

Table S1. Parameters governing the economic evaluation of decentralized composting-based treatment of rural kitchen waste (KW) with a capacity of 0.8 t/d

Parameter	Unit	SAC	BEC	HDC
1 Capacity	t/d	0.8	0.8	0.8
2 Equipment Cost	US\$	44089.50	58786.00	58786.00
3 Residual Value	US\$	1175.72	5290.74	2939.30
4 Coverage Area	m ²	96	50	93
5 Infrastructure Price	US\$/m ²	309.40	417.69	417.69
6 Labour Cost	US\$/t	6.77	6.77	9.67
7 Water And Electricity Cost	US\$/t	3.09	10.83	35.58
8 Auxiliary Manufacturing Cost	US\$/t	0.97	1.93	2.90
9 Maintenance Cost	US\$/t	293.93	1175.72	2351.44
10 Annual Output of Organic Fertilizer	t/a	87.60	87.60	72.00
11 Annual Output of Standard Organic Fertilizer ^a	t/a	84.65	112.07	77.23
12 Selling Price of Standard Organic Fertilizer	US\$/t	77.35	77.35	77.35
13 Working Time	d/a	330	330	330
14 Lifespan	a	10	10	10
15 Discount Rate	%	10	10	10
16 Income Tax Rate	%	25	25	25

^a The Organic fertilizer output was normalized against fertilizer output at 30% moisture content.

Table S2. Parameters governing the economic evaluation of decentralized composting-based treatment of rural KW with a capacity of 1.2 t/d

Parameter	Unit	SAC	BEC	HDC
1 Capacity	t/d	1.2	1.2	1.2
2 Equipment Cost	US\$	51051.00	68068.00	68068.00
3 Residual Value	US\$	1361.36	6126.12	3403.40
4 Coverage Area	m ²	144	50	93
5 Infrastructure Price	US\$/m ²	309.40	417.69	417.69
6 Labour Cost	US\$/t	4.51	4.51	6.45
7 Water And Electricity Cost	US\$/t	3.09	10.83	35.58
8 Auxiliary Manufacturing Cost	US\$/t	0.64	1.29	1.93
9 Maintenance Cost	US\$/t	340.34	1361.36	2722.72
10 Annual Output of Organic Fertilizer	t/a	131.40	131.40	108.00
11 Annual Output of Standard Organic Fertilizer ^a	t/a	126.97	168.10	115.84
12 Selling Price of Standard Organic Fertilizer	US\$/t	77.35	77.35	77.35
13 Working Time	d/a	330	330	330
14 Lifespan	a	10	10	10
15 Discount Rate	%	10	10	10
16 Income Tax Rate	%	25	25	25

Table S3. Summary of the profitability analysis for SAC, BEC, and HDC with a capacity of 0.8 t/d

Parameter	Unit	SAC	BEC	HDC
A Fixed Capital	US\$	73791.90	79670.50	97631.17
B Residual Value	US\$	1175.72	5290.74	2939.30
C Operating Cost ^a	US\$/a	11508.13	15742.47	29395.51
D Total Revenues	US\$/a	20843.28	22964.21	20269.34
E System Capacity	t/a	264	264	264
F Unit Production Cost (C/E)	US\$/t	43.59	59.63	111.35
G Unit Production Revenue (D/E)	US\$/t	78.95	86.99	76.78
H Gross Profit (D - C)	US\$/a	9335.15	7221.75	-9126.17
I Taxes (25%)	US\$/a	2333.79	1805.44	0
J Net Profit (H - I+ Depreciation)	US\$/a	14262.98	12854.29	343.01
K Gross Margin (H/D)	%	44.79	31.45	-45.02
L Return On Investment (J/A)	%	19.33	16.13	0.35
M Payback Time (A/J)	a	5.17	6.20	284.63
N NPV	US\$	13847.92	-686.47	-95523.50

^a The operation costs mainly comprise labor, water and electricity, auxiliary manufacturing costs, maintenance, and depreciation.

Table S4. Summary of the profitability analysis for SAC, BEC, and HDC with a capacity of 1.2 t/d

Parameter	Unit	SAC	BEC	HDC
A Fixed Capital	US\$	95604.60	88952.50	106913.17
B Residual Value	US\$	1361.36	6126.12	3403.40
C Operating Cost	US\$/a	12776.16	15714.04	29119.31
D Total Revenues	US\$/a	31264.53	34445.94	30403.62
E System Capacity	t/a	396	396	396
F Unit Production Cost (C/E)	US\$/t	32.26	39.68	73.53
G Unit Production Revenue (D/E)	US\$/t	78.95	86.98	76.78
H Gross Profit (D - C)	US\$/a	18488.37	18731.90	1284.31
I Taxes (25%)	US\$/a	4622.09	4682.97	0
J Net Profit (H - I+ Depreciation)	US\$/a	23290.60	22331.56	11635.29
K Gross Margin (H/D)	%	59.14	54.38	4.22
L Return On Investment (J/A)	%	24.36	25.11	10.88
M Payback Time (A/J)	a	4.10	3.98	9.19
N NPV	US\$	47506.07	48265.27	-35419.34