

Life Cycle Sustainability Assessment of Building Construction: A Case Study in China

Supplementary Material

Table S1: LCA results of the studied building project.

Approach	Impact/Damage Category	Unit	Material			Energy			Transportation			Waste			Dust emission			Total performance		
			Total	Per unit	Per GFA (m2)	Total	Per unit	Per GFA (m2)	Total	Per unit	Per GFA (m2)	Total	Per unit	Per GFA (m2)	Total	Per unit	Per GFA (m2)	Total	Per unit	Per GFA (m2)
Midpoint Characterization	Climate change	kg CO2 eq	1.59E+07	7.81E+04	4.55E+02	2.91E+05	1.43E+03	8.32E+00	1.29E+06	6.30E+03	3.67E+01	1.02E+04	5.01E+01	2.92E-01	0.00E+00	0.00E+00	0.00E+00	1.75E+07	8.59E+04	5.01E+02
	Ozone depletion	kg CFC-11 eq	9.07E-01	4.45E-03	2.59E-05	4.38E-04	2.15E-06	1.25E-08	1.73E-01	8.50E-04	4.96E-06	5.02E-04	2.46E-06	1.43E-08	0.00E+00	0.00E+00	0.00E+00	1.08E+00	5.30E-03	3.09E-05
	Human toxicity	kg 1,4-DB eq	5.94E+06	2.91E+04	1.70E+02	5.24E+04	2.57E+02	1.50E+00	2.08E+05	1.02E+03	5.95E+00	9.61E+03	4.71E+01	2.75E-01	0.00E+00	0.00E+00	0.00E+00	6.21E+06	3.04E+04	1.77E+02
	Photochemical oxidant formation	kg NMVOC	4.24E+04	2.08E+02	1.21E+00	1.39E+03	6.81E+00	3.97E-02	3.59E+03	1.76E+01	1.03E-01	2.45E+01	1.20E-01	7.00E-04	0.00E+00	0.00E+00	0.00E+00	4.74E+04	2.32E+02	1.35E+00
	Particulate matter formation	kg PM10 eq	2.92E+04	1.43E+02	8.34E-01	7.62E+02	3.74E+00	2.18E-02	1.19E+03	5.84E+00	3.40E-02	5.77E+00	2.83E-02	1.65E-04	4.14E+02	2.03E+00	1.18E-02	3.16E+04	1.55E+02	9.02E-01

	Ionizing radiation	kg U235 eq	3.00E+06	1.47E+04	8.58E+01	7.70E+02	3.78E+00	2.20E-02	2.61E+05	1.28E+03	7.46E+00	3.74E+02	1.83E+00	1.07E-02	0.00E+00	0.00E+00	0.00E+00	3.26E+06	1.60E+04	9.33E+01
	Terrestrial acidification	kg SO2 eq	4.94E+04	2.42E+02	1.41E+00	2.34E+03	1.15E+01	6.69E-02	3.28E+03	1.61E+01	9.36E-02	1.20E+01	5.89E-02	3.44E-04	0.00E+00	0.00E+00	0.00E+00	5.50E+04	2.70E+02	1.57E+00
	Freshwater eutrophication	kg P eq	5.36E+03	2.63E+01	1.53E-01	3.06E+01	1.50E-01	8.74E-04	1.80E+02	8.81E-01	5.14E-03	3.29E-01	1.61E-03	9.41E-06	0.00E+00	0.00E+00	0.00E+00	5.57E+03	2.73E+01	1.59E-01
	Marine eutrophication	kg N eq	2.24E+03	1.10E+01	6.39E-02	5.37E+01	2.63E-01	1.53E-03	1.16E+02	5.67E-01	3.31E-03	1.59E+02	7.82E-01	4.56E-03	0.00E+00	0.00E+00	0.00E+00	2.56E+03	1.26E+01	7.33E-02
	Terrestrial ecotoxicity	kg 1,4-DB eq	1.93E+03	9.48E+00	5.53E-02	5.82E+00	2.85E-02	1.66E-04	1.30E+02	6.36E-01	3.71E-03	2.49E-01	1.22E-03	7.13E-06	0.00E+00	0.00E+00	0.00E+00	2.07E+03	1.01E+01	5.92E-02
	Freshwater ecotoxicity	kg 1,4-DB eq	1.32E+05	6.49E+02	3.79E+00	7.74E+02	3.80E+00	2.21E-02	4.70E+03	2.30E+01	1.34E-01	7.91E+01	3.88E-01	2.26E-03	0.00E+00	0.00E+00	0.00E+00	1.38E+05	6.77E+02	3.94E+00
	Marine ecotoxicity	kg 1,4-DB eq	1.37E+05	6.71E+02	3.91E+00	7.74E+02	3.79E+00	2.21E-02	4.89E+03	2.40E+01	1.40E-01	7.14E+01	3.50E-01	2.04E-03	0.00E+00	0.00E+00	0.00E+00	1.43E+05	6.99E+02	4.07E+00
	Agricultural land occupation	m2a	2.68E+06	1.32E+04	7.66E+01	7.04E+03	3.45E+01	2.01E-01	5.68E+03	2.79E+01	1.62E-01	5.02E+01	2.46E-01	1.44E-03	0.00E+00	0.00E+00	0.00E+00	2.70E+06	1.32E+04	7.70E+01

	Urban land occupation	m2a	1.12E+05	5.47E+02	3.19E+00	2.05E+03	1.01E+01	5.87E-02	4.35E+04	2.13E+02	1.24E+00	6.07E+02	2.97E+00	1.73E-02	0.00E+00	0.00E+00	0.00E+00	1.58E+05	7.74E+02	4.51E+00
	Natural land transformation	m2	2.48E+03	1.22E+01	7.09E-02	3.84E+01	1.88E-01	1.10E-03	4.81E+02	2.36E+00	1.37E-02	-7.09E+00	-3.47E-02	-2.03E-04	0.00E+00	0.00E+00	0.00E+00	2.99E+03	1.47E+01	8.55E-02
	Water depletion	m3	1.58E+05	7.73E+02	4.51E+00	6.83E+02	3.35E+00	1.95E-02	4.63E+03	2.27E+01	1.32E-01	4.67E+01	2.29E-01	1.33E-03	0.00E+00	0.00E+00	0.00E+00	1.63E+05	7.99E+02	4.66E+00
	Metal depletion	kg Fe eq	2.87E+06	1.41E+04	8.20E+01	1.14E+03	5.59E+00	3.26E-02	7.50E+04	3.68E+02	2.14E+00	1.22E+02	5.97E-01	3.48E-03	0.00E+00	0.00E+00	0.00E+00	2.95E+06	1.45E+04	8.42E+01
	Fossil depletion	kg oil eq	3.54E+06	1.74E+04	1.01E+02	7.06E+04	3.46E+02	2.02E+00	4.55E+05	2.23E+03	1.30E+01	1.14E+03	5.61E+00	3.27E-02	0.00E+00	0.00E+00	0.00E+00	4.07E+06	1.99E+04	1.16E+02
Midpoint Normalization	Climate change	Point	2.31E+03	1.13E+01	6.61E-02	4.22E+01	2.07E-01	1.21E-03	1.87E+02	9.15E-01	5.33E-03	1.48E+00	7.27E-03	4.24E-05	0.00E+00	0.00E+00	0.00E+00	2.54E+03	1.25E+01	7.26E-02
	Ozone depletion	Point	2.41E+01	1.18E-01	6.88E-04	1.16E-02	5.71E-05	3.33E-07	4.61E+00	2.26E-02	1.32E-04	1.33E-02	6.54E-05	3.81E-07	0.00E+00	0.00E+00	0.00E+00	2.87E+01	1.41E-01	8.21E-04
	Human toxicity	Point	5.06E+04	2.48E+02	1.44E+00	4.46E+02	2.19E+00	1.27E-02	1.77E+03	8.69E+00	5.07E-02	8.19E+01	4.01E-01	2.34E-03	0.00E+00	0.00E+00	0.00E+00	5.29E+04	2.59E+02	1.51E+00

	Photochemical oxidant formation	Point	8.66E+02	4.25E+00	2.48E-02	2.84E+01	1.39E-01	8.11E-04	7.33E+01	3.60E-01	2.10E-03	5.01E-01	2.45E-03	1.43E-05	0.00E+00	0.00E+00	0.00E+00	9.69E+02	4.75E+00	2.77E-02
	Particulate matter formation	Point	2.08E+03	1.02E+01	5.94E-02	5.42E+01	2.66E-01	1.55E-03	8.47E+01	4.15E-01	2.42E-03	4.11E-01	2.01E-03	1.17E-05	2.95E+01	1.44E-01	8.42E-04	2.25E+03	1.10E+01	6.42E-02
	Ionizing radiation	Point	2.28E+03	1.12E+01	6.52E-02	5.86E-01	2.87E-03	1.67E-05	1.99E+02	9.73E-01	5.67E-03	2.84E-01	1.39E-03	8.12E-06	0.00E+00	0.00E+00	0.00E+00	2.48E+03	1.22E+01	7.09E-02
	Terrestrial acidification	Point	1.29E+03	6.34E+00	3.69E-02	6.13E+01	3.00E-01	1.75E-03	8.58E+01	4.21E-01	2.45E-03	3.15E-01	1.54E-03	9.00E-06	0.00E+00	0.00E+00	0.00E+00	1.44E+03	7.06E+00	4.12E-02
	Freshwater eutrophication	Point	1.85E+04	9.06E+01	5.28E-01	1.06E+02	5.18E-01	3.02E-03	6.20E+02	3.04E+00	1.77E-02	1.14E+00	5.57E-03	3.25E-05	0.00E+00	0.00E+00	0.00E+00	1.92E+04	9.42E+01	5.49E-01
	Marine eutrophication	Point	3.05E+02	1.49E+00	8.71E-03	7.32E+00	3.59E-02	2.09E-04	1.58E+01	7.73E-02	4.51E-04	2.17E+01	1.07E-01	6.21E-04	0.00E+00	0.00E+00	0.00E+00	3.50E+02	1.71E+00	9.99E-03
	Terrestrial ecotoxicity	Point	2.98E+02	1.46E+00	8.51E-03	8.96E-01	4.39E-03	2.56E-05	2.00E+01	9.79E-02	5.71E-04	3.84E-02	1.88E-04	1.10E-06	0.00E+00	0.00E+00	0.00E+00	3.19E+02	1.56E+00	9.10E-03
	Freshwater ecotoxicity	Point	3.06E+04	1.50E+02	8.74E-01	1.79E+02	8.76E-01	5.11E-03	1.08E+03	5.32E+00	3.10E-02	1.82E+01	8.95E-02	5.21E-04	0.00E+00	0.00E+00	0.00E+00	3.19E+04	1.56E+02	9.10E-01

	Marine ecotoxicity	Point	5.67E+04	2.78E+02	1.62E+00	3.21E+02	1.57E+00	9.16E-03	2.03E+03	9.94E+00	5.79E-02	2.96E+01	1.45E-01	8.45E-04	0.00E+00	0.00E+00	0.00E+00	5.91E+04	2.90E+02	1.69E+00
	Agricultural land occupation	Point	4.95E+02	2.42E+00	1.41E-02	1.30E+00	6.36E-03	3.71E-05	1.05E+00	5.14E-03	2.99E-05	9.26E-03	4.54E-05	2.65E-07	0.00E+00	0.00E+00	0.00E+00	4.97E+02	2.44E+00	1.42E-02
	Urban land occupation	Point	1.44E+02	7.06E-01	4.12E-03	2.65E+00	1.30E-02	7.57E-05	5.62E+01	2.75E-01	1.60E-03	7.83E-01	3.84E-03	2.24E-05	0.00E+00	0.00E+00	0.00E+00	2.04E+02	9.98E-01	5.82E-03
	Natural land transformation	Point	2.06E+02	1.01E+00	5.89E-03	3.19E+00	1.56E-02	9.12E-05	4.00E+01	1.96E-01	1.14E-03	-5.89E-01	-2.89E-03	-1.68E-05	0.00E+00	0.00E+00	0.00E+00	2.49E+02	1.22E+00	7.11E-03
	Water depletion	Point	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Metal depletion	Point	6.45E+03	3.16E+01	1.84E-01	2.56E+00	1.26E-02	7.32E-05	1.69E+02	8.26E-01	4.82E-03	2.74E-01	1.34E-03	7.82E-06	0.00E+00	0.00E+00	0.00E+00	6.62E+03	3.25E+01	1.89E-01
	Fossil depletion	Point	2.58E+03	1.26E+01	7.37E-02	5.14E+01	2.52E-01	1.47E-03	3.31E+02	1.62E+00	9.46E-03	8.33E-01	4.08E-03	2.38E-05	0.00E+00	0.00E+00	0.00E+00	2.96E+03	1.45E+01	8.46E-02
Endpoint Damage	Climate change Human Health	DALY	2.23E+01	1.09E-01	6.37E-04	4.08E-01	2.00E-03	1.16E-05	1.80E+00	8.83E-03	5.14E-05	1.45E-02	7.09E-05	4.13E-07	0.00E+00	0.00E+00	0.00E+00	2.45E+01	1.20E-01	7.01E-04

	Ozone depletion	DALY	2.36E-03	1.16E-05	6.76E-08	1.17E-06	5.73E-09	3.34E-11	4.55E-04	2.23E-06	1.30E-08	1.32E-06	6.48E-09	3.77E-11	0.00E+00	0.00E+00	0.00E+00	2.82E-03	1.38E-05	8.06E-08
	Human toxicity	DALY	4.15E+00	2.04E-02	1.19E-04	3.66E-02	1.80E-04	1.05E-06	1.46E-01	7.14E-04	4.16E-06	6.73E-03	3.30E-05	1.92E-07	0.00E+00	0.00E+00	0.00E+00	4.34E+00	2.13E-02	1.24E-04
	Photochemical oxidant formation	DALY	1.65E-03	8.11E-06	4.73E-08	5.42E-05	2.66E-07	1.55E-09	1.40E-04	6.86E-07	4.00E-09	9.56E-07	4.69E-09	2.73E-11	0.00E+00	0.00E+00	0.00E+00	1.85E-03	9.06E-06	5.28E-08
	Particulate matter formation	DALY	7.59E+00	3.72E-02	2.17E-04	1.98E-01	9.72E-04	5.66E-06	3.10E-01	1.52E-03	8.85E-06	1.50E-03	7.36E-06	4.29E-08	0.00E+00	0.00E+00	3.07E-06	8.10E+00	3.97E-02	2.35E-04
	Ionizing radiation	DALY	4.92E-02	2.41E-04	1.41E-06	1.26E-05	6.19E-08	3.61E-10	4.29E-03	2.10E-05	1.22E-07	6.13E-06	3.01E-08	1.75E-10	0.00E+00	0.00E+00	0.00E+00	5.35E-02	2.62E-04	1.53E-06
	Climate change Ecosystems	species.yr	1.26E-01	6.19E-04	3.61E-06	2.31E-03	1.13E-05	6.60E-08	1.02E-02	5.00E-05	2.91E-07	8.17E-05	4.00E-07	2.33E-09	0.00E+00	0.00E+00	0.00E+00	1.39E-01	6.81E-04	3.97E-06
	Terrestrial acidification	species.yr	2.86E-04	1.40E-06	8.18E-09	1.36E-05	6.66E-08	3.88E-10	1.90E-05	9.32E-08	5.43E-10	6.98E-08	3.42E-10	1.99E-12	0.00E+00	0.00E+00	0.00E+00	3.19E-04	1.56E-06	9.12E-09
	Freshwater eutrophication	species.yr	2.35E-04	1.15E-06	6.72E-09	1.34E-06	6.59E-09	3.84E-11	7.90E-06	3.87E-08	2.26E-10	1.45E-08	7.09E-11	4.13E-13	0.00E+00	0.00E+00	0.00E+00	2.45E-04	1.20E-06	6.99E-09

	Terrestrial ecotoxicity	species.yr	2.46E-04	1.20E-06	7.02E-09	7.40E-07	3.63E-09	2.11E-11	1.65E-05	8.09E-08	4.71E-10	3.17E-08	1.55E-10	9.06E-13	0.00E+00	0.00E+00	0.00E+00	2.63E-04	1.29E-06	7.52E-09
	Freshwater ecotoxicity	species.yr	3.45E-05	1.69E-07	9.85E-10	2.01E-07	9.88E-10	5.76E-12	1.22E-06	5.99E-09	3.49E-11	2.06E-08	1.01E-10	5.88E-13	0.00E+00	0.00E+00	0.00E+00	3.59E-05	1.76E-07	1.03E-09
	Marine ecotoxicity	species.yr	1.10E-07	5.37E-10	3.13E-12	6.19E-10	3.04E-12	1.77E-14	3.92E-09	1.92E-11	1.12E-13	5.71E-11	2.80E-13	1.63E-15	0.00E+00	0.00E+00	0.00E+00	1.14E-07	5.59E-10	3.26E-12
	Agricultural land occupation	species.yr	3.01E-02	1.47E-04	8.59E-07	7.88E-05	3.86E-07	2.25E-09	6.58E-05	3.22E-07	1.88E-09	6.97E-07	3.42E-09	1.99E-11	0.00E+00	0.00E+00	0.00E+00	3.02E-02	1.48E-04	8.63E-07
	Urban land occupation	species.yr	2.15E-03	1.06E-05	6.16E-08	3.96E-05	1.94E-07	1.13E-09	8.40E-04	4.12E-06	2.40E-08	1.17E-05	5.74E-08	3.35E-10	0.00E+00	0.00E+00	0.00E+00	3.05E-03	1.49E-05	8.70E-08
	Natural land transformation	species.yr	3.88E-03	1.90E-05	1.11E-07	6.89E-05	3.38E-07	1.97E-09	7.20E-04	3.53E-06	2.06E-08	-1.29E-05	-6.33E-08	-3.69E-10	0.00E+00	0.00E+00	0.00E+00	4.65E-03	2.28E-05	1.33E-07
	Metal depletion	\$	2.05E+05	1.01E+03	5.87E+00	8.16E+01	4.00E-01	2.33E-03	5.36E+03	2.63E+01	1.53E-01	8.72E+00	4.27E-02	2.49E-04	0.00E+00	0.00E+00	0.00E+00	2.11E+05	1.03E+03	6.02E+00
	Fossil depletion	\$	5.69E+07	2.79E+05	1.63E+03	1.13E+06	5.56E+03	3.24E+01	7.30E+06	3.58E+04	2.09E+02	1.84E+04	9.01E+01	5.25E-01	0.00E+00	0.00E+00	0.00E+00	6.54E+07	3.20E+05	1.87E+03

Endpoint Normalization	Climate change Human Health	Point	1.65E+03	8.10E+00	4.72E-02	3.02E+01	1.48E-01	8.63E-04	1.33E+02	6.54E-01	3.81E-03	1.07E+00	5.26E-03	3.06E-05	0.00E+00	0.00E+00	0.00E+00	1.82E+03	8.91E+00	5.19E-02
	Ozone depletion	Point	1.75E-01	8.59E-04	5.01E-06	8.67E-05	4.25E-07	2.48E-09	3.37E-02	1.65E-04	9.64E-07	9.79E-05	4.80E-07	2.80E-09	0.00E+00	0.00E+00	0.00E+00	2.09E-01	1.03E-03	5.98E-06
	Human toxicity	Point	3.08E+02	1.51E+00	8.80E-03	2.71E+00	1.33E-02	7.76E-05	1.08E+01	5.29E-02	3.09E-04	4.99E-01	2.44E-03	1.42E-05	0.00E+00	0.00E+00	0.00E+00	3.22E+02	1.58E+00	9.20E-03
	Photochemical oxidant formation	Point	1.23E-01	6.01E-04	3.50E-06	4.02E-03	1.97E-05	1.15E-07	1.04E-02	5.09E-05	2.96E-07	7.09E-05	3.47E-07	2.03E-09	0.00E+00	0.00E+00	0.00E+00	1.37E-01	6.72E-04	3.92E-06
	Particulate matter formation	Point	5.63E+02	2.76E+00	1.61E-02	1.47E+01	7.20E-02	4.20E-04	2.29E+01	1.12E-01	6.56E-04	1.11E-01	5.45E-04	3.18E-06	0.00E+00	0.00E+00	2.28E-04	6.00E+02	2.94E+00	1.74E-02
	Ionizing radiation	Point	3.65E+00	1.79E-02	1.04E-04	9.37E-04	4.59E-06	2.68E-08	3.18E-01	1.56E-03	9.07E-06	4.55E-04	2.23E-06	1.30E-08	0.00E+00	0.00E+00	0.00E+00	3.97E+00	1.94E-02	1.13E-04
	Climate change Ecosystems	Point	1.47E+02	7.21E-01	4.20E-03	2.69E+00	1.32E-02	7.68E-05	1.19E+01	5.82E-02	3.39E-04	9.51E-02	4.66E-04	2.72E-06	0.00E+00	0.00E+00	0.00E+00	1.62E+02	7.93E-01	4.62E-03
	Terrestrial acidification	Point	3.33E-01	1.63E-03	9.52E-06	1.58E-02	7.75E-05	4.52E-07	2.21E-02	1.08E-04	6.32E-07	8.12E-05	3.98E-07	2.32E-09	0.00E+00	0.00E+00	0.00E+00	3.71E-01	1.82E-03	1.06E-05

	Freshwater eutrophication	Point	2.74E-01	1.34E-03	7.83E-06	1.57E-03	7.67E-06	4.47E-08	9.19E-03	4.51E-05	2.63E-07	1.68E-05	8.26E-08	4.81E-10	0.00E+00	0.00E+00	0.00E+00	2.85E-01	1.40E-03	8.14E-06
	Terrestrial ecotoxicity	Point	2.86E-01	1.40E-03	8.17E-06	8.61E-04	4.22E-06	2.46E-08	1.92E-02	9.41E-05	5.49E-07	3.69E-05	1.81E-07	1.05E-09	0.00E+00	0.00E+00	0.00E+00	3.06E-01	1.50E-03	8.75E-06
	Freshwater ecotoxicity	Point	4.01E-02	1.97E-04	1.15E-06	2.35E-04	1.15E-06	6.70E-09	1.42E-03	6.97E-06	4.06E-08	2.40E-05	1.17E-07	6.84E-10	0.00E+00	0.00E+00	0.00E+00	4.18E-02	2.05E-04	1.19E-06
	Marine ecotoxicity	Point	1.27E-04	6.25E-07	3.64E-09	7.21E-07	3.53E-09	2.06E-11	4.56E-06	2.24E-08	1.30E-10	6.65E-08	3.26E-10	1.90E-12	0.00E+00	0.00E+00	0.00E+00	1.33E-04	6.51E-07	3.80E-09
	Agricultural land occupation	Point	3.50E+01	1.71E-01	9.99E-04	9.18E-02	4.50E-04	2.62E-06	7.66E-02	3.75E-04	2.19E-06	8.12E-04	3.98E-06	2.32E-08	0.00E+00	0.00E+00	0.00E+00	3.52E+01	1.72E-01	1.00E-03
	Urban land occupation	Point	2.51E+00	1.23E-02	7.17E-05	4.61E-02	2.26E-04	1.32E-06	9.78E-01	4.79E-03	2.79E-05	1.36E-02	6.68E-05	3.89E-07	0.00E+00	0.00E+00	0.00E+00	3.55E+00	1.74E-02	1.01E-04
	Natural land transformation	Point	4.51E+00	2.21E-02	1.29E-04	8.02E-02	3.93E-04	2.29E-06	8.38E-01	4.11E-03	2.39E-05	-1.50E-02	-7.37E-05	-4.30E-07	0.00E+00	0.00E+00	0.00E+00	5.41E+00	2.65E-02	1.55E-04
	Metal depletion	Point	9.29E+00	4.55E-02	2.65E-04	3.69E-03	1.81E-05	1.05E-07	2.42E-01	1.19E-03	6.93E-06	3.94E-04	1.93E-06	1.13E-08	0.00E+00	0.00E+00	0.00E+00	9.53E+00	4.67E-02	2.72E-04

	Fossil depletion	Point	2.57E+03	1.26E+01	7.35E-02	5.13E+01	2.52E-01	1.47E-03	3.30E+02	1.62E+00	9.43E-03	8.31E-01	4.07E-03	2.37E-05	0.00E+00	0.00E+00	0.00E+00	2.96E+03	1.45E+01	8.45E-02
Endpoint Weighting	Climate change Human Health	Point	6.61E+05	3.24E+03	1.89E+01	1.21E+04	5.92E+01	3.45E-01	5.34E+04	2.62E+02	1.53E+00	4.29E+02	2.10E+00	1.23E-02	0.00E+00	0.00E+00	0.00E+00	7.27E+05	3.56E+03	2.08E+01
	Ozone depletion	Point	7.01E+01	3.44E-01	2.00E-03	3.47E-02	1.70E-04	9.91E-07	1.35E+01	6.61E-02	3.85E-04	3.92E-02	1.92E-04	1.12E-06	0.00E+00	0.00E+00	0.00E+00	8.37E+01	4.10E-01	2.39E-03
	Human toxicity	Point	1.23E+05	6.04E+02	3.52E+00	1.09E+03	5.32E+00	3.10E-02	4.32E+03	2.12E+01	1.23E-01	1.99E+02	9.78E-01	5.70E-03	0.00E+00	0.00E+00	0.00E+00	1.29E+05	6.31E+02	3.68E+00
	Photochemical oxidant formation	Point	4.90E+01	2.40E-01	1.40E-03	1.61E+00	7.88E-03	4.59E-05	4.15E+00	2.03E-02	1.19E-04	2.84E-02	1.39E-04	8.10E-07	0.00E+00	0.00E+00	0.00E+00	5.48E+01	2.69E-01	1.57E-03
	Particulate matter formation	Point	2.25E+05	1.10E+03	6.43E+00	5.88E+03	2.88E+01	1.68E-01	9.18E+03	4.50E+01	2.62E-01	4.45E+01	2.18E-01	1.27E-03	0.00E+00	0.00E+00	9.12E-02	2.40E+05	1.18E+03	6.95E+00
	Ionizing radiation	Point	1.46E+03	7.15E+00	4.17E-02	3.75E-01	1.84E-03	1.07E-05	1.27E+02	6.23E-01	3.63E-03	1.82E-01	8.91E-04	5.19E-06	0.00E+00	0.00E+00	0.00E+00	1.59E+03	7.78E+00	4.53E-02
	Climate change Ecosystems	Point	5.88E+04	2.88E+02	1.68E+00	1.07E+03	5.27E+00	3.07E-02	4.75E+03	2.33E+01	1.36E-01	3.80E+01	1.86E-01	1.09E-03	0.00E+00	0.00E+00	0.00E+00	6.47E+04	3.17E+02	1.85E+00

	Terrestrial acidification	Point	1.33E+02	6.54E-01	3.81E-03	6.32E+00	3.10E-02	1.81E-04	8.85E+00	4.34E-02	2.53E-04	3.25E-02	1.59E-04	9.28E-07	0.00E+00	0.00E+00	0.00E+00	1.49E+02	7.28E-01	4.24E-03
	Freshwater eutrophication	Point	1.10E+02	5.37E-01	3.13E-03	6.26E-01	3.07E-03	1.79E-05	3.68E+00	1.80E-02	1.05E-04	6.74E-03	3.30E-05	1.93E-07	0.00E+00	0.00E+00	0.00E+00	1.14E+02	5.58E-01	3.25E-03
	Terrestrial ecotoxicity	Point	1.14E+02	5.61E-01	3.27E-03	3.45E-01	1.69E-03	9.84E-06	7.68E+00	3.76E-02	2.19E-04	1.48E-02	7.24E-05	4.22E-07	0.00E+00	0.00E+00	0.00E+00	1.22E+02	6.00E-01	3.50E-03
	Freshwater ecotoxicity	Point	1.61E+01	7.87E-02	4.59E-04	9.38E-02	4.60E-04	2.68E-06	5.69E-01	2.79E-03	1.63E-05	9.58E-03	4.70E-05	2.74E-07	0.00E+00	0.00E+00	0.00E+00	1.67E+01	8.20E-02	4.78E-04
	Marine ecotoxicity	Point	5.10E-02	2.50E-04	1.46E-06	2.88E-04	1.41E-06	8.24E-09	1.82E-03	8.94E-06	5.21E-08	2.66E-05	1.30E-07	7.60E-10	0.00E+00	0.00E+00	0.00E+00	5.31E-02	2.60E-04	1.52E-06
	Agricultural land occupation	Point	1.40E+04	6.86E+01	4.00E-01	3.67E+01	1.80E-01	1.05E-03	3.06E+01	1.50E-01	8.75E-04	3.25E-01	1.59E-03	9.28E-06	0.00E+00	0.00E+00	0.00E+00	1.41E+04	6.89E+01	4.02E-01
	Urban land occupation	Point	1.00E+03	4.92E+00	2.87E-02	1.84E+01	9.04E-02	5.27E-04	3.91E+02	1.92E+00	1.12E-02	5.45E+00	2.67E-02	1.56E-04	0.00E+00	0.00E+00	0.00E+00	1.42E+03	6.95E+00	4.05E-02
	Natural land transformation	Point	1.80E+03	8.85E+00	5.16E-02	3.21E+01	1.57E-01	9.17E-04	3.35E+02	1.64E+00	9.58E-03	-6.01E+00	-2.95E-02	-1.72E-04	0.00E+00	0.00E+00	0.00E+00	2.17E+03	1.06E+01	6.19E-02

	Metal depletion	Point	1.86E+03	9.10E+00	5.31E-02	7.38E-01	3.62E-03	2.11E-05	4.85E+01	2.38E-01	1.39E-03	7.88E-02	3.86E-04	2.25E-06	0.00E+00	0.00E+00	0.00E+00	1.91E+03	9.35E+00	5.45E-02
	Fossil depletion	Point	5.15E+05	2.52E+03	1.47E+01	1.03E+04	5.03E+01	2.93E-01	6.60E+04	3.24E+02	1.89E+00	1.66E+02	8.15E-01	4.75E-03	0.00E+00	0.00E+00	0.00E+00	5.91E+05	2.90E+03	1.69E+01
Damage	Human Health	DALY	3.41E+01	1.67E-01	9.74E-04	6.43E-01	3.15E-03	1.84E-05	2.26E+00	1.11E-02	6.46E-05	2.27E-02	1.11E-04	6.49E-07	0.00E+00	0.00E+00	3.07E-06	3.70E+01	1.82E-01	1.06E-03
	Ecosystems	species.yr	1.63E-01	8.00E-04	4.66E-06	2.51E-03	1.23E-05	7.18E-08	1.19E-02	5.82E-05	3.39E-07	8.13E-05	3.99E-07	2.32E-09	0.00E+00	0.00E+00	0.00E+00	1.78E-01	8.71E-04	5.08E-06
	Resources	\$	5.71E+07	2.80E+05	1.63E+03	1.13E+06	5.56E+03	3.24E+01	7.31E+06	3.58E+04	2.09E+02	1.84E+04	9.01E+01	5.25E-01	0.00E+00	0.00E+00	0.00E+00	6.56E+07	3.21E+05	1.87E+03
Normalization	Human Health	Point	2.53E+03	1.24E+01	7.22E-02	4.76E+01	2.33E-01	1.36E-03	1.68E+02	8.21E-01	4.79E-03	1.68E+00	8.25E-03	4.81E-05	0.00E+00	0.00E+00	2.28E-04	2.74E+03	1.35E+01	7.86E-02
	Ecosystems	Point	1.90E+02	9.31E-01	5.43E-03	2.92E+00	1.43E-02	8.35E-05	1.38E+01	6.77E-02	3.95E-04	9.46E-02	4.64E-04	2.70E-06	0.00E+00	0.00E+00	0.00E+00	2.07E+02	1.01E+00	5.91E-03
	Resources	Point	2.58E+03	1.27E+01	7.38E-02	5.13E+01	2.52E-01	1.47E-03	3.30E+02	1.62E+00	9.44E-03	8.31E-01	4.08E-03	2.38E-05	0.00E+00	0.00E+00	0.00E+00	2.97E+03	1.45E+01	8.47E-02

Weighting	Human Health	Point	1.01E+06	4.96E+03	2.89E+01	1.90E+04	9.34E+01	5.44E-01	6.70E+04	3.29E+02	1.91E+00	6.73E+02	3.30E+00	1.92E-02	0.00E+00	0.00E+00	9.12E-02	1.10E+06	5.38E+03	3.15E+01
	Ecosystems	Point	7.60E+04	3.73E+02	2.17E+00	1.17E+03	5.73E+00	3.34E-02	5.53E+03	2.71E+01	1.58E-01	3.79E+01	1.86E-01	1.08E-03	0.00E+00	0.00E+00	0.00E+00	8.27E+04	4.06E+02	2.36E+00
	Resources	Point	5.17E+05	2.53E+03	1.48E+01	1.03E+04	5.03E+01	2.93E-01	6.61E+04	3.24E+02	1.89E+00	1.66E+02	8.15E-01	4.75E-03	0.00E+00	0.00E+00	0.00E+00	5.93E+05	2.91E+03	1.69E+01

Table S2: S-LCA characterization results of the studied building project.

Stakeholder	Impact category	Resource	Material	Construction	Total
Worker	1 Freedom of association and collective bargaining	-3.90E-03	-8.37E-01	0.00E+00	-8.41E-01
	2 Child labor	2.07E-03	4.44E-01	0.00E+00	4.46E-01
	3 Fair salary	3.90E-03	8.37E-01	-1.27E-02	8.29E-01
	4 Working hours	3.90E-03	8.37E-01	-2.54E-02	8.16E-01
	5 Forced labors	-1.29E-03	-2.76E-01	-2.54E-02	-3.03E-01
	6 Equal opportunities/discrimination	7.80E-04	1.67E-01	-1.27E-02	1.56E-01
	7 Health and safety	2.30E-03	4.94E-01	2.16E-01	7.12E-01
Local Community	8 Access to material resources (e.g., sanitation, school)	1.17E-03	2.51E-01	1.27E-02	2.65E-01
	9 Cultural heritages	0.00E+00	0.00E+00	2.54E-02	2.54E-02
	10 Safe/healthy living conditions	6.50E-04	1.40E-01	2.67E-01	4.07E-01
	11 Community engagement	3.90E-04	8.37E-02	1.52E-01	2.36E-01
	12 Local employment	3.55E-03	7.62E-01	8.89E-02	8.54E-01
Society	13 Public commitments to sustainability issues	0.00E+00	0.00E+00	2.79E-01	2.79E-01