

Supplementary Material

1 SUPPLEMENTARY TABLES

The following tables document the results of the five cross-laminated timber (CLT) building scenarios and the reinforced concrete (RC) building.

Table S1. Embodied primary energy and global warming potential impacts for the CLT building in scenario A

Impact Category	Unit	A1	A2	A3	A4	A5	Total
Non-renewable, fossil	MJ/m ²	1,135	191	754	182	59	2298
Non-renewable, nuclear	MJ/m ²	841	6	168	2	0.73	261
Non-renewable, biomass	MJ/m ²	0.02	0.00	0.00	0.00	0.00	0.03
Renewable, wind, solar, geothermal	MJ/m ²	9	0.32	13	0.19	2	25
Renewable, biomass	MJ/m ²	663	0.17	28	0.08	0.70	961
Renewable, hydro	MJ/m ²	21	0.83	64	0.34	10	96
Global Warming Potential	kg CO ₂ eq/m ₂	105	14	50	11	0.87	180

Table S2. Embodied primary energy and global warming potential impacts for the CLT building in scenario B

Impact Category	Unit	A1	A2	A3	A4	A5	Total
Non-renewable, fossil	MJ/m ²	1,135	627	888	495	74	3219
Non-renewable, nuclear	MJ/m ²	84	12	221	7	8	332
Non-renewable, biomass	MJ/m ²	0.02	0.00	0.00	0.00	0.00	0.03
Renewable, wind, solar, geothermal	MJ/m ²	9	0.53	9	0.36	2	20
Renewable, biomass	MJ/m ²	663	0.35	297	0.23	2	963
Renewable, hydro	MJ/m ²	21	1	17	0.75	2	41
Global Warming Potential	kg CO ₂ eq/m ₂	105	46	62	36	2	252

Table S3. Embodied primary energy and global warming potential impacts for the CLT building in scenario C

Impact Category	Unit	A1	A2	A3	A4	A5	Total
Non-renewable, fossil	MJ/m ²	1,189	629	808	163	81	2870
Non-renewable, nuclear	MJ/m ²	136	12	154	2	15	320
Non-renewable, biomass	MJ/m ²	0.02	0.00	0.00	0.00	0.00	0.03
Renewable, wind, solar, geothermal	MJ/m ²	4	0.53	16	0.20	0.31	21
Renewable, biomass	MJ/m ²	1,002	0.36	350	0.09	4	1357
Renewable, hydro	MJ/m ²	15	1	34	0.34	0.58	51
Global Warming Potential	kg CO ₂ eq/m ₂	111	47	54	11	2	225

Table S4. Embodied primary energy and global warming potential impacts for the CLT building in scenario D

Impact Category	Unit	A1	A2	A3	A4	A5	Total
Non-renewable, fossil	MJ/m ²	1,189	687	754	752	81	3462
Non-renewable, nuclear	MJ/m ²	136	13	168	10	20	348
Non-renewable, biomass	MJ/m ²	0.02	0.00	0.00	0.00	0.00	0.03
Renewable, wind, solar, geothermal	MJ/m ²	4	0.55	13	0.48	0.05	19
Renewable, biomass	MJ/m ²	1002	0.38	298	0.34	0.45	1301
Renewable, hydro	MJ/m ²	15	1	64	1	0.48	82
Global Warming Potential	kg CO ₂ eq/m ₂	111	51	50	56	3	270

Table S5. Embodied primary energy and global warming potential impacts for the RC building

Impact Category	Unit	A1	A2	A3	A4	A5	Total
Non-renewable, fossil	MJ/m ²	1,486	164	776	77	370	2900
Non-renewable, nuclear	MJ/m ²	101	21	140	1	4	267
Non-renewable, biomass	MJ/m ²	0.02	0.00	0.00	0.00	0.00	0.02
Renewable, wind, solar, geothermal	MJ/m ²	6	1	9	0.18	27	44
Renewable, biomass	MJ/m ²	40	0.43	9	0.05	9	58
Renewable, hydro	MJ/m ²	20	2	12	0.26	125	160
Global Warming Potential	kg CO ₂ eq/m ₂	161	11	56	5	11	245