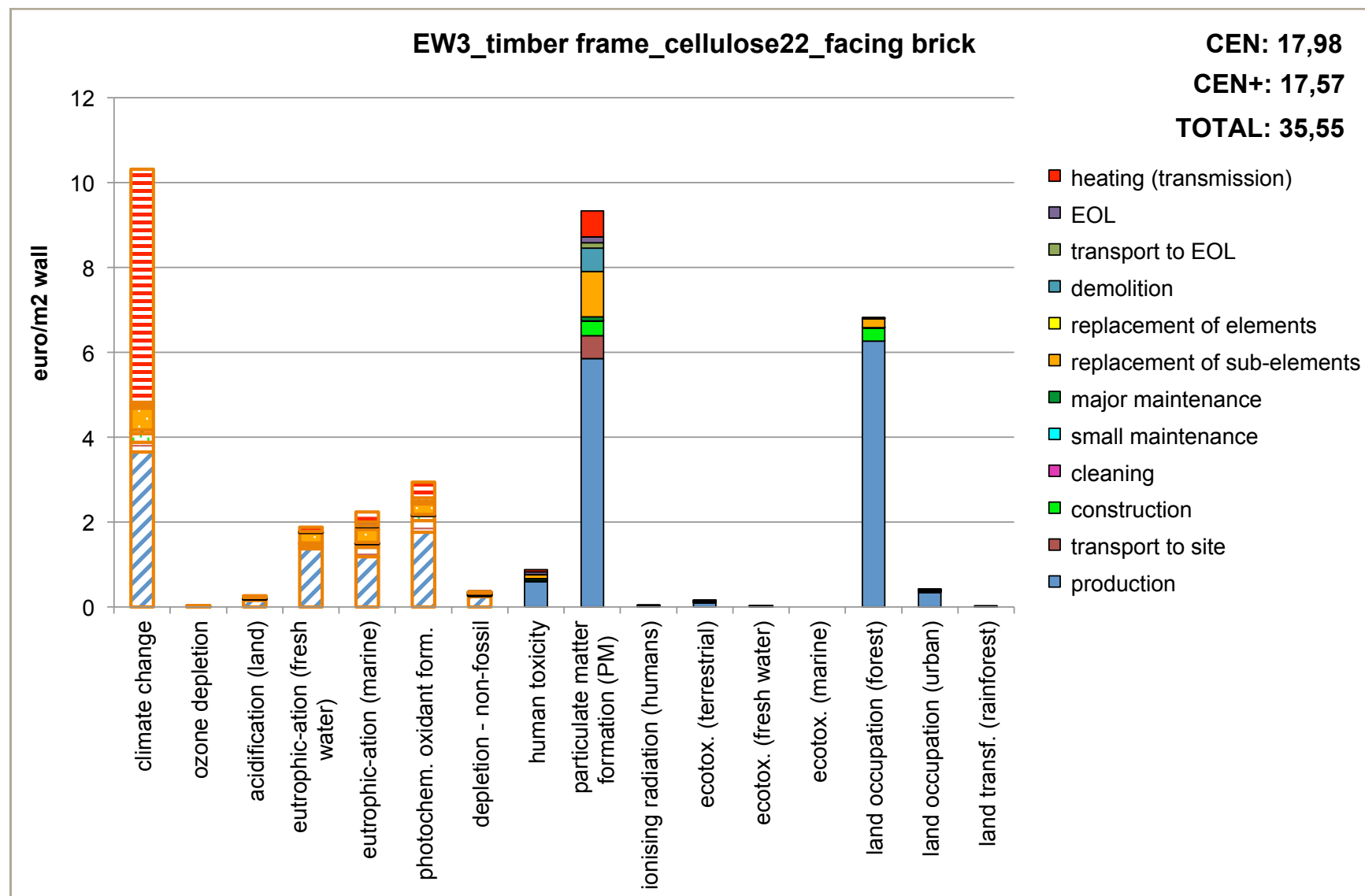


Figure exterior wall 2.3.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW3_timber frame_cellulose22_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.4. EW4_timber frame_RW14_fibre cement board

Table 2.4: overview of the detailed composition of variant 'EW4_timber frame_RW14_fibre cement board'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW4_timber frame_RW14_fibre cement board									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.027	0.14	0.326	0.43
outer wall - loadbearing - primary part - wood skeleton (on site) - 14 cm - belgian mix	m ²			120	necessary	0.973		na	
Thermal insulation between wood skeleton - blanket, batt - anorganic fiber - rock wool - 14cm	m ²			120	necessary	0.973	0.14	0.056	2.45
air cavity, d = 2 cm, horizontal - ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall finishes, external - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall, external finishes - closing sub-element - board - no overlap - fibre cement - screwed	m ²		15	40	aesthetic	1	0.01	na	
Wall, external finishes - support structure for other claddings - profiles - wood belgian mix - 3,8 x 3,8 cm - hoh 60 cm	m ²			30	necessary	1	0.04	na	
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

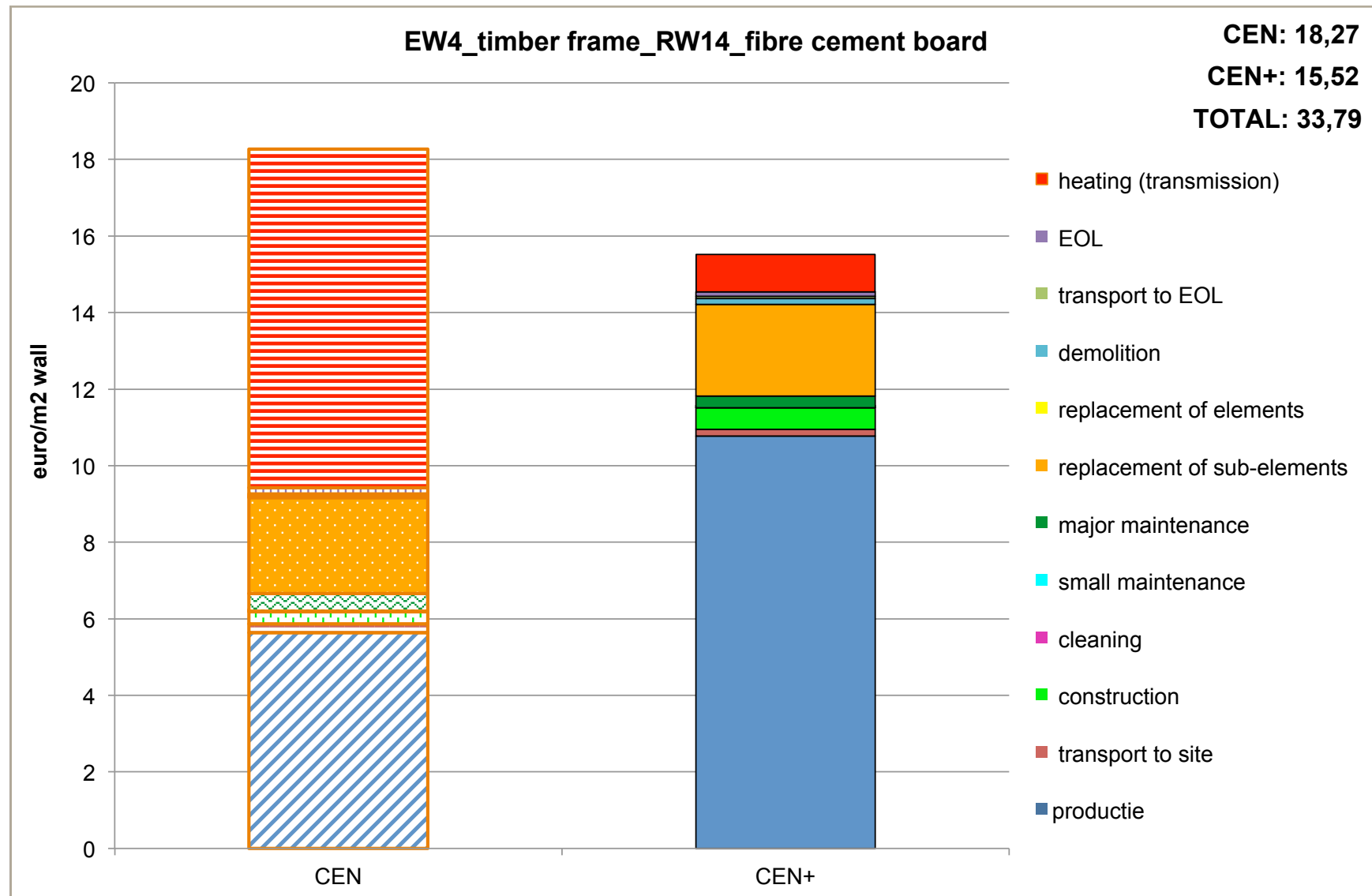


Figure exterior wall 2.4.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW4_timber frame_RW14_fibre cement board' per life cycle stage, expressed in monetary units.

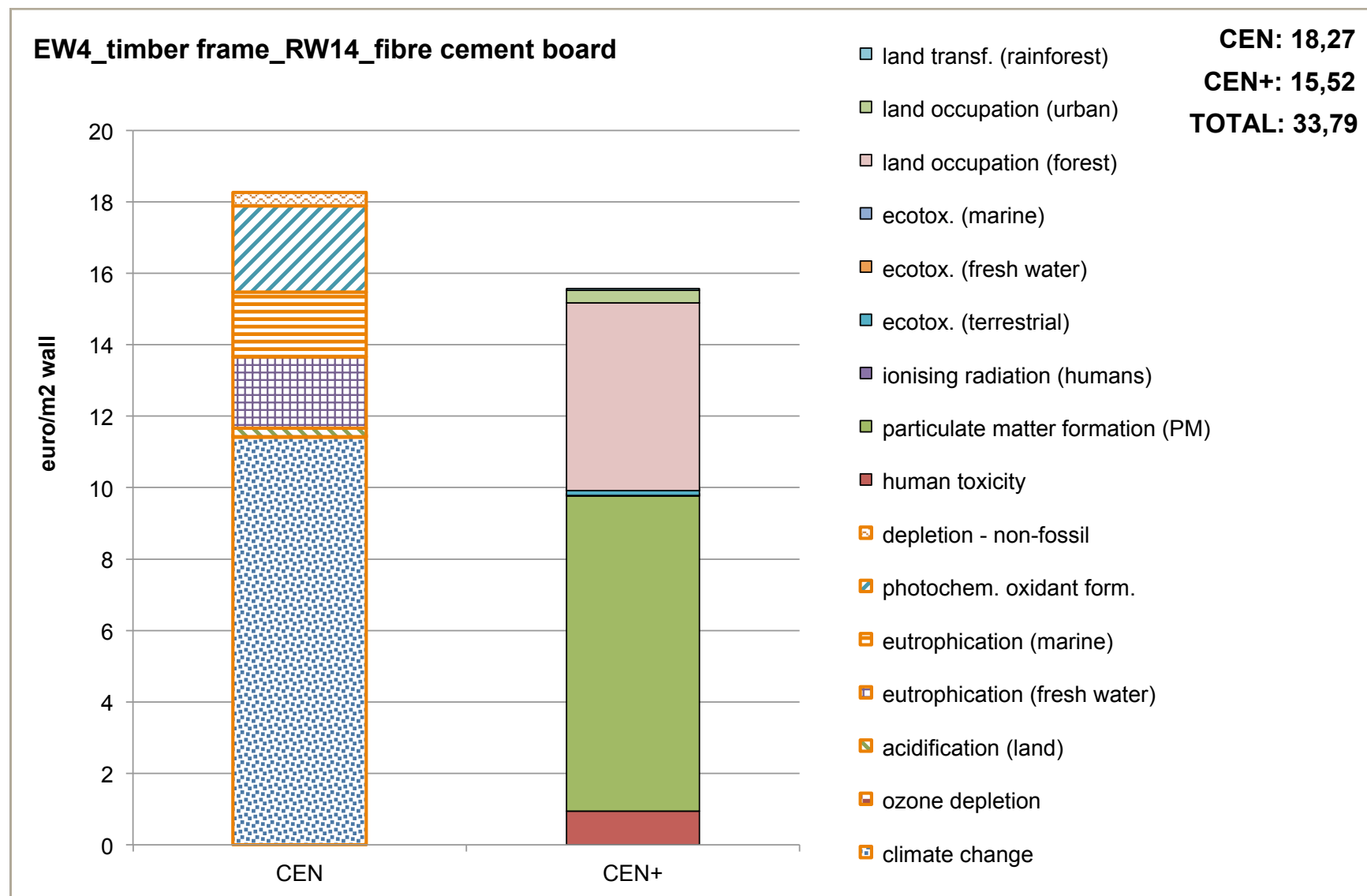


Figure exterior wall 2.4.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW4_timber frame_RW14_fibre cement board' per environmental indicator, expressed in monetary units.

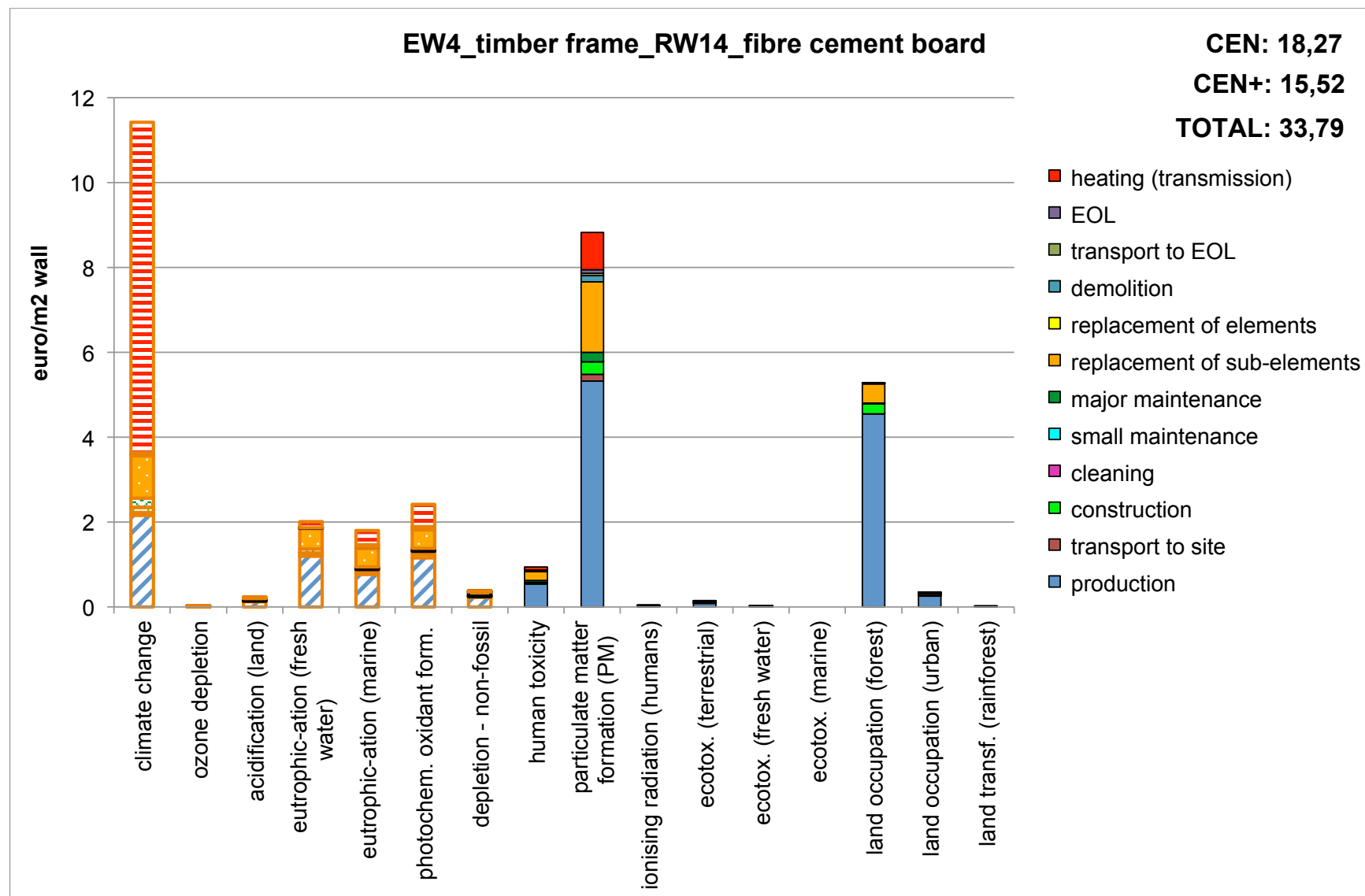


Figure exterior wall 2.4.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW4_timber frame_RW14_fibre cement board' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.5. EW5_FJI_cellulose24_facing brick

Table 2.5: overview of the detailed composition of variant 'EW5_FJI_cellulose24_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW5_FJI_cellulose24_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.046	0.14	0.326	0.43
outer wall - loadbearing - primary part - FJI profile - type 250 - height 24 cm - h.o.h. 50 cm	m ²			120	necessary	0.973	0.24	na	
Thermal insulation between FJI beams - cellulose flakes - 24 cm	m ²			120	necessary	0.973	0.24	na	5.46
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

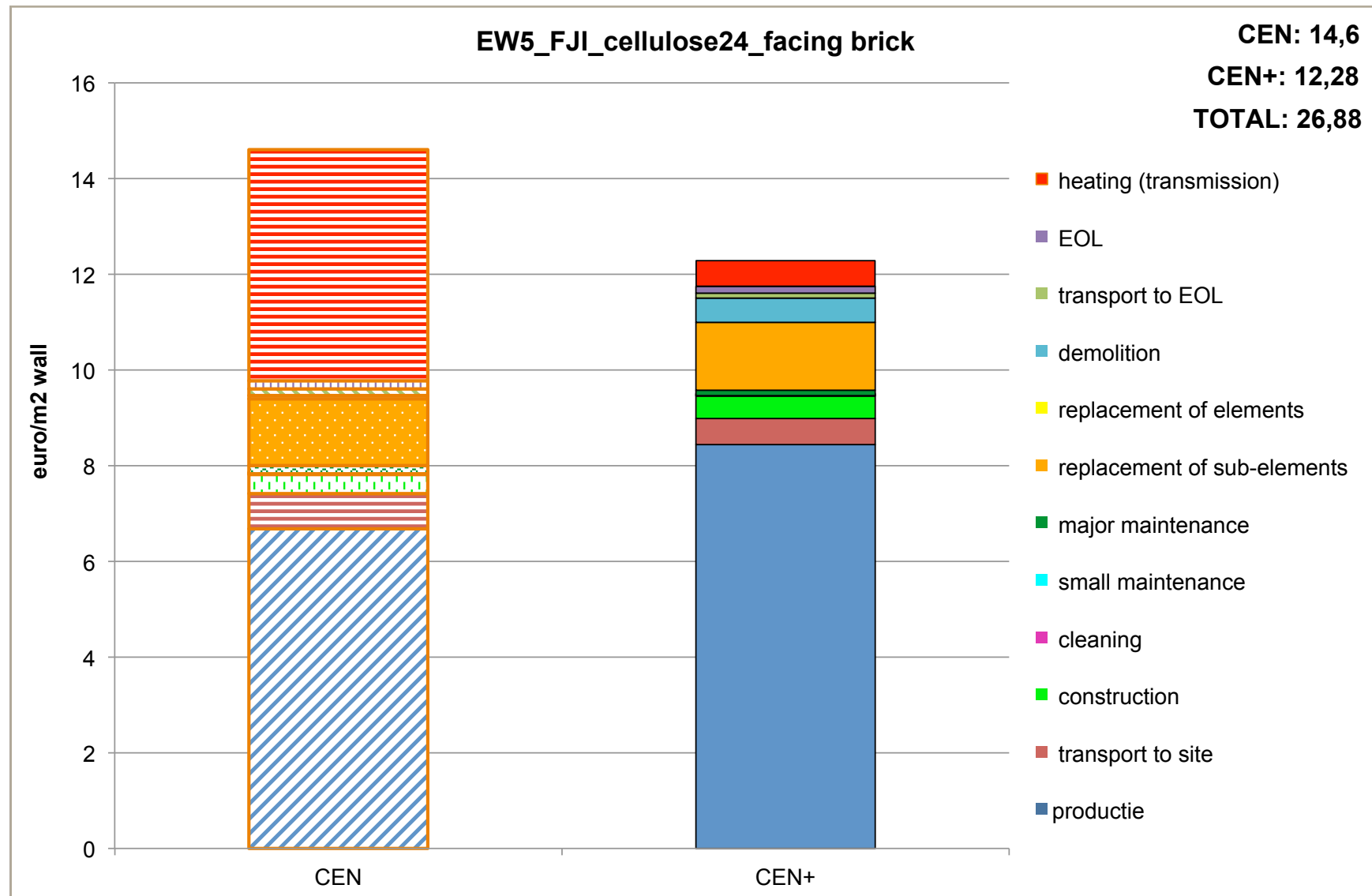


Figure exterior wall 2.5. 1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW5_FJI_cellulose24_facing brick' per life cycle stage, expressed in monetary units.

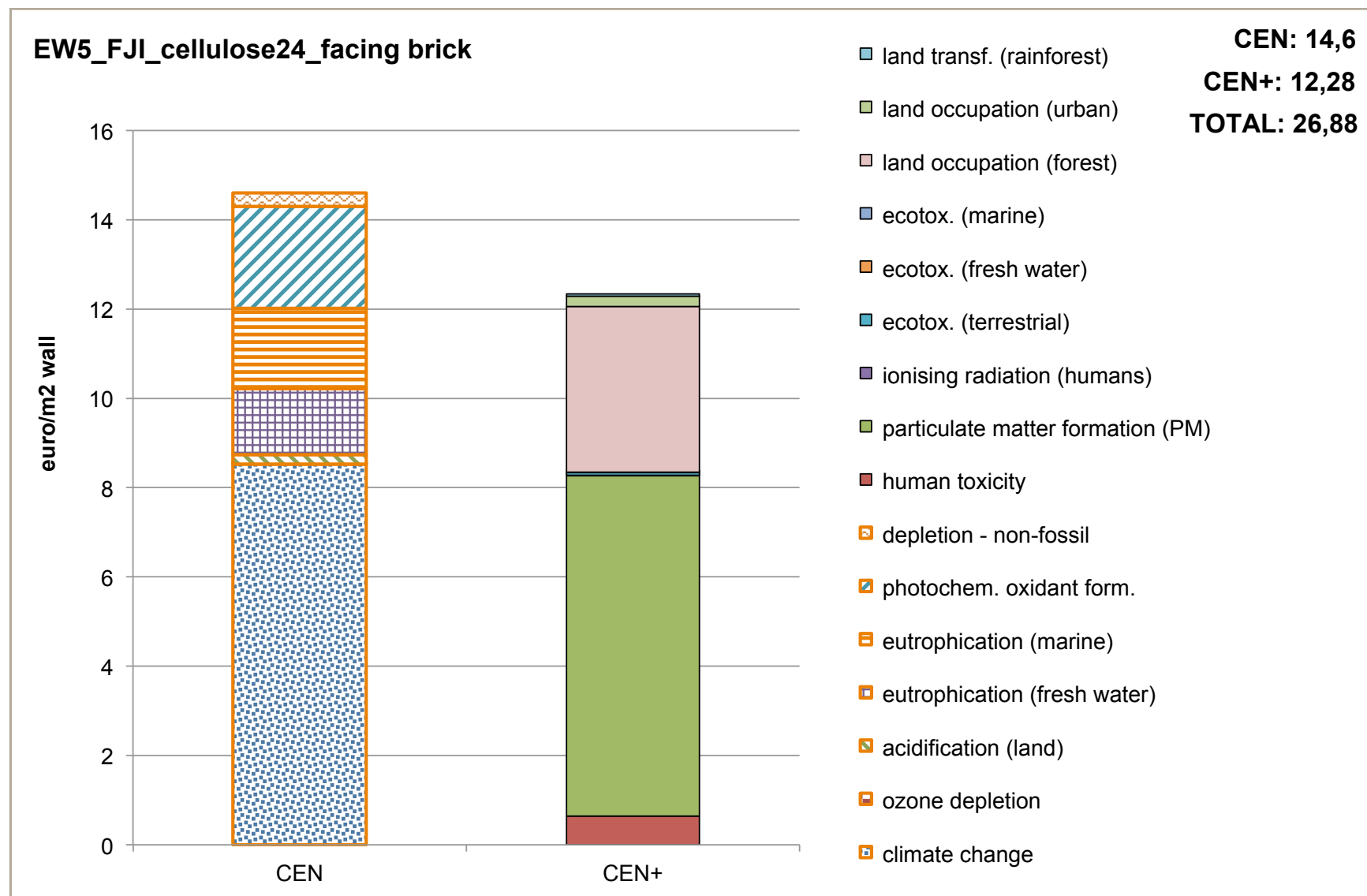


Figure exterior wall 2.5.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW5_FJI_cellulose24_facing brick' per environmental indicator, expressed in monetary units.

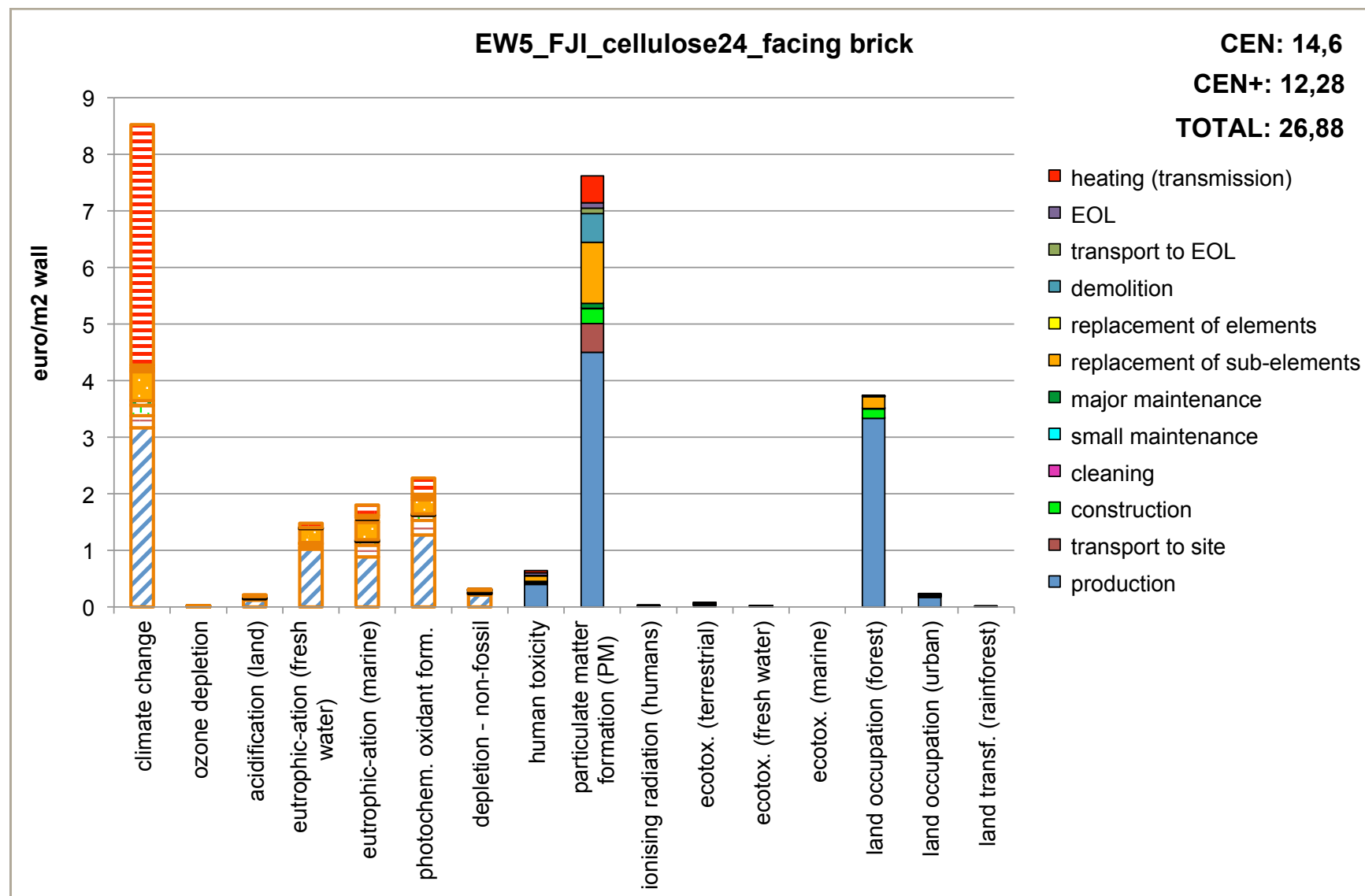


Figure exterior wall 2.5.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW5_FJI_cellulose24_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.6. EW6_FJI_cellulose36_facing brick

Table 2.6: overview of the detailed composition of variant 'EW6_FJI_cellulose36_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW6_FJI_cellulose36_facing brick									
outer wall - loadbearing - primary part - blocks/stones - cellular concrete (600x365x250)	m ²			120	necessary	0.027	0.37	0.125	2.92
outer wall - loadbearing - primary part - FJI profile - type 250 - height 36cm - h.o.h. 50cm	m ²			120	necessary	0.973	0.36	na	
Thermal insulation between FJI beams - cellulose flakes - 36 cm	m ²			120	necessary	0.973	0.36	na	8.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

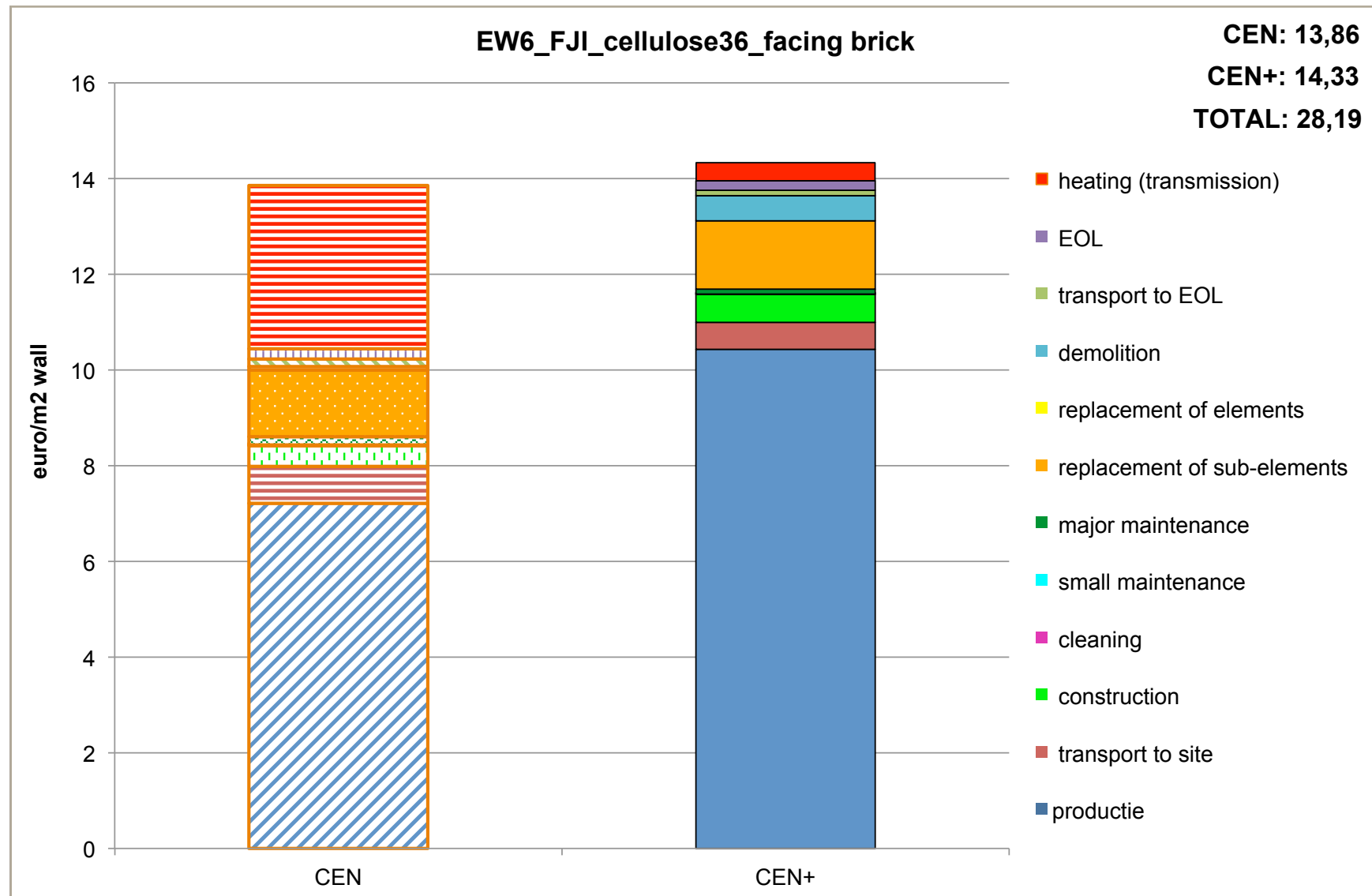


Figure exterior wall 2.6.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW6_FJI_cellulose36_facing brick' per life cycle stage, expressed in monetary units.

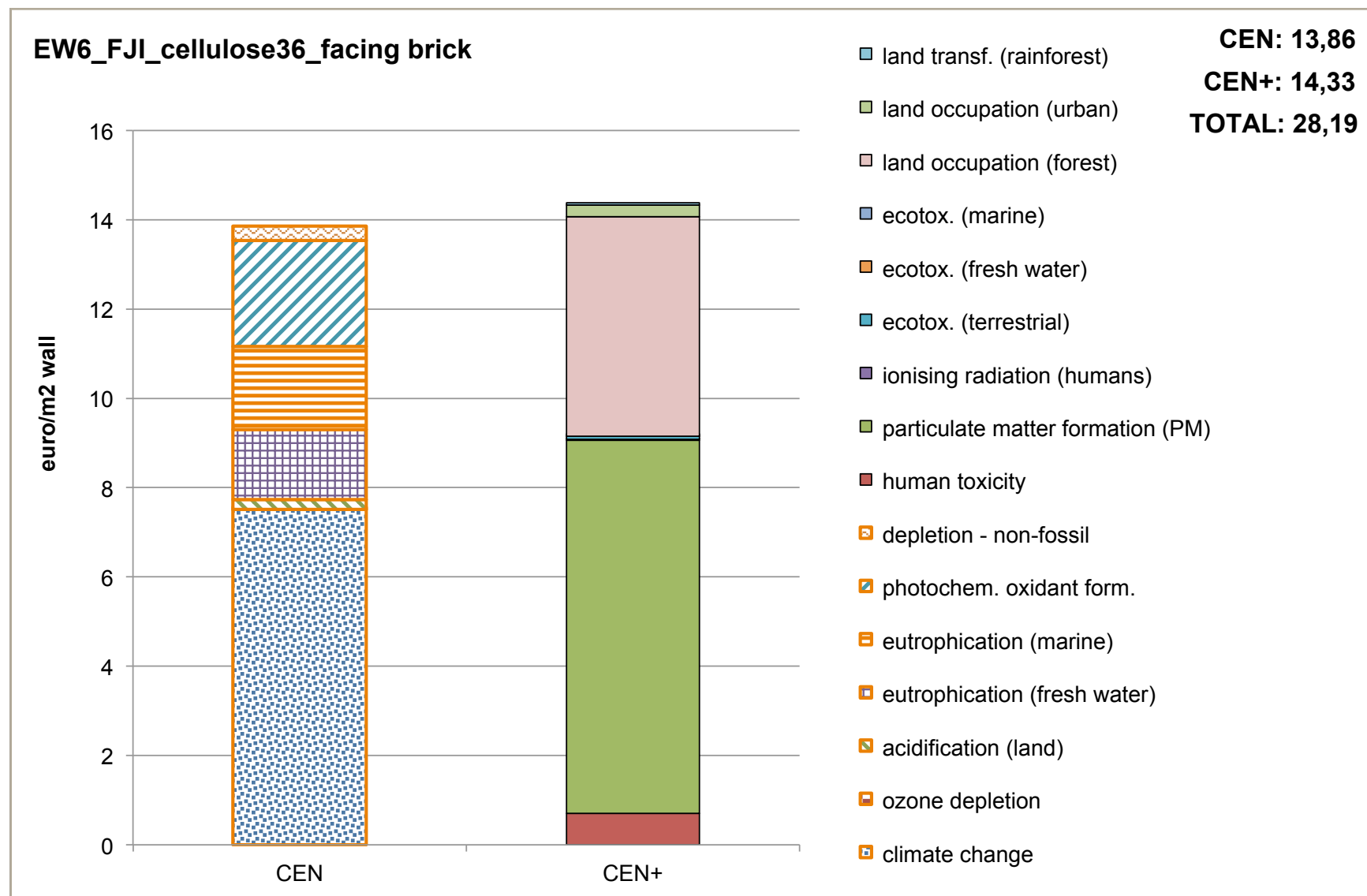


Figure exterior wall 2.6.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW6_FJI_cellulose36_facing brick' per environmental indicator, expressed in monetary units.

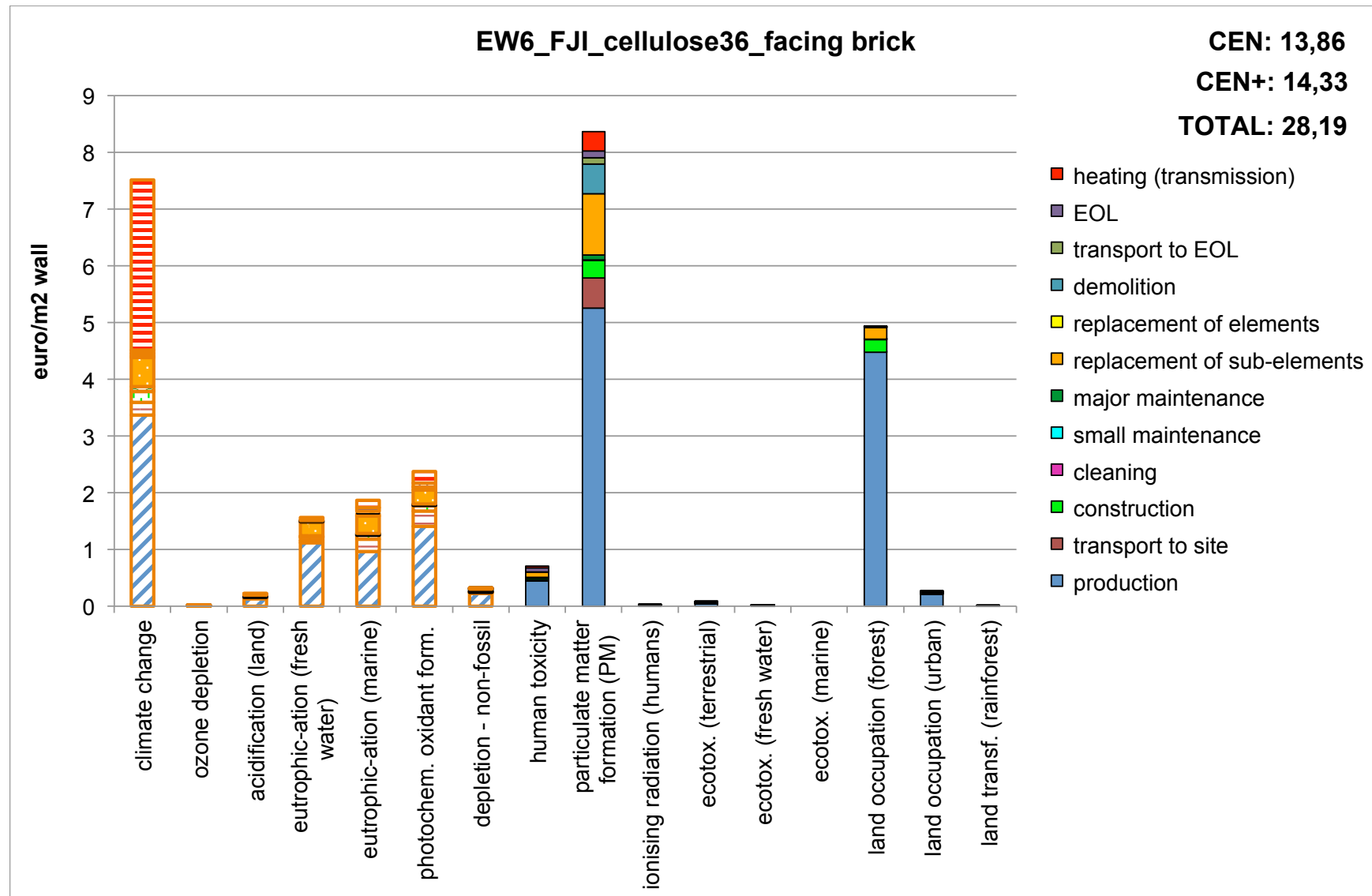


Figure exterior wall 2.6.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW6_FJI_cellulose36_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.7. EW7_FJI_cellulose36_roughcast_gypsum blocks

Table 2.7: overview of the detailed composition of variant 'EW7_FJI_cellulose36_roughcast_gypsum blocks'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW7_FJI_cellulose36_roughcast_gypsum blocks									
outer wall - loadbearing - primary part - blocks/stones - cellular concrete (600x365x250)	m ²			120	necessary	0.027	0.37	0.125	2.92
outer wall - loadbearing - primary part - FJI profile - type 250 - height 36 cm - h.o.h. 50 cm	m ²			120	necessary	0.973	0.36	na	
Thermal insulation between FJI beams - cellulose flakes - 36 cm	m ²			120	necessary	0.973	0.36	na	8.11
Wall finishes, external - infrastructure - insulating woodfibre board - 18 mm				120	necessary	1	0.02	0.038	0.47
Wall, external finishes - closing sub-element - traditional plaster on insulation (EPS or XPS boards) - by machine	m ²		15	40	aesthetic	1	0.03	1.500	0.02
Wall finishes, internal - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall finishes, internal - gypsum blocks (5 cm) + gypsum putty (finishing putty)	m ²		10	30	necessary	1	0.05	0.320	0.16
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

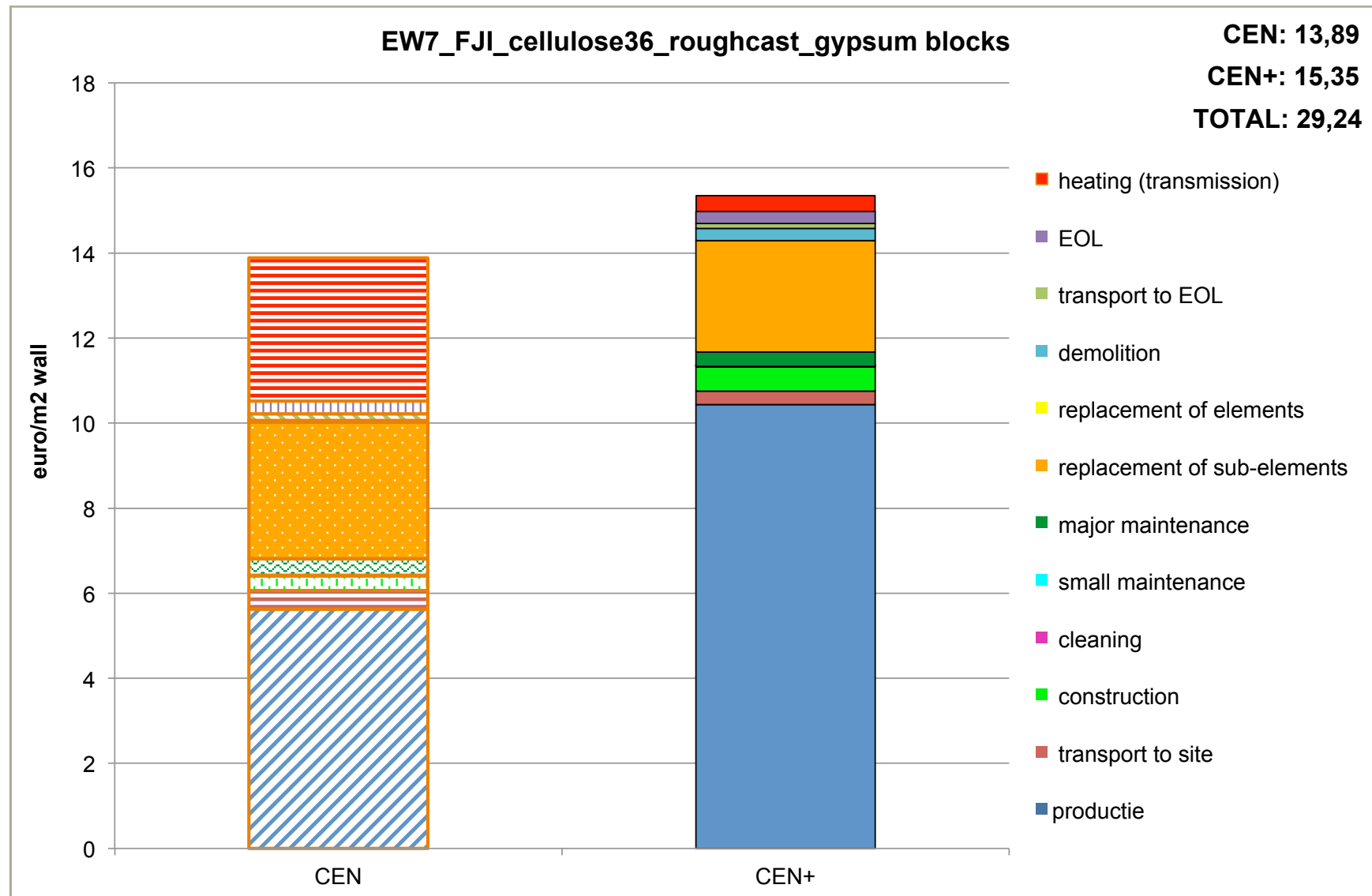


Figure exterior wall 2.7.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW7_FJI_cellulose36_roughcast_gypsum blocks' per life cycle stage, expressed in monetary units.

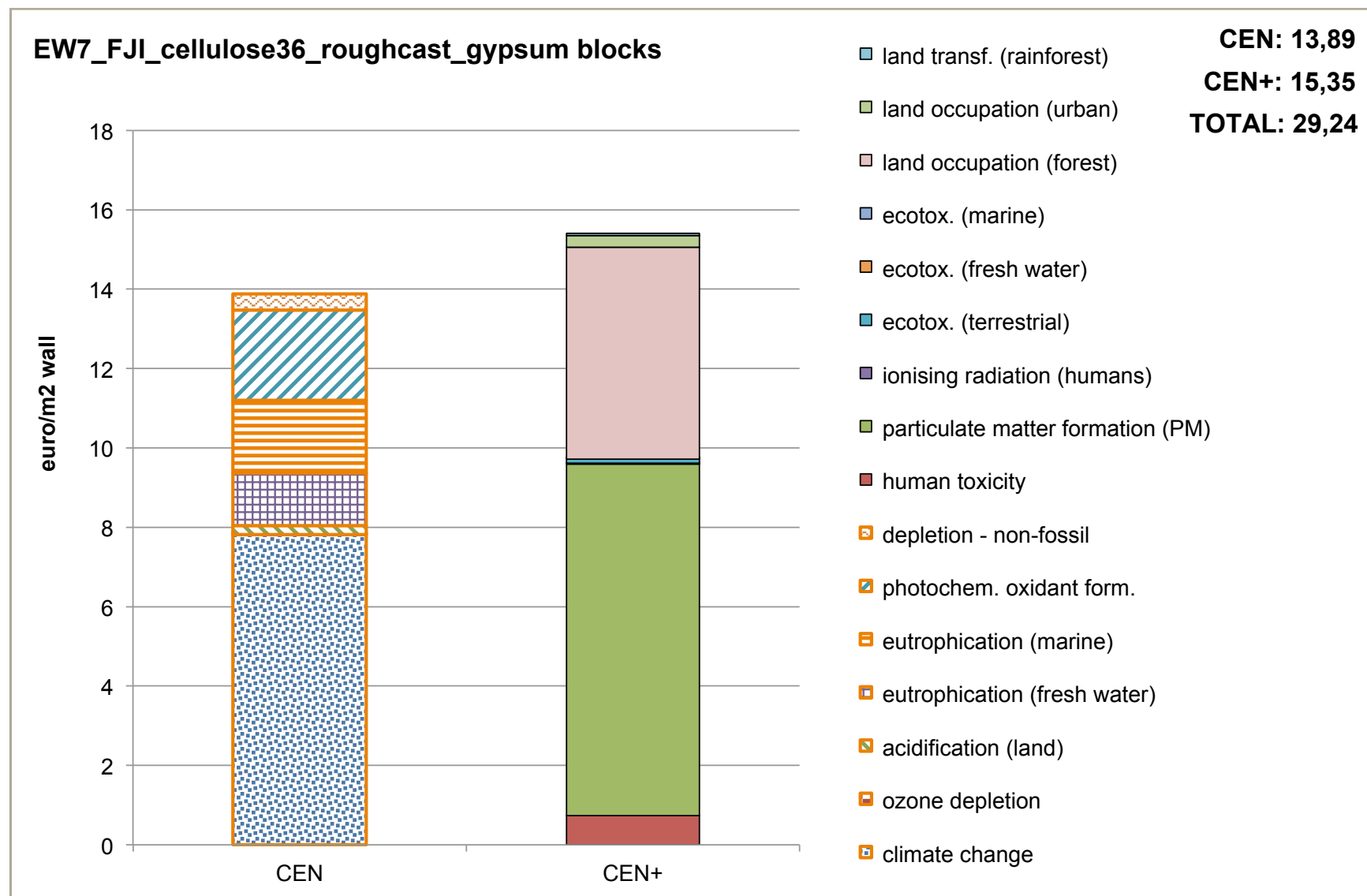


Figure exterior wall 2.7.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW7_FJI_cellulose36_roughcast_gypsum blocks' per environmental indicator, expressed in monetary units.

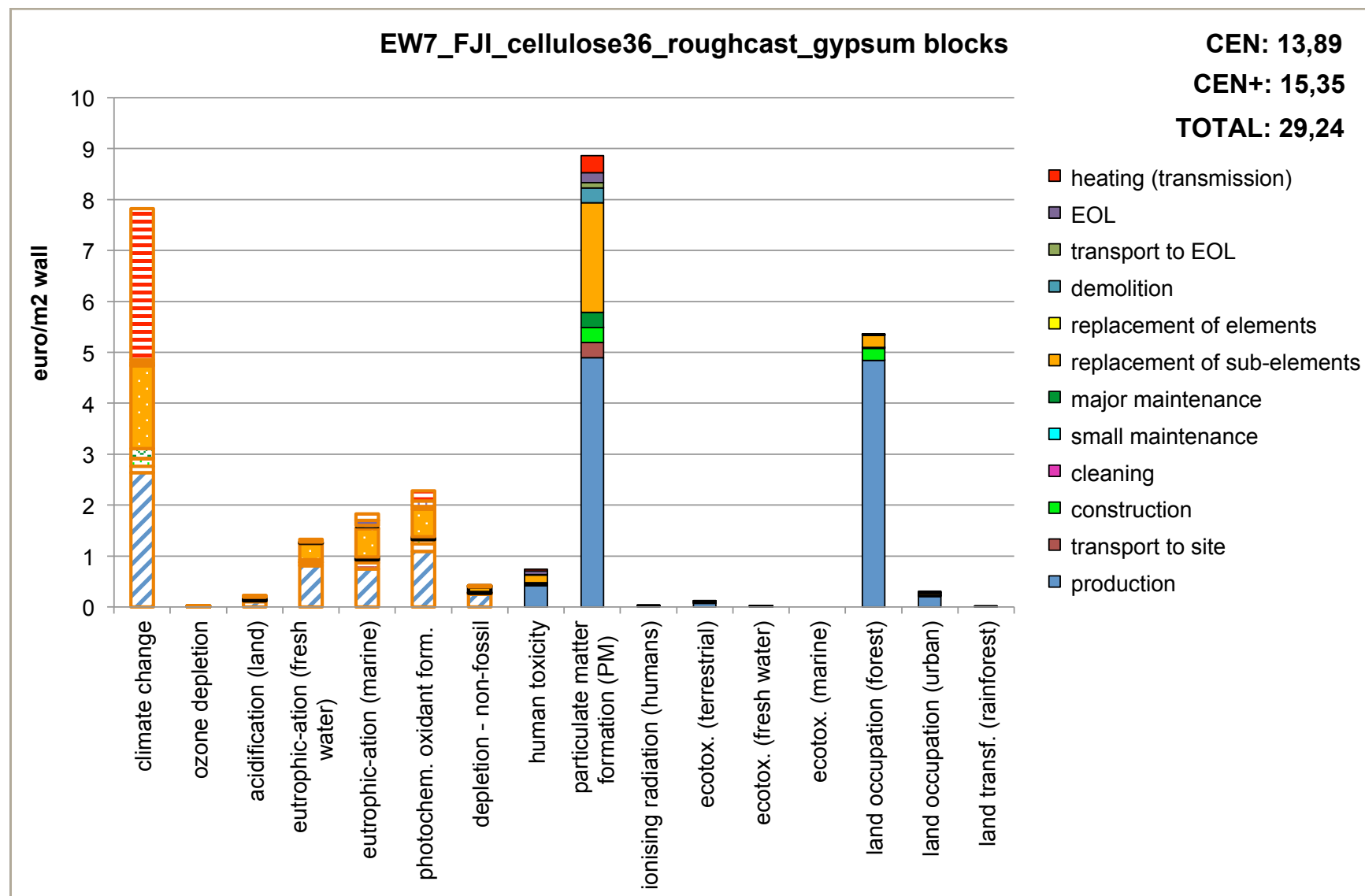


Figure exterior wall 2.7.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW7_FJI_cellulose36_roughcast_gypsum blocks' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.8. EW8_timber frame_RW14_planks

Table 2.8: overview of the detailed composition of variant 'EW8_timber frame_RW14_planks'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW8_timber frame_RW14_planks									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	0.027	0.14	0.326	0.43
outer wall - loadbearing - primary part - wood skeleton (on site) - 14 cm - belgian mix	m ²			120	necessary	0.973		na	
Thermal insulation between wood skeleton - blanket, batt - anorganic fiber - rock wool - 14cm	m ²			120	necessary	0.973	0.14	0.056	2.45
air cavity, d = 2 cm, horizontal - ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - biuminous soft woodfibre board - 18 mm	m ²			120	necessary	1	0.02	0.050	0.36
Wall finishes, external - infrastructure - OSB board - 18 mm	m ²			120	necessary	1	0.02	0.130	0.14
Wall, external finishes - closing sub-element - wooden claddings (untreated) - larch (thickness 22mm) - Belgian mix - air space	m ²		10	20	necessary	1	0.02	na	
Wall, external finishes - support structure for untreated wooden planks - profiles - wood belgian mix - 3,8 x 3,8 cm - hoh 60 cm	m ²			20	necessary	1	0.04	na	
Outer wall - water felt (vapour open) - PE 2/10 - stapled	m ²			120	necessary	1	0	na	
Wall finishes, internal - board - gypsum (1,25cm) - screwed (excl. supporting construction) - width 60 cm - inclusive joint filler	m ²		10	30	necessary	1	0.01	na	0.05
Wall finishes, internal - support structure for boards -profiles (0,022x0,047)- Belgian mix	m ²			30	necessary	1	0.02	na	0.17
Wall finishes, internal - treatment of closing sub-element - painting on gypsum board - acrylic paint	m ²		5	10	aesthetic	1		na	
Wall finishes, internal - vapour felt - kraft paper - without reinforcement fleece - fixed with adhesive tape	m ²			120	necessary	1	0	na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

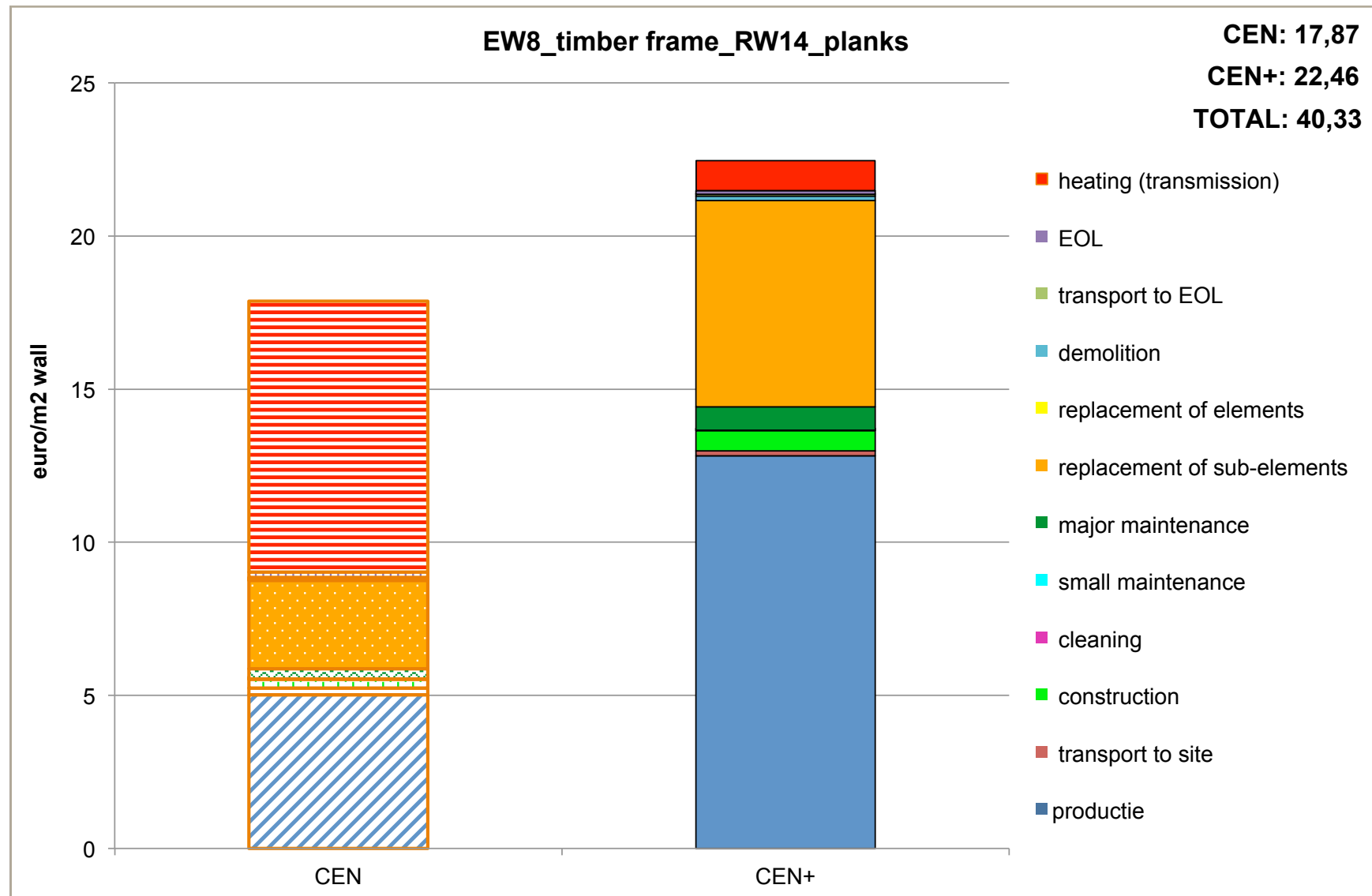


Figure exterior wall 2.8.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW8_timber frame_RW14_planks' per life cycle stage, expressed in monetary units.

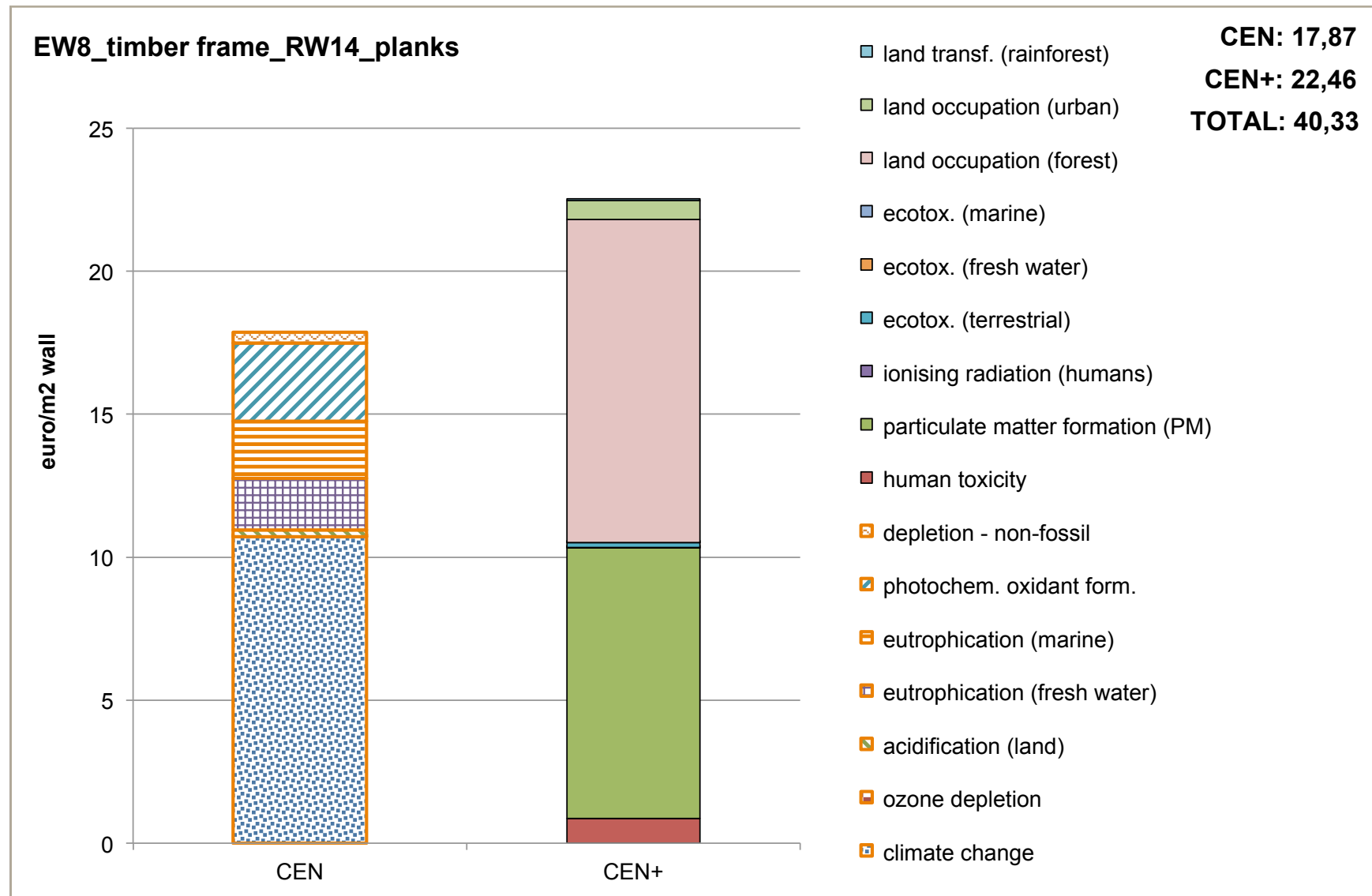


Figure exterior wall 2.8.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW8_timber frame_RW14_planks' per environmental indicator, expressed in monetary units.

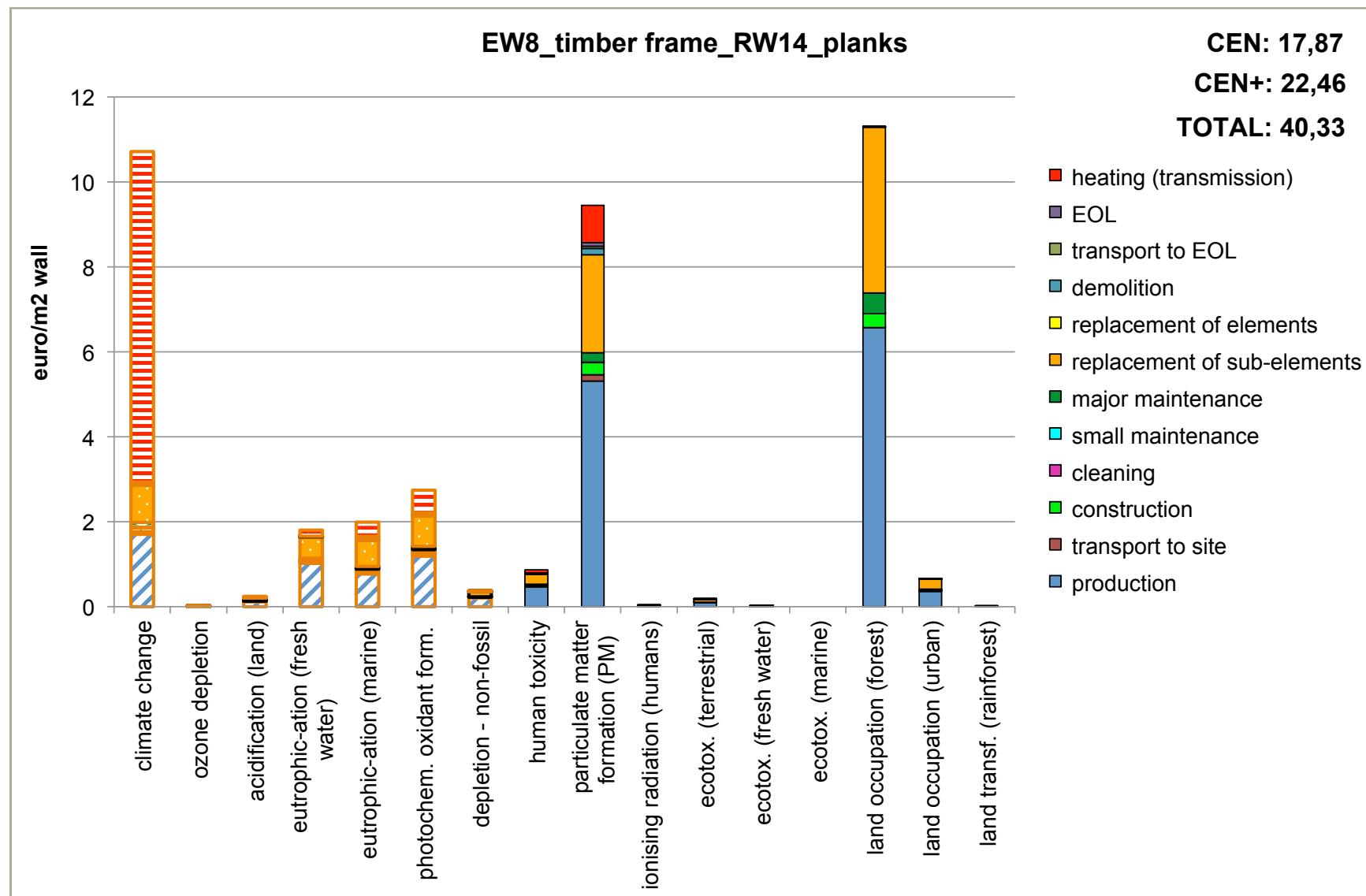


Figure exterior wall 2.8.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW8_timber frame_RW14_planks' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.9. EW9_concrete stone_hollow_RW7.5_facing brick

Table 2.9: overview of the detailed composition of variant 'EW9_concrete stone_hollow_RW7.5_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW9_concrete stone_hollow_RW7.5_facing brick									
outer wall - loadbearing - primary part - blocks/stones - concrete - hollow (290x140x190)	m ²			120	necessary	1	0.14	na	0.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (7,5 cm)	m ²			120	necessary	1	0.08	0.036	2.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

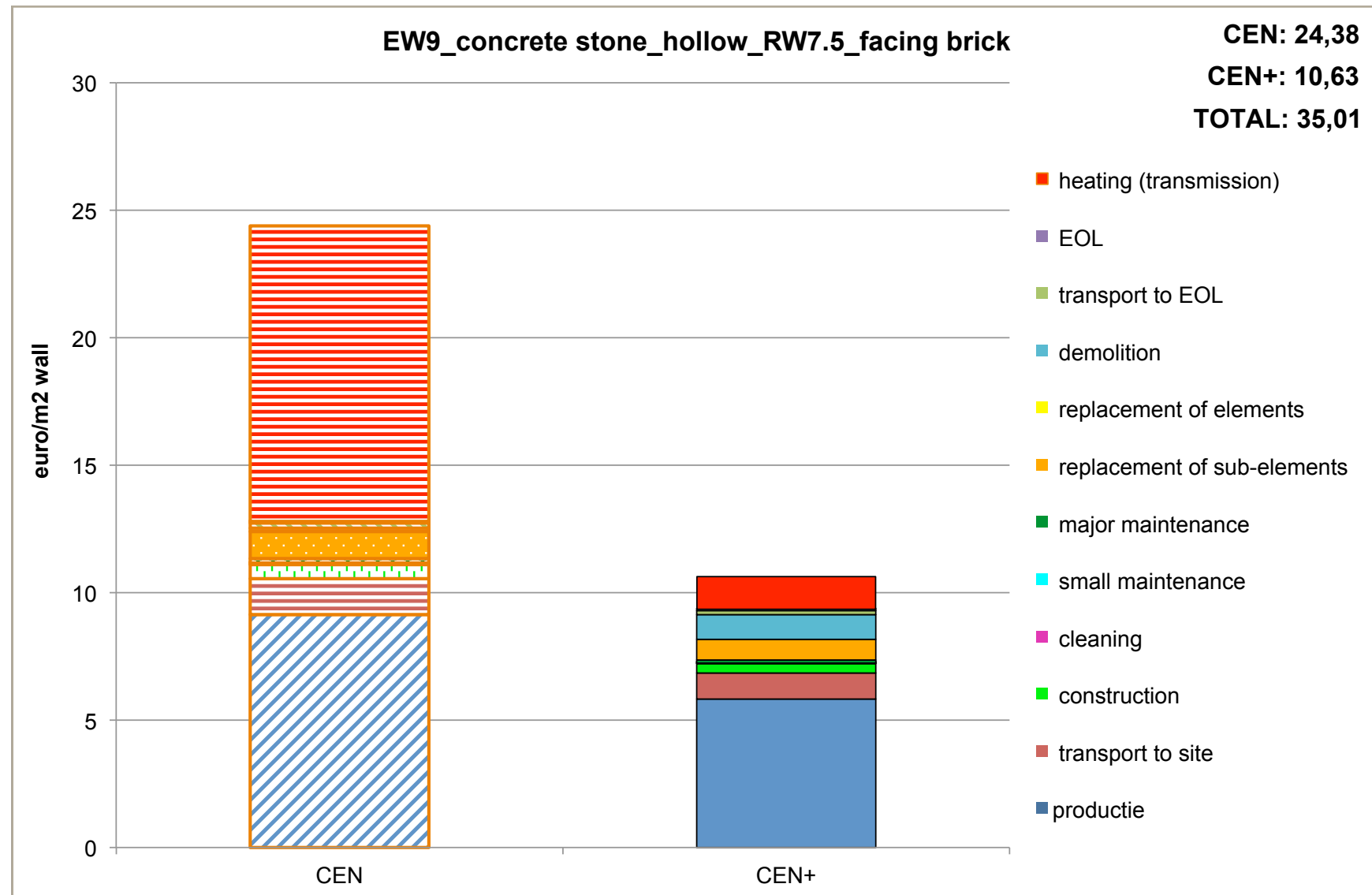


Figure exterior wall 2.9.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW9_concrete stone_hollow_RW7.5_facing brick' per life cycle stage, expressed in monetary units.

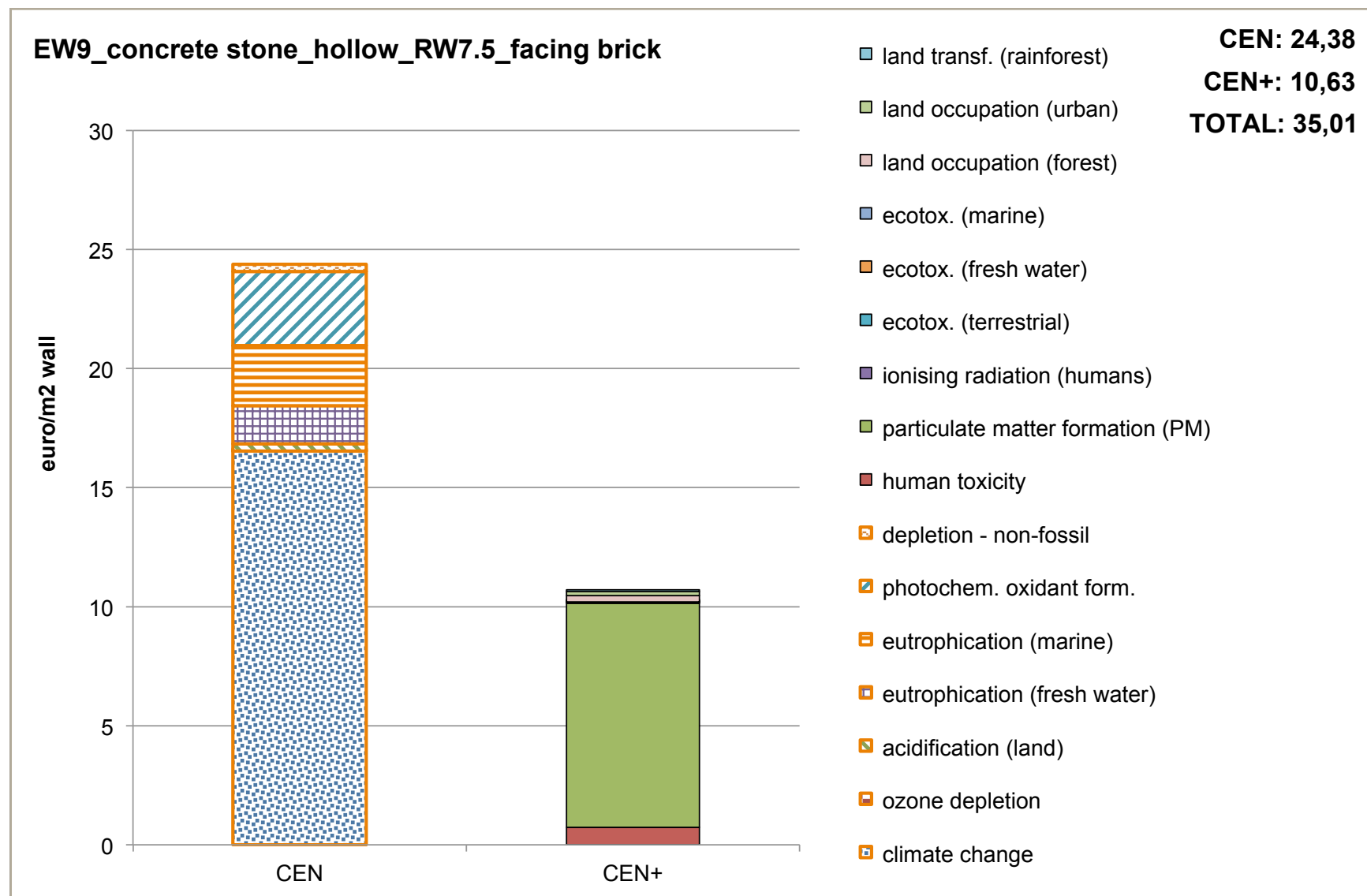


Figure exterior wall 2.9.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW9_concrete stone_hollow_RW7.5_facing brick' per environmental indicator, expressed in monetary units.

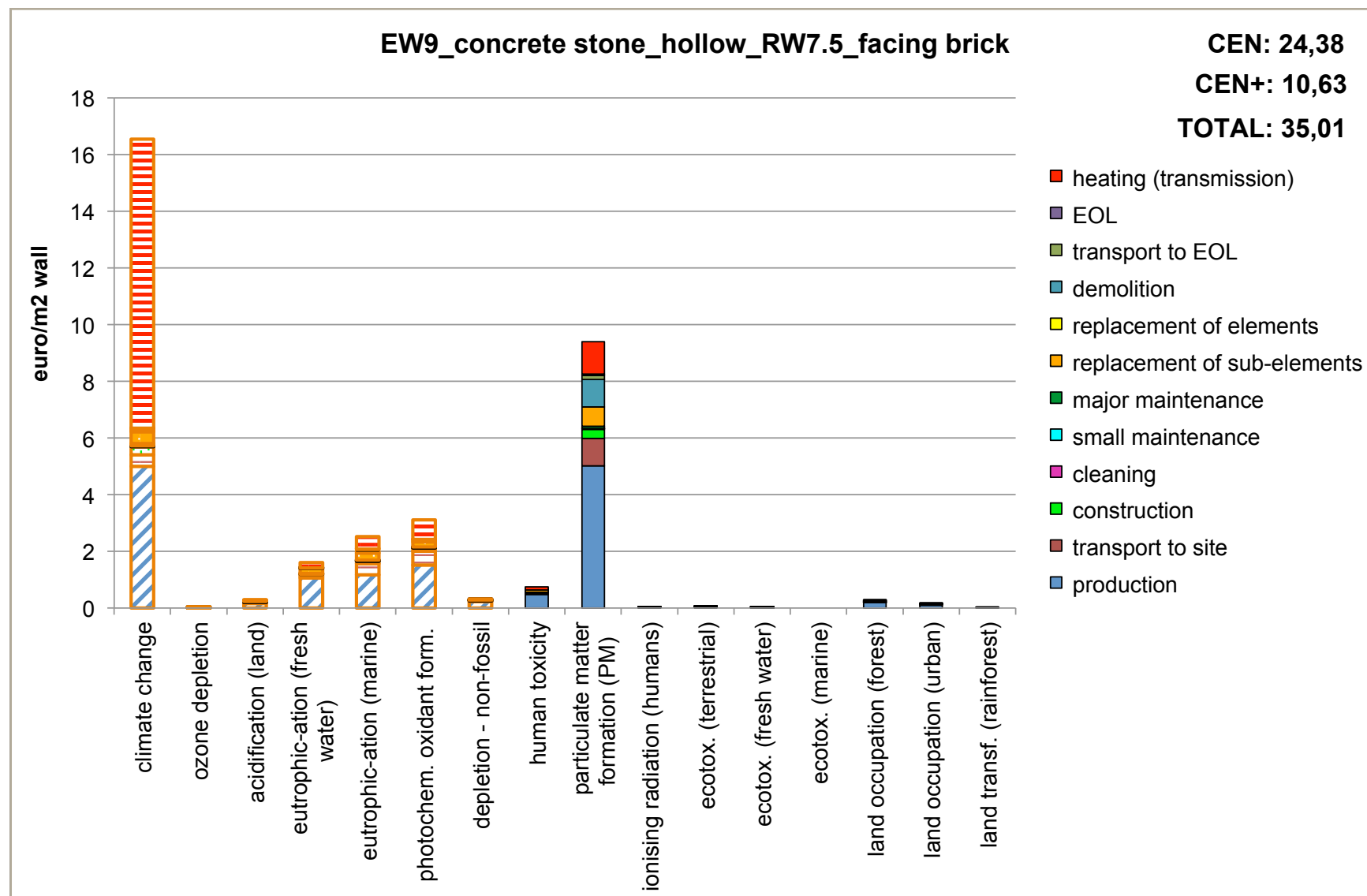


Figure exterior wall 2.9.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW9_concrete stone_hollow_RW7.5_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.10. EW10_concrete stone_hollow_RW22_facing brick

Table 1.10.1: overview of the detailed composition of variant 'EW10_concrete stone_hollow_RW22_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW10_concrete stone_hollow_RW22_facing brick									
outer wall - loadbearing - primary part - blocks/stones - concrete - hollow (290x140x190)	m ²			120	necessary	1	0.14	na	0.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (210 x 4,0 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (10 cm)	m ²			120	necessary	1	0.1	0.036	2.78
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (12 cm)	m ²			120	necessary	1	0.12	0.036	3.33
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

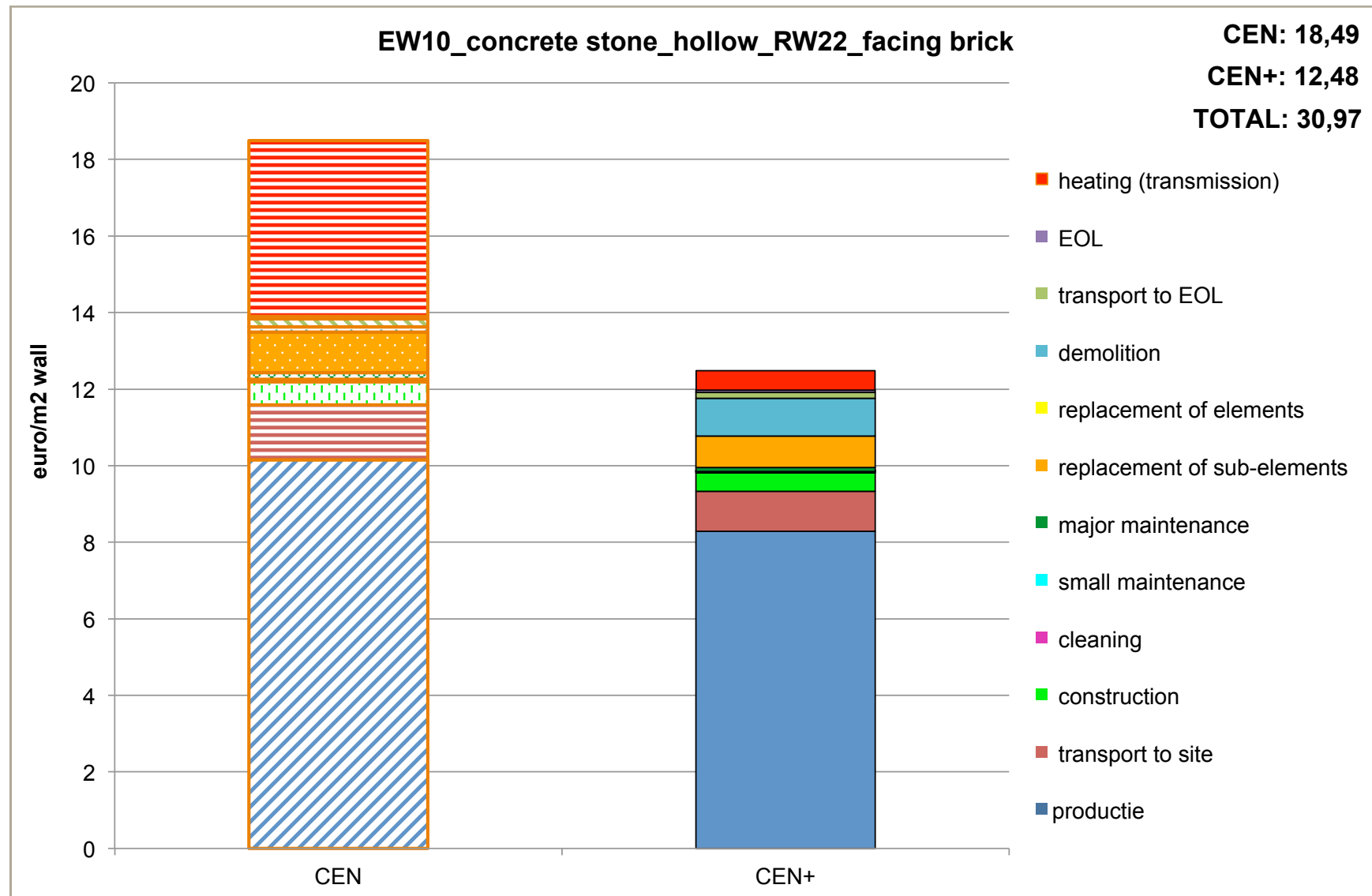


Figure exterior wall 2.10.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW10_concrete stone_hollow_RW22_facing brick' per life cycle stage, expressed in monetary units.

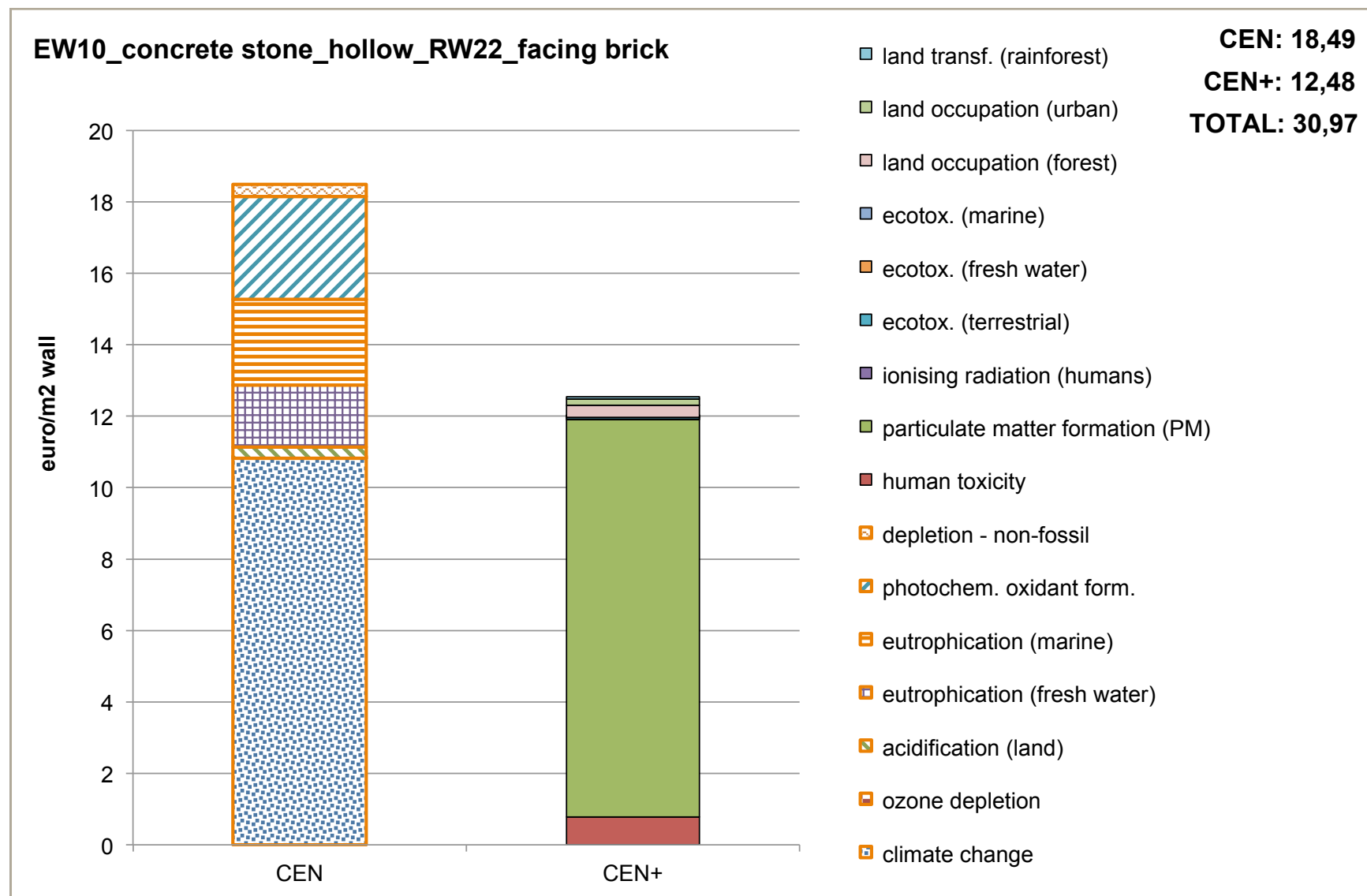


Figure exterior wall 2.10.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW10_concrete stone_hollow_RW22_facing brick' per environmental indicator, expressed in monetary units.

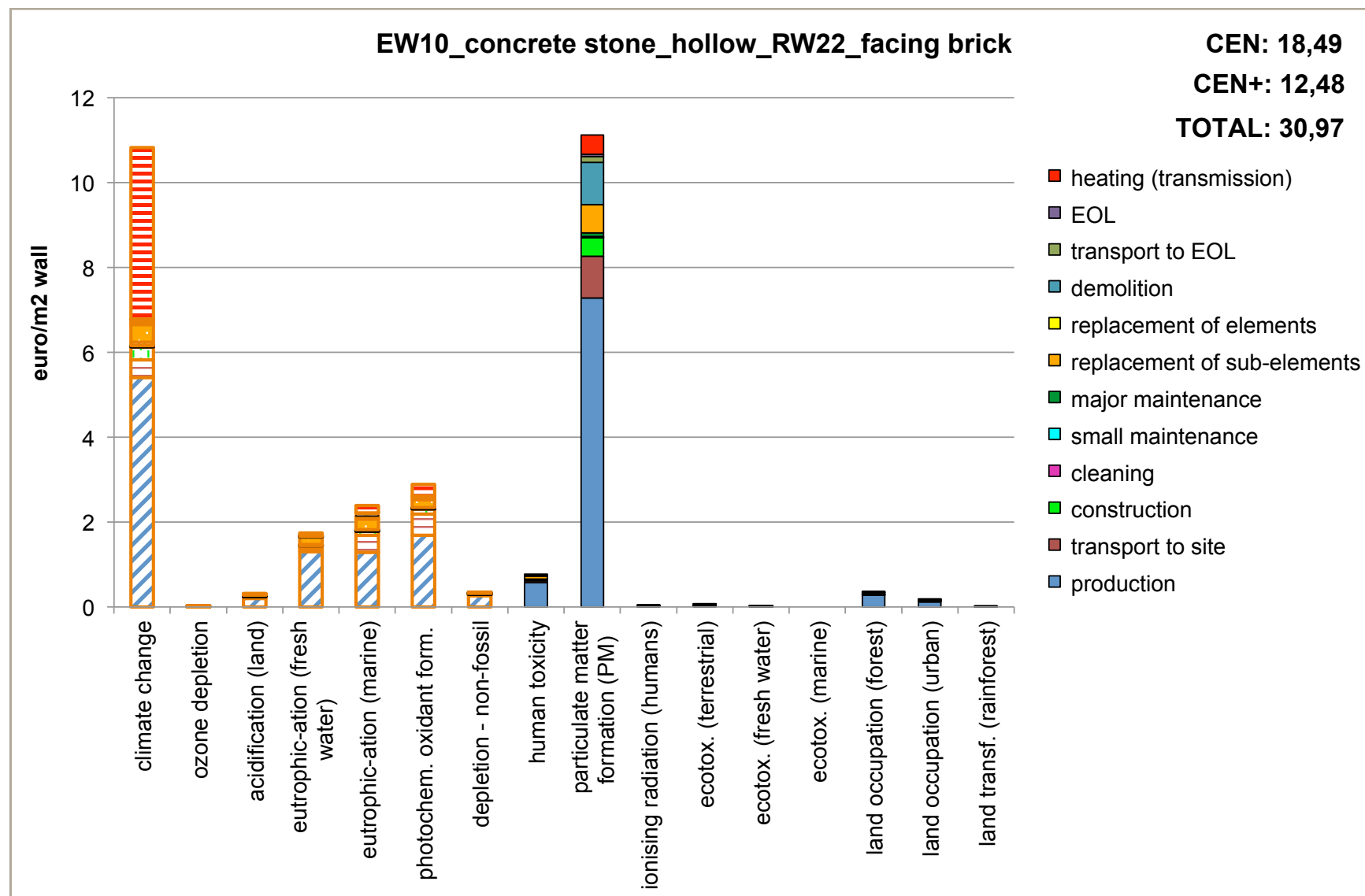


Figure exterior wall 2.10.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW10_concrete stone_hollow_RW22_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.11. EW11_concrete stone_hollow_PUR5_facing brick

Table 2.11: overview of the detailed composition of variant 'EW11_concrete stone_hollow_PUR5_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW11_concrete stone_hollow_PUR5_facing brick									
outer wall - loadbearing - primary part - blocks/stones - concrete - hollow (290x140x190)	m ²			120	necessary	1	0.14	na	0.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - hard boards - no overlap - plastic - polyurethane - 5 cm	m ²			120	necessary	1	0.05	0.023	2.17
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

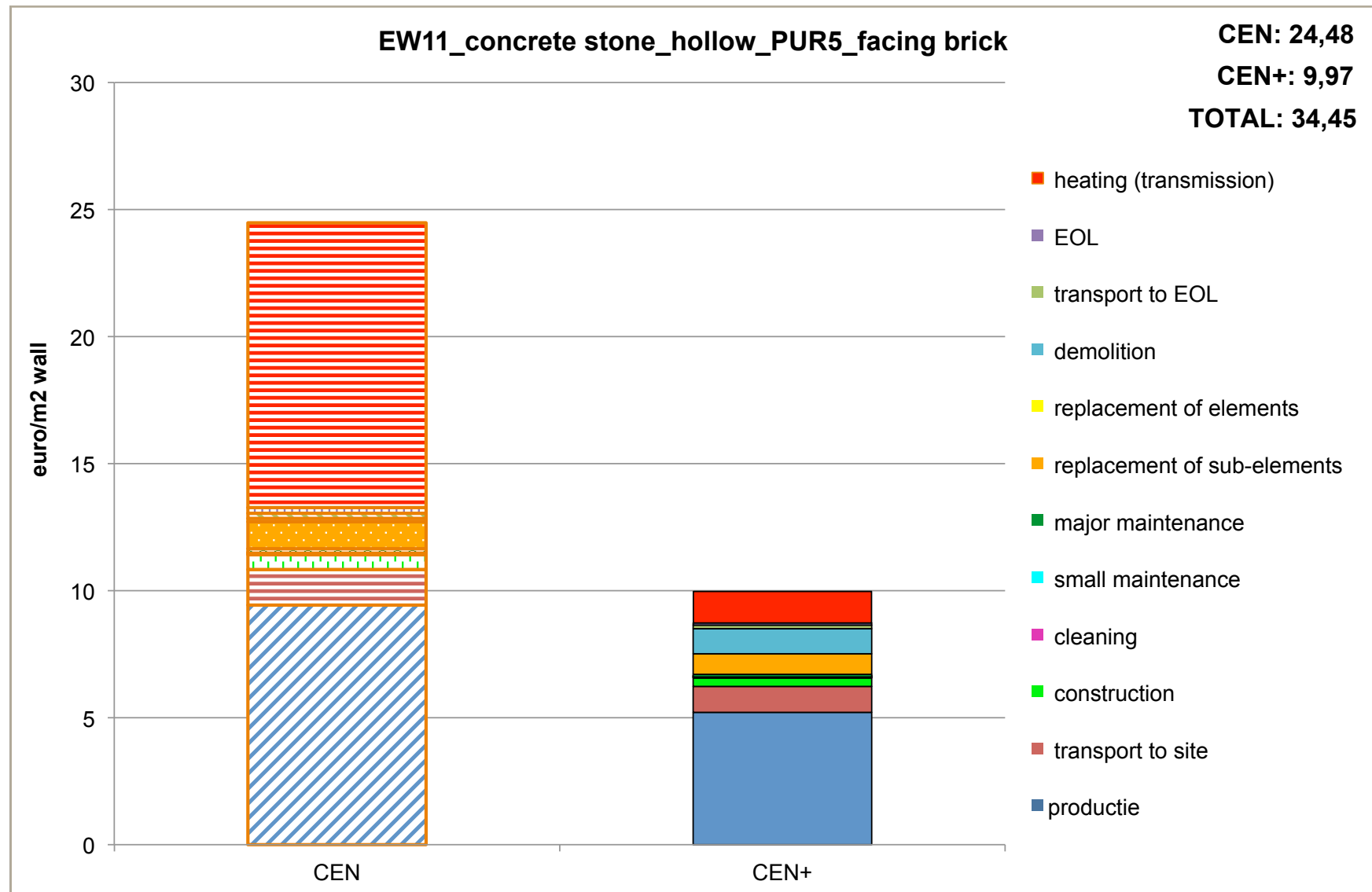


Figure exterior wall 2.11.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW11_concrete stone_hollow_PUR5_facing brick' per life cycle stage, expressed in monetary units.

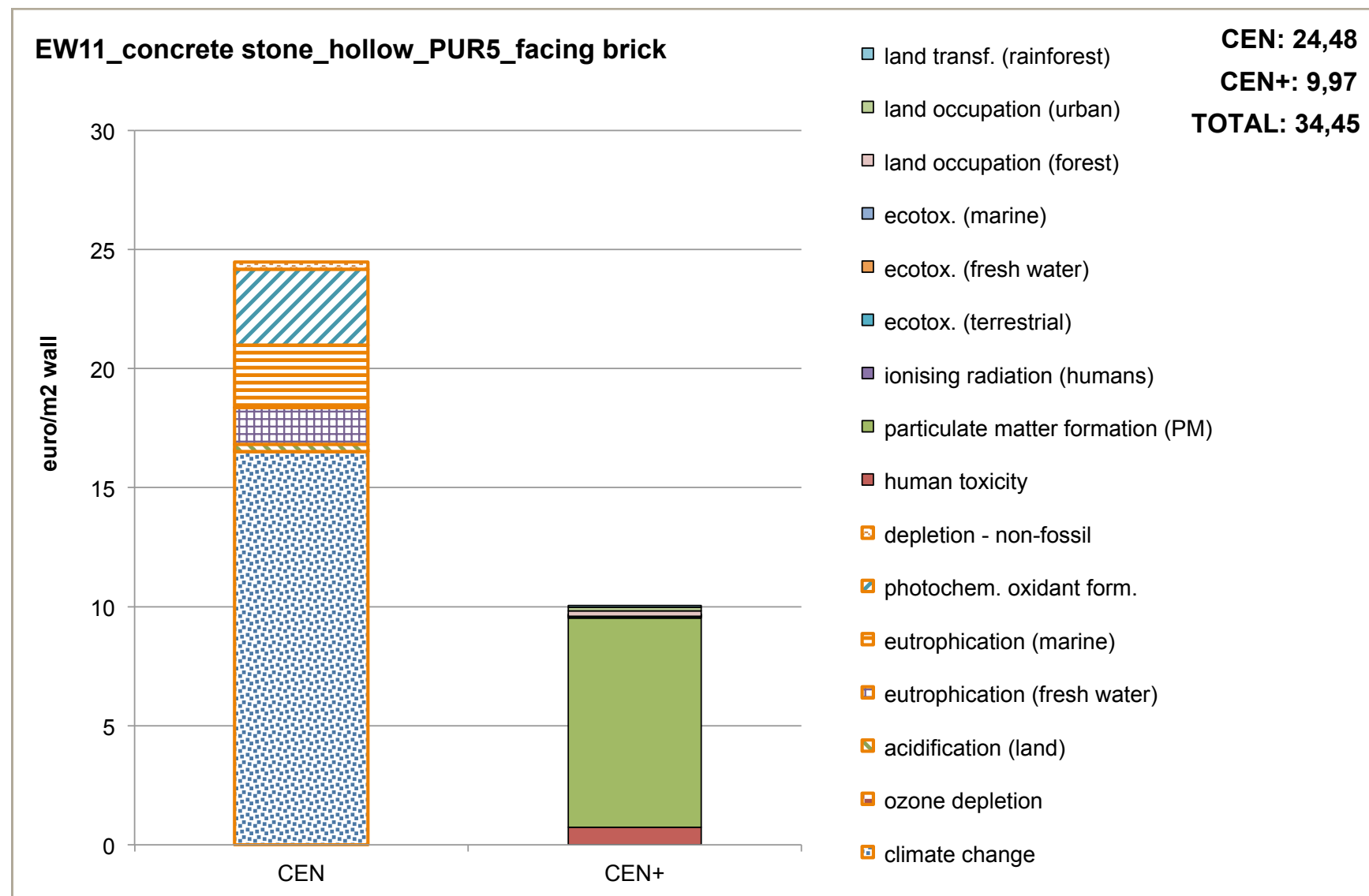


Figure exterior wall 2.11.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW11_concrete stone_hollow_PUR5_facing brick' per environmental indicator, expressed in monetary units.

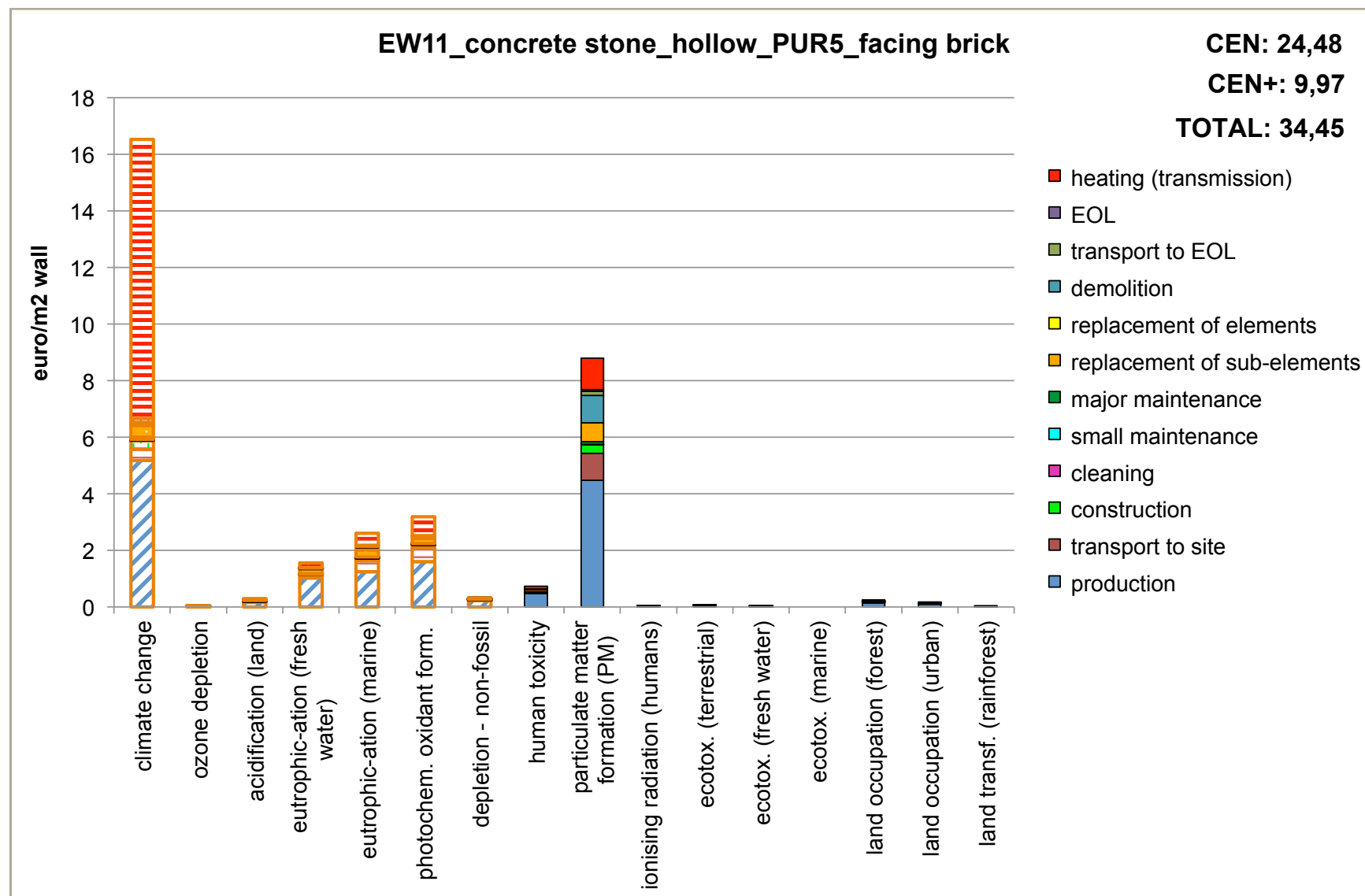


Figure exterior wall 2.11.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW11_concrete stone_hollow_PUR5_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.12. EW12_concrete stone_hollow_PUR15_facing brick

Table 2.12: overview of the detailed composition of variant 'EW12_concrete stone_hollow_PUR15_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW12_concrete stone_hollow_PUR15_facing brick									
outer wall - loadbearing - primary part - blocks/stones - concrete - hollow (290x140x190)	m ²			120	necessary	1	0.14	na	0.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (210 x 4,0 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - hard boards - no overlap - plastic - polyurethane - 7 cm	m ²			120	necessary	1	0.07	0.023	3.04
Thermal insulation in cavity - hard boards - no overlap - plastic - polyurethane - 8,2 cm	m ²			120	necessary	1	0.082	0.023	3.56
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

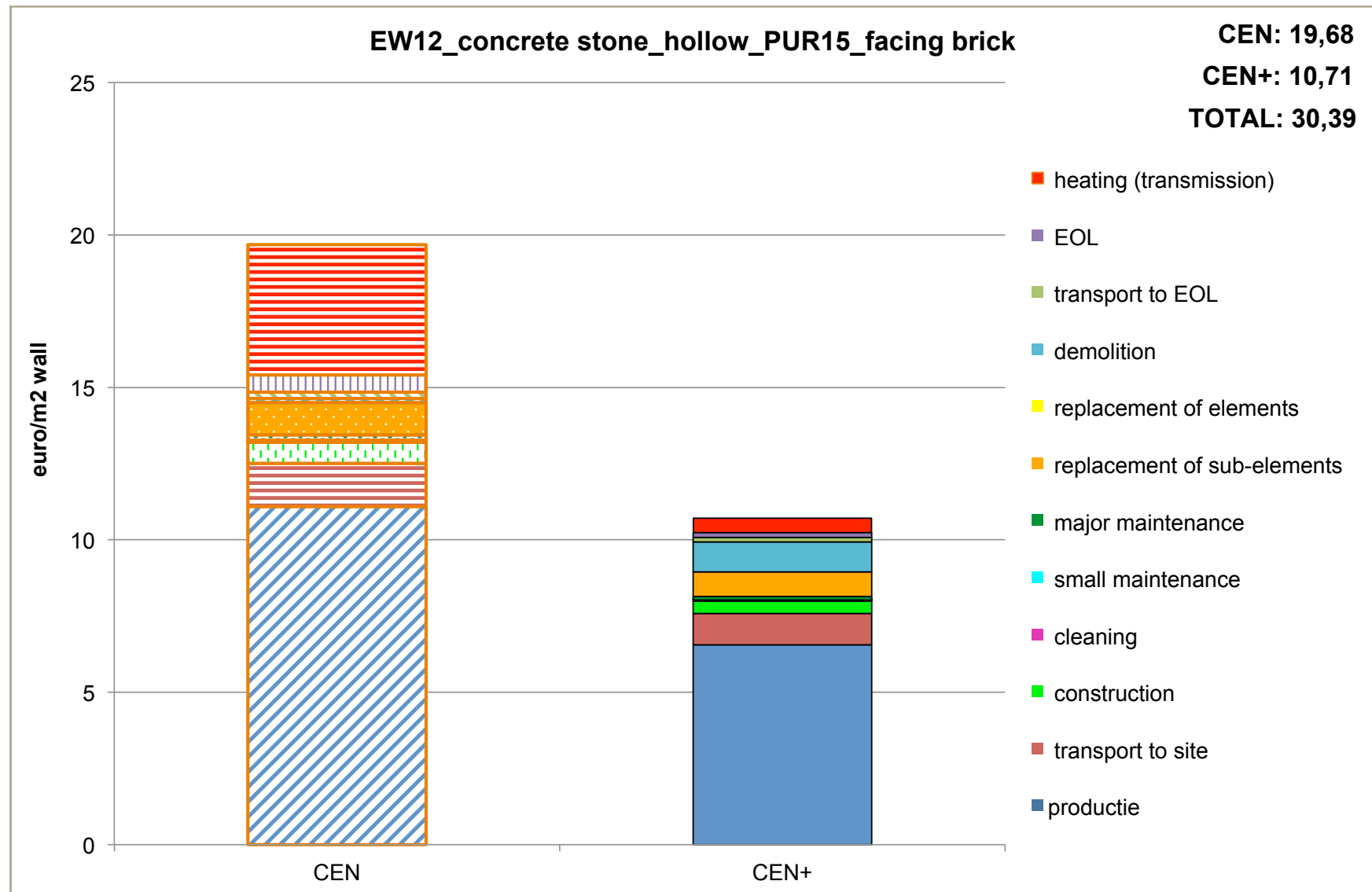


Figure exterior wall 2.12.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW12_concrete stone_hollow_PUR15_facing brick' per life cycle stage, expressed in monetary units.

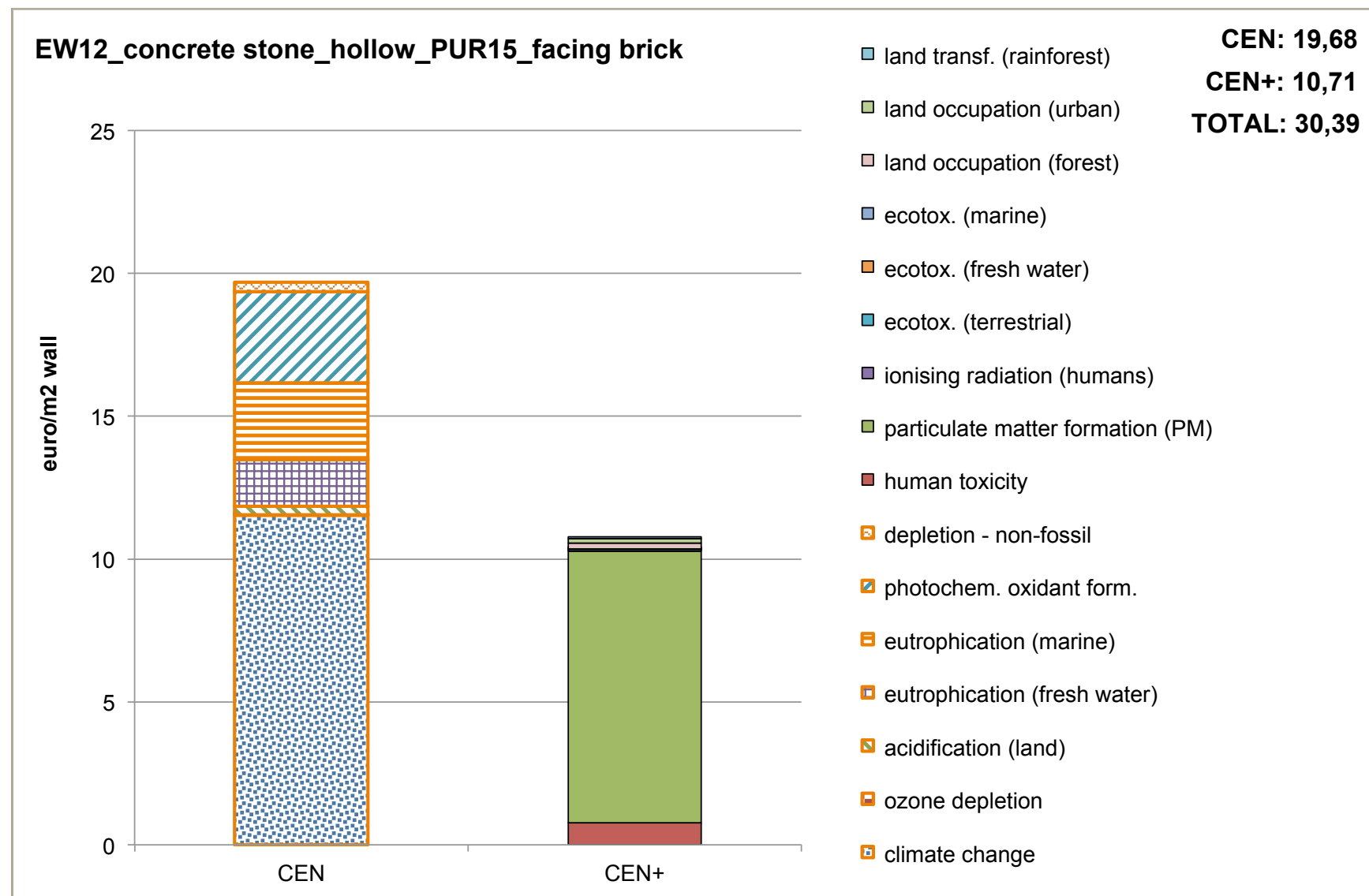


Figure exterior wall 2.12.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW12_concrete stone_hollow_PUR15_facing brick' per environmental indicator, expressed in monetary units.

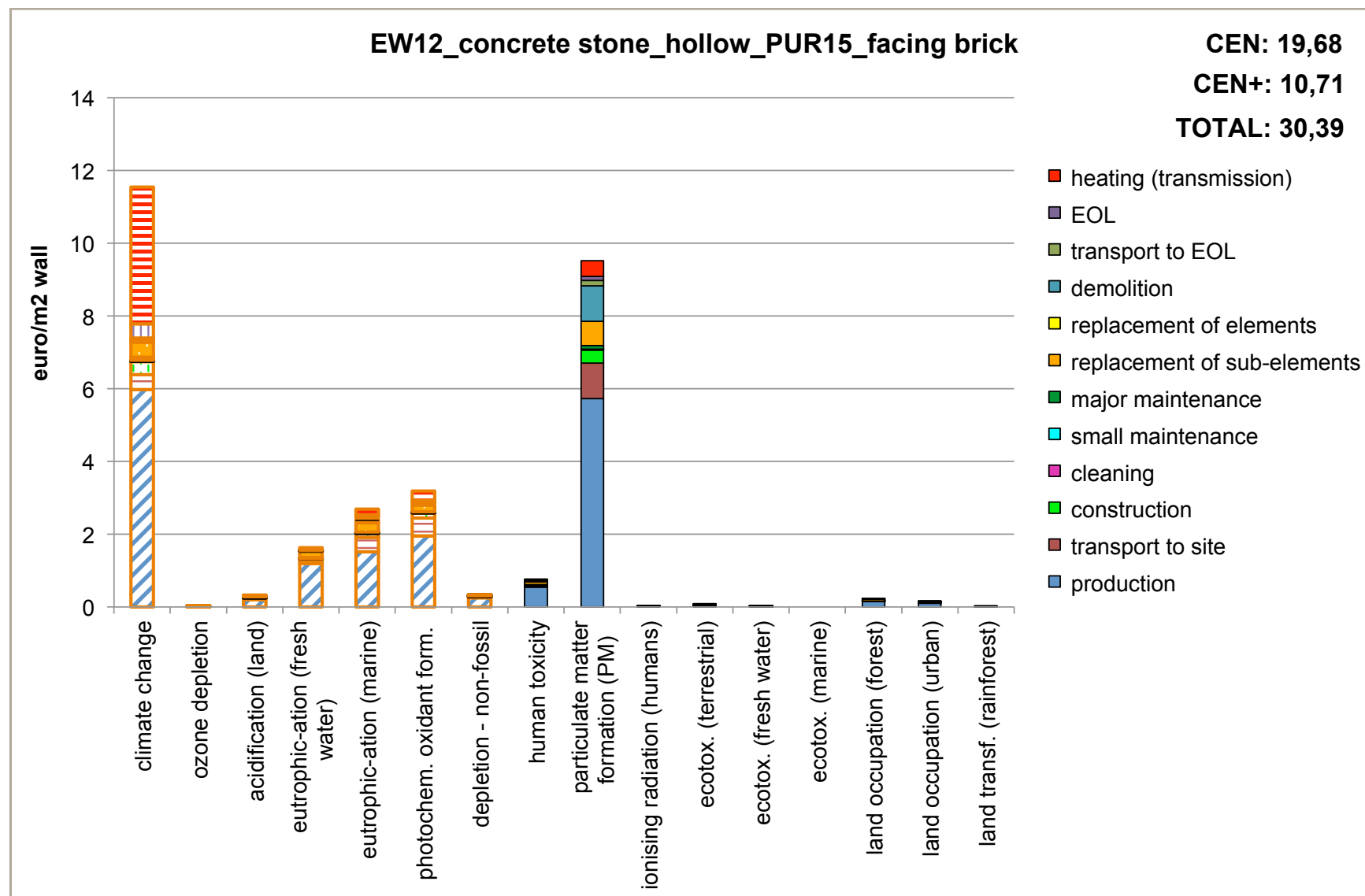


Figure exterior wall 2.12.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW12_concrete stone_hollow_PUR15_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.13. EW13_concrete stone_full_RW7.5_facing brick

Table 2.13: overview of the detailed composition of variant 'EW13_concrete stone_full_RW7.5_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW13_concrete stone_full_RW7.5_facing brick									
outer wall - loadbearing - primary part - blocks/stones - concrete - massive (290x140x190)	m ²			120	necessary	1	0.14	1.580	0.09
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.09
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (7,5 cm)	m ²			120	necessary	1	0.075	0.036	2.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

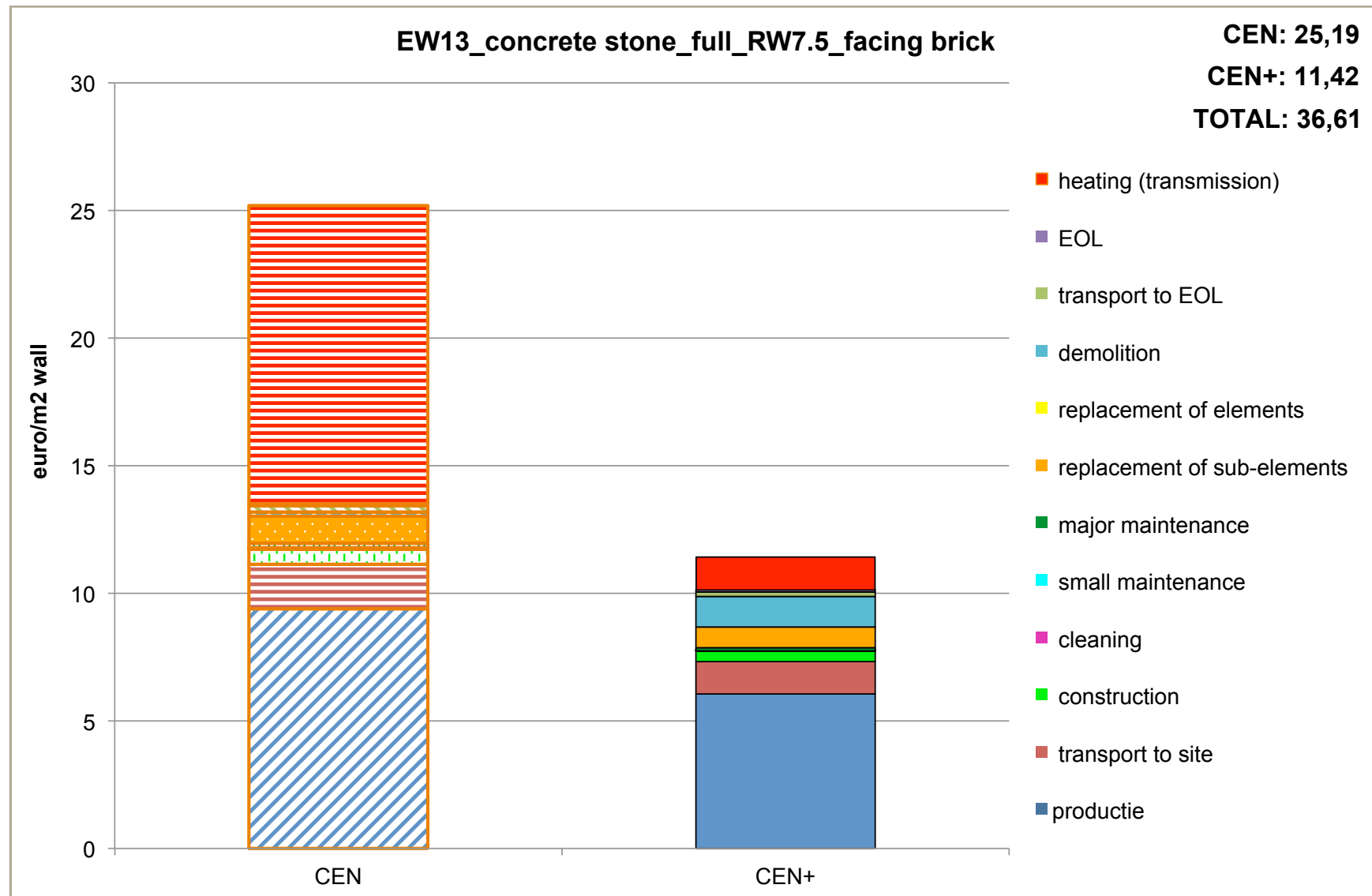


Figure exterior wall 2.13.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW13_concrete stone_full_RW7.5_facing brick' per life cycle stage, expressed in monetary units.

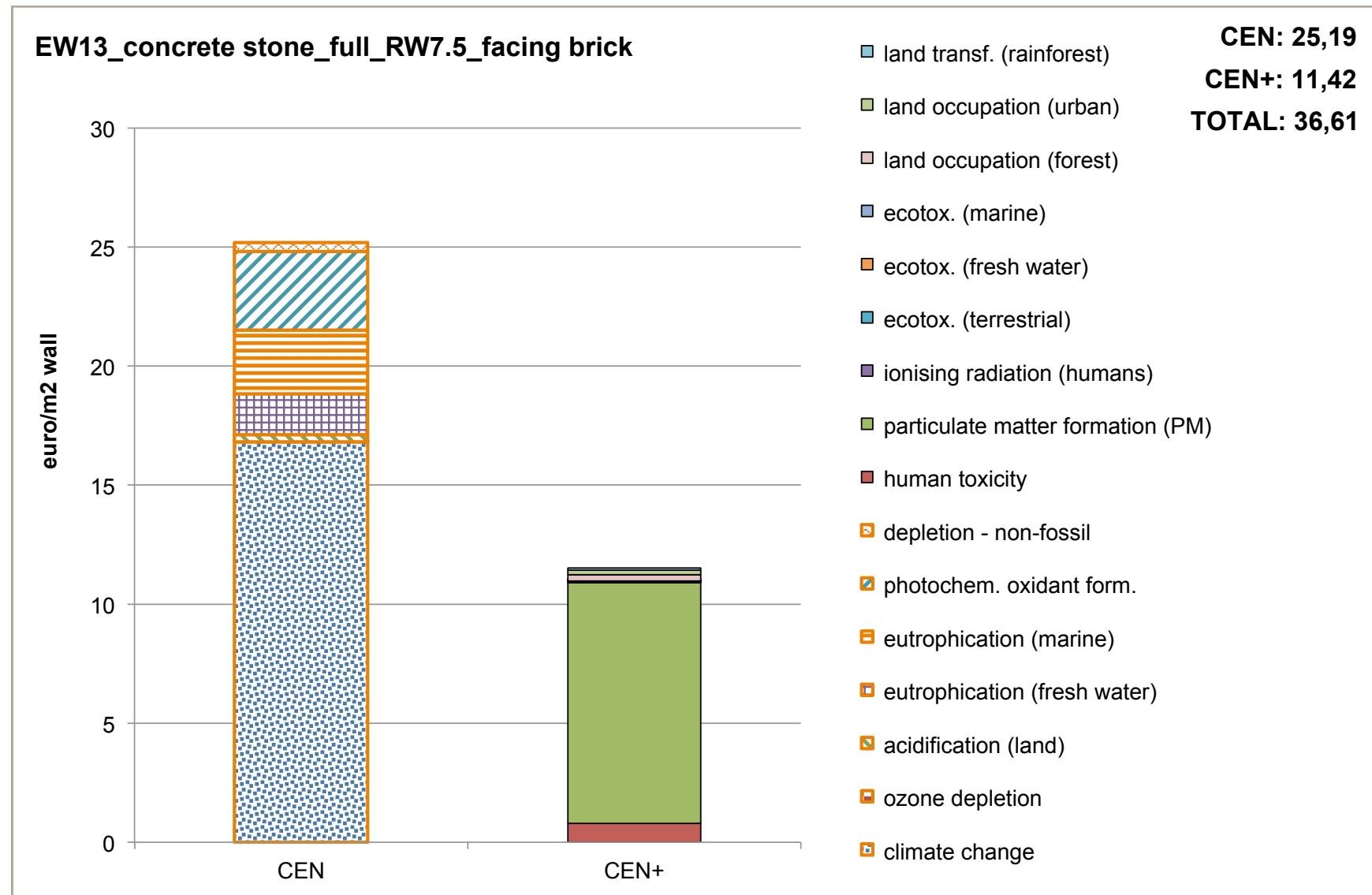


Figure exterior wall 2.13.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW13_concrete stone_full_RW7.5_facing brick' per environmental indicator, expressed in monetary units.

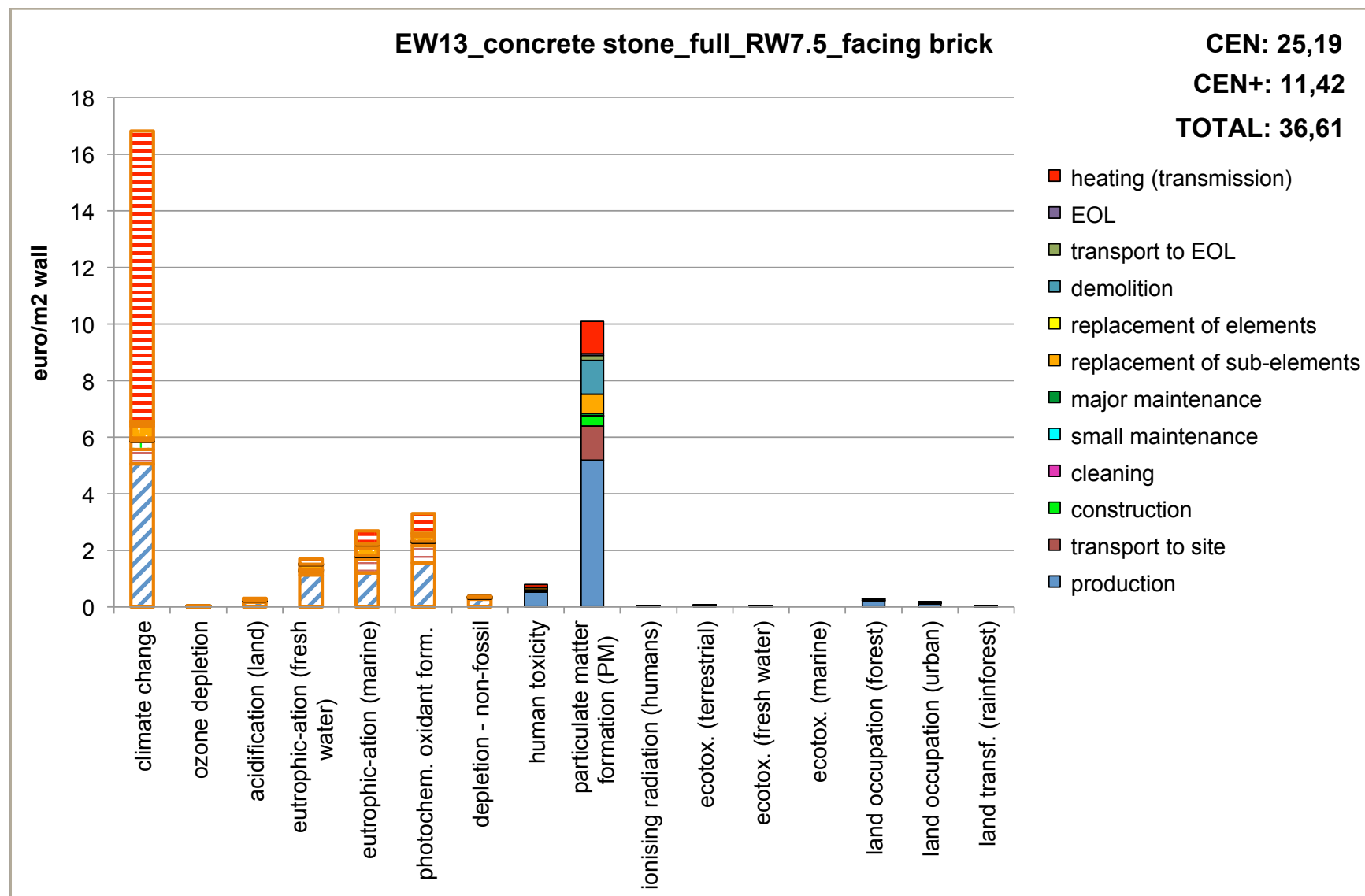


Figure exterior wall 2.13.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW13_concrete stone_full_RW7.5_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.14. EW14_hollow brick_insul_RW6_facing brick

Table 2.14: overview of the detailed composition of variant 'EW14_hollow brick_insul_RW6_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW14_hollow brick_insul_RW6_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.326	0.43
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (6 cm)	m ²			120	necessary	1	0.06	0.036	1.67
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

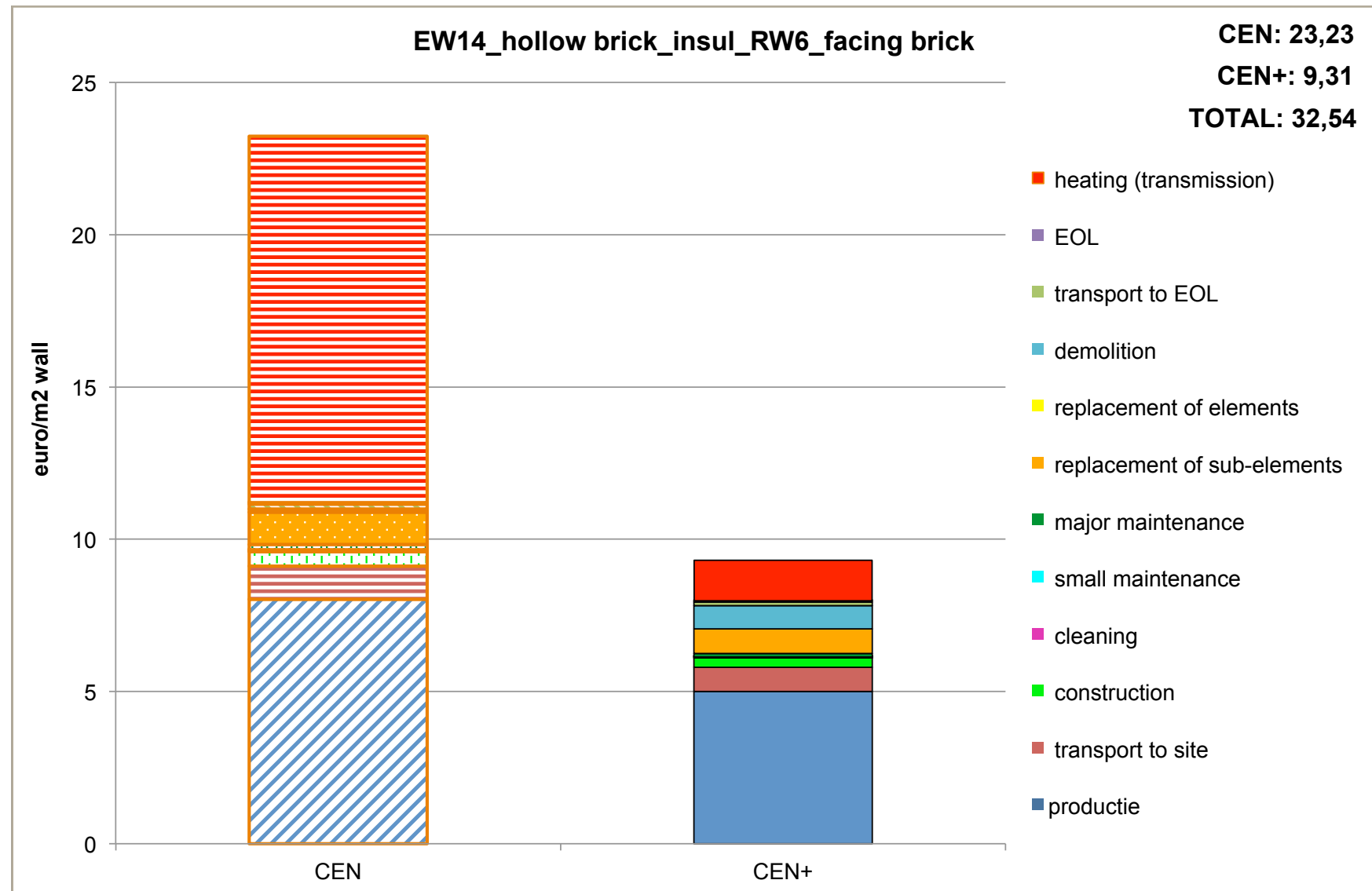


Figure exterior wall 2.14.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW14_hollow brick_insul_RW6_facing brick' per life cycle stage, expressed in monetary units.

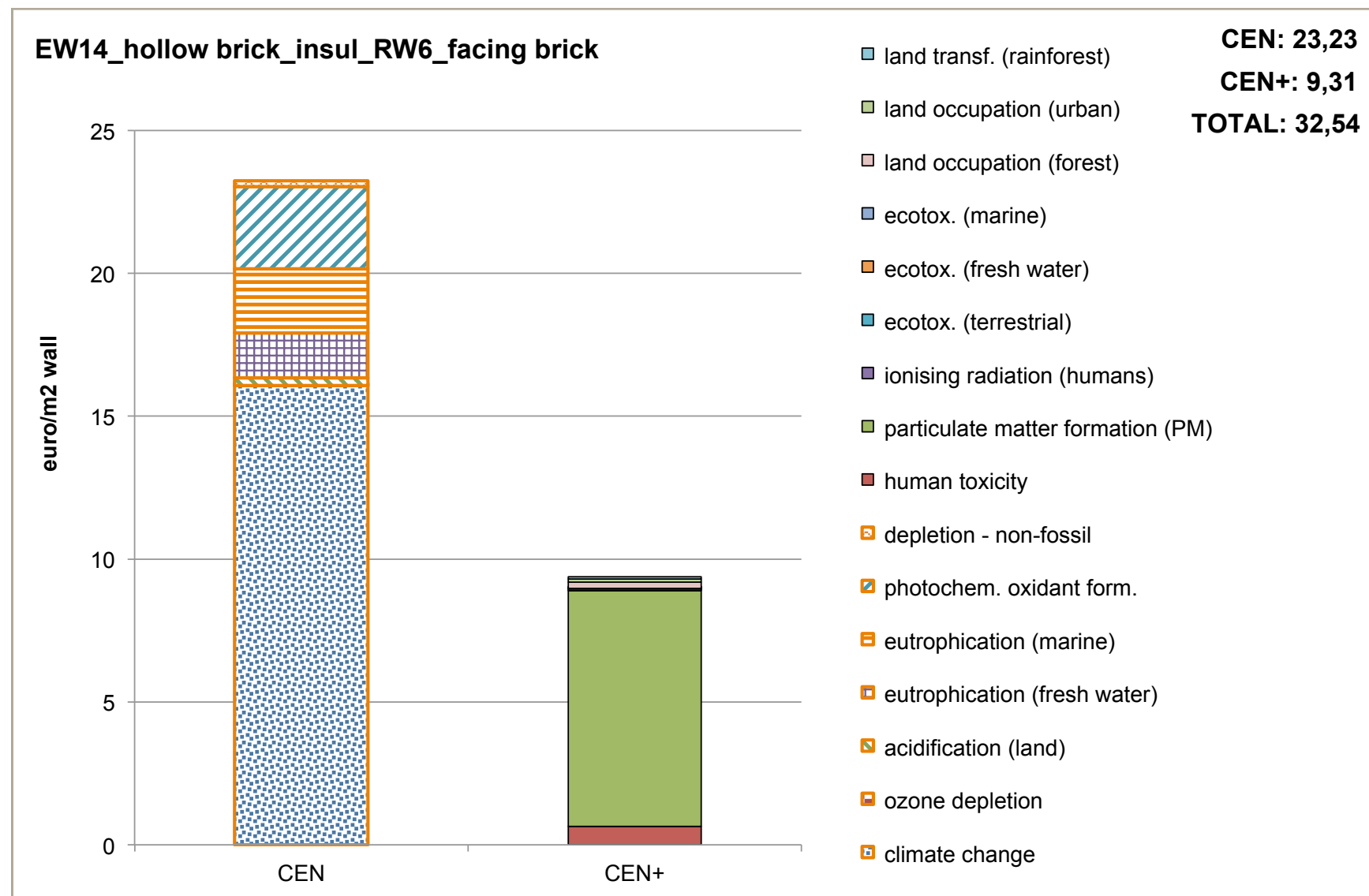


Figure exterior wall 2.14.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW14_hollow brick_insul_RW6_facing brick' per environmental indicator, expressed in monetary units.

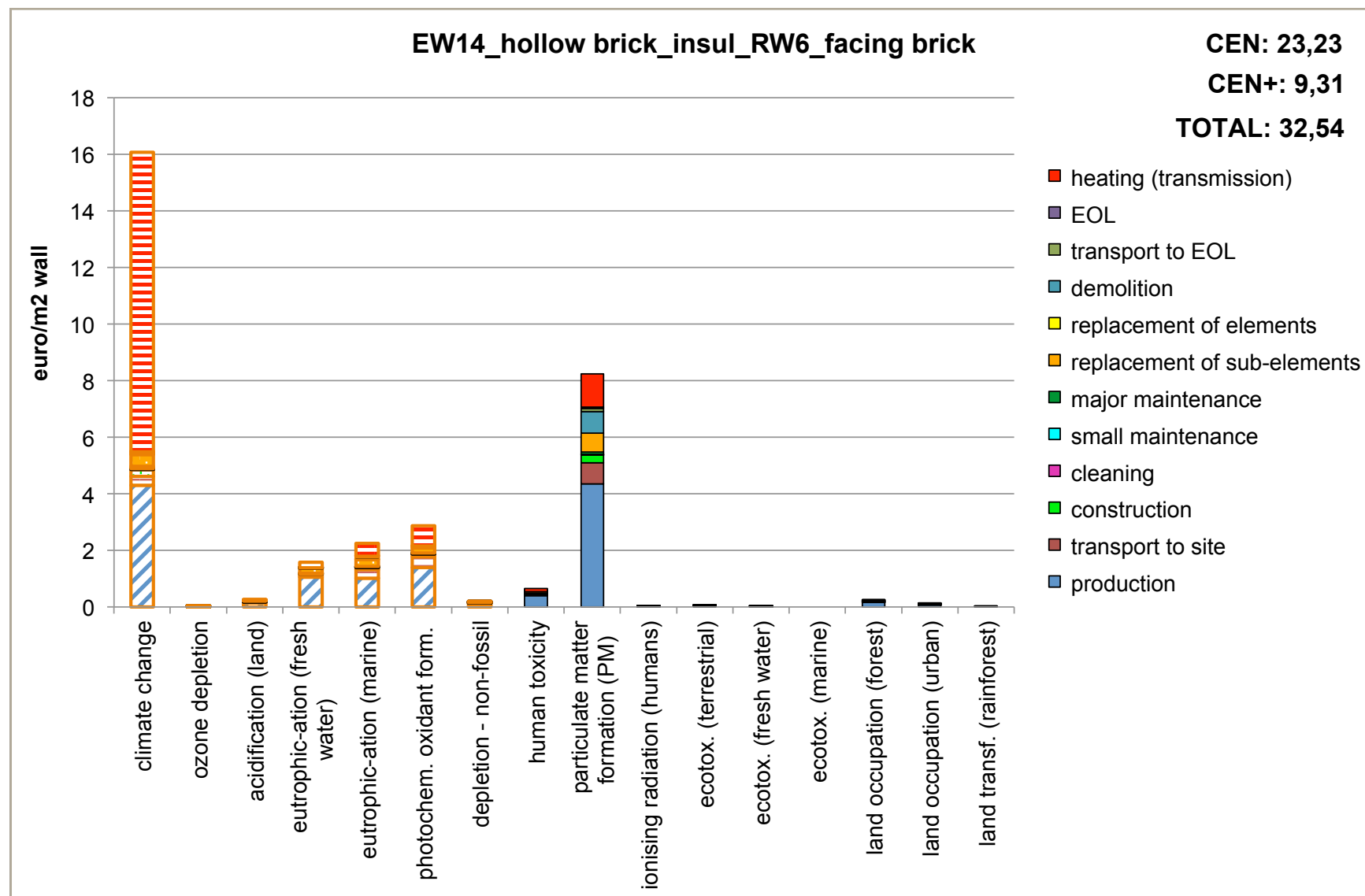


Figure exterior wall 2.14.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW14_hollow brick_insul_RW6_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.15. EW15_hollow brick_insul_RW8_roughcast

Table 2.15: overview of the detailed composition of variant 'EW15_hollow brick_insul_RW8_roughcast'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW15_hollow brick_insul_RW8_roughcast									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.326	0.43
Wall, external finishes - closing sub-element - traditional plaster on insulation (EPS or XPS boards) - by machine	m ²		15	40	aesthetic	1	0.033	1.500	0.02
Thermal insulation - rockwool - 8 cm, to be plastered	m ²			40	necessary	1	0.09	0.040	2.23
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

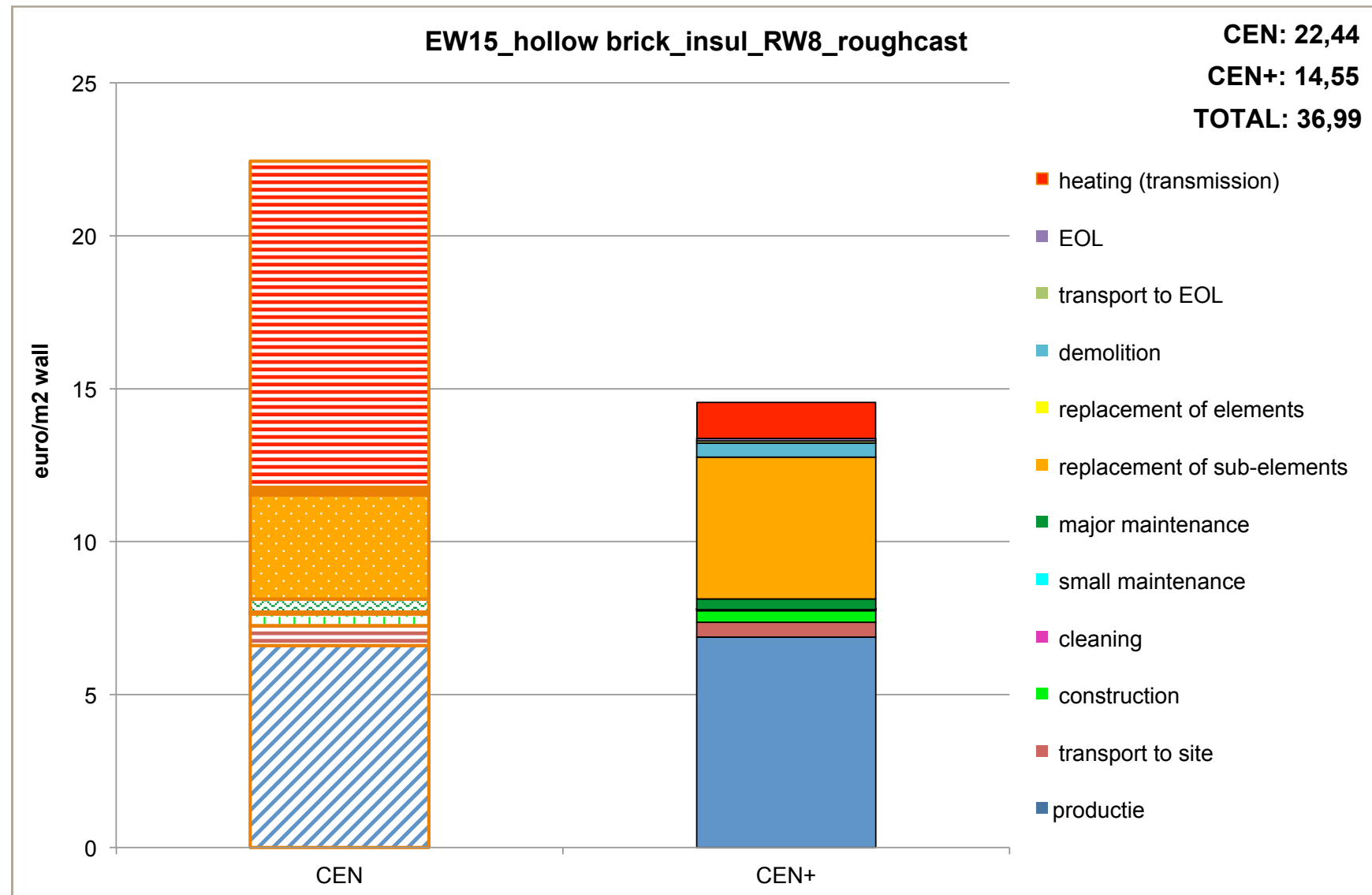


Figure exterior wall 2.15.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW15_hollow brick_insul_RW8_roughcast' per life cycle stage, expressed in monetary units.

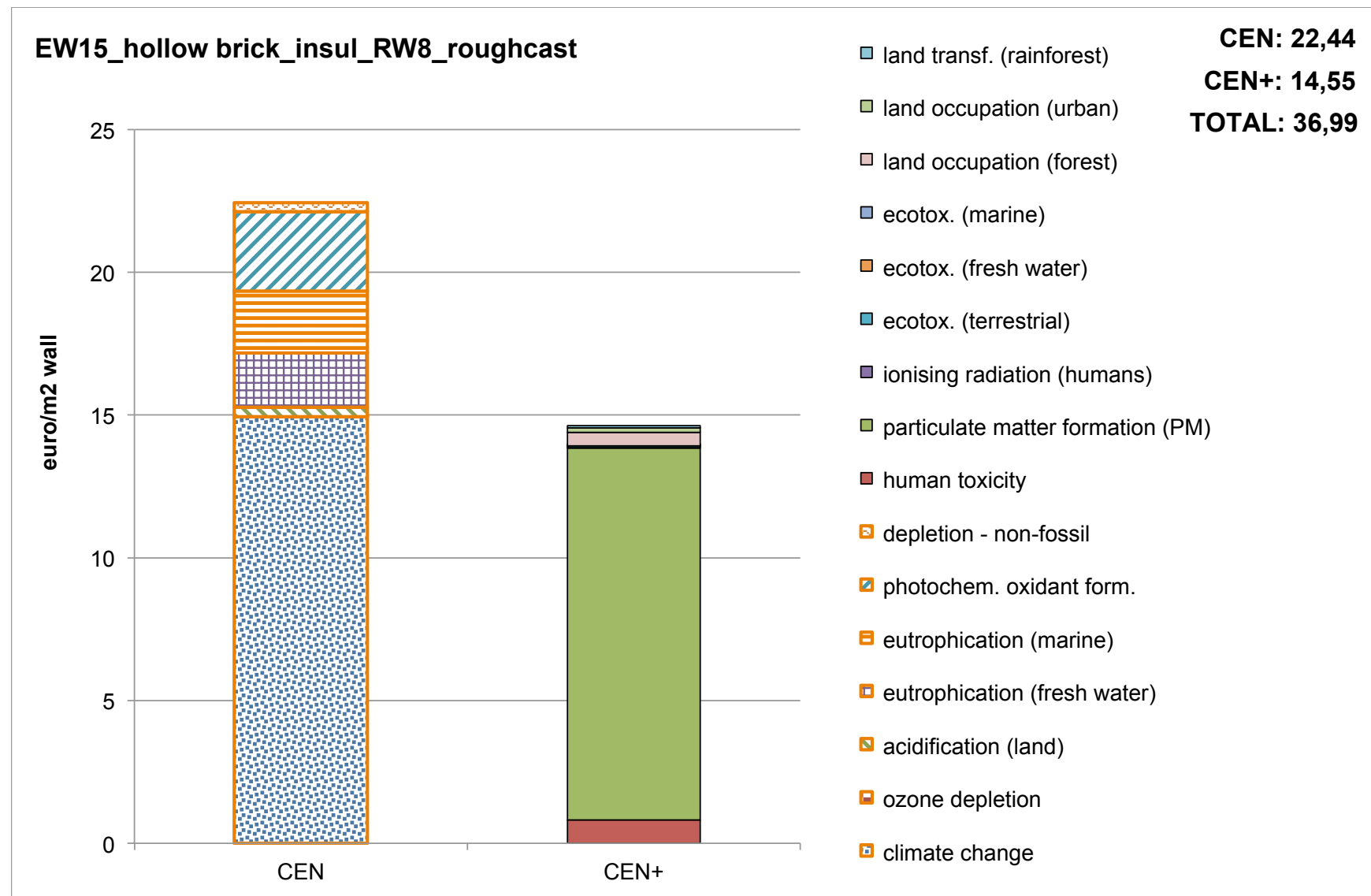


Figure exterior wall 2.15.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW15_hollow brick_insul_RW8_roughcast' per environmental indicator, expressed in monetary units.

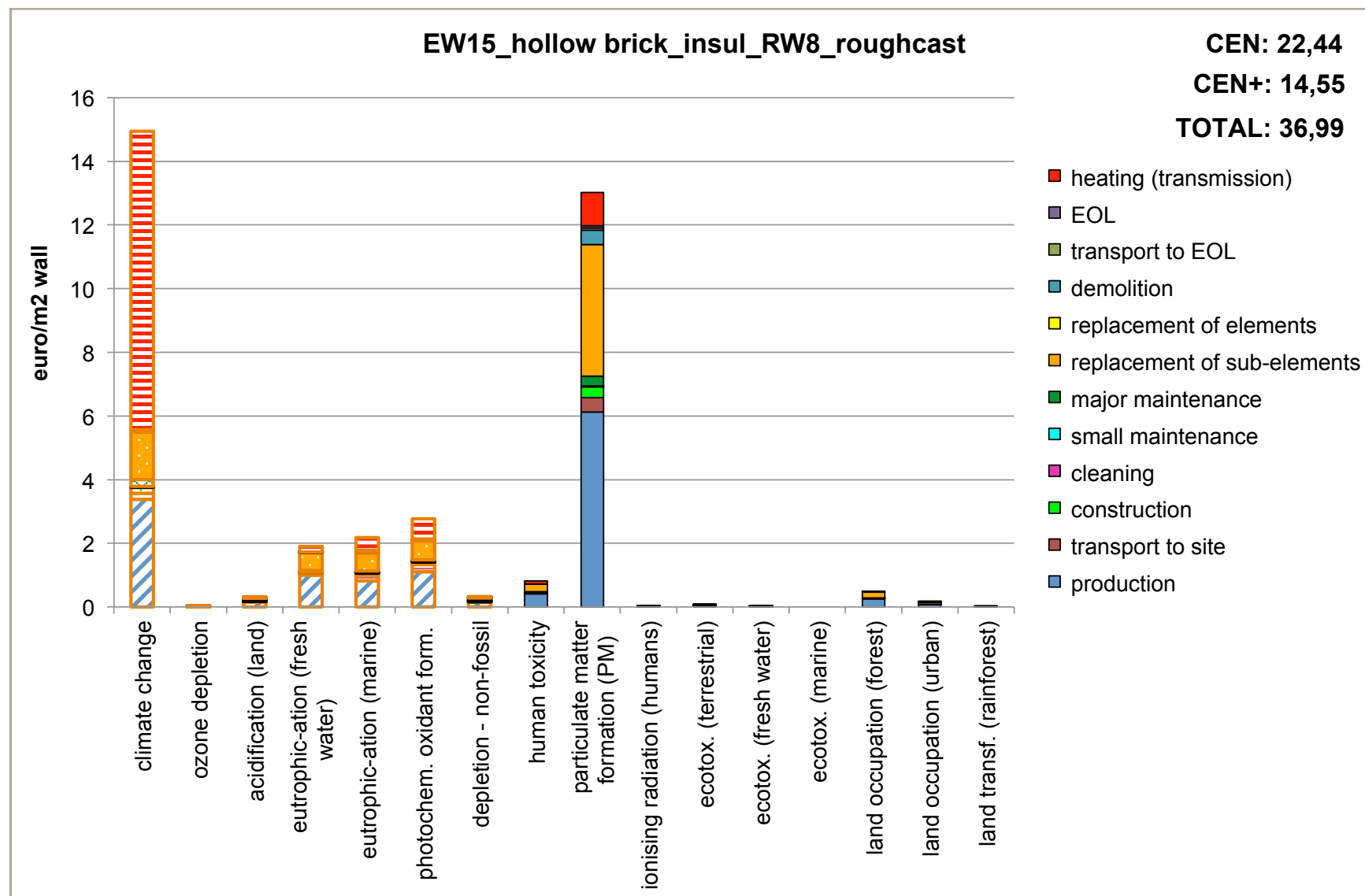


Figure exterior wall 2.15.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW15_hollow brick_insul_RW8_roughcast' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.16. EW16_hollow brick_insul_EPS7_roughcast

Table 2.16: overview of the detailed composition of variant 'EW16_hollow brick_insul_EPS7_roughcast'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW16_hollow brick_insul_EPS7_roughcast									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.326	0.43
Wall, external finishes - closing sub-element - traditional plaster on insulation (EPS or XPS boards) - by machine	m ²		15	40	aesthetic	1	0.033	1.500	0.02
Thermal insulation - hard boards - no overlap - plastic - polystyrene, expanded - 7 cm, to be plastered	m ²			40	necessary	1	0.08	0.040	2.01
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

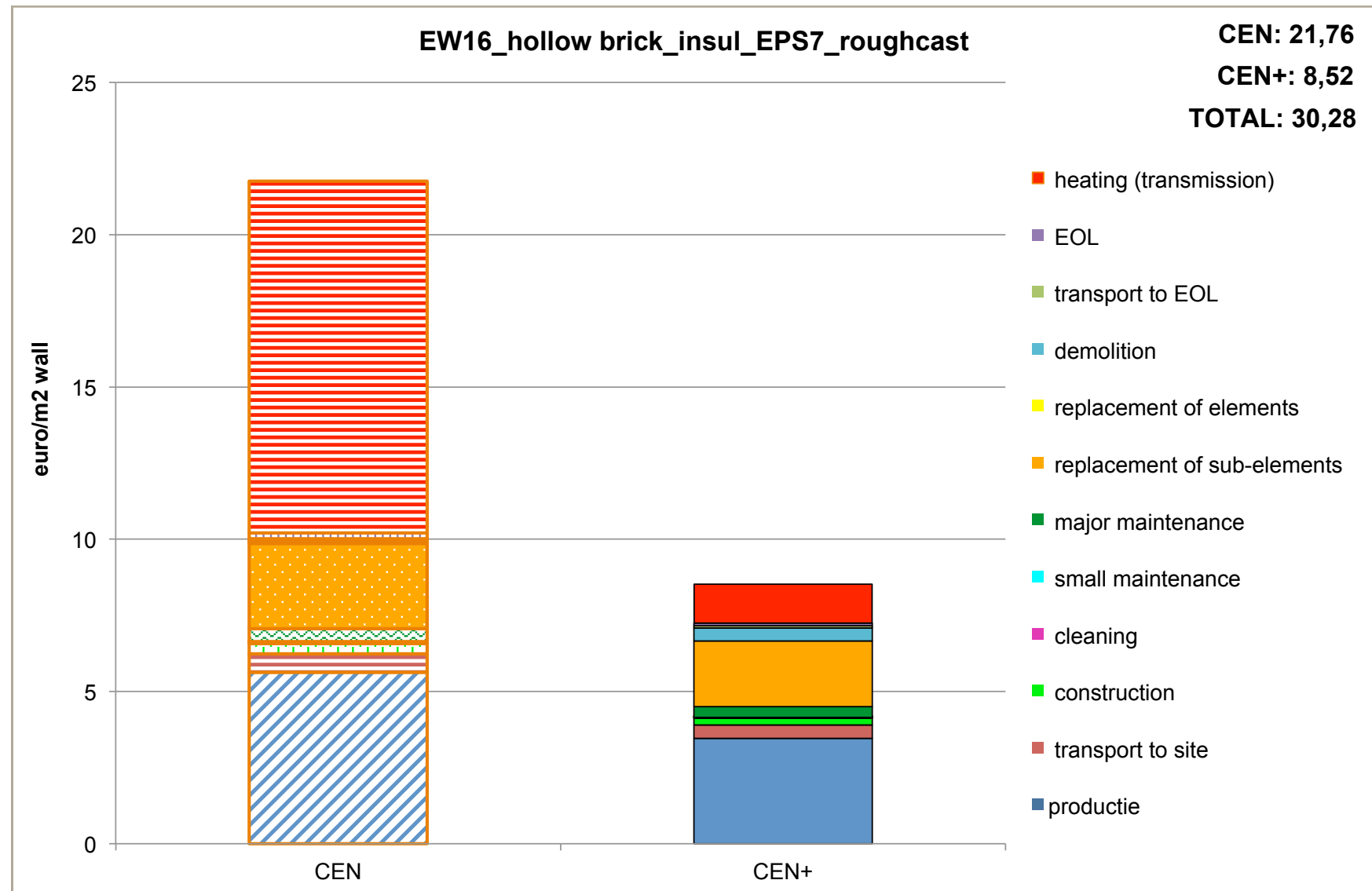


Figure exterior wall 2.16.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW16_hollow brick_insul_EPS7_roughcast' per life cycle stage, expressed in monetary units.

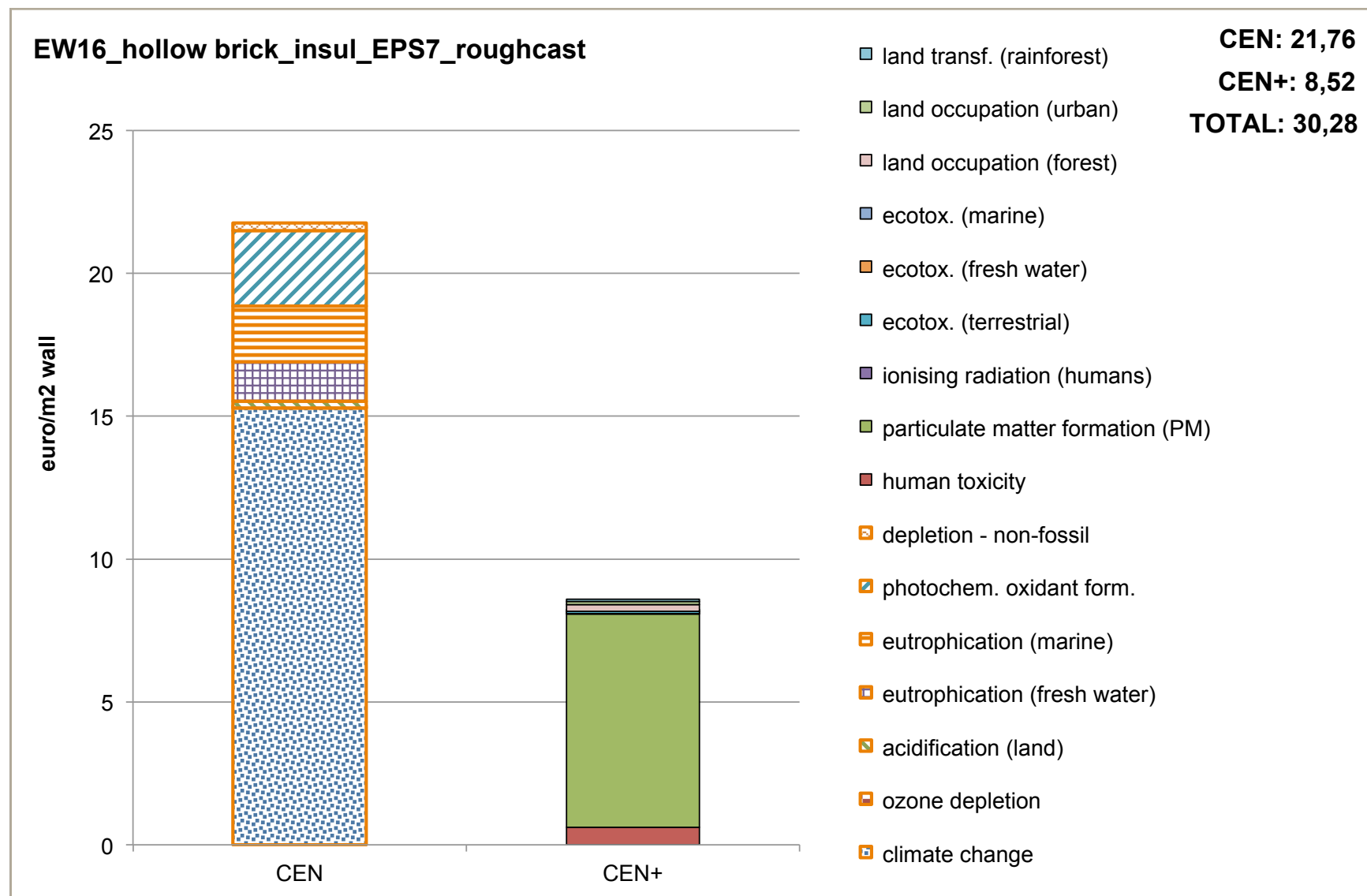


Figure exterior wall 2.16.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW16_hollow brick_insul_EPS7_roughcast' per environmental indicator, expressed in monetary units.

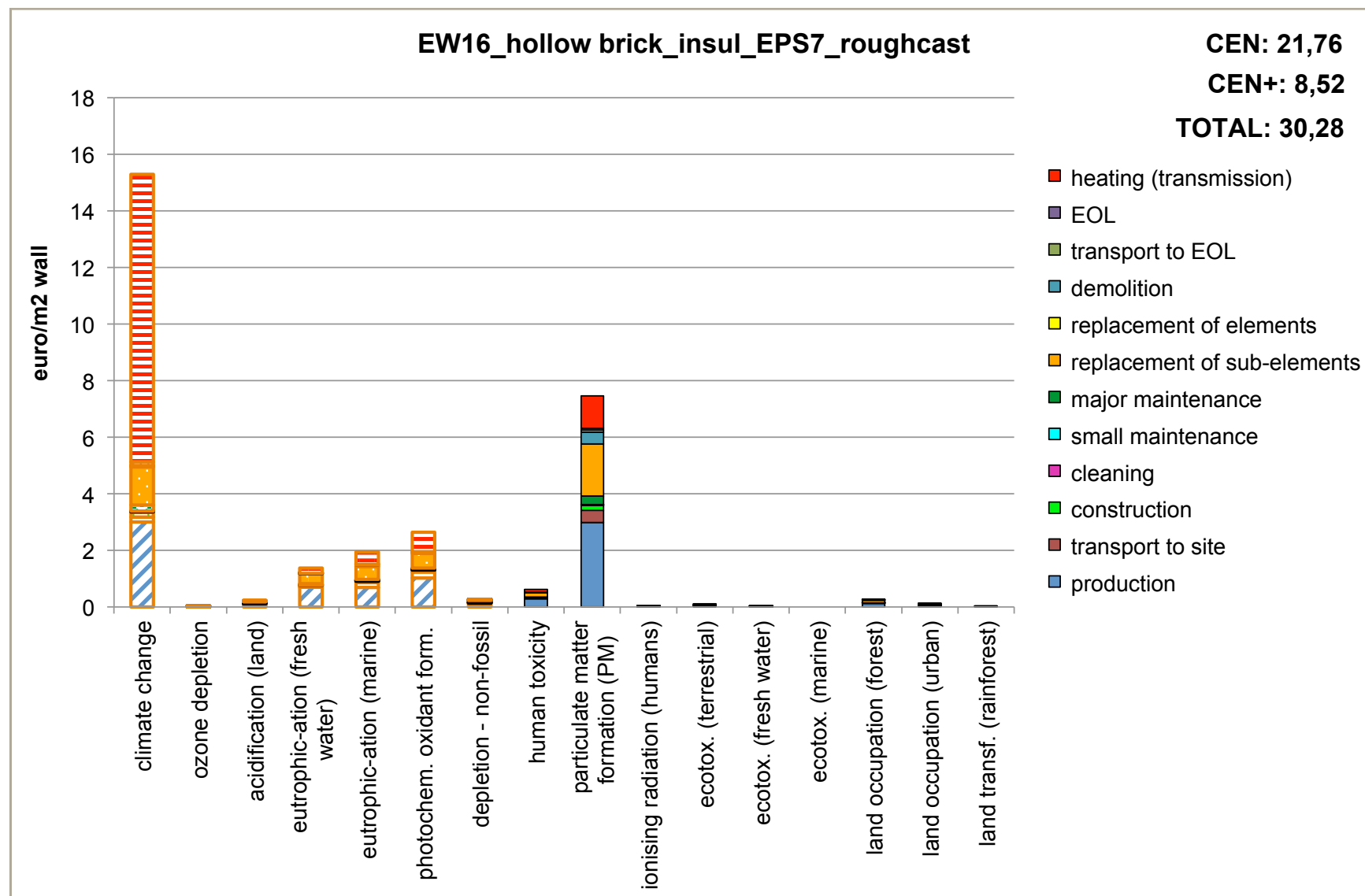


Figure exterior wall 2.16.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW16_hollow brick_insul_EPS7_roughcast' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.17. EW17_hollow brick_RW7.5_facing brick

Table 2.17: overview of the detailed composition of variant 'EW17_hollow brick_RW7.5_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW17_hollow brick_RW7.5_facing brick									
outer wall - loadbearing - primary part - blocks/stones - building bricks (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.407	0.34
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (7,5 cm)	m ²			120	necessary	1	0.075	0.036	2.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

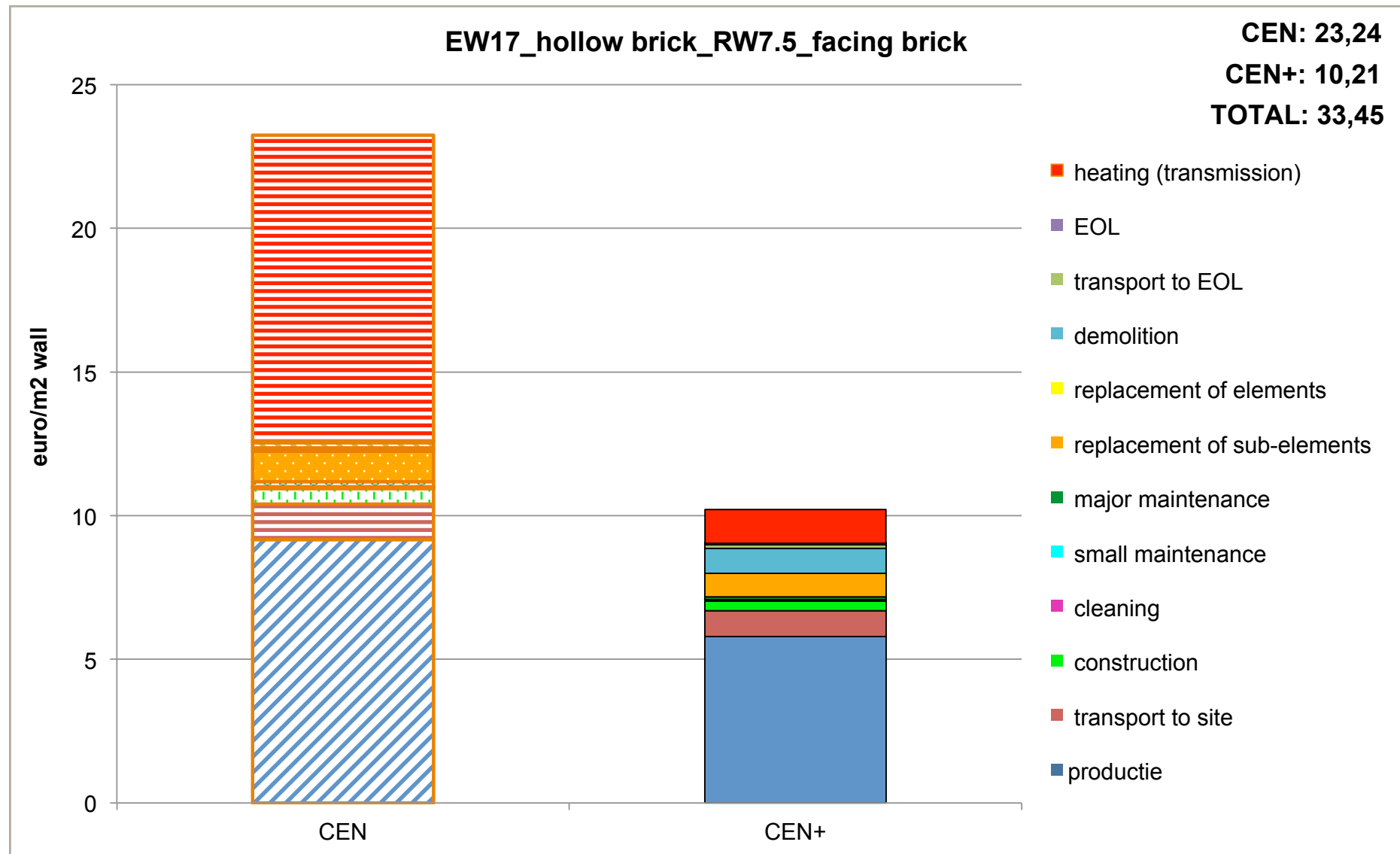


Figure exterior wall 2.17.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW17_hollow brick_RW7.5_facing brick' per life cycle stage, expressed in monetary units.

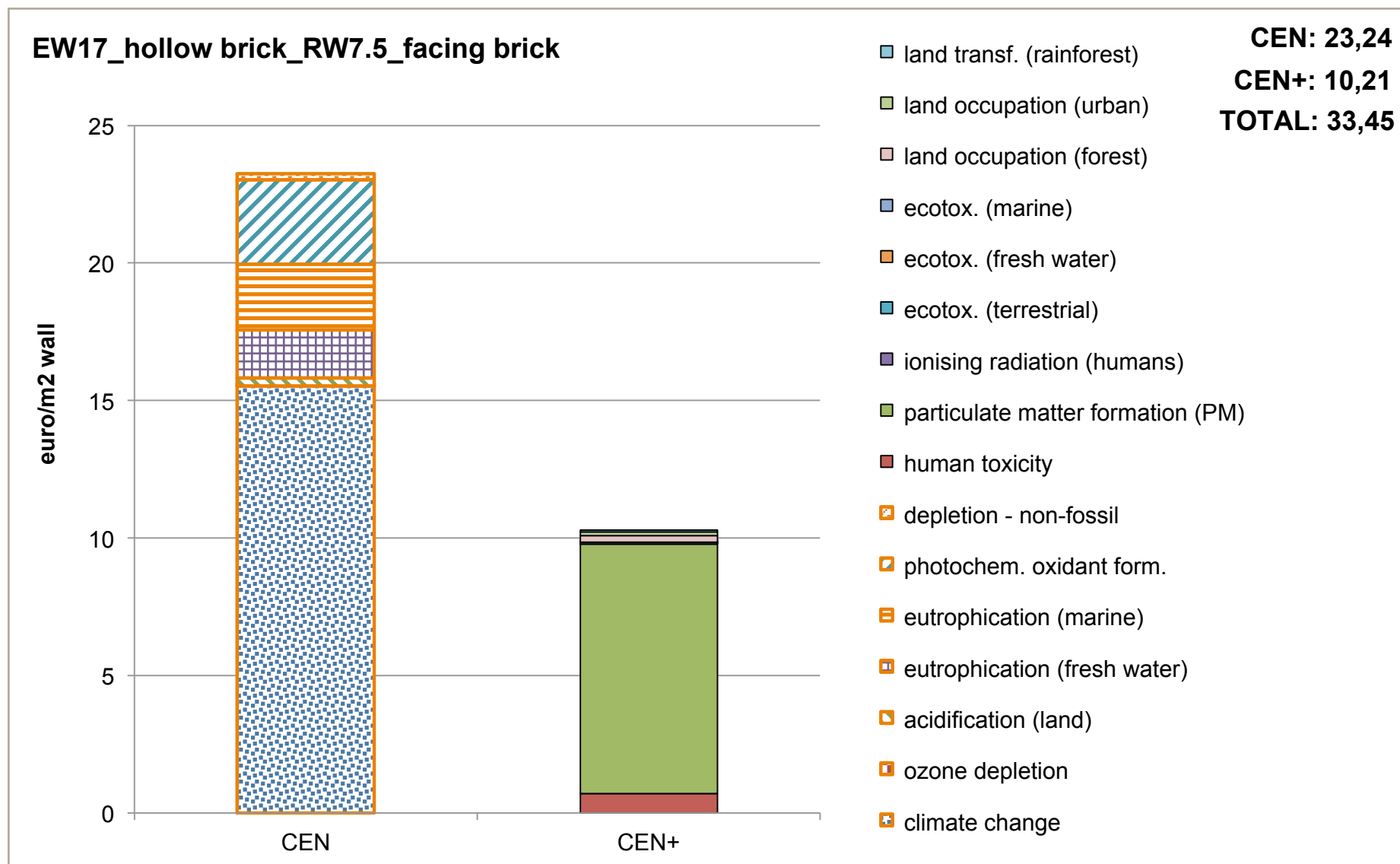


Figure exterior wall 2.17.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW17_hollow brick_RW7.5_facing brick' per environmental indicator, expressed in monetary units.

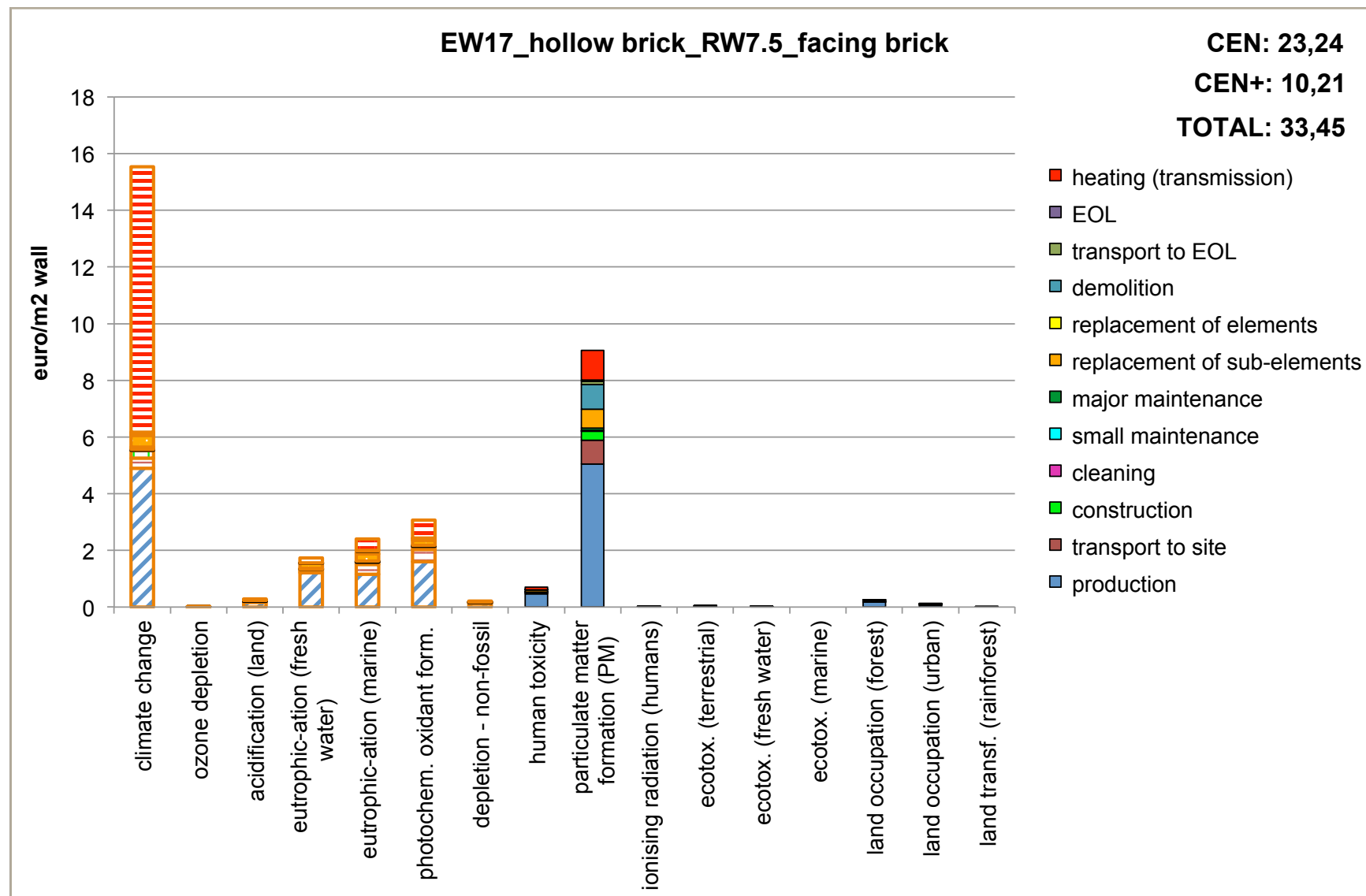


Figure exterior wall 2.17.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW17_hollow brick_RW7.5_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.18. EW18_hollow brick_insul_RW6_facing brick_loam plaster

Table 2.18: overview of the detailed composition of variant 'EW18_hollow brick_insul_RW6_facing brick_loam plaster'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW18_hollow brick_insul_RW6_facing brick_loam plaster									
outer wall - loadbearing - primary part - blocks/stones - building bricks - insulating (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.326	0.43
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (6 cm)	m ²			120	necessary	1	0.06	0.036	1.67

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

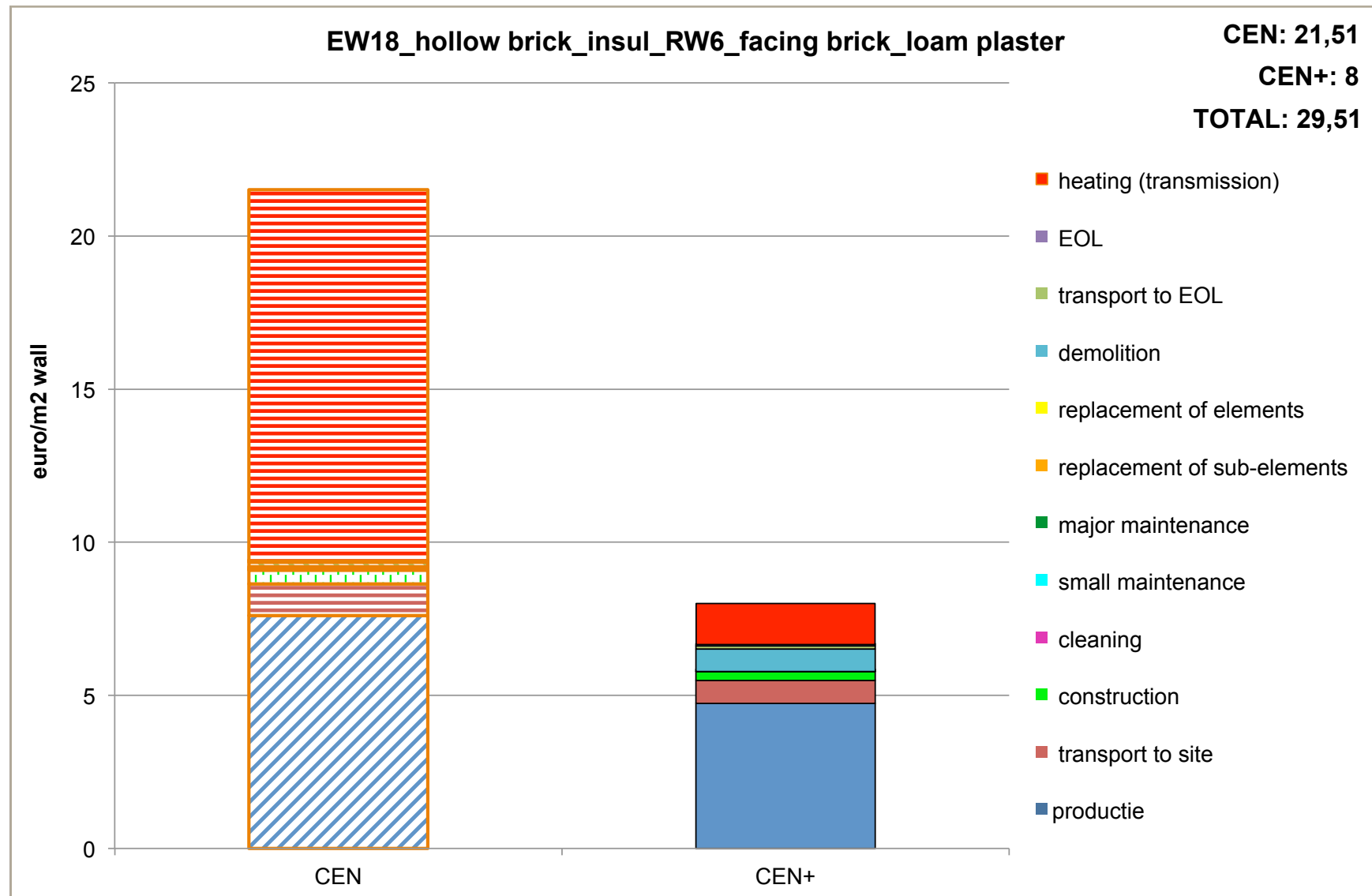


Figure exterior wall 2.18.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW18_hollow brick_insul_RW6_facing brick_loam plaster' per life cycle stage, expressed in monetary units.

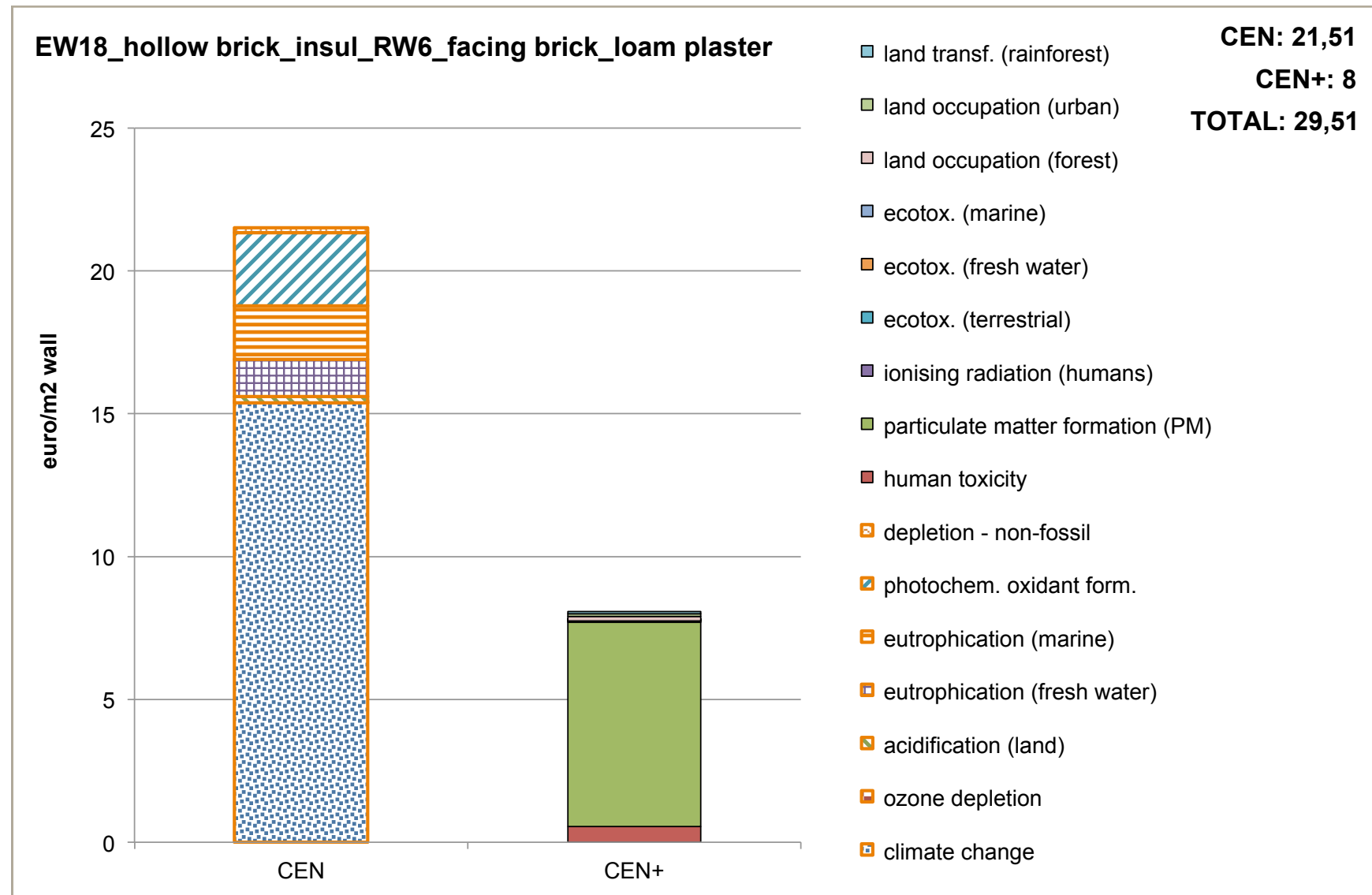


Figure exterior wall 2.18.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW18_hollow brick_insul_RW6_facing brick_loam plaster' per environmental indicator, expressed in monetary units.

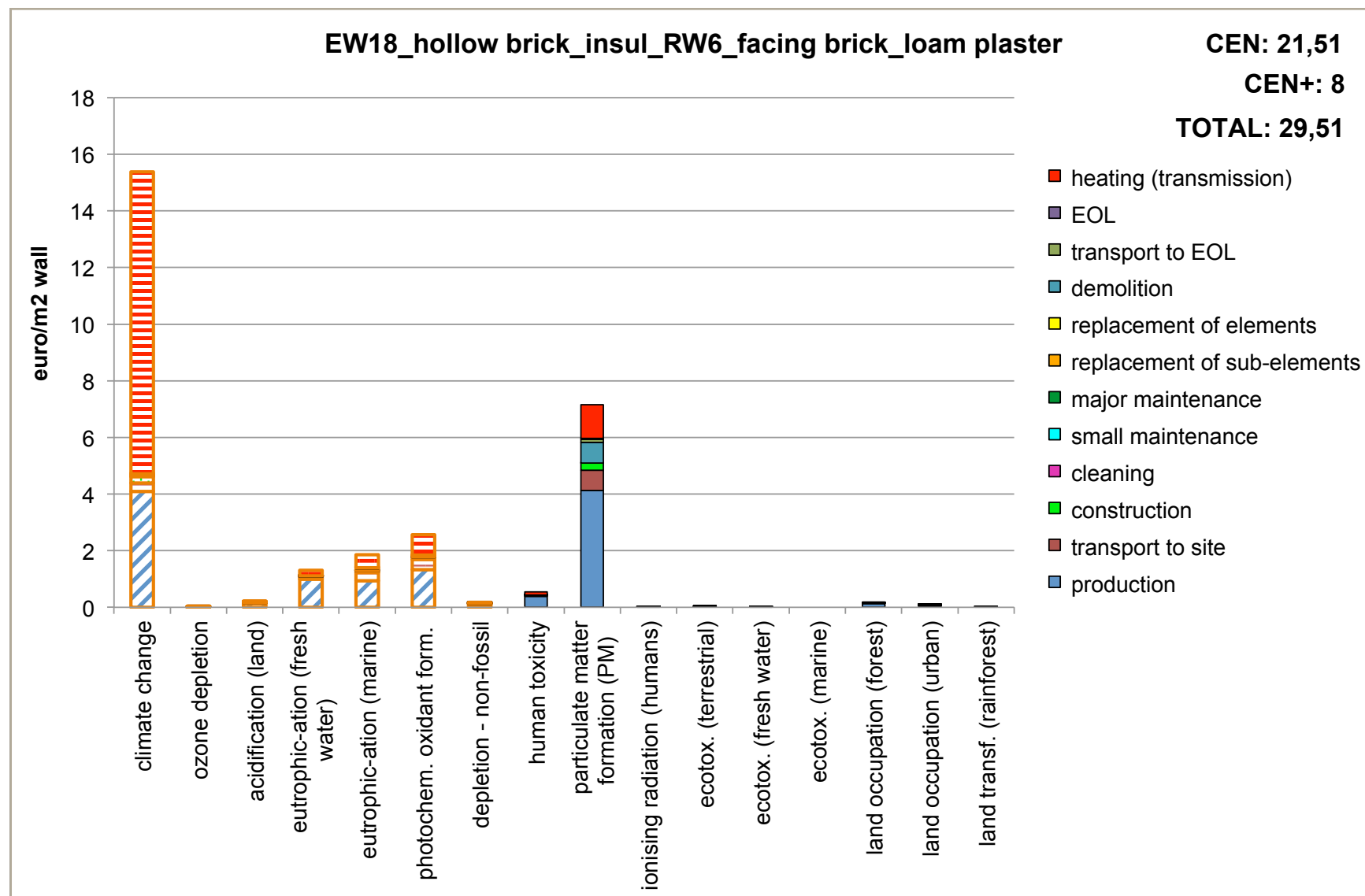


Figure exterior wall 2.18.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW18_hollow brick_insul_RW6_facing brick_loam plaster' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.19. EW19_concrete stone_hollow_PUR5_concrete stone

Table 2.19: overview of the detailed composition of variant 'EW19_concrete stone_hollow_PUR5_concrete stone'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW19_concrete stone_hollow_PUR5_concrete stone									
outer wall - loadbearing - primary part - blocks/stones - concrete - hollow (290x140x190)	m ²			120	necessary	1	0.14	na	0.11
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - concrete blocks (190x90x90) - incl.mortar and joint filling	m ²		30	120	necessary	1	0.09	1.948	0.05
Thermal insulation in cavity - hard boards - no overlap - plastic - polyurethane - 5 cm	m ²			120	necessary	1	0.05	0.023	2.17
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

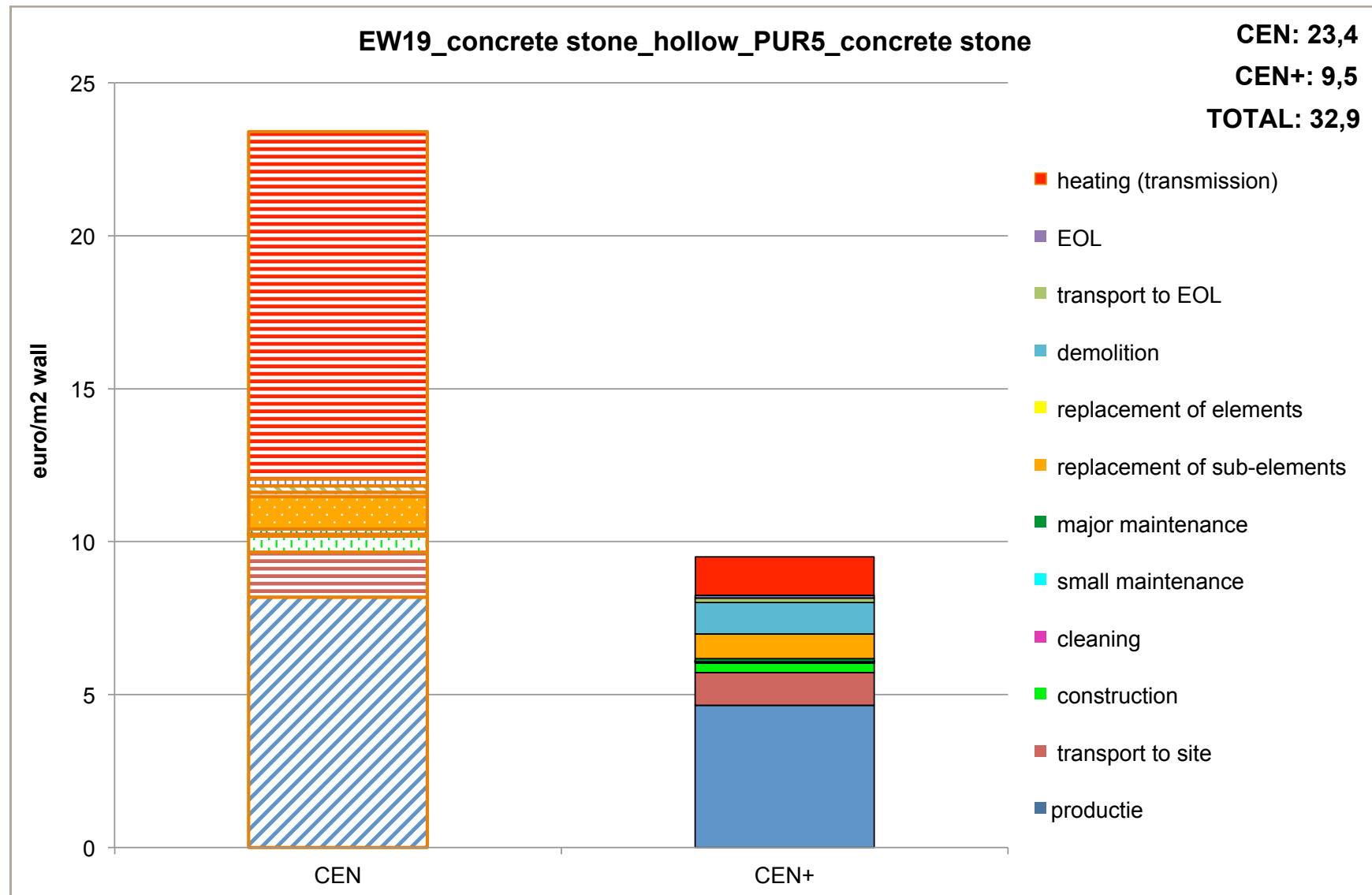


Figure exterior wall 2.19.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW19_concrete stone_hollow_PUR5_concrete stone' per life cycle stage, expressed in monetary units.

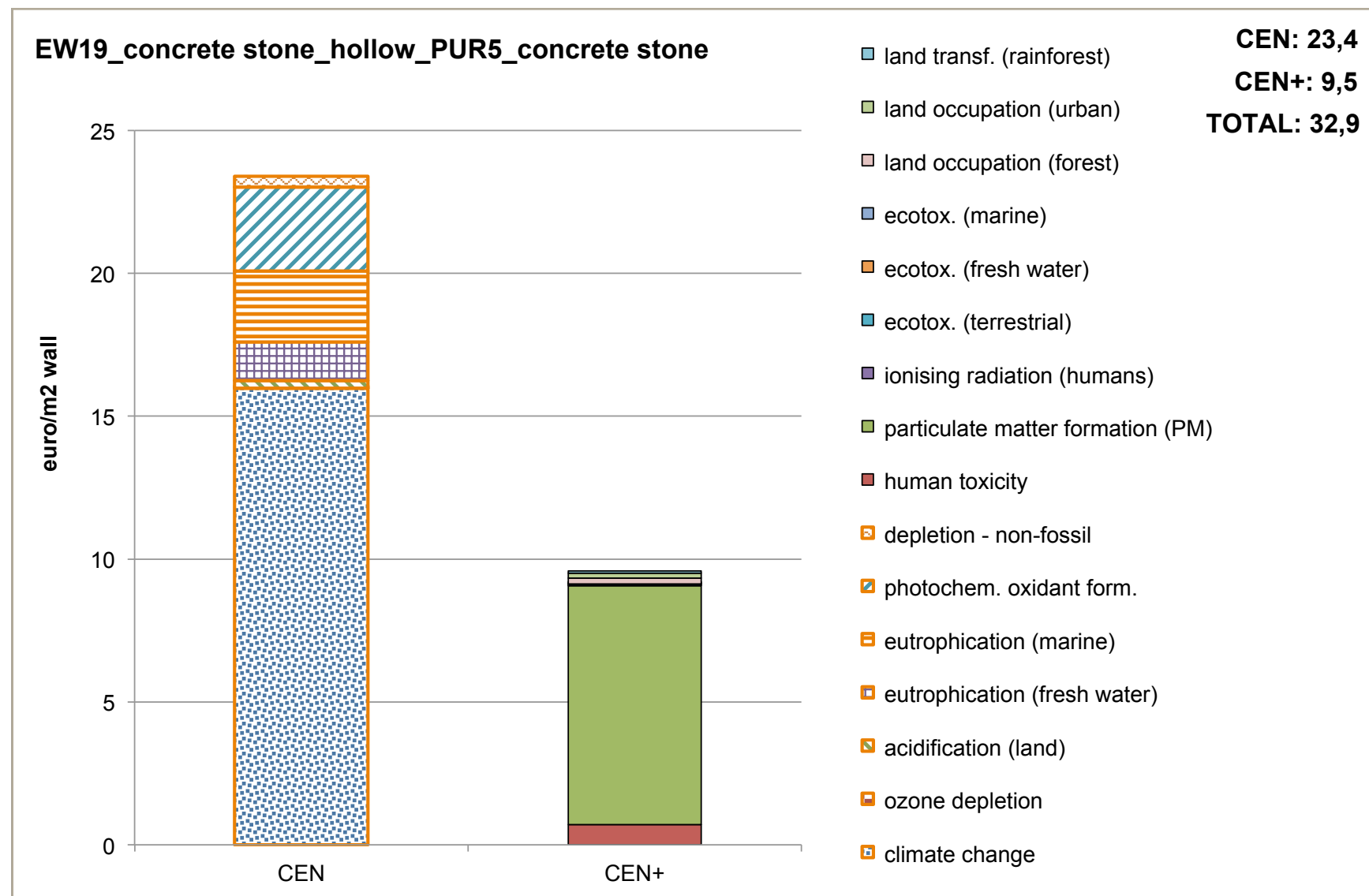


Figure exterior wall 2.19.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW19_concrete stone_hollow_PUR5_concrete stone' per environmental indicator, expressed in monetary units.

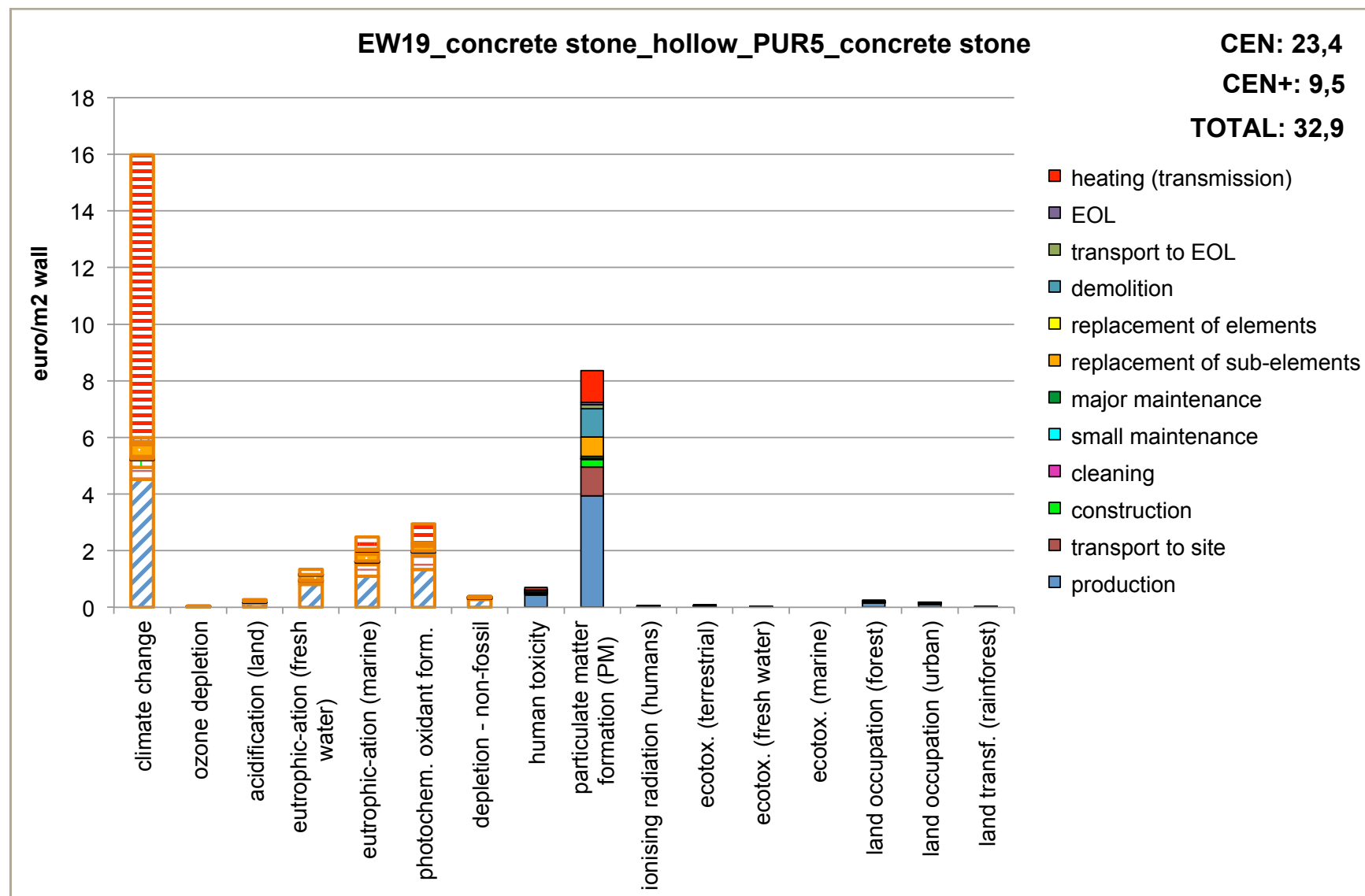


Figure exterior wall 2.19.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW19_concrete stone_hollow_PUR5_concrete stone' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.20. EW20_aircrete30_facing brick

Table 2.20: overview of the detailed composition of variant 'EW20_aircrete30_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW20_aircrete30_facing brick									
outer wall - loadbearing - primary part - blocks/stones - cellular concrete (600x300x250)	m ²			120	necessary	1	0.3	0.125	2.4
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

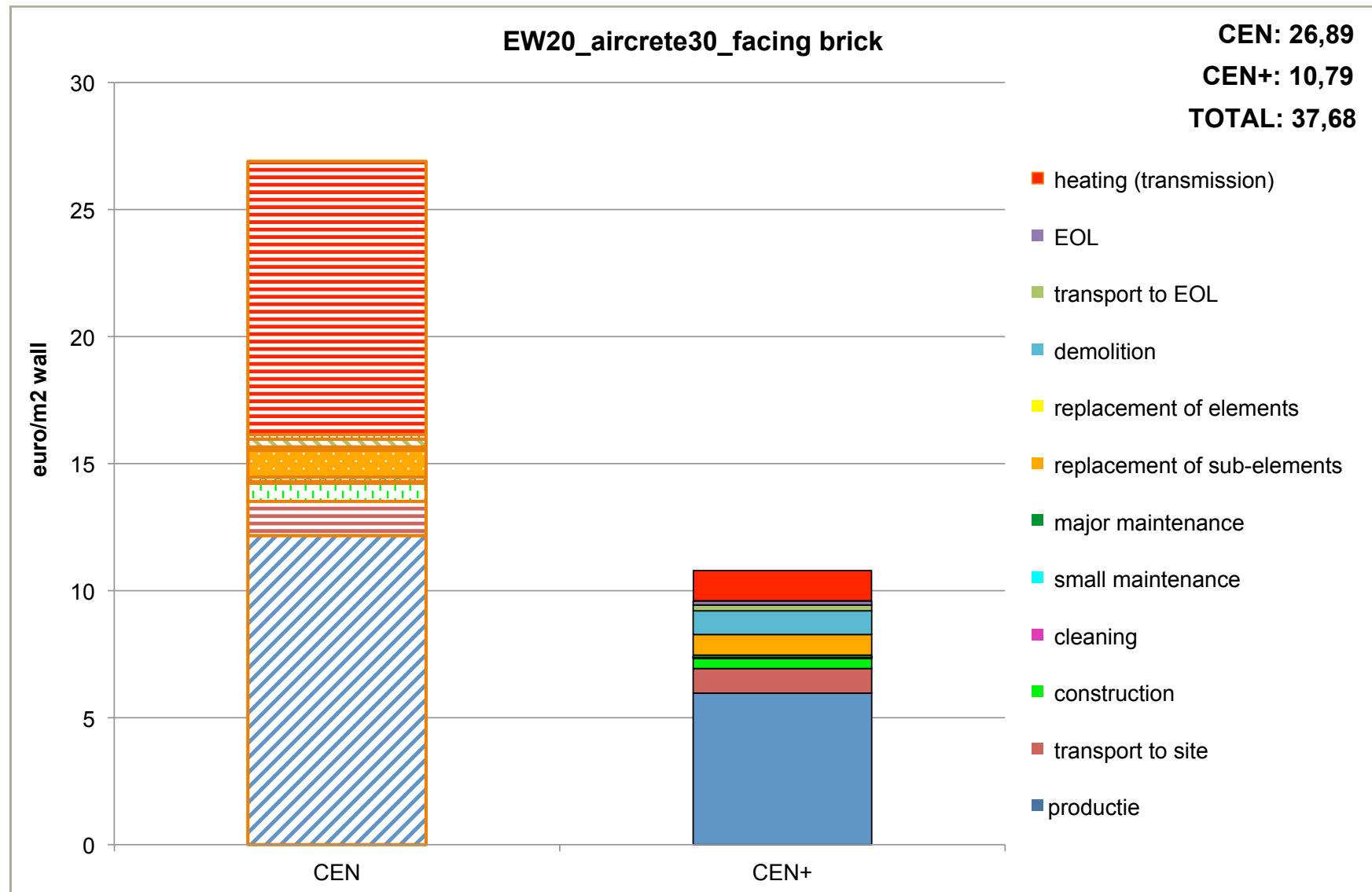


Figure exterior wall 2.20.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW20_aircrete30_facing brick' per life cycle stage, expressed in monetary units.

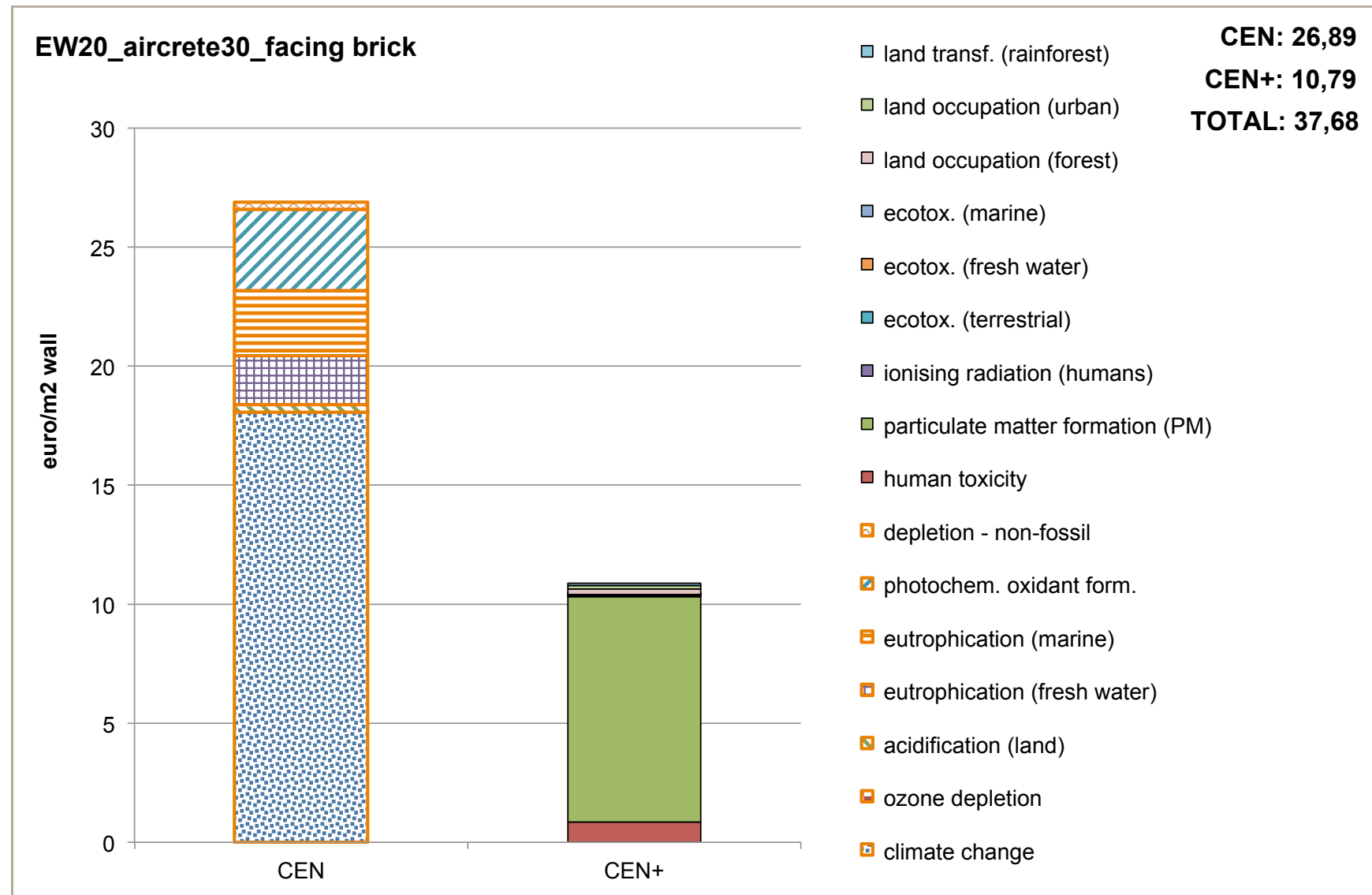


Figure exterior wall 2.20.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW20_aircrete30_facing brick' per environmental indicator, expressed in monetary units.

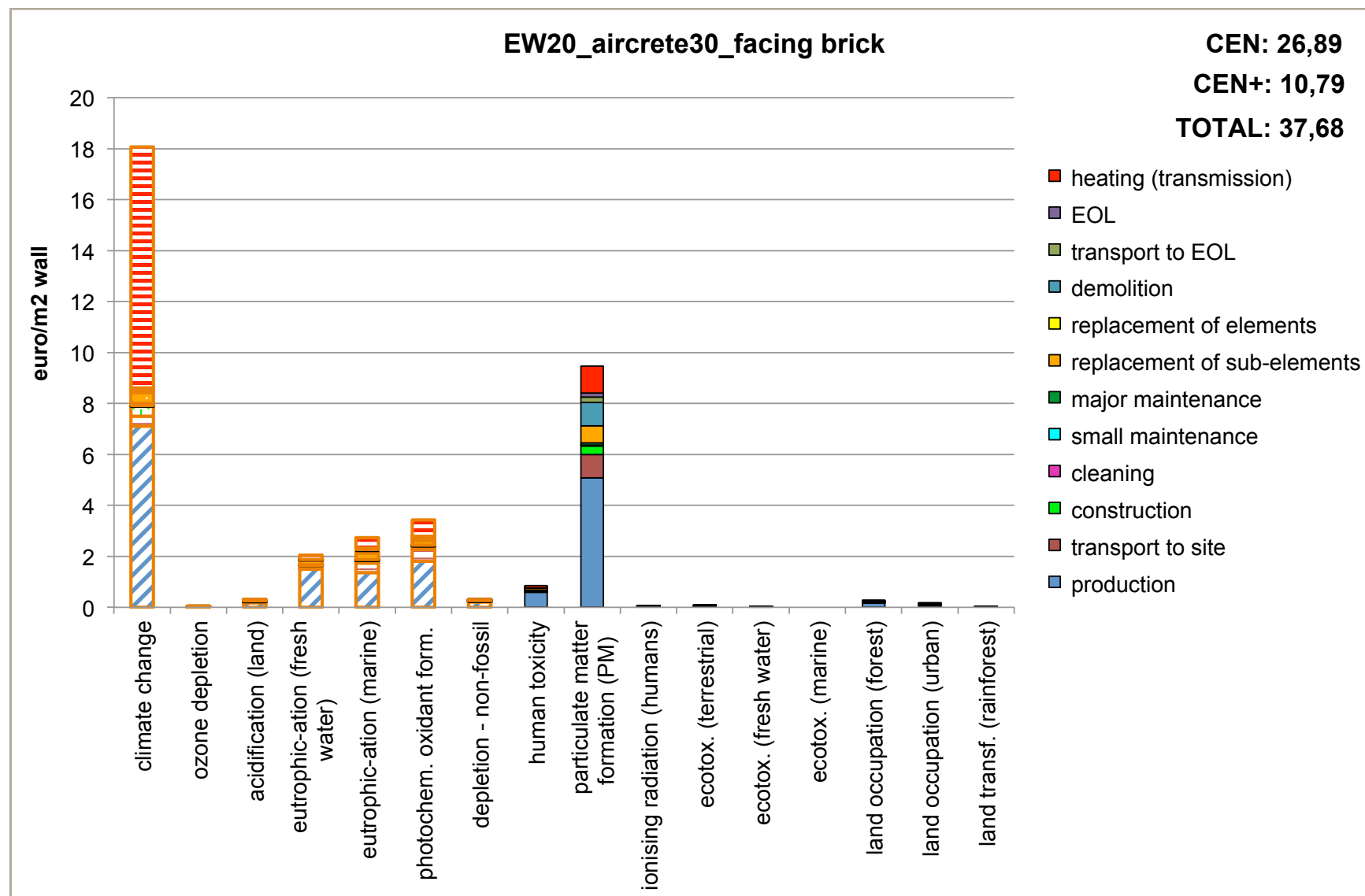


Figure exterior wall 2.20.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW20_aircrete30_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.21. EW21_aircrete48_roughcast

Table 2.21: overview of the detailed composition of variant 'EW21_aircrete48_roughcast'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW21_aircrete48_roughcast									
outer wall - loadbearing - primary part - blocks/stones - cellular concrete (600x365x250)	m ²			120	necessary	1	0.365	0.125	2.92
Wall, external finishes - closing sub-element - traditional plaster on brickwork - by machine	m ²		15	40	aesthetic	1	0.033	1.500	0.02
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

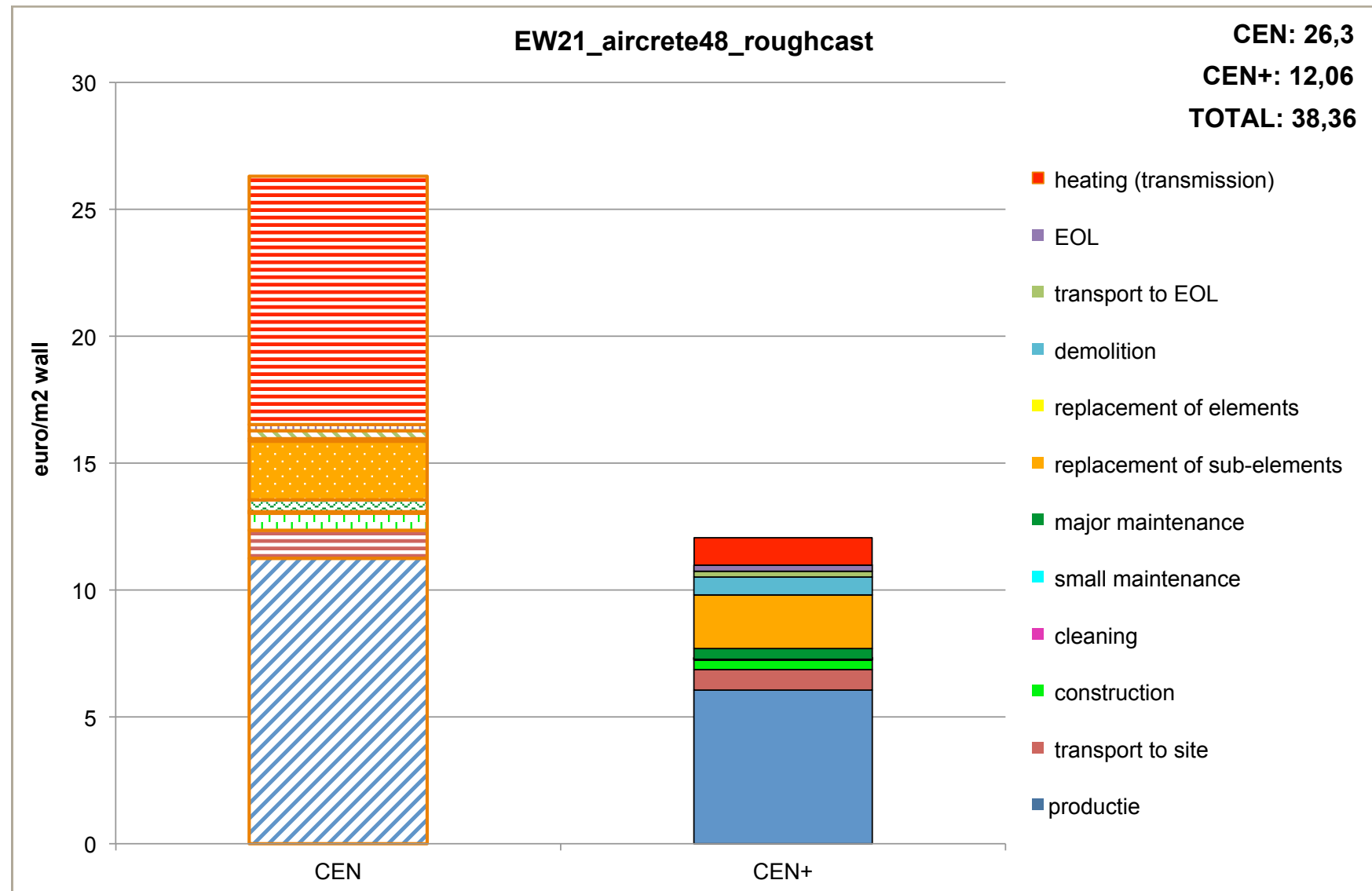


Figure exterior wall 2.21.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW21_aircrete48_roughcast' per life cycle stage, expressed in monetary units.

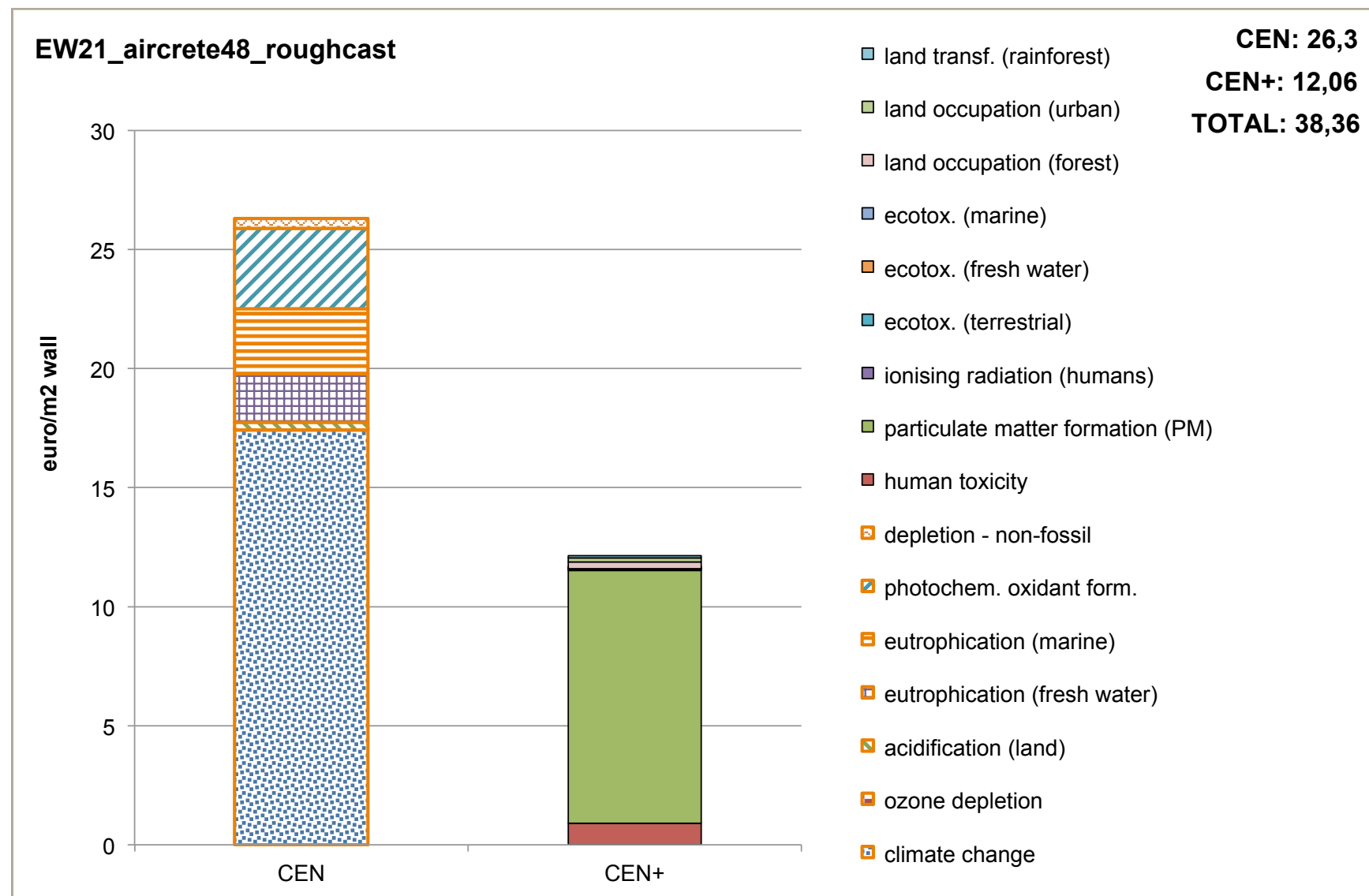


Figure exterior wall 2.21.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW21_aircrete48_roughcast' per environmental indicator, expressed in monetary units.

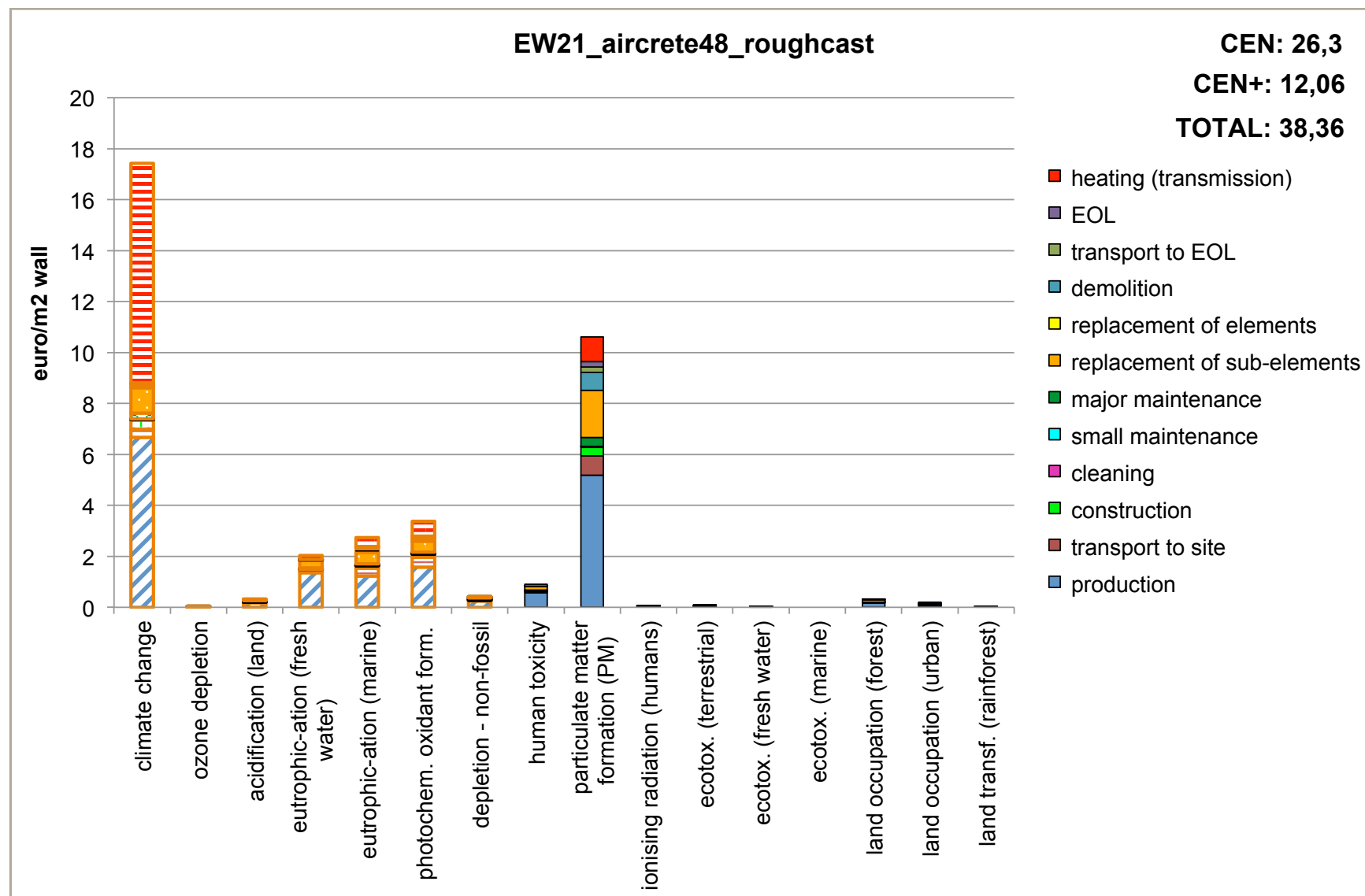


Figure exterior wall 2.21.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW21_aircrete48_roughcast' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.22. EW22_aircrete30_RW14_facing brick

Table 2.22: overview of the detailed composition of variant 'EW22_aircrete30_RW14_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW22_aircrete30_RW14_facing brick									
outer wall - loadbearing - primary part - blocks/stones - cellular concrete (600x300x250)	m ²			120	necessary	1	0.3	0.125	2.4
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (210 x 4,0 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (14 cm)	m ²			120	necessary	1	0.14	0.036	3.89
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

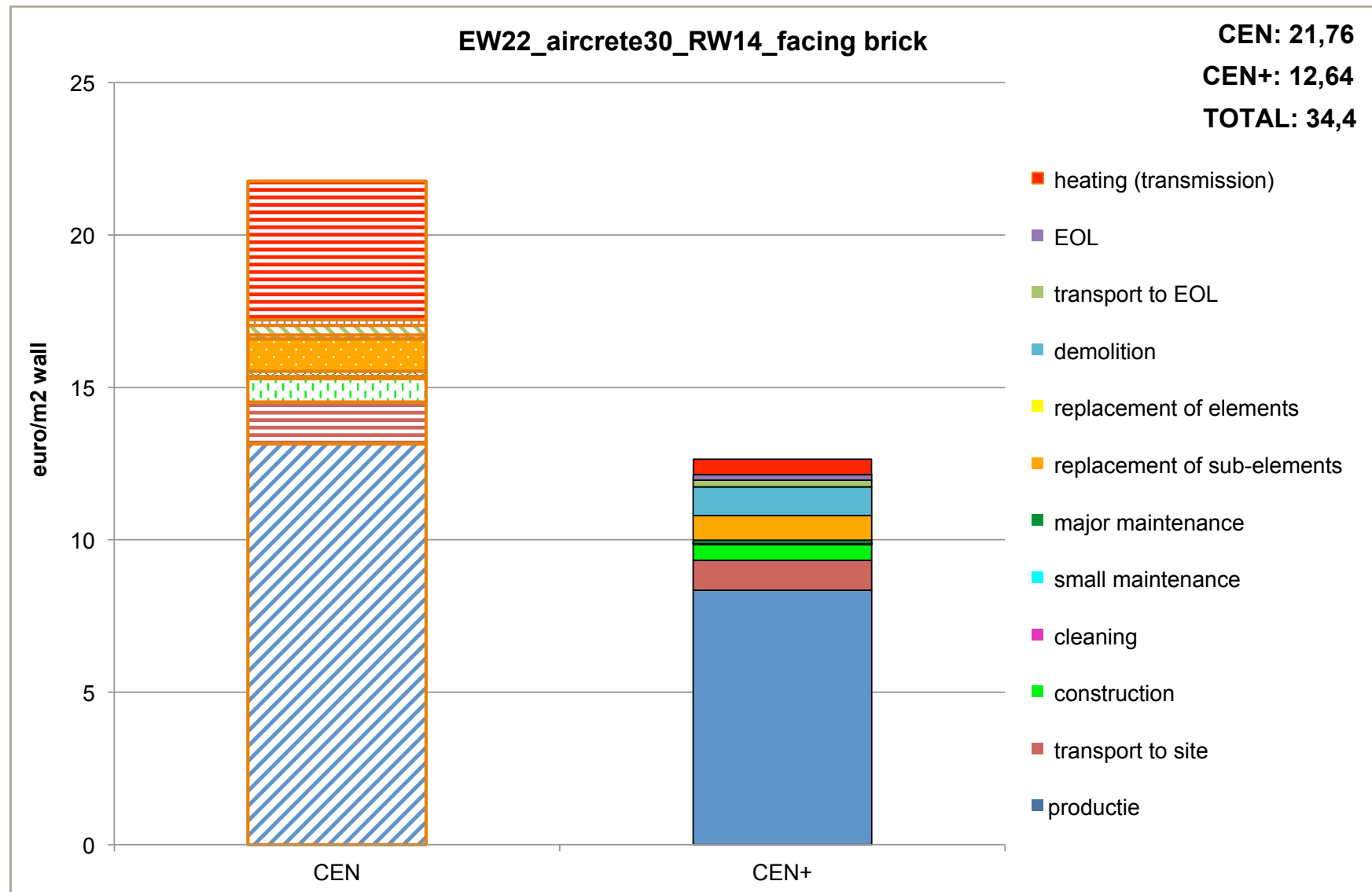


Figure exterior wall 2.22.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW22_aircrete30_RW14_facing brick' per life cycle stage, expressed in monetary units.

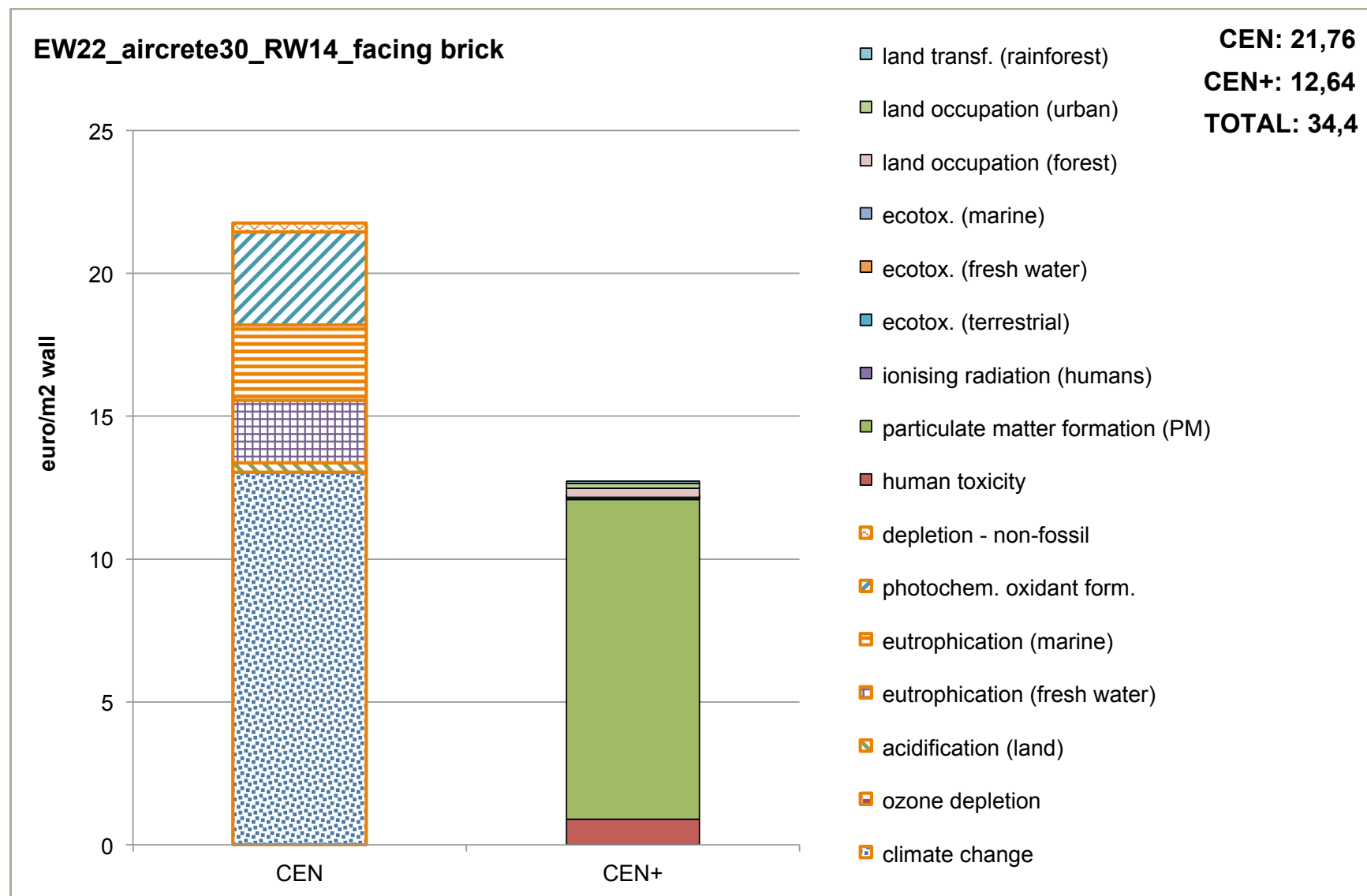


Figure exterior wall 2.22.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW22_aircrete30_RW14_facing brick' per environmental indicator, expressed in monetary units.

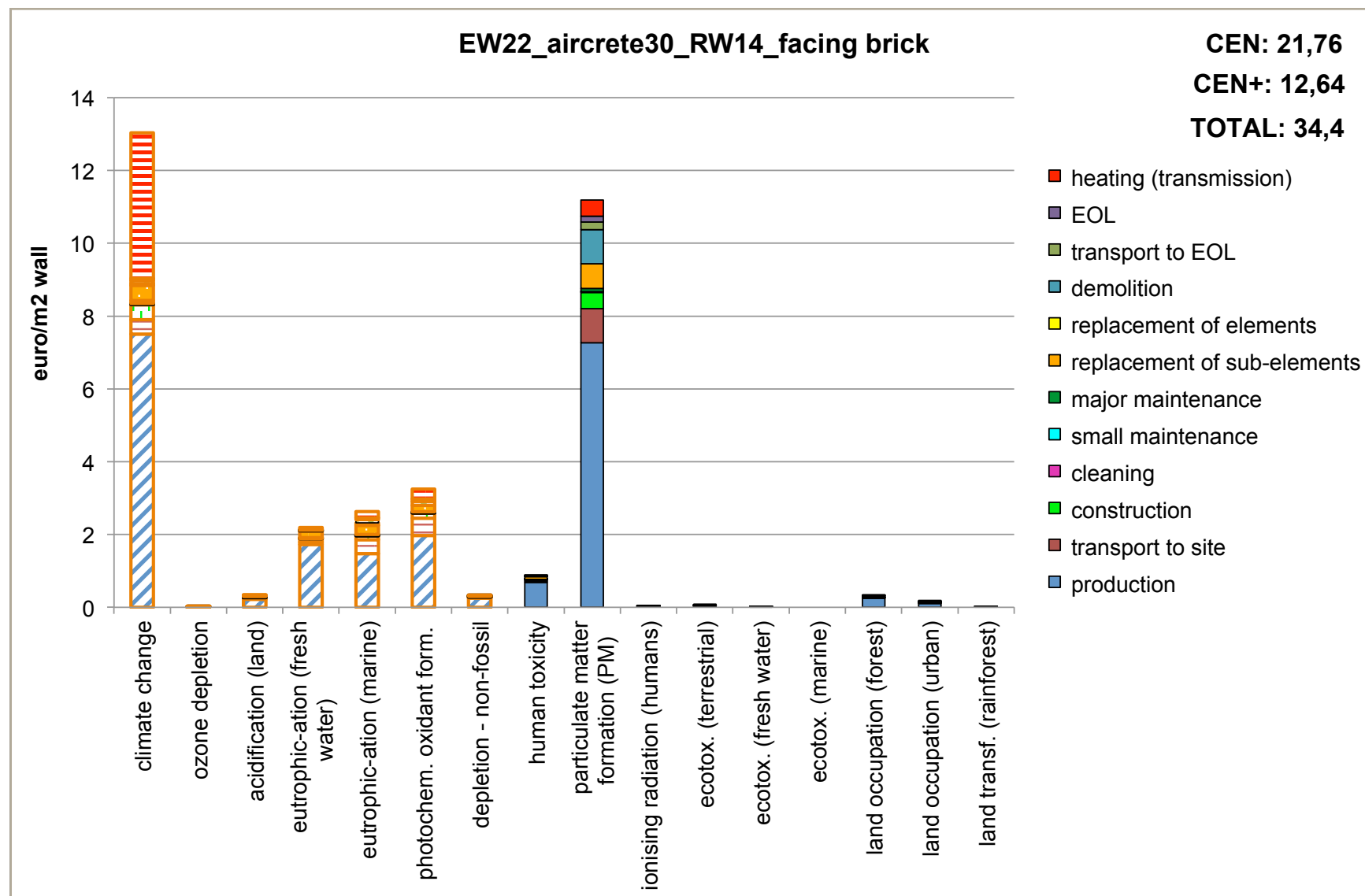


Figure exterior wall 2.22.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW22_aircrete30_RW14_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.23. EW23_calcarenite_RW7.5_facing brick

Table 2.23: overview of the detailed composition of variant 'EW23_calcarenite_RW7.5_facing brick'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW23_calcarenite_RW7.5_facing brick									
outer wall - loadbearing - primary part - blocks/stones - sand-lime brick - hollow - (300x150x150), glued	m ²			120	necessary	1	0.15	0.520	0.29
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - blocks/stones - face bricks - hand formed stone M50 (190x90x50), incl. Mortar and joint filling	m ²		30	120	necessary	1	0.09	1.113	0.08
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (7,5 cm)	m ²			120	necessary	1	0.075	0.036	2.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

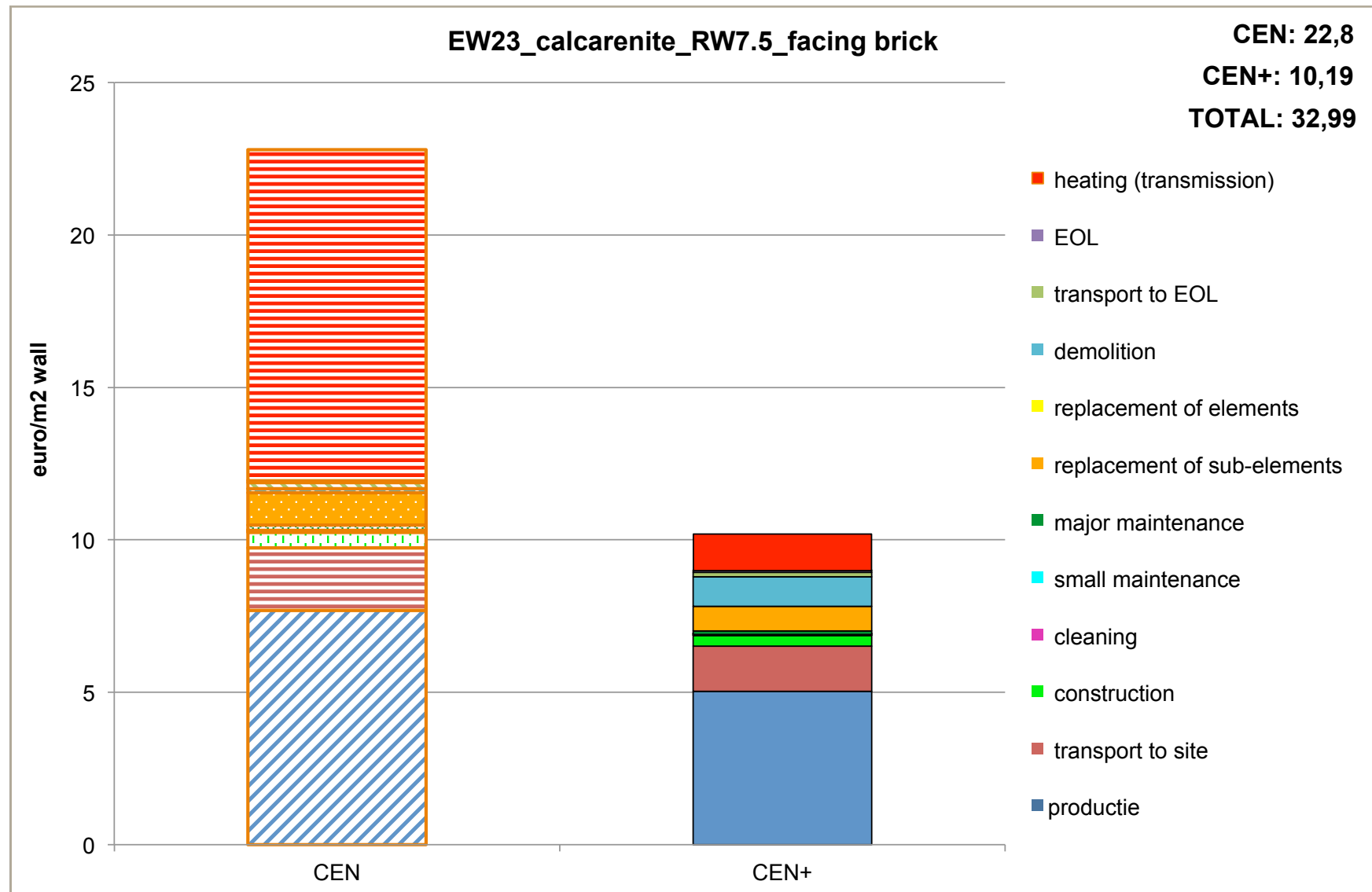


Figure exterior wall 2.23.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW23_calcarenite_RW7.5_facing brick' per life cycle stage, expressed in monetary units.

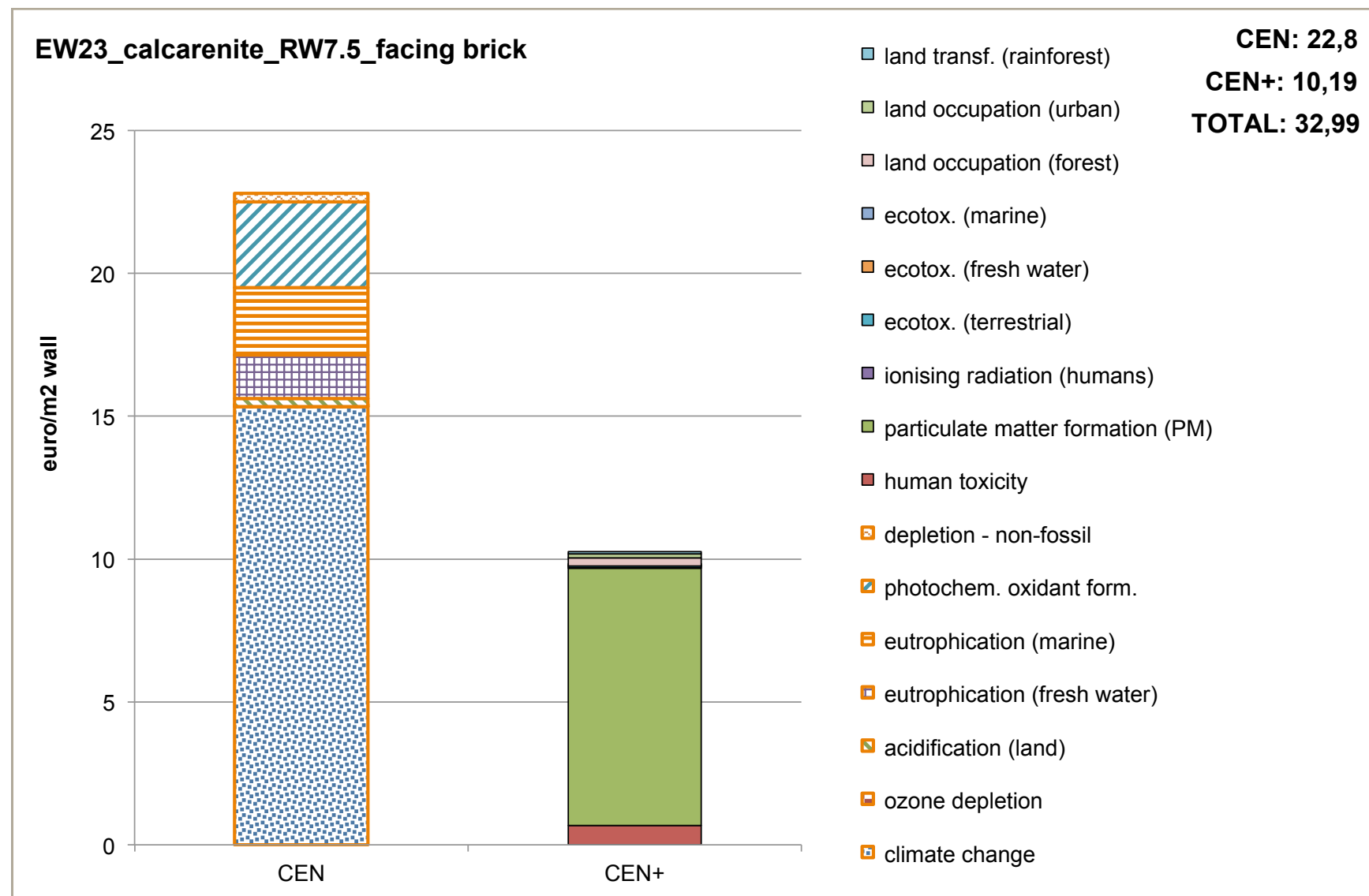


Figure exterior wall 2.23.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW23_calcarenite_RW7.5_facing brick' per environmental indicator, expressed in monetary units.

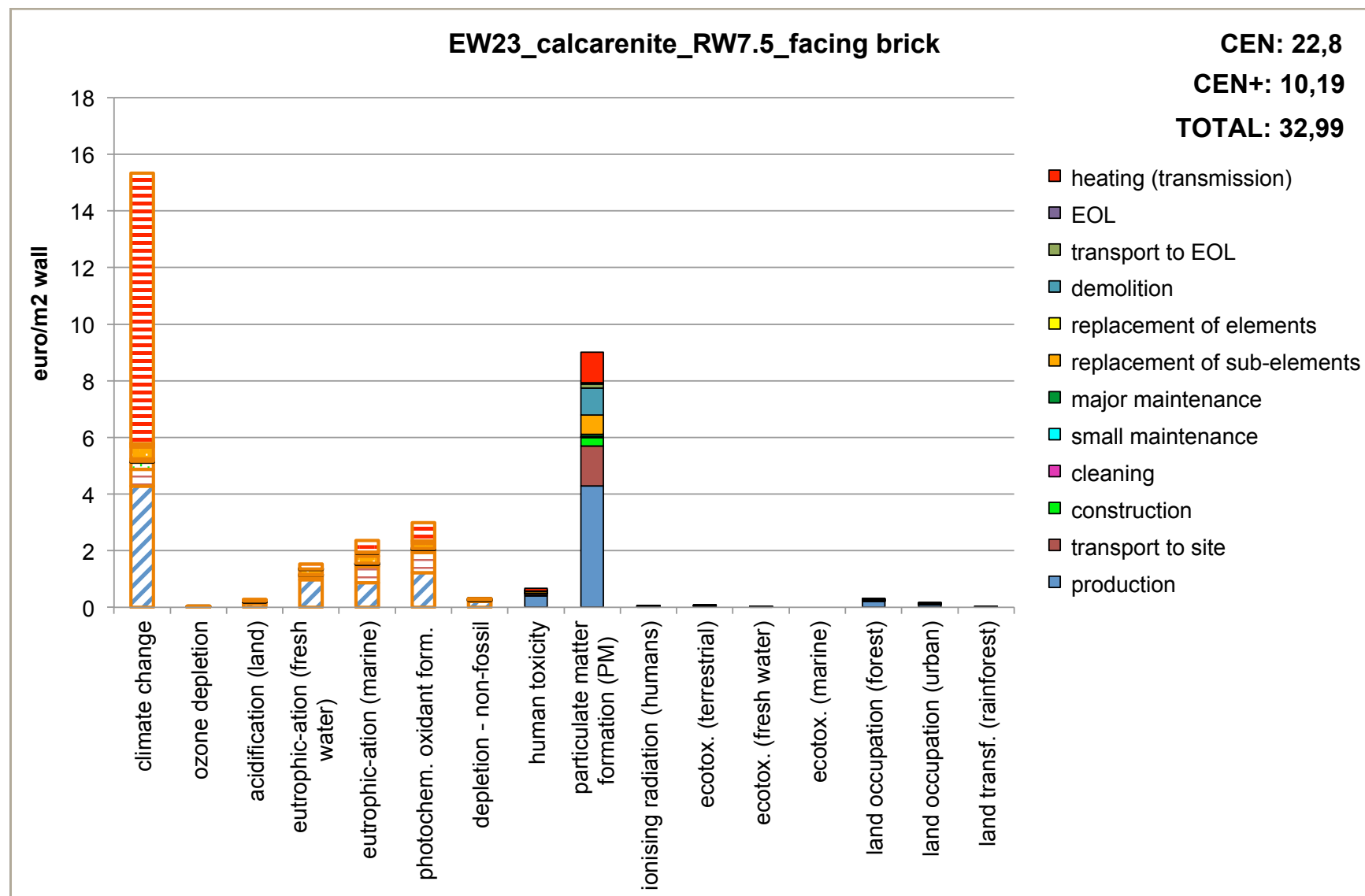


Figure exterior wall 2.23.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW23_calcarenite_RW7.5_facing brick' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.24. EW24_hollow brick_concrete prefab panel

Table 2.24: overview of the detailed composition of variant 'EW24_hollow brick_concrete prefab panel'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW24_hollow brick_concrete prefab panel									
outer wall - loadbearing - primary part - blocks/stones - building bricks (290x140x140), incl. mortar	m ²			120	necessary	1	0.14	0.407	0.34
outer wall - loadbearing - column - steel - IPE - b=73mm h=140mm t=4,7mm	m			120	necessary	0.23		na	
outer wall - loadbearing - beam - steel - UPN - b=100mm h=300mm t=10mm	m			120	necessary	0.18		na	
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - concrete sandwich panels 16cm - PUR insulation (6cm)	m ²		30	60	necessary	1	0.2	na	2.00
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (14 cm)	m ²			120	necessary	1	0.14	0.036	3.89
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/ λ (in m².K/W)

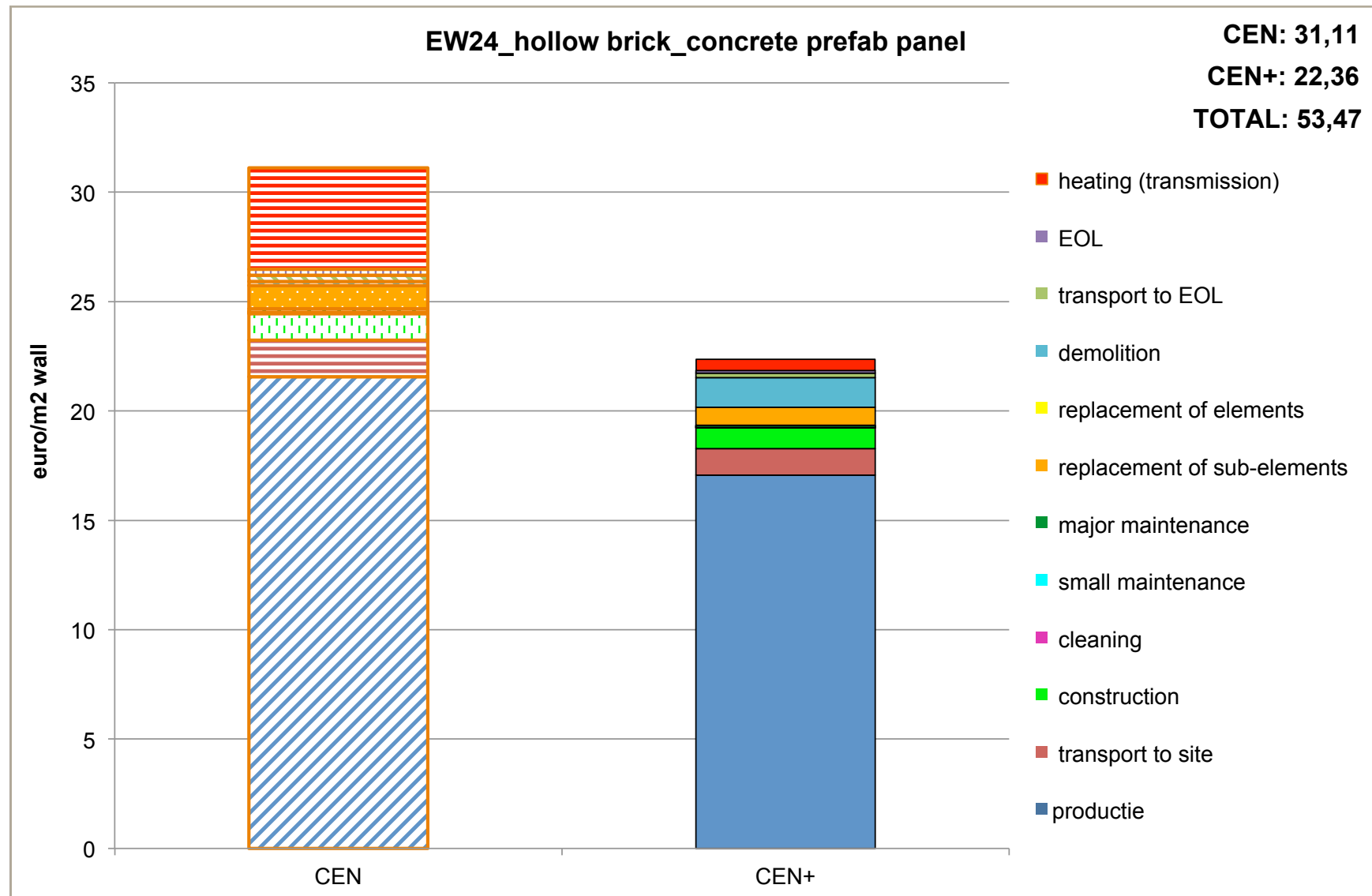


Figure exterior wall 2.24.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW24_hollow brick_concrete prefab panel' per life cycle stage, expressed in monetary units.

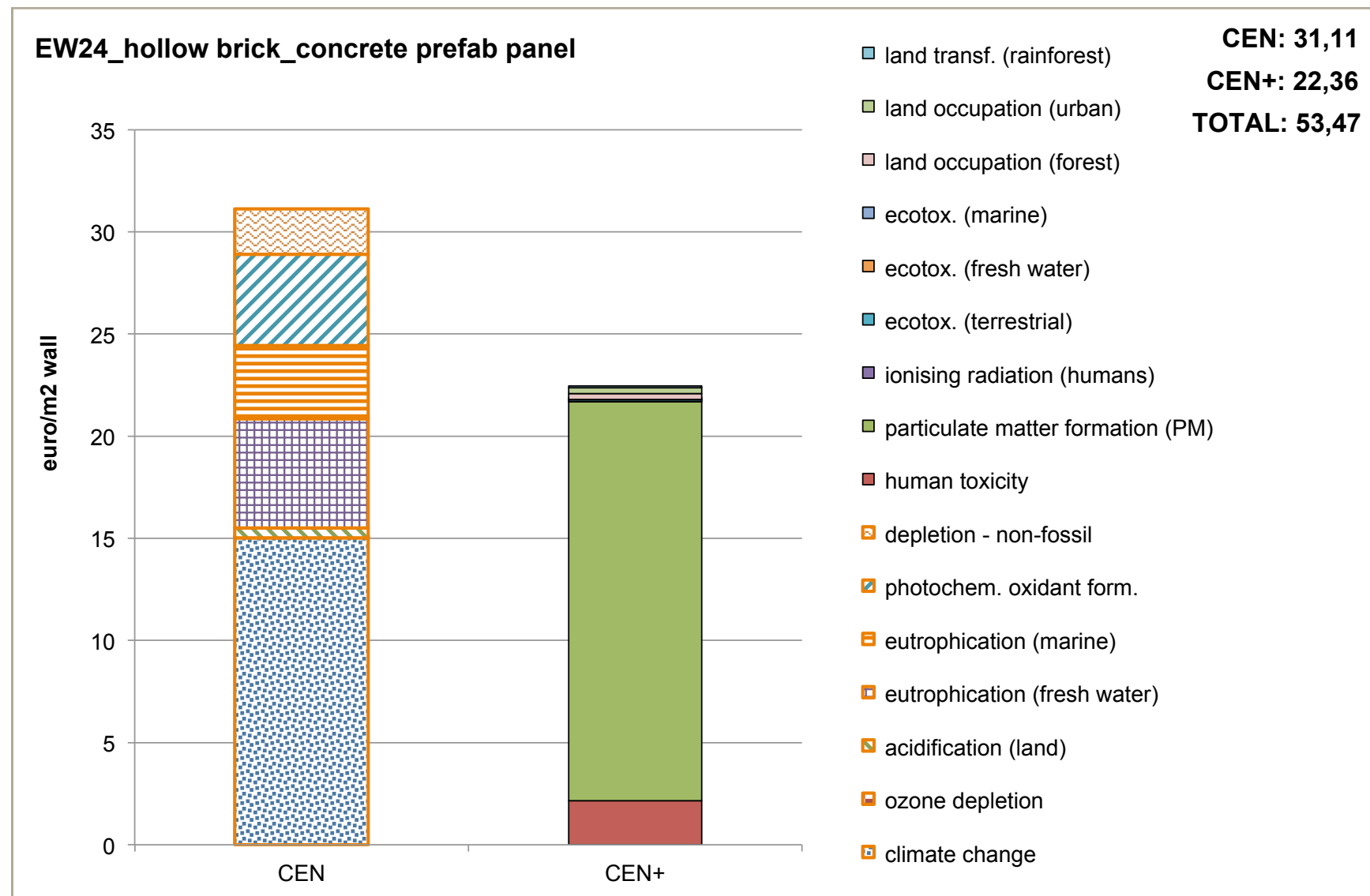


Figure exterior wall 2.24.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW24_hollow brick_concrete prefab panel' per environmental indicator, expressed in monetary units.

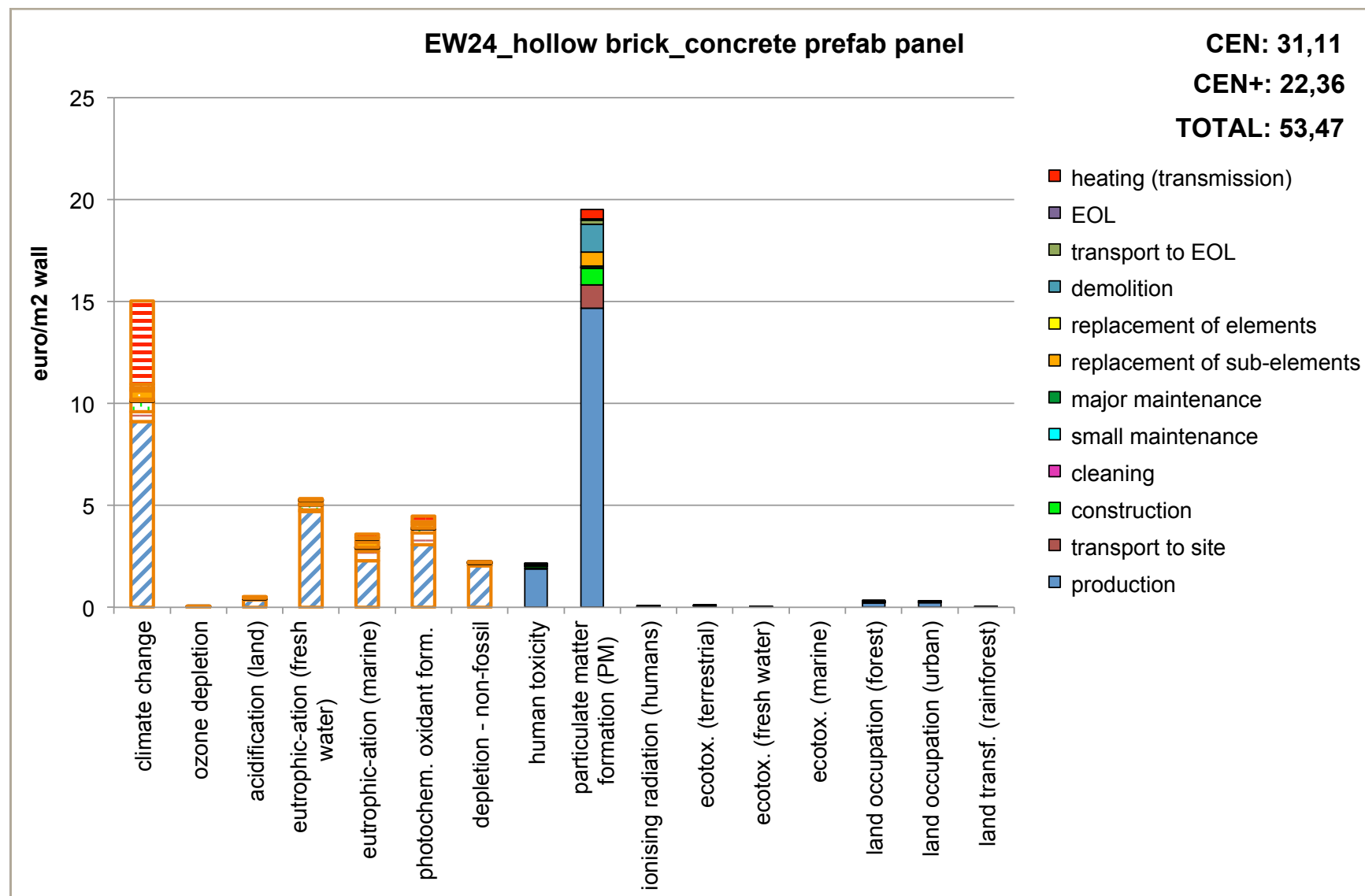


Figure exterior wall 2.24.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW24_hollow brick_concrete prefab panel' per life cycle stage and per individual environmental indicator, expressed in monetary units.

2.25. EW25_concrete_insitu_RW7.5_concrete board

Table 2.25: overview of the detailed composition of variant 'EW25_concrete_insitu_RW7.5_concrete board'

Description	u	MiM	MaM	Repl	Repl Type	Ratio	t (m)	λ (W/m.K)	R (m ² .K/W)
EW25_concrete_insitu_RW7.5_concrete board									
outer wall - loadbearing - primary part - in situ/reinforced concrete	m ³			120	necessary	0.14	0.14	1.700	0.08
air cavity, d = 3 cm, horizontal - not ventilated	m ²			120	necessary	1	0.03	na	0.18
Wall finishes, external - infrastructure - cavity wall ties - iron proof steel (180 x 3,5 mm)	m ²			120	necessary	1		na	
Wall finishes, external - infrastructure - cavity wall ties - insulation clips	m ²			120	necessary	1		na	
Wall, external finishes - closing sub-element - architectural grey concrete - in situ/reinforced - 10 cm	m ²		30	120	necessary	1	0.1	2.200	0.05
Thermal insulation in cavity - blanket, batt - anorganic fiber - rock wool - medium hard (7,5 cm)	m ²			120	necessary	1	0.075	0.036	2.08
Wall finishes, internal - plaster - gypsum on brickwork - with machine (for paint or wall paper)	m ²	5	10	40	aesthetic	1	0.01	0.520	0.02
Wall finishes, internal - treatment of closing sub-element - painting on gypsum plaster - acrylic paint	m ²		5	10	aesthetic	1		na	

- u: unit;
- MiM: minor maintenance frequency;
- MaM: major maintenance frequency;

- Repl: replacement frequency;
- type Repl: type of replacement (necessary or aesthetic);
- ratio: quantity per m²;

- t: layer thickness (in m);
- λ : heat conduction coefficient (in W/m.K);
- R: thermal resistance = t/λ (in m².K/W)

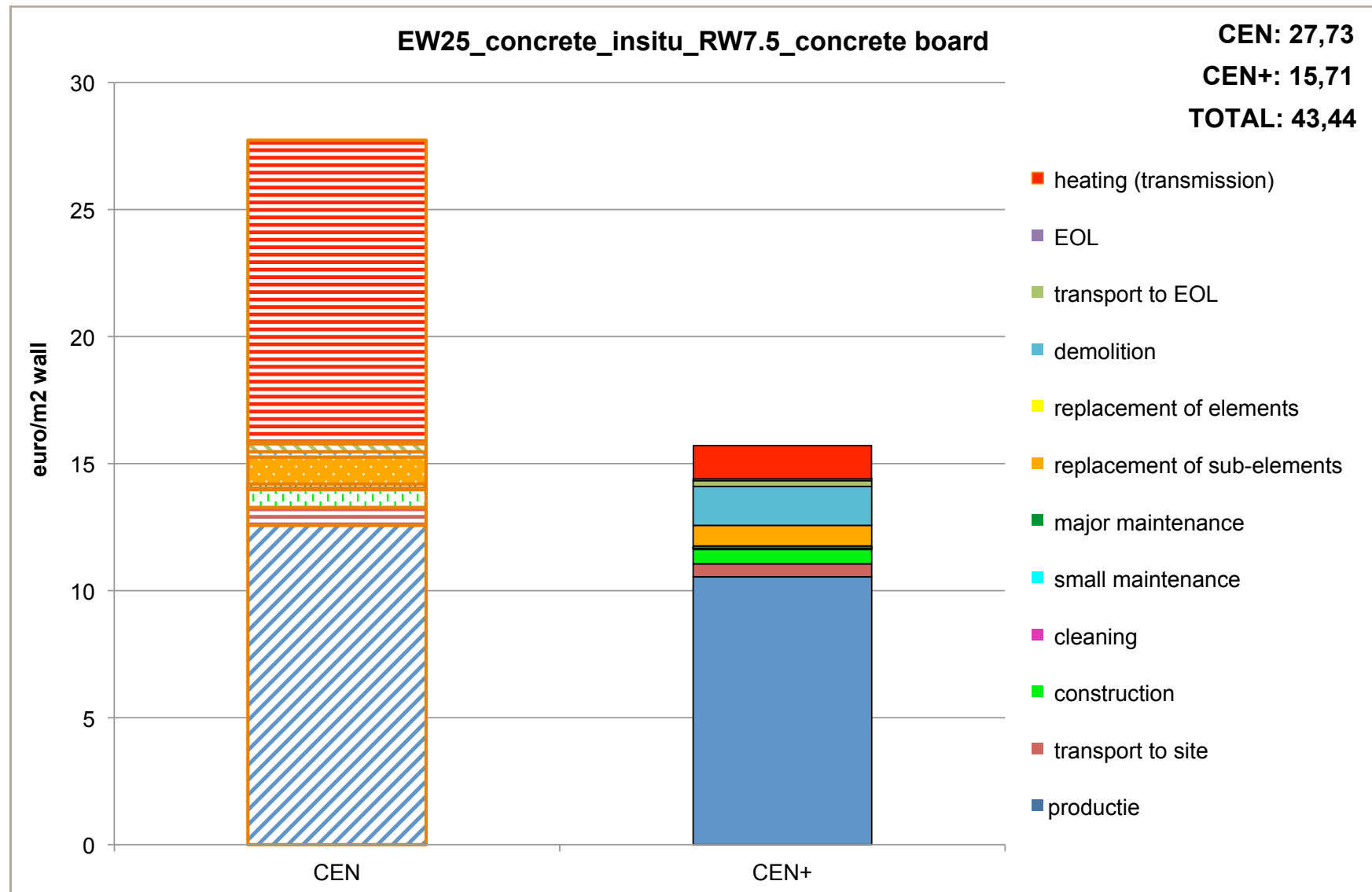


Figure exterior wall 2.25.1: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW25_concrete_insitu_RW7.5_concrete board' per life cycle stage, expressed in monetary units.

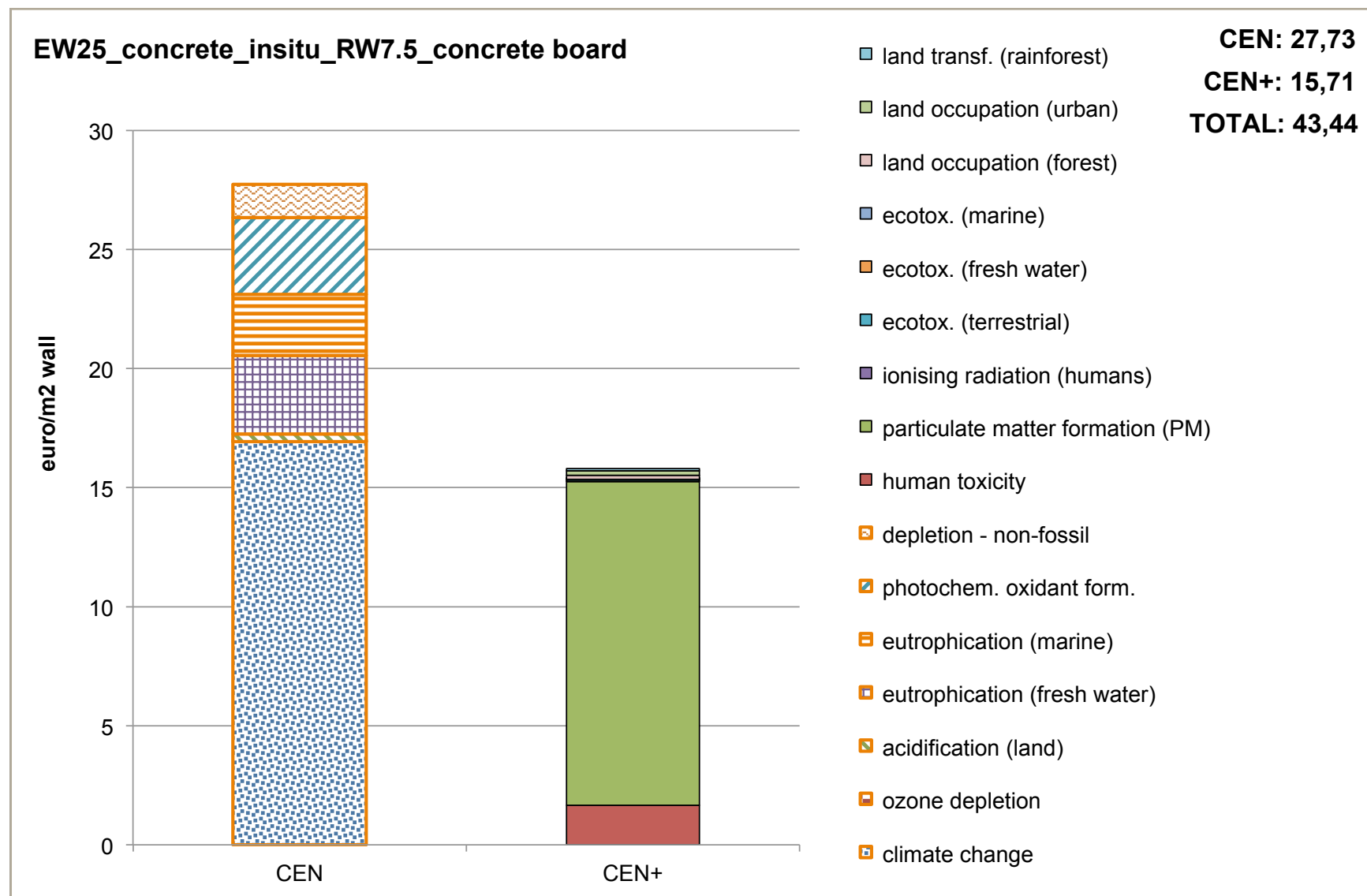


Figure exterior wall 2.25.2: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW25_concrete_insitu_RW7.5_concrete board' per environmental indicator, expressed in monetary units.

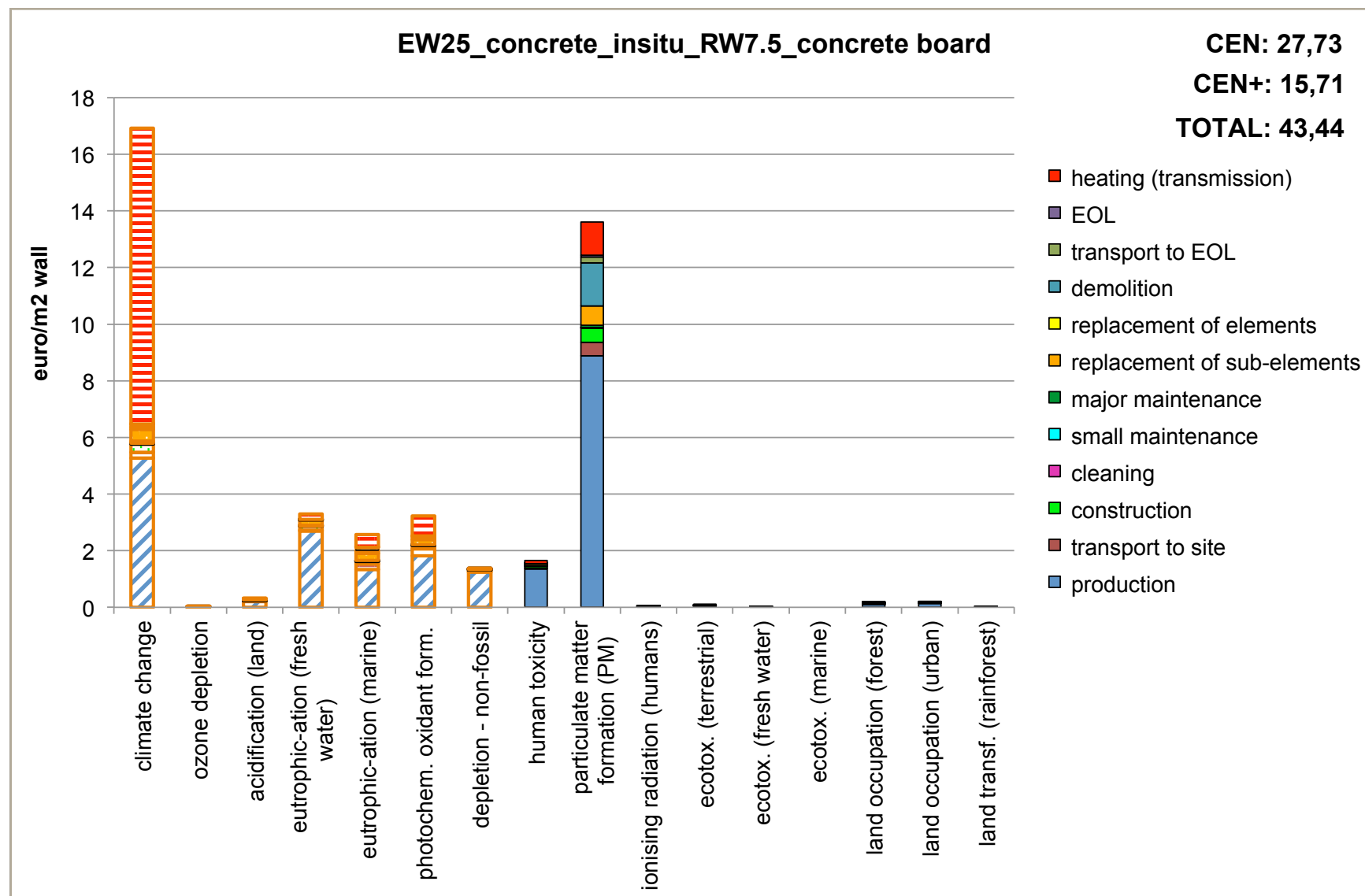


Figure exterior wall 2.25.3: Aggregated environmental profile (divided into CEN and CEN+) of variant 'EW25_concrete_insitu_RW7.5_concrete board' per life cycle stage and per individual environmental indicator, expressed in monetary units.

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