

Indonesia Green Field LNG Liquefaction Plant on 2 for 5.3Mtpa

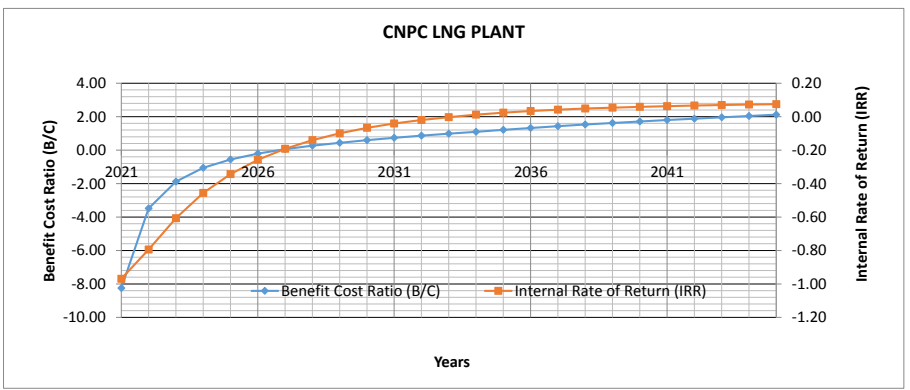
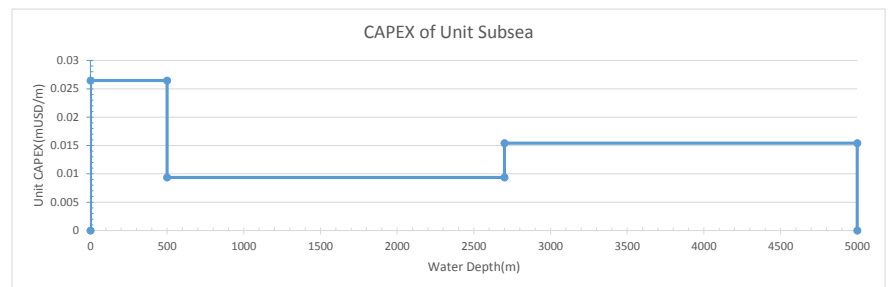
Description	Values	Unit
Work Start Year	2018	Years
Operating Year	2021	Years
Location of Liquefaction	Green Field	<--FLNG or Green Field or Brown Field
Site and Contry for Project	Indonesia	
Sensitivity of Golobal Financial Crisis	0	Years- Active Crisis Year, Otherwise = 0
Initial Inflation of Fuel Natural Gas Price	0	%
LNG Sales Cost	3.83	USD/mmbtu without Chartering of LNGC
Assumed Product Liquefaction GAS(LNG)	5.3	Mtpa
Required MW Electric Power for Liquefaction Operating System	23	MW - for operation of system 4.30302MW/mtpa
Convert to Standard Gas Flow	760	mmscfd at 288.716°K on 1.013bar
Assumed Normal Gas Flow	719.24	mmNcfd at 273.16°K on 1.013bar
Assumed Operating conditions	7.69	mmcfd at 288.16°K on 100bar
Storage Tank Capacity	308,947	m³ -10 days return Unloading Time
LNGC Vessel	170,000	m³ and time per unloading
LNGC Vessel Nos per evary retrirn Unloading Time	2	Nos LNGC at every 10 days
Assumed LNG Density	470	kg/m³
Claculated British thermal unit	302,168,076	mmbtu/year
Yearly LNG Sale Cost	1,157,303,731	USD/Year
Water Depth of Well Platform for Onshore LNG	100	m, 100m≤ Water depth ≤3000m
Nos of Well Platform for Onshore LNG	10	Nos
Unit CAPEX of Offshore Facilities for Onshore LNG	22,230,971	USD
Total CAPEX of of Offshore Facilities for Onshore LNG	222,309,711	USD - 이익이전이백삼십만구천칠백일십일달러
Unit CAPEX of Liquefaction	1,400	\$/tonne = \$/tpa
Liquefaction Equipment Area	750.23	m²- Land Area
Facilities Area	7502.28	m²- Land Area
LNG Storage Area	27783.00	m²- Land Storage Tank
Unit Space Acquisiton Cost	120	USD/m² in Indonesia
CAPEX of Area Acquisition Cost	4,324,261	USD
CAPEX for LNG Green Field PLANT	7,420,000,000	USD - 칠십사억이천만달러
CAPEX for Break Water Length is	1,000m	100,000,000 USD
CAPEX for Berthing Dolphine	170k DWT	30,000,000 USD
CAPEX for Trestle and Piers of	Pipe x 16.00inch x 500m	6,561,693 USD
CAPEX for Cryogenic	Pipe x 14.00inch x 500m	256,039 USD
CAPEX for subsea Cryogenic	Pipe x 20.00inch x 0m	0 USD
CAPEX for subsea Gas	Pipe x 20.00inch x 0m	0 USD
CAPEX for onshore Gas or LNG	Pipe x 20.00inch x 0m	0 USD
CAPEX for Transmission Line Length is	10km	1,847,491 USD -12.1Kv --Double
Total CAPEX for Fabrication and Installation	7,785,299,196	USD - 칠십칠억팔천오백이십구만구천일백구십육달러
Construction and Fabrication Period	3	Years
Interest FEE during Construction and Fabrication	759,066,672	USD
TOTAL CAPEX AND INTREST FEE DURING CONSTRUCTION	8,544,365,868	USD - 팔십오억사천사백삼십육만오천팔백육십팔달러
Fixed and Various OPEX	339,308,709	USD/Year
Fund Intrest	6.5	%
Return rate on investment of Net Profit, r	3	%
Operating Periods	50	Years
Project Design Life	50	Years
Benefit Cost Ratio (B/C)	3.50	≥ 1.1 GOOD For 50Years Operating
IRR(Internal Rate of Return)	9.3%	> 0 GOOD For 50Years Operating
NPV(Net Present Value)	20,005,622,882	USD with Asset value of Project for 50Years
Inflation of LNG Sale Price	0	%, If Inflation = 0, the LNG Unit price shall be quoted Forecast Price, otherwise consider inflation based on 2021Years Sale Cost, If no consider Inflation, the value=10E-11
Income tax rate for government	20	%
Inflation of Space Acquisition	1	%

15.556°C	1.013250274bar
0°C	1.013250274bar
15°C	100bar

Storage	Length	Breadth	Depth	Draft
308,947m³	368.8m	64.8m	35.7m	15.2m
0m³				

해 찾기

LNG ONSHORE STORAGE TANK						
Storage	Nos of Tank	1 Nos-Storage	Diameters	Center Gap	Edge gap	Required Space
308,947m³	2	154,473.5m³	63.0m	0.5D	0.5D	27,783.0m²



First Project residual value	4,914,571,859	USD after 10 Years
Second Project residual value	1,958,853,160	USD after 30 Years
Final residual value on Design Life	785,209,311	USD after 50 Years
Net Payback Turn Over Periods	13.003	Years

Actual Payback turn Over Years	14Years	14Years	해 찾기
Initial Value(min 0%, max 7.143%)	1.929%	1.929%	0 Good
Limit of Initial Value	≤ 7.143%	≤ 7.143%	

End of Year	①% of Return of Equity	②% of Return of FUND	③Return of Equity (USD)	④Return of FUND(USD)	⑤Remain Cost(USD)	⑥Fund Interest 6.5%(USD)	⑦OPEX(USD)	⑧Yearly Revenue or Sale Price(USD) of LNG W/ Inflation	⑨(순이익)Net Profit(USD)	⑩(현재자산가치)Asset value=Residual Value(USD)	⑪(순현재가치)Net Present Value	⑫Benefit Cost Ratio (B/C)	⑬(내부수익률)Internal Rate of Return (IRR)
			20% of Equity	80% of FUND									
### 1	1.93%	1.93%	32,964,411	131,857,646	8,544,365,868	555,383,781	339,308,709	1,157,303,731	78,231,347	7,436,530,826	-8,047,964,561	-8.26	-0.97
### 2	2.73%	2.73%	46,671,790	186,687,158	8,379,543,811	544,670,348	339,308,709	1,190,542,219	58,563,372	7,100,660,319	-7,767,415,840	-3.48	-0.79
### 3	3.53%	3.53%	60,379,168	241,516,671	8,146,184,863	529,502,016	339,308,709	1,226,802,388	44,876,660	6,781,684,459	-7,449,344,884	-1.88	-0.61
### 4	4.34%	4.34%	74,086,546	296,346,184	7,844,289,024	509,878,787	339,308,709	1,269,105,919	39,588,555	6,478,270,989	-7,087,119,563	-1.06	-0.46
### 5	5.14%	5.14%	87,793,924	351,175,696	7,473,856,295	485,800,659	339,308,709	1,299,322,726	28,194,990	6,190,419,915	-6,689,973,341	-0.56	-0.34
### 6	5.94%	5.94%	101,501,302	406,005,209	7,034,886,674	457,267,634	339,308,709	1,341,626,257	30,034,722	5,910,350,266	-6,246,797,883	-0.21	-0.26
### 7	6.74%	6.74%	115,208,680	460,834,722	6,527,380,163	424,279,711	339,308,709	1,383,929,788	35,438,373	5,645,843,021	-5,757,094,678	0.06	-0.19
### 8	7.54%	7.54%	128,916,059	515,664,235	5,951,336,761	386,836,889	339,308,709	1,426,233,318	44,405,941	5,389,117,210	-5,220,535,735	0.26	-0.14
### 9	8.35%	8.35%	142,623,437	570,493,747	5,306,756,468	344,939,170	339,308,709	1,468,536,849	56,937,429	5,147,953,813	-4,636,951,086	0.44	-0.10
### 10	9.15%	9.15%	156,330,815	625,323,260	4,593,639,283	298,586,553	339,308,709	1,510,840,380	73,032,834	4,914,571,859	-4,006,316,960	0.60	-0.07
### 11	9.95%	9.95%	170,038,193	680,152,773	3,811,985,209	247,779,039	339,308,709	1,523,511,944	68,986,585	4,696,752,327	-3,349,527,869	0.73	-0.04
### 12	10.75%	10.75%	183,745,571	734,982,285	2,961,794,243	192,516,626	339,308,709	1,536,183,508	68,504,254	4,486,714,248	-2,665,608,824	0.86	-0.02
### 13	11.55%	11.55%	197,452,950	789,811,798	2,043,066,386	132,799,315	339,308,709	1,548,855,073	71,585,841	4,284,457,627	-1,953,752,178	0.98	0.00
### 14	12.36%	12.36%	211,160,328	844,641,311	1,055,801,638	68,627,107	339,308,709	1,561,526,637	78,231,347	4,089,982,468	-1,213,306,126	1.10	0.01
### 15	0.00%	0.00%	0	0	0	0	339,308,709	1,574,198,202	987,911,594	3,903,288,775	-443,763,821	1.21	0.02
### 16	0.00%	0.00%	0	0	0	0	339,308,709	1,586,546,902	997,790,555	3,732,157,530	310,835,798	1.33	0.03
### 17	0.00%	0.00%	0	0	0	0	339,308,709	1,598,895,603	1,007,669,515	3,568,807,762	1,050,710,347	1.43	0.04
### 18	0.00%	0.00%	0	0	0	0	339,308,709	1,611,244,303	1,017,548,475	3,405,458,501	1,776,077,444	1.53	0.05
### 19	0.00%	0.00%	0	0	0	0	339,308,709	1,623,593,003	1,027,427,435	3,249,890,727	2,487,154,519	1.63	0.05
### 20	0.00%	0.00%	0	0	0	0	339,308,709	1,635,941,704	1,037,306,396	3,102,104,445	3,184,158,646	1.72	0.06
### 21	0.00%	0.00%	0	0	0	0	339,308,709	1,648,290,404	1,047,185,356	2,962,099,660	3,867,306,377	1.80	0.06
### 22	0.00%	0.00%	0	0	0	0	339,308,709	1,660,639,104	1,057,064,316	2,829,876,378	4,536,813,585	1.89	0.07
### 23	0.00%	0.00%	0	0	0	0	339,308,709	1,672,987,805	1,066,943,277	2,705,434,604	5,192,895,326	1.97	0.07
### 24	0.00%	0.00%	0	0	0	0	339,308,709	1,685,336,505	1,076,822,237	2,580,993,368	5,835,765,697	2.04	0.07
### 25	0.00%	0.00%	0	0	0	0	339,308,709	1,697,685,205	1,086,701,197	2,464,333,650	6,465,637,717	2.12	0.07
### 26	0.00%	0.00%	0	0	0	0	339,308,709	1,712,279,992	1,098,377,027	2,355,455,457	7,083,734,362	2.19	0.08
### 27	0.00%	0.00%	0	0	0	0	339,308,709	1,726,874,780	1,110,052,857	2,246,577,818	7,690,207,235	2.25	0.08
### 28	0.00%	0.00%	0	0	0	0	339,308,709	1,741,469,567	1,121,728,687	2,145,481,715	8,285,209,095	2.32	0.08
### 29	0.00%	0.00%	0	0	0	0	339,308,709	1,756,064,354	1,133,404,516	2,052,167,151	8,868,893,663	2.39	0.08
### 30	0.00%	0.00%	0	0	0	0	339,308,709	1,770,659,142	1,145,080,346	1,958,853,160	9,441,415,436	2.45	0.08
### 31	0.00%	0.00%	0	0	0	0	339,308,709	1,858,227,866	1,215,135,325	1,873,320,720	10,031,267,996	2.51	0.08
### 32	0.00%	0.00%	0	0	0	0	339,308,709	1,872,822,653	1,226,811,155	1,787,788,863	10,609,443,003	2.58	0.08
### 33	0.00%	0.00%	0	0	0	0	339,308,709	1,887,417,440	1,238,486,985	1,710,038,570	11,176,120,308	2.64	0.09
### 34	0.00%	0.00%	0	0	0	0	339,308,709	1,902,012,228	1,250,162,815	1,632,288,871	11,731,479,195	2.70	0.09
### 35	0.00%	0.00%	0	0	0	0	339,308,709	1,916,607,015	1,261,838,645	1,562,320,747	12,275,698,254	2.76	0.09
### 36	0.00%	0.00%	0	0	0	0	339,308,709	1,931,201,802	1,273,514,475	1,492,353,231	12,808,955,278	2.82	0.09
### 37	0.00%	0.00%	0	0	0	0	339,308,709	1,945,796,590	1,285,190,305	1,422,386,326	13,331,427,150	2.87	0.09
### 38	0.00%	0.00%	0	0	0	0	339,308,709	1,960,391,377	1,296,866,134	1,360,201,016	13,843,289,751	2.93	0.09
### 39	0.00%	0.00%	0	0	0	0	339,308,709	1,974,986,164	1,308,541,964	1,298,016,330	14,344,717,864	2.98	0.09
### 40	0.00%	0.00%	0	0	0	0	339,308,709	1,989,580,952	1,320,217,794	1,243,613,251	14,835,885,093	3.03	0.09
### 41	0.00%	0.00%	0	0	0	0	339,308,709	2,004,175,739	1,331,893,624	1,189,210,808	15,316,963,778	3.08	0.09
### 42	0.00%	0.00%	0	0	0	0	339,308,709	2,018,770,526	1,343,569,454	1,134,809,010	15,788,124,927	3.13	0.09
### 43	0.00%	0.00%	0	0	0	0	339,308,709	2,033,365,313	1,355,245,284	1,080,407,862	16,249,538,144	3.18	0.09
### 44	0.00%	0.00%	0	0	0	0	339,308,709	2,047,960,101	1,366,921,114	1,033,788,345	16,701,371,566	3.23	0.09
### 45	0.00%	0.00%	0	0	0	0	339,308,709	2,062,554,888	1,378,596,943	987,169,492	17,143,791,807	3.28	0.09
### 46	0.00%	0.00%	0	0	0	0	339,308,709	2,077,149,675	1,390,272,773	940,551,309	17,576,963,900	3.32	0.09
### 47	0.00%	0.00%	0	0	0	0	339,308,709	2,091,744,463	1,401,948,603	901,714,778	18,001,051,252	3.37	0.09
### 48	0.00%	0.00%	0	0	0	0	339,308,709	2,106,339,250	1,413,624,433	862,878,930	18,416,215,594	3.41	0.09
### 49	0.00%	0.00%	0	0	0	0	339,308,709	2,120,934,037	1,425,300,263	824,043,772	18,822,616,944	3.46	0.09

###	50	0.00%	0.00%	0	0	0	0	339,308,709	2,135,528,825	1,436,976,093	785,209,311	19,220,413,571	3.50	0.09
	Summation	100%	100%	1,708,873,174	6,835,492,694	79,674,886,685	5,178,867,635	16,965,435,442	86,084,594,216	44,316,740,217	785,209,311	20,005,622,882	3.50	0.09
	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Natural Gas Markets Prices and FSRU or Onshore LNG Terminal CAPEX is referred to David Carroll(President of the International Gas Union), 2016, "IGU World Gas LNG Report", LNG 18 Conference & Exhibition Edition, pp.52 to pp.53
 CAPEX of Power types and Environmental Emissions are referred to U.S. Energy Information Administration, 2013, "Updated Capital Cost Estimates for Utility Scale Electricity Generating Plants", pp.2-10, Table 2-5 Technology Performance Specifications