SUPPLEMENTARY INFORMATION

Innovative Approaches in Wastewater Treatment: Partial Life Cycle Assessment of 3D-Printed Clay Bricks Enhanced with Seafood Waste

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Figure S1. System boundaries for the slow sand filter (SSF)

Table S1. Process inventory for the raw materials and energy sources of the selected filter designs per functional unit (Treating 4 m^3 of wastewater to irrigate a private yard daily)

Filter	Clay: OSP	Sand (kg)	Gravel (kg)	Clay (kg)	PVC (kg)	Oyster shell powder (kg)	Water (kg)	Electricity (kWh)
Single-brick columns	90:10	921	60.4	58.1	118.73	7.6	6180.8	143.33
Single-brick columns	85:15	921	60.4	54.8	118.73	11.4	6203.6	143.5
Single-brick columns	80:20	921	60.4	51.6	118.73	15.2	6226.4	143.67
Two-brick columns	90:10	864	60.4	116.1	118.73	15.2	5889.5	287.67
Two-brick columns	85:15	864	60.4	109.7	118.73	22.8	5935.1	288
Two-brick columns	80:20	864	60.4	103.2	118.73	30.4	5980.7	288.34
Three-brick columns	90:10	800	60.4	174.2	118.73	22.8	5556.3	420
Three-brick columns	85:15	800	60.4	164.5	118.73	34.1	5624.1	420.5
Three-brick columns	80:20	800	60.4	154.8	118.73	45.5	5692.5	421
SSF with OSP	-	881	60.4	-	118.73	97		27.3
SSF	-	979	60.4	-	118.73			23

Table S2. Process inventory for the transportation when materials are transported from various distances (161 km and 1609 km)

Filter	Transport scenarios	
	Transport Impact at 161 km (t·km)	**Transport Impact at 1,609 km (t·km)**
Single-brick columns (90:10)	186.85	1867.34
Single-brick columns (85:15)	186.19	1860.74
Single-brick columns (80:20)	185.59	1854.75
Two-brick columns (90:10)	187.05	1869.34
Two-brick columns (85:15)	185.61	1854.95
Two-brick columns (80:20)	184.55	1844.35
Three-brick columns (90:10)	185.76	1856.45
Three-brick columns (85:15)	184.12	1840.06
Three-brick columns (80:20)	182.48	1823.67
SSF with OSP	170.67	1705.64
SSF	176.67	1765.60