

## Supplementary Materials

**Table S1.** Data input in the Ecoinvent database version 3.7 for surveying the inventory of the systems analyzed (datasets).

Items	Dataset
Concrete	Market for concrete, 25 MPa-concrete, 25 MPa Cutoff, S - BR.
Steel	Market for reinforcing steel-reinforcing steel-Cutoff, S - GLO.
Ceramic roof tiles	Market for roof tile-roof tile-Cutoff, SGLO.
Ceramic blocks	Market for clay brick-clay brick-Cutoff, S - GLO.
Cement	Market for cement, Portland- cement, Portland-Cutoff, S-BR.
Lime	Market for lime, hydrated, packed-lime, hydrated, packed-Cutoff, S - RoW.
Sand	Market for sand-sand-Cutoff, S - BR.
Ceramic tiles	Market for ceramic tile-ceramic tile-Cutoff, S - GLO.
Adhesive mortar	Market for adhesive mortar-adhesive mortar-Cutoff, S - GLO.
Ceramic floor tile	Market for ceramic tile-ceramic tile-Cutoff, S - GLO.
Electricity	Market for electricity, high voltage-electricity, high voltage-Cutoff, S-BR-Southern grid.

**Table S2.** Data input in the Ecoinvent database version 3.7 for surveying the inventory of the second stage of this study.

Items	Dataset
Concrete	Concrete production, 25 MPa, ready-mix, with cement blast furnace slag 6–34%-concrete, 25 MPa-Cutoff, S - BR.
Steel	Reinforcing steel production-reinforcing steel-Cutoff, S - RoW
Ceramic clocks	Clay brick production-clay brick-Cutoff, S - RoW.
Cement	Cement production, Portland-cement, Portland-Cutoff, S - BR.
Lime	Lime production, hydrated, packed-lime, hydrated, packed-Cutoff, S - RoW.
Sand	Sand quarry operation, extraction from river bed-sand-Cutoff, S - BR
Electricity	Market for electricity, high voltage-electricity, high voltage-Cutoff, S-BR-Southern grid.
Transport truck, 3.5–7.5 t	Transport, freight, lorry 3.5–7.5 metric ton, EURO3-transport, freight, lorry 3.5–7.5 metric ton, EURO3-Cutoff, S - RoW.
Transport truck, 16–32 t	Transport, freight, lorry 16–32 metric ton, EURO3-transport, freight, lorry 16–32 metric ton, EURO3-Cutoff, S - RoW.
Transport truck, > 32 t	Transport, freight, lorry > 32 metric ton, EURO3-transport, freight, lorry > 32 metric ton, EURO3-Cutoff, S - RoW.

**Table S3.** Results of the first stage of this study—assessment of the life cycle of the construction systems of Canaã Residence (output)—initial embedded impacts.

SYSTEMS	ADP kg Sb eq.	ADPf MJ	AP kg SO <sub>2</sub> eq.	EP kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	GWP kg CO <sub>2</sub> eq.	ODP kg CFC-11 eq.	POCP kg C <sub>2</sub> H <sub>4</sub> eq.
Roof	$6.81 \times 10^{-4}$	$3.43 \times 10^2$	$1.28 \times 10^{-1}$	$3.55 \times 10^{-2}$	$3.97 \times 10^1$	$3.04 \times 10^{-6}$	$7.51 \times 10^{-3}$
Walls	$1.17 \times 10^{-3}$	$5.53 \times 10^2$	$1.96 \times 10^{-1}$	$5.06 \times 10^{-2}$	$7.47 \times 10^1$	$5.41 \times 10^{-6}$	$1.26 \times 10^{-2}$
Coatings	$7.92 \times 10^{-3}$	$2.55 \times 10^2$	$9.72 \times 10^{-2}$	$3.45 \times 10^{-2}$	$2.04 \times 10^1$	$1.61 \times 10^{-6}$	$7.78 \times 10^{-3}$
Floor	$7.80 \times 10^{-3}$	$2.94 \times 10^2$	$1.16 \times 10^{-1}$	$3.72 \times 10^{-2}$	$2.67 \times 10^1$	$2.19 \times 10^{-6}$	$7.55 \times 10^{-3}$

**Table S4.** Results of the first stage of this study—assessment of the life cycle of the construction systems of Canaã Residence (output)—recurrent embedded impacts.

SYSTEMS	ADP kg Sb eq.	ADPf MJ	AP kg SO <sub>2</sub> eq.	EP kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	GWP kg CO <sub>2</sub> eq.	ODP kg CFC-11 eq.	POCP kg C <sub>2</sub> H <sub>4</sub> eq.
Roof	$1.14 \times 10^{-3}$	$4.74 \times 10^2$	$1.31 \times 10^{-1}$	$3.37 \times 10^{-2}$	$4.99 \times 10^1$	$3.69 \times 10^{-6}$	$8.49 \times 10^{-3}$
Walls	$1.42 \times 10^{-3}$	$4.84 \times 10^2$	$1.85 \times 10^{-1}$	$4.37 \times 10^{-2}$	$9.61 \times 10^1$	$5.69 \times 10^{-6}$	$1.55 \times 10^{-2}$
Coatings	$5.05 \times 10^{-2}$	$1.06 \times 10^3$	$4.34 \times 10^{-1}$	$1.54 \times 10^{-1}$	$8.91 \times 10^1$	$6.70 \times 10^{-6}$	$2.16 \times 10^{-1}$
Floor	$2.30 \times 10^{-2}$	$6.57 \times 10^2$	$2.38 \times 10^{-1}$	$8.48 \times 10^{-2}$	$5.06 \times 10^1$	$4.14 \times 10^{-6}$	$2.58 \times 10^{-1}$

**Table S5.** Results of the second stage of this study—assessment of the life cycle of the wall system (output)—total impacts.

SYSTEMS	ADP kg Sb eq.	ADPf MJ	AP kg SO <sub>2</sub> eq.	EP kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	GWP kg CO <sub>2</sub> eq.	ODP kg CFC-11 eq.	POCP kg C <sub>2</sub> H <sub>4</sub> eq.
Initial embedded impacts	$1.62 \times 10^{-8}$	$7.41 \times 10^2$	$5.66 \times 10^{-1}$	$6.68 \times 10^{-2}$	$8.92 \times 10^1$	$7.55 \times 10^{-6}$	$1.45 \times 10^{-2}$
Recurrent embedded impacts	$4.14 \times 10^{-4}$	$4.41 \times 10^2$	$1.63 \times 10^{-1}$	$3.98 \times 10^{-2}$	$7.51 \times 10^1$	$5.19 \times 10^{-6}$	$1.18 \times 10^{-2}$
Total impacts	$2.03 \times 10^{-3}$	$1.18 \times 10^3$	$4.29 \times 10^{-1}$	$1.07 \times 10^{-1}$	$1.64 \times 10^2$	$1.27 \times 10^{-5}$	$2.63 \times 10^{-2}$

**Table S6.** Results of the second stage of this study—assessment of the life cycle of the wall system (output)—initial embedded impacts in each subsystem.

SYSTEMS	ADP kg Sb eq.	ADPf MJ	AP kg SO <sub>2</sub> eq.	EP kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	GWP kg CO <sub>2</sub> eq.	ODP kg CFC-11 eq.	POCP kg C <sub>2</sub> H <sub>4</sub> eq.
Seal	$1.00 \times 10^{-3}$	$3.26 \times 10^2$	$1.21 \times 10^{-1}$	$3.20 \times 10^{-2}$	$4.32 \times 10^1$	$2.66 \times 10^{-6}$	$7.37 \times 10^{-3}$
Roughcast	$7.02 \times 10^{-6}$	$1.43 \times 10^1$	$6.97 \times 10^{-3}$	$1.62 \times 10^{-3}$	$3.12 \times 10^0$	$1.63 \times 10^{-7}$	$4.18 \times 10^{-4}$
Plaster	$4.19 \times 10^{-5}$	$1.00 \times 10^2$	$3.74 \times 10^{-2}$	$8.89 \times 10^{-3}$	$2.27 \times 10^1$	$1.18 \times 10^{-6}$	$3.70 \times 10^{-3}$
Transport	$5.65 \times 10^{-4}$	$3.01 \times 10^2$	$1.01 \times 10^{-1}$	$2.44 \times 10^{-2}$	$2.03 \times 10^1$	$3.55 \times 10^{-6}$	$3.00 \times 10^{-3}$

**Table S7.** Results of the second stage of this study—assessment of the life cycle of the wall system (output)—recurrent embedded impacts in each subsystem.

SYSTEMS	ADP kg Sb eq.	ADPf MJ	AP kg SO <sub>2</sub> eq.	EP kg (PO <sub>4</sub> ) <sup>3-</sup> eq.	GWP kg CO <sub>2</sub> eq.	ODP kg CFC-11 eq.	POCP kg C <sub>2</sub> H <sub>4</sub> eq.
Plaster	$1.76 \times 10^{-5}$	$3.57 \times 10^1$	$1.74 \times 10^{-2}$	$4.05 \times 10^{-3}$	$7.79 \times 10^0$	$4.08 \times 10^{-7}$	$1.05 \times 10^{-3}$
Roughcast	$1.05 \times 10^{-4}$	$2.50 \times 10^2$	$9.35 \times 10^{-2}$	$2.22 \times 10^{-2}$	$5.58 \times 10^1$	$2.96 \times 10^{-6}$	$9.24 \times 10^{-3}$
Transport	$2.92 \times 10^{-4}$	$1.55 \times 10^2$	$5.21 \times 10^{-2}$	$1.26 \times 10^{-2}$	$1.05 \times 10^1$	$1.82 \times 10^{-6}$	$1.55 \times 10^{-3}$