

Table S1: Breakdown of the CAPEX

CAPEX Component	Calculation factor	Scenario 1 (M.U.\$)	Scenario 2 (M.U.\$)	Scenario 3 (M.U.\$)
Equipment purchase cost, EPC (Bare module cost) (1)	1EPC	7.0	13.8	13.6
Equipment installation cost (2)	0.4EPC	2.8	5.5	5.5
Controls and instrumentation (3)	0.26EPC	1.8	3.6	3.5
Piping and Electrical systems (4)	0.41EPC	2.9	5.7	5.6
Buildings (including services) (5)	0.1EPC	0.7	1.4	1.4
Yard improvements (6)	0.12EPC	0.8	1.7	1.6
Direct cost, DC (7)	(7) = (1) +(2)+(6)	16.0	31.6	31.2
Indirect cost, INC (8)	(8) = 0.29DC	4.6	9.2	9.1
Fixed capital investment, FCI (9)	(9) = DC + INC	20.6	40.8	40.3
Working capital, WC (10)	0.15FCI	3.1	6.1	6.0
Startup cost (SUC) (11)	0.05FCI	1.0	2.0	2.0
CAPEX	FCI + WC + SUC	24.7	49.0	48.3

Table S2: Breakdown of the OPEX

Parameter	Factors used for estimation	Scenario 1 (M.U.\$)	Scenario 2 (M.U.\$)	Scenario 3 (M.U.\$)
Supervision (1)	0.25Lcost	0.1	0.1	0.2
Direct overhead (2)	0.5 (Lcost + supervision cost)	0.2	0.4	0.4
General overhead (3)	0.5 (Lcost + supervision cost + direct overhead)	0.3	0.5	0.6
Insurance and tax (4)	0.01FCI	0.2	0.4	0.4
Maintenance labor and materials (5)	0.03FCI	0.7	1.5	1.4
Additional expenses (e.g., marketing, logistics, operation services, etc.) (6)	0.01FCI	0.2	0.4	0.4
Laboratory cost (7)	0.01Lcost	0.0	0.0	0.0
Financing working capital (8)	0.1 WC	0.3	0.6	0.6
Fixed operating cost (9)	(9) = Sum (1-8)	2.1	3.9	4.1
Utilities				
Cooling water (10)	U.S. \$ 0.46/ m ³	0.1	0.1	0.9
Electricity (11)	0.31 U.S. \$/KWh per unit	0.5	2.8	13.5
Steam (12)	0.52 U.S. \$/KJ	0.9	0.9	1.5
Ash disposal from HTG (13)	22.8 U.S.\$/ton	0.0	2.7	0.0
Total utilities cost (U.S. \$) (14)	(14) = Sum (10 - 13)	1.5	6.6	15.9
Feedstock				
Deionized water (15)	U.S. \$81.8/1000 m ³	0.0	3.3	0.0
Crude glycerol, 48,314 tons/y (16)	0.1 U.S. \$/tons	0.0	0.0	0.0
Hydrogen cost for scenario 1 (17)	U.S. \$0.7955/kg	0.4	0.0	0.0
Catalyst cost (18)	U.S. \$30.78/kg	1.2	1.2	1.2
Total feed cost (19)	(19) = Sum (15-18)	1.6	4.5	1.2
Variable operating costs (20)	(20) = (14) +(19)	3.1	11.1	17.1

OPEX (21)	(21) = (9) +(20)	5.2	15.0	21.2
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Table S3: Summary of the overall EPC

	Scenario 1 (M.U.S\$)	Scenario 2 (M.U.S.\$)	Scenario 3 (M.U.S.\$)
Distillation column	2.4806	2.4759	1.7507
Heat exchangers	0.3229	0.5156	0.1687
Pumps	2.0428	2.1826	1.543
Compressors	1.3815	1.3815	1.6774
Flash separator	0.13	0.13	0.506
CTH reactor	0.3239	0.3239	0.2427
RPG purification unit	0.2829	0.2835	0.2486
Mixers	0.01	0.01	0.02
Hydrogen separation unit	0	0.2787	0
Combustion chamber	0	0.89	0.89
HTG reactor	0	5.34	0
Electrolytic unit	0	0	6.5819
Total	6.9746	13.8117	13.629