

Indonesia FLNG LNG Liquefaction Plant on 1 for 5.3Mtpa

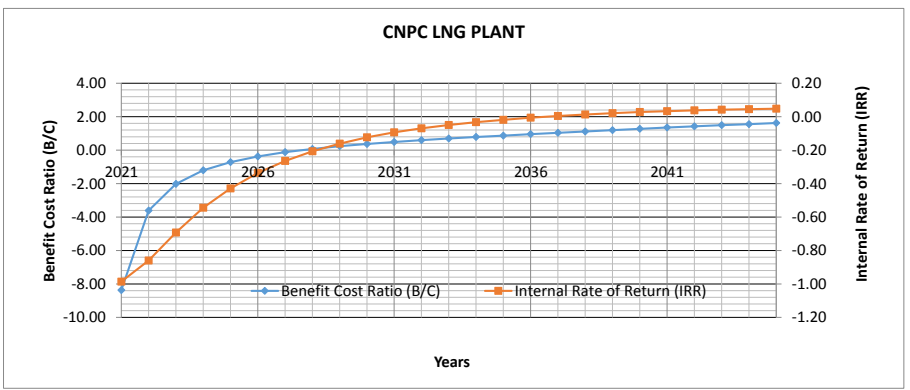
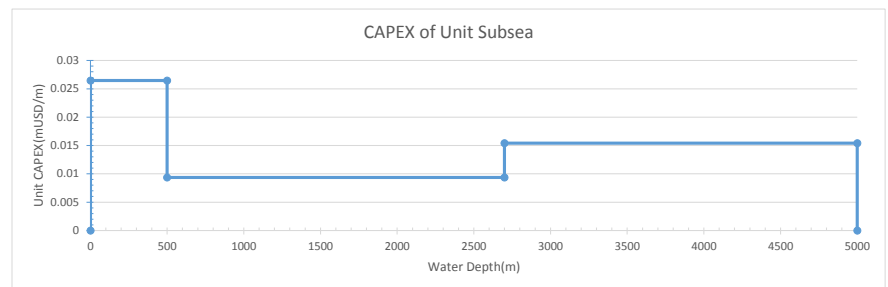
Description	Values	Unit
Work Start Year	2018	Years
Operating Year	2021	Years
Location of Liquefaction	FLNG	<--FLNG or Green Field or Brown Field
Site and Contry for Project	Indonesia	
Sensitivity of Golobal Financial Crisis	0	Years- Active Crisis Year, Otherwise = 0
Initial Inflation of Fuel Natural Gas Price	50	%
LNG Sales Cost	5.745	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	1,735,955,596	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	0	USD
Total CAPEX of of Offshore Facilities for Onshore LNG	0	USD - 영달려
Unit CAPEX of Liquefaction	2,508	\$/tonne = \$/tpa
Liquefaction Equipment Area	750.23	m²- Floating Storage Structure
Facilities Area	7502.28	m²- Floating Storage Structure
LNG Storage Area	.8L x64.8B x35.7D x15.2D	m²- Floating Storage Tank
Unit Space Acquisiton Cost	0	USD/m² in Indonesia
CAPEX of Area Acquisition Cost	0	USD
CAPEX for LNG FLNG PLANT	13,293,592,500	USD - 일백삼십이억구천삼백오십구만이천오
CAPEX for Break Water Length is	0m	0 USD 100,000USD/m
CAPEX for Berthing Dolphine	170k DWT	0 USD 176,471k DWT
CAPEX for Trestle and Piers of	Pipe x 16.00inch x 0m	0 USD 13,123USD/m
CAPEX for Cryogenic	Pipe x 14.00inch x 0m	0 USD 512USD/m
CAPEX for subsea Cryogenic	Pipe x 20.00inch x 0m	0 USD 14,029USD/m
CAPEX for subsea Gas	Pipe x 20.00inch x 0m	0 USD 7,015USD/m
CAPEX for onshore Gas	Pipe x 20.00inch x 0m	0 USD 341USD/m
CAPEX for Transmission Line Length is	0km	0 USD -12.1Kv --Double 2 - Circuit
Total CAPEX for Fabrication and Installation	13,293,592,500	USD - 일백삼십이억구천삼백오십구만이천오
Construction and Fabrication Period	3	Years
Interest FEE during Construction and Fabrication	1,296,125,269	USD
TOTAL CAPEX AND INTREST FEE DURING CONSTRUCTION	14,589,717,769	USD - 일백사십오억팔천구백칠십일만칠천칠
Fixed and Various OPEX	585,999,594	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)	2.84	≥ 1.1 GOOD For 50Years Operating
IRR(Internal Rate of Return)	7.4%	> 0 GOOD For 50Years Operating
NPV(Net Present Value)	24,128,224,081	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	8,388,256,868	USD after 10 Years
Second Project residual value	3,336,691,718	USD after 30 Years
Final residual value on Design Life	1,329,359,250	USD after 50 Years
Net Payback Turn Over Periods	16.008	Years

Actual Payback turn Over Years	17Years	17Years	해 찾기
Initial Value (min 0%, max 5.882%)	0.721%	0.721%	0
Limit of Initial Value	≤ 5.882%	≤ 5.882%	Increase the Return Over Year

End of Year	①% of Return of Equity	②% of Return of FUND	③Return of Equity (USD) 20% of Equity	④Return of FUND(USD) 80% of FUND	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)
### 1	0.72%	0.72%	21,044,683	84,178,732	14,589,717,769	948,331,655	585,999,594	1,735,955,596	77,120,746	12,697,656,968	-13,974,724,248	-8.38	-0.99
### 2	1.37%	1.37%	39,869,565	159,478,260	14,484,494,354	941,492,133	585,999,594	1,785,813,329	47,179,022	12,123,756,360	-13,738,323,389	-3.61	-0.86
### 3	2.01%	2.01%	58,694,447	234,777,787	14,285,146,529	928,534,524	585,999,594	1,840,203,582	25,757,784	11,578,719,068	-13,448,970,288	-2.02	-0.69
### 4	2.66%	2.66%	77,519,329	310,077,315	13,991,674,295	909,458,829	585,999,594	1,903,658,878	16,483,049	11,060,268,960	-13,096,852,989	-1.21	-0.54
### 5	3.30%	3.30%	96,344,211	385,376,843	13,604,077,651	884,265,047	585,999,594	1,948,984,090	-3,001,605	10,568,406,038	-12,695,932,988	-0.71	-0.43
### 6	3.95%	3.95%	115,169,093	460,676,371	13,122,356,597	852,953,179	585,999,594	2,012,439,386	-2,358,850	10,089,836,708	-12,229,635,891	-0.37	-0.34
### 7	4.59%	4.59%	133,993,975	535,975,898	12,546,511,134	815,523,224	585,999,594	2,075,894,681	3,521,593	9,637,854,563	-11,697,280,514	-0.12	-0.26
### 8	5.24%	5.24%	152,818,857	611,275,426	11,876,541,261	771,975,182	585,999,594	2,139,349,977	13,824,735	9,199,166,010	-11,098,421,486	0.07	-0.21
### 9	5.88%	5.88%	171,643,738	686,574,954	11,112,446,979	722,309,054	585,999,594	2,202,805,273	29,022,347	8,787,064,643	-10,432,831,989	0.23	-0.16
### 10	6.53%	6.53%	190,468,620	761,874,482	10,254,228,286	666,524,839	585,999,594	2,266,260,569	49,114,428	8,388,256,868	-9,700,487,435	0.37	-0.12
### 11	7.17%	7.17%	209,293,502	837,174,009	9,301,885,184	604,622,537	585,999,594	2,285,267,916	38,542,619	8,016,036,278	-8,932,724,906	0.49	-0.09
### 12	7.82%	7.82%	228,118,384	912,473,537	8,255,417,673	536,602,149	585,999,594	2,304,275,263	32,865,279	7,657,109,280	-8,128,062,739	0.60	-0.07
### 13	8.46%	8.46%	246,943,266	987,773,065	7,114,825,751	462,463,674	585,999,594	2,323,282,609	32,082,409	7,311,475,875	-7,285,256,973	0.69	-0.05
### 14	9.11%	9.11%	265,768,148	1,063,072,592	5,880,109,420	382,207,112	585,999,594	2,342,289,956	36,194,007	6,979,136,063	-6,403,285,222	0.78	-0.03
### 15	9.75%	9.75%	284,593,030	1,138,372,120	4,551,268,680	295,832,464	585,999,594	2,361,297,303	45,200,076	6,660,089,843	-5,481,331,394	0.87	-0.02
### 16	10.40%	10.40%	303,417,912	1,213,671,648	3,128,303,530	203,339,729	585,999,594	2,379,820,353	58,713,176	6,367,630,808	-4,519,064,214	0.95	-0.01
### 17	11.04%	11.04%	322,242,794	1,288,971,176	1,611,213,970	104,728,908	585,999,594	2,398,343,404	77,120,746	6,088,465,365	-3,516,020,428	1.03	0.00
### 18	0.00%	0.00%	0	0	0	0	585,999,594	2,416,866,454	1,464,693,488	5,809,299,923	-2,471,902,641	1.12	0.01
### 19	0.00%	0.00%	0	0	0	0	585,999,594	2,435,389,505	1,479,511,929	5,543,428,073	-1,447,940,287	1.20	0.02
### 20	0.00%	0.00%	0	0	0	0	585,999,594	2,453,912,555	1,494,330,369	5,290,849,815	-443,845,027	1.28	0.03
### 21	0.00%	0.00%	0	0	0	0	585,999,594	2,472,435,606	1,509,148,810	5,051,565,150	540,671,781	1.35	0.03
### 22	0.00%	0.00%	0	0	0	0	585,999,594	2,490,958,656	1,523,967,250	4,825,574,078	1,505,898,819	1.42	0.04
### 23	0.00%	0.00%	0	0	0	0	585,999,594	2,509,481,707	1,538,785,690	4,612,876,598	2,452,124,561	1.49	0.04
### 24	0.00%	0.00%	0	0	0	0	585,999,594	2,528,004,757	1,553,604,131	4,400,179,118	3,379,637,043	1.56	0.05
### 25	0.00%	0.00%	0	0	0	0	585,999,594	2,546,527,808	1,568,422,571	4,200,775,230	4,288,723,639	1.62	0.05
### 26	0.00%	0.00%	0	0	0	0	585,999,594	2,568,419,989	1,585,936,316	4,014,664,935	5,181,187,604	1.68	0.05
### 27	0.00%	0.00%	0	0	0	0	585,999,594	2,590,312,170	1,603,450,061	3,828,554,640	6,057,226,037	1.74	0.05
### 28	0.00%	0.00%	0	0	0	0	585,999,594	2,612,204,351	1,620,963,805	3,655,737,938	6,917,038,655	1.80	0.06
### 29	0.00%	0.00%	0	0	0	0	585,999,594	2,634,096,532	1,638,477,550	3,496,214,828	7,760,827,476	1.85	0.06
### 30	0.00%	0.00%	0	0	0	0	585,999,594	2,655,988,713	1,655,991,295	3,336,691,718	8,588,796,514	1.91	0.06
### 31	0.00%	0.00%	0	0	0	0	585,999,594	2,787,341,799	1,761,073,764	3,190,462,200	9,443,659,217	1.97	0.06
### 32	0.00%	0.00%	0	0	0	0	585,999,594	2,809,233,979	1,778,587,509	3,044,232,683	10,281,876,933	2.02	0.06
### 33	0.00%	0.00%	0	0	0	0	585,999,594	2,831,126,160	1,796,101,253	2,911,296,758	11,103,694,062	2.08	0.06
### 34	0.00%	0.00%	0	0	0	0	585,999,594	2,853,018,341	1,813,614,998	2,778,360,833	11,909,354,887	2.13	0.06
### 35	0.00%	0.00%	0	0	0	0	585,999,594	2,874,910,522	1,831,128,743	2,658,718,500	12,699,103,376	2.18	0.07
### 36	0.00%	0.00%	0	0	0	0	585,999,594	2,896,802,703	1,848,642,488	2,539,076,168	13,473,182,988	2.23	0.07
### 37	0.00%	0.00%	0	0	0	0	585,999,594	2,918,694,884	1,866,156,232	2,419,433,835	14,231,836,502	2.28	0.07
### 38	0.00%	0.00%	0	0	0	0	585,999,594	2,940,587,065	1,883,669,977	2,313,085,095	14,975,305,846	2.33	0.07
### 39	0.00%	0.00%	0	0	0	0	585,999,594	2,962,479,246	1,901,183,722	2,206,736,355	15,703,831,940	2.38	0.07
### 40	0.00%	0.00%	0	0	0	0	585,999,594	2,984,371,427	1,918,697,467	2,113,681,208	16,417,654,554	2.42	0.07
### 41	0.00%	0.00%	0	0	0	0	585,999,594	3,006,263,608	1,936,211,212	2,020,626,060	17,117,012,165	2.47	0.07
### 42	0.00%	0.00%	0	0	0	0	585,999,594	3,028,155,789	1,953,724,956	1,927,570,913	17,802,141,835	2.51	0.07
### 43	0.00%	0.00%	0	0	0	0	585,999,594	3,050,047,970	1,971,238,701	1,834,515,765	18,473,279,083	2.56	0.07
### 44	0.00%	0.00%	0	0	0	0	585,999,594	3,071,940,151	1,988,752,446	1,754,754,210	19,130,657,783	2.60	0.07
### 45	0.00%	0.00%	0	0	0	0	585,999,594	3,093,832,332	2,006,266,191	1,674,992,655	19,774,510,053	2.64	0.07
### 46	0.00%	0.00%	0	0	0	0	585,999,594	3,115,724,513	2,023,779,935	1,595,231,100	20,405,066,162	2.68	0.07
### 47	0.00%	0.00%	0	0	0	0	585,999,594	3,137,616,694	2,041,293,680	1,528,763,138	21,022,554,440	2.72	0.07
### 48	0.00%	0.00%	0	0	0	0	585,999,594	3,159,508,875	2,058,807,425	1,462,295,175	21,627,201,198	2.76	0.07
### 49	0.00%	0.00%	0	0	0	0	585,999,594	3,181,401,056	2,076,321,170	1,395,827,213	22,219,230,646	2.80	0.07

###	50	0.00%	0.00%	0	0	0	0	585,999,594	3,203,293,237	2,093,834,915	1,329,359,250	22,798,864,831	2.84	0.07	
	Summation	100%	100%	2,917,943,554	11,671,774,215	169,710,219,063	11,031,164,239	29,299,979,692	129,126,891,323	59,363,751,608	1,329,359,250	24,128,224,081	2.84	0.07	
		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