

Time Value of Money

	0				
Money	500				
	2022	2023	2024	2025	2026
US\$ in wallet	500	500	500	500	500
US\$ in bank	525	551	579	608	638
Inflation	4%	4%	4%	4%	4%
Interest Rate	5%	5%	5%	5%	5%
Cumulative Interest Rate	1.05	1.10	1.16	1.22	1.28
Discounted Cashflow	476	454	432	411	392
NPV	4153				
Cost of printer ink	5				
	2022	2023	2024	2025	2026
US\$ flat					
US\$ inflation	5.20	5.41	5.62	5.85	6.08
US\$					
Amount of printer ink					
	2022	2023	2024	2025	2026
US\$ no inflation					
US after inflation	96	92	89	85	82
US\$ after inflation with interest	101	102	103	104	105

Real versus Nominal

Costs	At Dec 31				
	2018	2019	2020	2021	2022
US\$ Nominal	1	1	1.00	1.00	1.00
Inflation Rate	0%	0%	0%	0%	0%
Multiplier		1	1.00	1.00	1.00

Money available

100

Chocolate Bars

Money Invested

	100.0				
Chocolate Bars	100.0	0.0	0.0	0.0	0.0

US\$ Real (2018)

Money Available

Cost of Choc Bar

2027	2028	2029	2030	2031	2032
500	500	500	500	500	500
670	704	739	776	814	855
4%	4%	4%	4%	4%	4%
5%	5%	5%	5%	5%	5%
1.34	1.41	1.48	1.55	1.63	1.71
373	355	338	322	307	292

2027	2028	2029	2030	2031	2032
6.33	6.58	6.84			

2027	2028	2029	2030	2031	2032
79	76	73			
106	107	108			

2023	2024	2025	2026	2027	2028
1.00	1.00	1.00	1.00	1.00	1.00

0%	0%	0%	0%	0%	0%
1.00	1.00	1.00	1.00	1.00	1.00

0.0	0.0	0.0	0.0	0.0	0.0
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Real and Nominal

	Year 1	Year 2	Year 3	Year 4	Year 5
Real	100	100	100	100	100
Nominal	102.5	105.1	107.7	110.4	113.1
Inflation	2.5%				
Capex					
US\$2022	500				
Nominal	539				

Oil Price

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Real	30	30	30	30	30	30	30
Nominal	30.6	31.21	31.84	32.47	33.12		
Inflation	2%						



Year 8	Year 9	Year 10
30	30	30



Example Discounted Cashflow

Example 1

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cashflow	-20	-20	-20	30	30	30	30
Discount Factor	1.05	1.10	1.16	1.22	1.28	1.34	1.41
Discounted Cashflow	-19.0	-18.1	-17.3	24.7	23.5	22.4	21.3
NPV (Net Present Value)	95.5						

Discount Rate 5.0%

Excel Calculation

IRR 31.6%

Example 2

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Capital Cost	-200	-200	-200				
Revenue				100	100	100	100
Operating Cost				-20	-20	-20	-20
Net Cashflow	-200	-200	-200	80	80	80	80
Discount Factor	1.10	1.21	1.33	1.46	1.61	1.77	1.95
Discounted Cashflow	-181.8	-165.3	-150.3	54.6	49.7	45.2	41.1
NPV	-15.2						

Discount Rate 10.0%

IRR 9.57%

IRR

Internal Rate of Return

Excel Calculation **-15.2**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cumulative Cashflow	-200	-400	-600	-520	-440	-360	-280
Disc Cum Cashflow	-181.8	-347.1	-497.4	-442.7	-393.1	-347.9	-306.8
Payback period	11						
Discounted payback period	20						

Year 8	Year 9	Year 10
30	30	30
1.48	1.55	1.63
20.3	19.3	18.4

Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
100	100	100	100	100	100	100	100	100
-20	-20	-20	-20	-20	-20	-20	-20	-20
80	80	80	80	80	80	80	80	80
2.14	2.36	2.59	2.85	3.14	3.45	3.80	4.18	4.59
37.3	33.9	30.8	28.0	25.5	23.2	21.1	19.2	17.4

Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
-200	-120	-40	40	120	200	280	360	440
-269.5	-235.6	-204.8	-176.7	-151.2	-128.1	-107.0	-87.8	-70.4

Year 17	Year 18	Year 19	Year 20
100	100	100	100
-20	-20	-20	-20
80	80	80	80
5.05	5.56	6.12	6.73
15.8	14.4	13.1	11.9

Year 17	Year 18	Year 19	Year 20
520	600	680	760
-54.6	-40.2	-27.1	-15.2

WACC Calculation

Risk Free Rate	1.75%		
Corporate Interest Rate	5.00%		
Equity market return	10.53%		
Company Beta	1.5		
Corporate Tax Rate	20%		
Debt:Equity Split	Debt 50%	Equity 50%	
Cost of Debt	4.00%		
Cost of Equity	14.92%		
WACC	9.46%		

An Example Conventional Oil Field

Sensitivities		1	0%
Oil Price	1	2	15%
Production	1	3	30%
Operating Costs & Transport	1	4	-15%
Capex	1	5	-30%

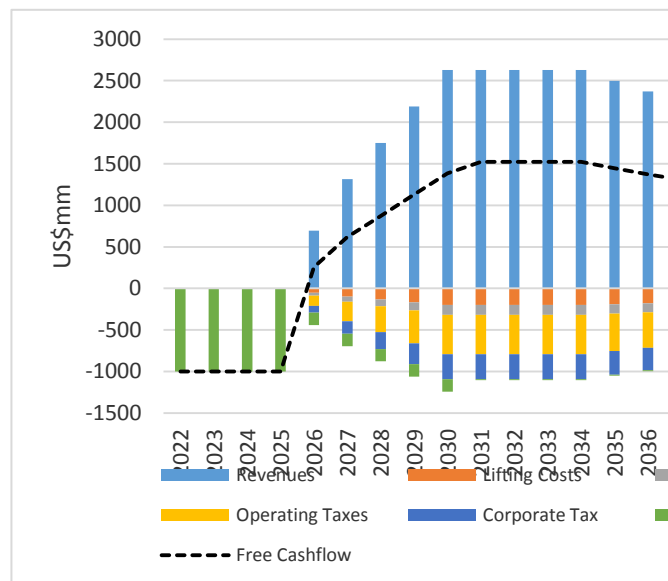
	2022	2023	2024	2025	2026	2027
Revenues	0	0	0	0	696	1314
Operating Costs	0	0	0	0	-54	-100
Transport Costs	0	0	0	0	-33	-60
Operating Taxes	0	0	0	0	-125	-236
EBITDA (Pre-tax Cashflow)	0	0	0	0	485	918
Depreciation <i>Straight Line (0) or Unit of Prod (1)</i>	0 1	0	0	0	-89	-164
EBIT (Post Tax Profit)	0	0	0	0	396	754
Tax on EBIT <i>Corporate Tax Rate</i>	0 20%	0	0	0	-79	-151
Post tax cashflow	0	0	0	0	405	767
CAPEX	-1000	-1000	-1000	-1000	-150	-150
Free Cashflow (FCF)	-1000	-1000	-1000	-1000	255	617
Cumulative FCF	-1000	-2000	-3000	-4000	-3745	-3127
Discount Rate	9.5%					
Discount Factor	1.09	1.20	1.31	1.44	1.57	1.72
Discounted Cashflow (DCF)	-914	-835	-762	-697	163	359
NPV (\$mm)	3543					
IRR (%)	18.6%					
Payback (years)	9	When does cumulative cashflow turn positive				
Excel Calculation	\$3,543					

Breakeven Oil Price **\$80.00** *After Goal Seek Function in Data:What If*

Alternative NPV (terminal value)						
FCF for 10 years	-913.576	-1000	-1000	-1000	255	617

Terminal Value						
Implied FCF	-913.576	-1000	-1000	-1000	255	617
Implied DCF	-834.621	-835	-762	-697	163	359
NPV	4543					
Plus Cash	0					
Less Debt	0					
Total NPV	4543					
IRR	23%					
<i>EBITDA Multiple</i>	7					

	2022	2023	2024	2025	2026	2027
Revenues	0	0	0	0	696	1314
Lifting Costs	0	0	0	0	-54	-100
Transport	0	0	0	0	-33	-60
Operating Taxes	0	0	0	0	-125	-236
Corporate Tax	0	0	0	0	-79	-151
Capex	-1000	-1000	-1000	-1000	-150	-150
Free Cashflow	-1000	-1000	-1000	-1000	255	617



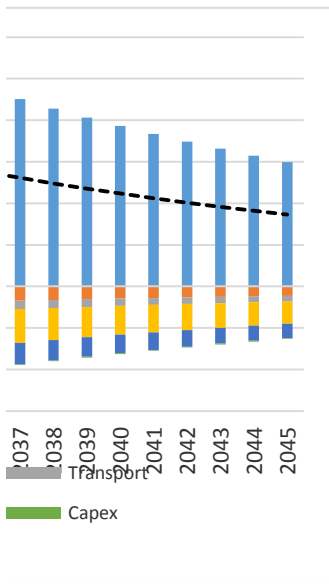
Base
High
Upside
Low
Downside

Results
NPV 3543 US\$mm
IRR 19% %

2028	2029	2030	2031	2032	2033	2034	2035	2036
1752	2190	2628	2628	2628	2628	2628	2497	2372
-133	-167	-200	-200	-200	-200	-200	-190	-181
-80	-100	-120	-120	-120	-120	-120	-114	-108
-315	-393	-472	-472	-472	-472	-472	-449	-426
1224	1530	1836	1836	1836	1836	1836	1744	1657
-219	-273	-328	-328	-328	-328	-328	-311	-296
1005	1257	1508	1508	1508	1508	1508	1433	1361
-201	-251	-302	-302	-302	-302	-302	-287	-272
1023	1279	1534	1534	1534	1534	1534	1458	1385
-150	-150	-150	-10	-10	-10	-10	-10	-10
873	1129	1384	1524	1524	1524	1524	1448	1375
-2255	-1126	258	1782	3307	4831	6355	7803	9177
1.88	2.06	2.26	2.47	2.70	2.96	3.24	3.54	3.88
464	548	614	617	564	515	471	408	354
873	1129	1384	1524	1524				

					12851
873	1129	1384	1524	1524	12851
464	548	614	617	564	4344

2028	2029	2030	2031	2032	2033	2034	2035	2036
1752	2190	2628	2628	2628	2628	2628	2497	2372
-133	-167	-200	-200	-200	-200	-200	-190	-181
-80	-100	-120	-120	-120	-120	-120	-114	-108
-315	-393	-472	-472	-472	-472	-472	-449	-426
-201	-251	-302	-302	-302	-302	-302	-287	-272
-150	-150	-150	-10	-10	-10	-10	-10	-10
873	1129	1384	1524	1524	1524	1524	1448	1375



2037	2038	2039	2040	2041	2042	2043	2044	2045
2253	2141	2033	1932	1835	1743	1656	1573	1495
-171	-163	-155	-147	-140	-133	-126	-120	-114
-103	-98	-93	-88	-84	-80	-76	-72	-68
-405	-385	-365	-347	-330	-313	-298	-283	-269
1574	1495	1421	1350	1282	1218	1157	1099	1044
-281	-267	-254	-241	-229	-217	-207	-196	-186
1293	1228	1167	1109	1053	1001	950	903	858
-259	-246	-233	-222	-211	-200	-190	-181	-172
1315	1250	1187	1128	1071	1018	967	919	873
-10	-10	-10	-10	-10	-10	-10	-10	-10
1305	1240	1177	1118	1061	1008	957	909	863
10483	11722	12900	14017	15079	16087	17044	17952	18815
4.25	4.65	5.09	5.57	6.10	6.67	7.30	8.00	8.75
307	267	231	201	174	151	131	114	99

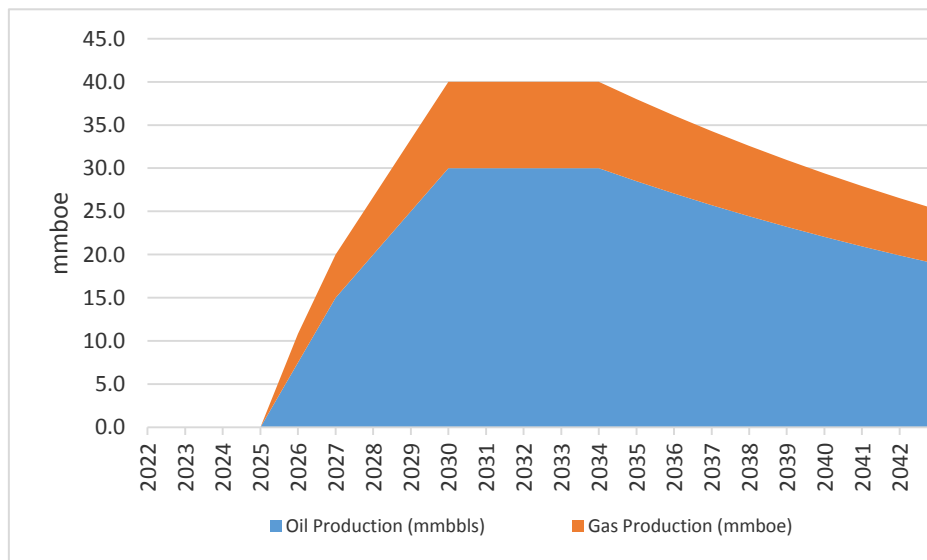
2037	2038	2039	2040	2041	2042	2043	2044	2045
2253	2141	2033	1932	1835	1743	1656	1573	1495
-171	-163	-155	-147	-140	-133	-126	-120	-114
-103	-98	-93	-88	-84	-80	-76	-72	-68
-405	-385	-365	-347	-330	-313	-298	-283	-269
-259	-246	-233	-222	-211	-200	-190	-181	-172
-10	-10	-10	-10	-10	-10	-10	-10	-10
1305	1240	1177	1118	1061	1008	957	909	863

Production

	Oil		
	mmbbls	kbpd	
Resources	0		
Recovery Factor	0%		
Reserves	500		
Start date	5 years		Peak as %
	after first		Reserves
	capex		
Peak Production (mmbbls)	30	82	6%
Time to Peak (yrs)	5		
Length of Peak (yrs)	5		
Decline rate (%)	5%		

	<i>First capex</i>				<i>1st year</i>	
	2022	2023	2024	2025	2026	2027
Oil production	0.00	0.00	0.00	0.00	7.50	15.00
Total oil produced to 2040	463.3					
Barrels per day		0	0	0	20548	41096
Gas Production	0.00	0.00	0.00	0.00	20.00	30.00
Total gas produced to 2040	881.6					

	2022	2023	2024	2025	2026	2027
Oil Production (mmbbls)	0.0	0.0	0.0	0.0	7.5	15.0
Gas Production (mmboe)	0.0	0.0	0.0	0.0	3.3	5.0
Total (mmboe)	0.0	0.0	0.0	0.0	10.8	20.0



Production Scenarios

Total Produced

Oil Production Scenarios

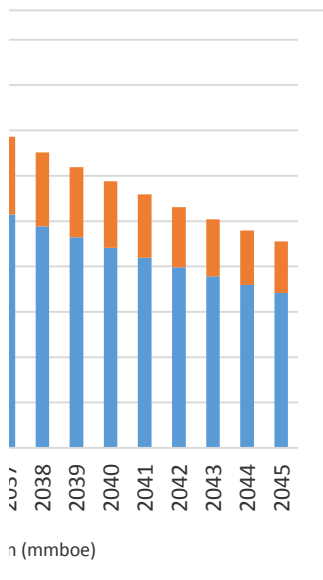
1	463.28
2	532.78
3	602.27
4	393.79
5	324.30

Gas Production Scenarios

1	931.57
2	1071.30
3	1211.04
4	791.83
5	652.10

2037	2038	2039	2040	2041	2042	2043	2044	2045
25.72	24.44	23.21	22.05	20.95	19.90	18.91	17.96	17.06
70469	66946	63598	60419	57398	54528	51801	49211	46751
51.44	48.87	46.43	44.11	41.90	39.81	37.81	35.92	34.13

2037	2038	2039	2040	2041	2042	2043	2044	2045
25.7	24.4	23.2	22.1	21.0	19.9	18.9	18.0	17.1
8.6	8.1	7.7	7.4	7.0	6.6	6.3	6.0	5.7
34.3	32.6	31.0	29.4	27.9	26.5	25.2	23.9	22.8



Domestic Oil Price

Base Case	40.0	40.0	40.0	40.0	40.0	40.0
Scenario 2	46.0	46.0	46.0	46.0	46.0	46.0
Scenario 3	52.0	52.0	52.0	52.0	52.0	52.0
Scenario 4	34.0	34.0	34.0	34.0	34.0	34.0
Scenario 5	28.0	28.0	28.0	28.0	28.0	28.0

Domestic Gas Price

Base Case	5.2	5.2	5.2	5.2	5.2	5.2
Scenario 2	6.0	6.0	6.0	6.0	6.0	6.0
Scenario 3	6.8	6.8	6.8	6.8	6.8	6.8
Scenario 4	4.4	4.4	4.4	4.4	4.4	4.4
Scenario 5	3.6	3.6	3.6	3.6	3.6	3.6

Export Gas Price

Base Case	10.4	10.4	10.4	10.4	10.4	10.4
Scenario 2	12.0	12.0	12.0	12.0	12.0	12.0
Scenario 3	13.5	13.5	13.5	13.5	13.5	13.5
Scenario 4	8.8	8.8	8.8	8.8	8.8	8.8
Scenario 5	7.3	7.3	7.3	7.3	7.3	7.3

Slope 13%

40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0
52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0

5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6

10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3

2045

17.1

3.4

13.7

40

80

137

1092

1229

34.1

5.2

10.4

17

17

89

177

266

1495

17.1

19.6 15%

22.2 30%

14.5 -15%

11.9 -30%

34.1

39.2 15%

44.4 30%

29.0 -15%

23.9 -30%

80.0

92.0

104.0

68.0

56.0

40.0
46.0
52.0
34.0
28.0

5.2
6.0
6.8
4.4
3.6

10.4
12.0
13.5
8.8
7.3

Capital Expenditure

Reserves	667	
Capex per bbl	7.50	
Total capex	5000	
% before first oil	80%	4000
% first oil to peak	15%	750
Maintenance capex	5%	250

	First Capex				First Oil	
	2022	2023	2024	2025	2026	2027
US\$mm	1000	1000	1000	1000	150	150
Before first oil	4000					
First oil to peak	750					
Maintenance	150					
Total	4900					

Sensitivities

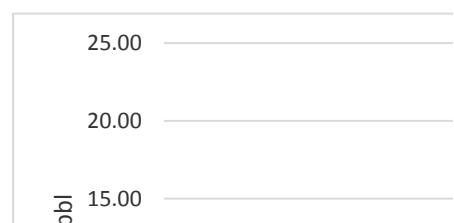
2	1150	1150	1150	1150	173	173
3	1300	1300	1300	1300	195	195
4	850	850	850	850	128	128
5	700	700	700	700	105	105
15%						
30%						
-15%						
-30%						

Field Comparisons

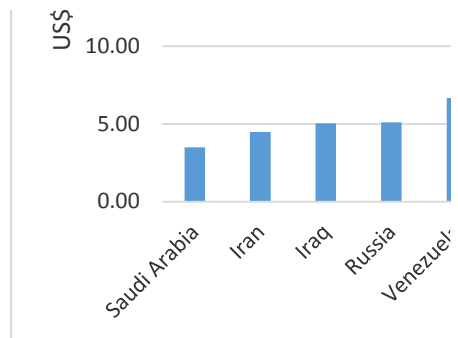
	Cost /bbl	Capex	Reserves	Peak Prod	Peak Prod
	US\$/bbl	US\$mm	mmbbls	kbpd	mmbbls
Kashagan (Kazakhstan)	10.46	136000	13000	1500	547.5
ACG (Azerbaijan)	4.00	20000	5000	620	226.3
Thunderhorse (Gulf of Mexico)	5.00	5000	1000	250	91.25
Novy Port (Russia onshore)	3.25	4500	1385	161	58.64
Ghawar (Saudi)	3.50	248500	71000	5000	1825
Lula (Brazil deep water)	9.04	75000	8300	500	182.5

Global Comparisons

	Capex US\$/bbl
Saudi Arabia	3.50
Iran	4.48
Iraq	5.03
Russia	5.10
Venezuela	6.66



US shale	7.56
Indonesia	7.65
US conv	7.70
Canada	9.69
Nigeria	13.10
Norway	13.76
Brazil	16.09
UK	22.67

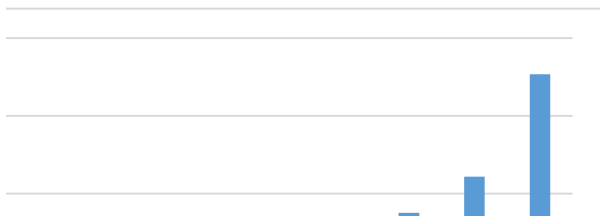
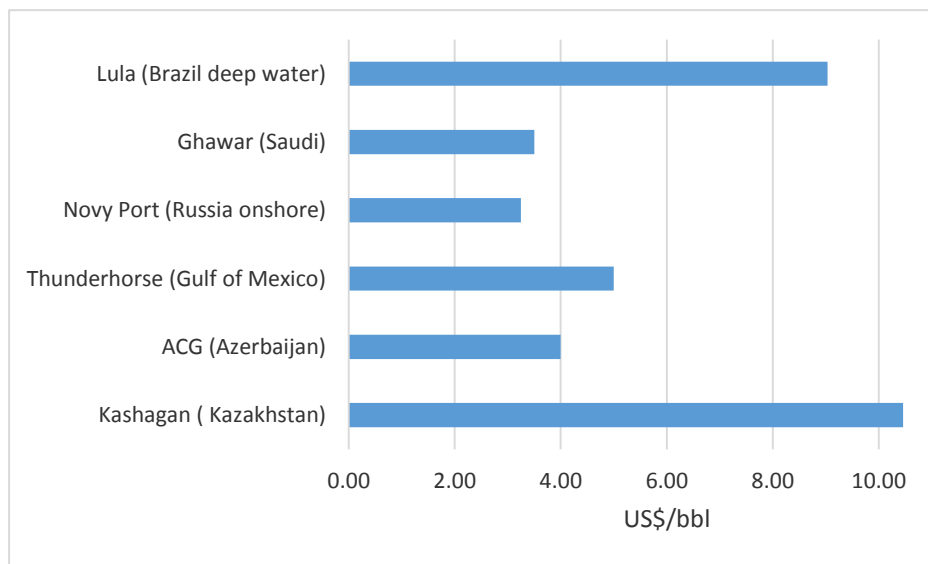


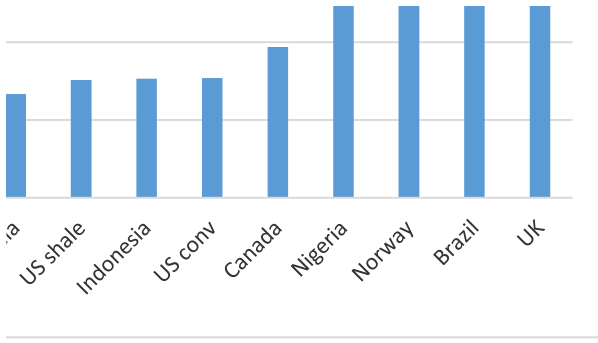
	Peak Oil								
	2028	2029	2030	2031	2032	2033	2034	2035	2036
	150	150	150	10	10	10	10	10	10

173	173	173	12	12	12	12	12	12	12
195	195	195	13	13	13	13	13	13	13
128	128	128	9	9	9	9	9	9	9
105	105	105	7	7	7	7	7	7	7

Capex/
peak bbl
US\$/bbl

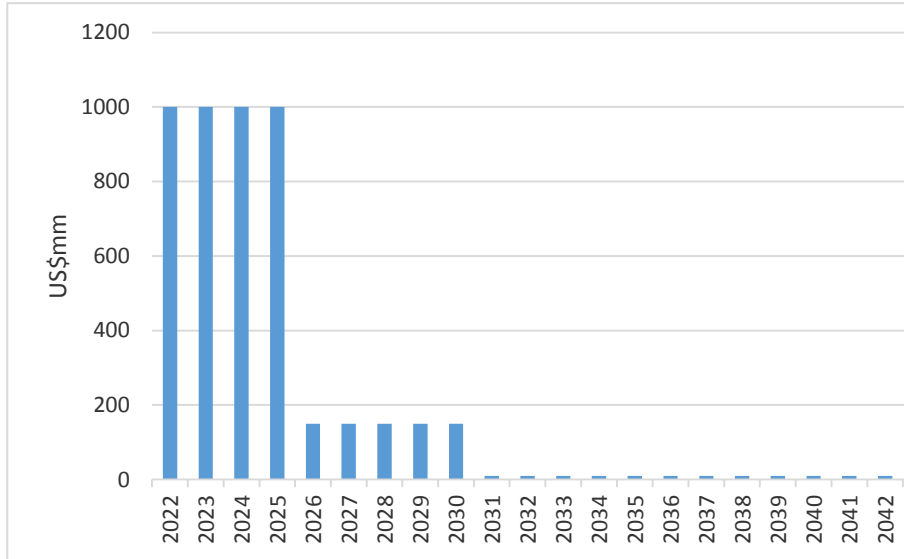
248
88
55
77
136
411





2037	2038	2039	2040	2041	2042	2043	2044	2045
10	10	10	10	10	10	10	10	10

12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13
9	9	9	9	9	9	9	9	9
7	7	7	7	7	7	7	7	7





Operating Costs

Lifting Costs 5 US\$/boe real
 Total for model 3051 US\$mm

	2020	2021	2022	2023	2024	2025	2026
US\$mm	0.0	0.0	0.0	0.0	54.2	100.0	133.3
Total	3093						

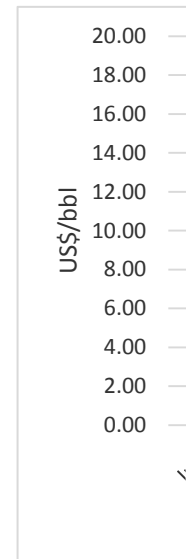
Base Case and Sensitivities

1	5
2	15%
3	30%
4	-15%
5	-30%

Global Comparisons

	Lifting US\$/bbl		Transport US\$/bbl
Iran	1.94	Saudi Arabi	2.49
Iraq	2.16	Iran	2.67
Russia	2.98	Iraq	2.47
Saudi Arabia	3.00	Russia	2.69
Norway	4.24	Indonesia	3.63
US conv	5.15	US conv	3.11
US shale	5.85	Norway	3.12
Indonesia	6.87	US shale	3.52
Venezuela	7.94	Canada	2.92
Nigeria	8.81	Venezuela	2.54
Brazil	9.45	Nigeria	2.97
Canada	11.56	Brazil	2.80
UK	17.36	UK	4.30

Lifting Costs



Company examples

Rosneft	3.10
Lukoil	4.26
BP	6.90
Chesapeake	2.92

Transport Costs

Oil 3.00 US\$/bbl
 Gas 0.50 US\$/mcf

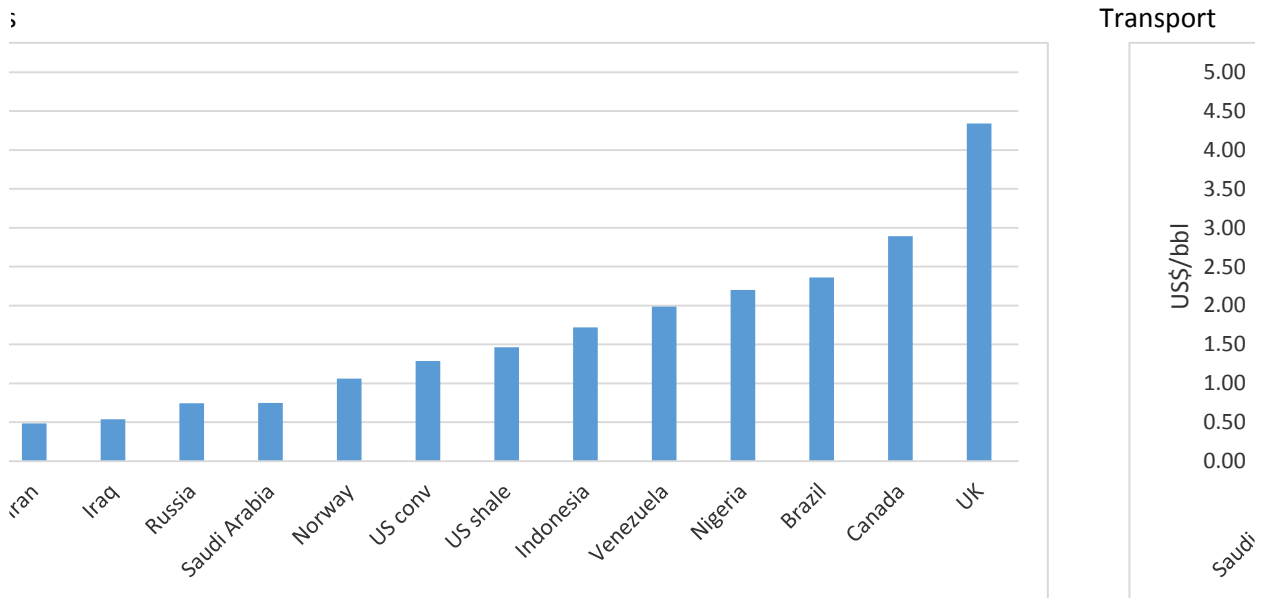
	2022	2023	2024	2025	2026	2027	2028
Oil (US\$mm)	0.0	0.0	0.0	0.0	22.5	45.0	60.0
Gas (US\$mm)	0.0	0.0	0.0	0.0	10.0	15.0	20.0

Total (US\$mm)	0.0	0.0	0.0	0.0	32.5	60.0	80.0
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Base Case and Sensitivities

1	3.00
2	15%
3	30%
4	-15%
5	-30%

2027	2028	2029	2030	2031	2032	2033	2034
166.7	200.0	200.0	200.0	200.0	200.0	190.0	180.5



2029	2030	2031	2032	2033	2034	2035	2036
75.0	90.0	90.0	90.0	90.0	90.0	85.5	81.2
25.0	30.0	30.0	30.0	30.0	30.0	28.5	27.1

100.0

120.0

120.0

120.0

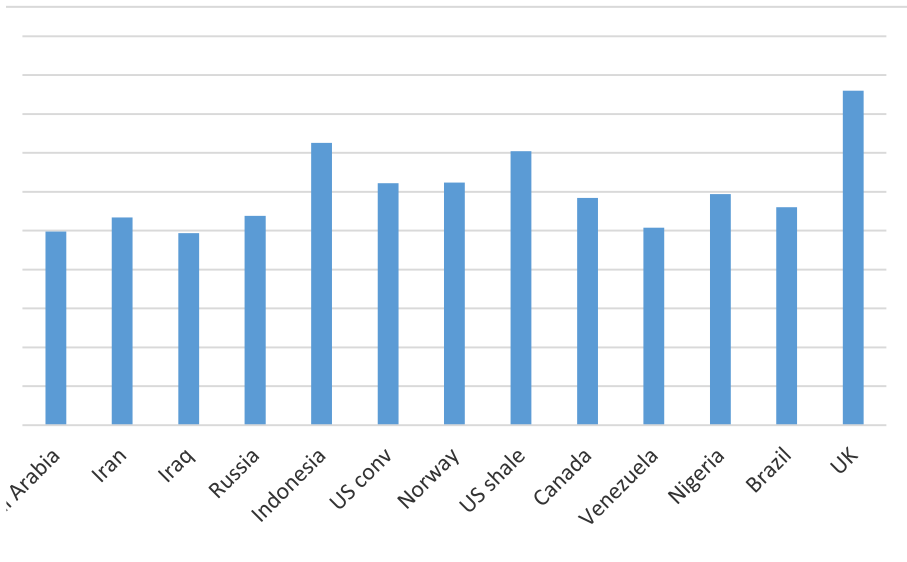
120.0

120.0

114.0

108.3

2035	2036	2037	2038	2039	2040	2041	2042
171.5	162.9	154.8	147.0	139.7	132.7	126.0	119.7



2037	2038	2039	2040	2041	2042	2043	2044
77.2	73.3	69.6	66.2	62.9	59.7	56.7	53.9
25.7	24.4	23.2	22.1	21.0	19.9	18.9	18.0

102.9

97.7

92.9

88.2

83.8

79.6

75.6

71.8

2043

113.8

2045

51.2

17.1

Operating Taxes

Oil Tax

Export Tax	Sliding	of export barrels
Royalty	1.0%	of oil revenues
Other taxes	0.5%	of total revenues

Export Oil Price	80	80	80	80	80	80
------------------	----	----	----	----	----	----

	2020	2021	2022	2023	2024	2025
Export Tax	0.0	0.0	0.0	0.0	90.0	180.0
Royalty	0.0	0.0	0.0	0.0	5.4	10.8
Other	0.0	0.0	0.0	0.0	3.5	6.6
Total	0	0	0	0	98.88	197.4

Export Tax

Cut-off point	20	US\$/bbl
Tax	25%	above cut-off point

Export Tax (\$/bbl)	15	15	15	15	15	15
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Gas Tax

Export Tax	20%	export revenues
Royalty	0.25	US\$/mcf

	2022	2023	2024	2025	2026	2027
Export Tax	0	0	0	0	21	31
Royalty	0	0	0	0	5	8
Total	0	0	0	0	26	39

Total Operating Taxes	0	0	0	0	125	236
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Total US\$/boe

Gross Taxes

US\$/bbl

Saudi Arabia	0
Iran	0
Iraq	0.91
Russia	8.44
Indonesia	1.55
US conv	5.03
Norway	0.19
US shale	6.42
Canada	2.48
Venezuela	10.48
Nigeria	4.11

Brazil
UK

6.66
0

Depreciation

Straight Line

Total Capex	5000
Years of Production	20
Annual Depreciation (US\$mm)	250

	2022	2023	2024	2025	2026	2027
Depreciation	0	0	0	0	250	250
<i>Production</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>
Total	5000					

Unit of Production

Total Reserves	667
Total Produced	610
Total Capex	5000
Depreciation per barrel	8.19

	2022	2023	2024	2025	2026	2027
Depreciation	0	0	0	0	88.76697	164
Total	5068					

2028	2029	2030	2031	2032	2033	2034	2035	2036
250	250	250	250	250	250	250	250	250
1	1	1	1	1	1	1	1	1

2028	2029	2030	2031	2032	2033	2034	2035	2036
219	273	328	328	328	328	328	311	296

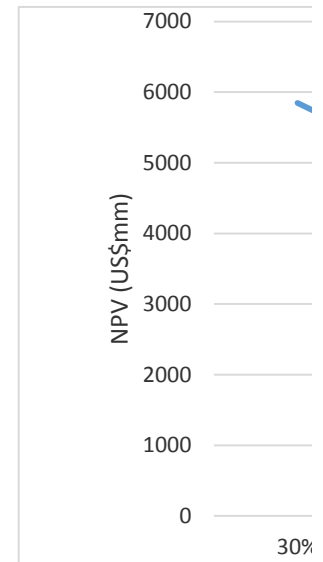
2037	2038	2039	2040	2041	2042	2043	2044	2045
250	250	250	250	250	250	250	250	250
1	1	1	1	1	1	1	1	1

2037	2038	2039	2040	2041	2042	2043	2044	2045
281	267	254	241	229	217	207	196	186

Sensitivities

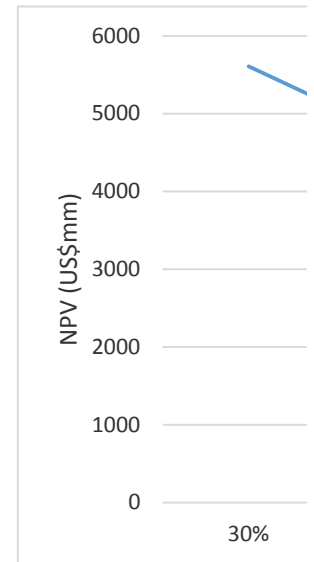
Oil Price

	NPV
30%	5849
15%	4696
0%	3543
-15%	2390
-30%	1237



Production

	NPV
30%	5607
15%	4575
0%	3543
-15%	2511
-30%	1479



Capex

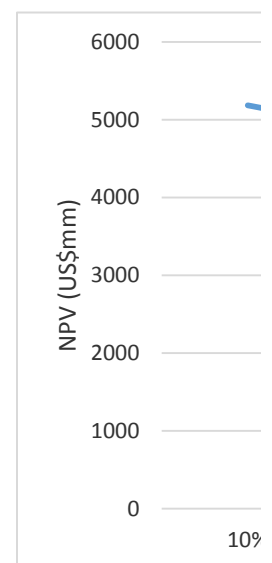
	NPV
30%	4636
15%	4090
0%	3543
-15%	2997
-30%	2450

Opex

	NPV
30%	3903
15%	3723
0%	3543
-15%	3363
-30%	3183

Corporate Tax Rate

	NPV
10%	5184
15%	4766
20%	4349
25%	3931
30%	3513

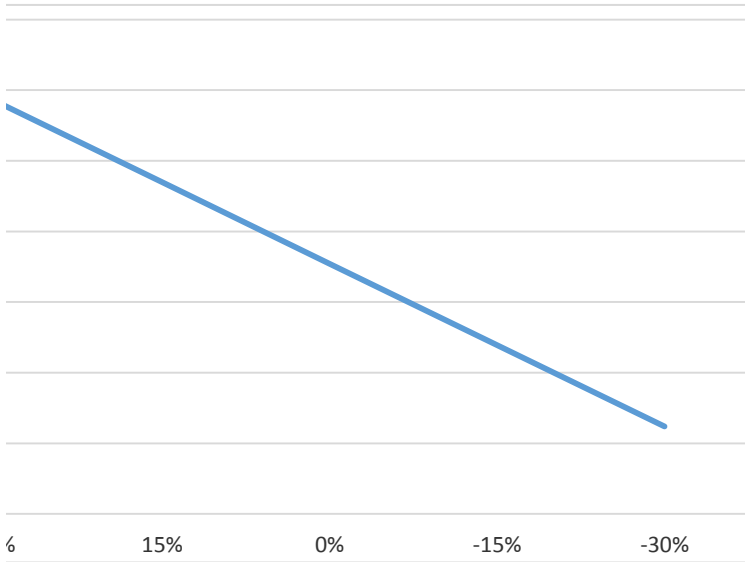


Discount Rate

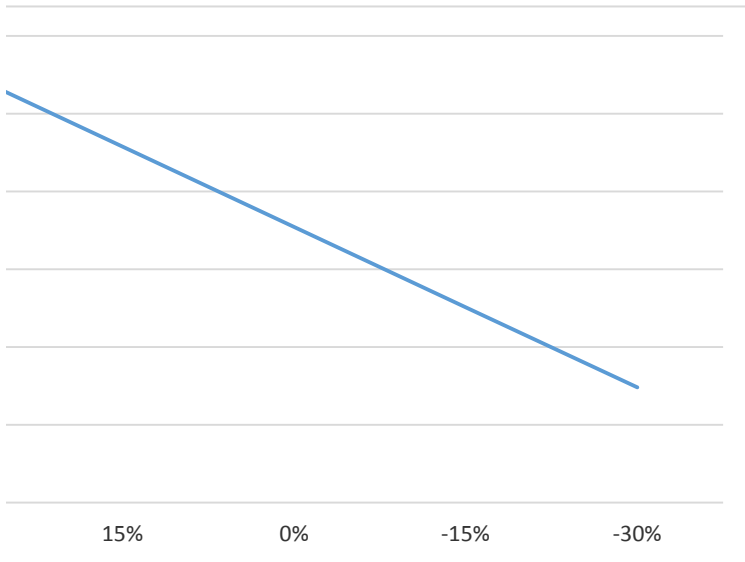
	NPV
-30.0%	6668
-15.0%	5406
Base	4349
+15%	3427
+30%	2654

Summary

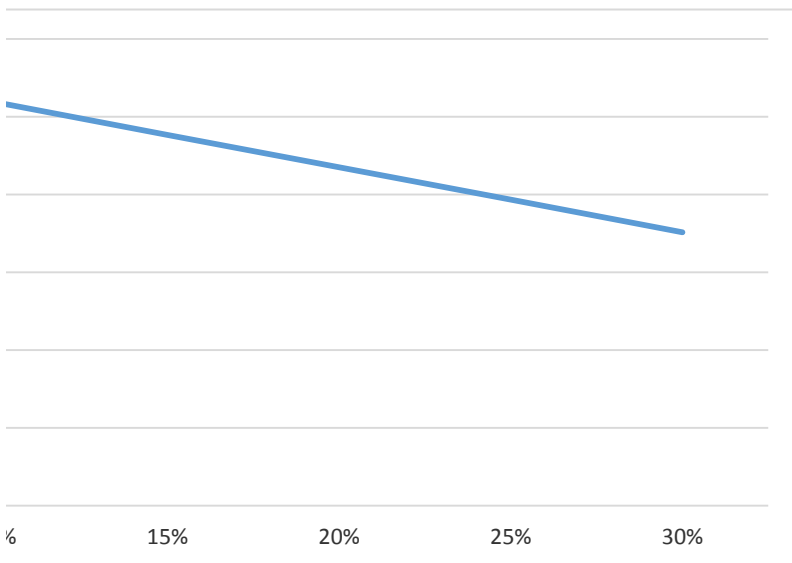
	Oil Price	Production Capex	Opex	Corp Tax	Disc. Rate
Downside	1237	1479	2450	3183	
Low	2390	2511	2997	3363	
Base	3543	3543	3543	3543	
High	4696	4575	4090	3723	
Upside	5849	5607	4636	3903	



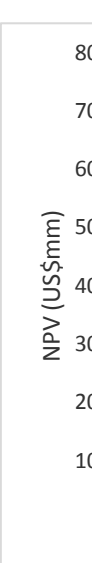
Oil Price

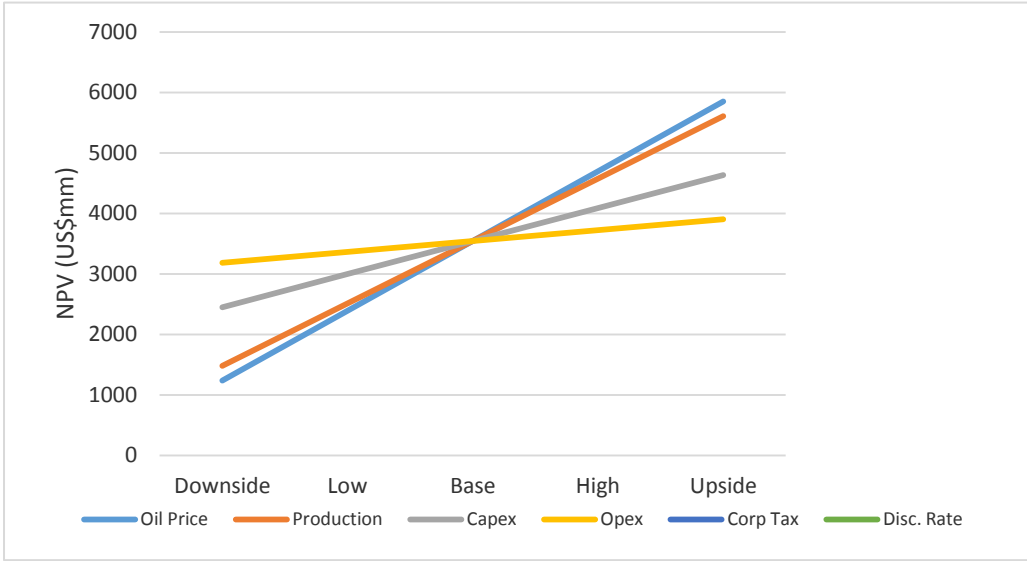


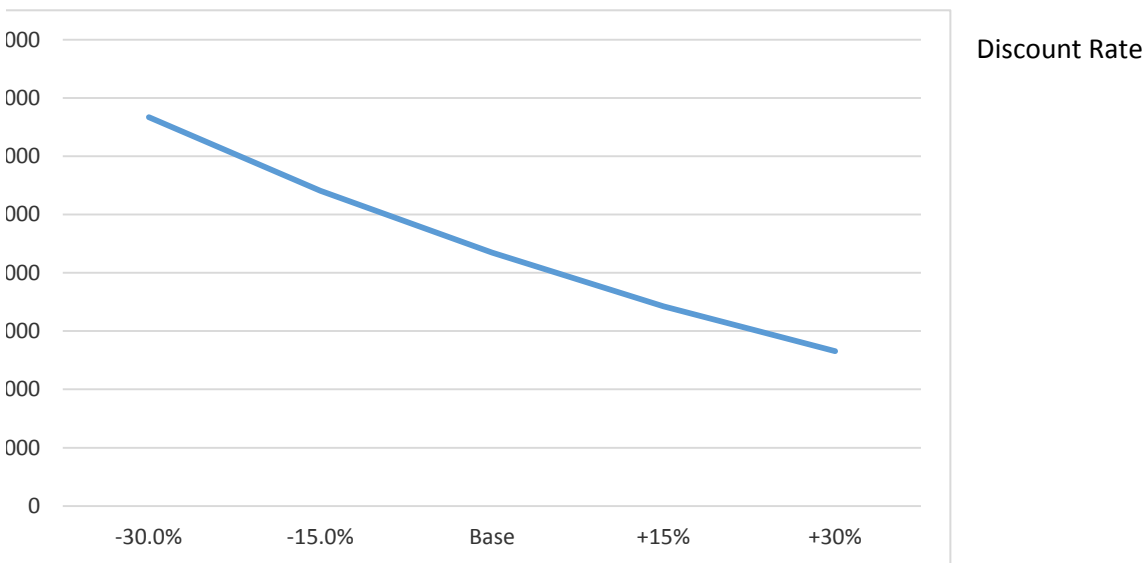
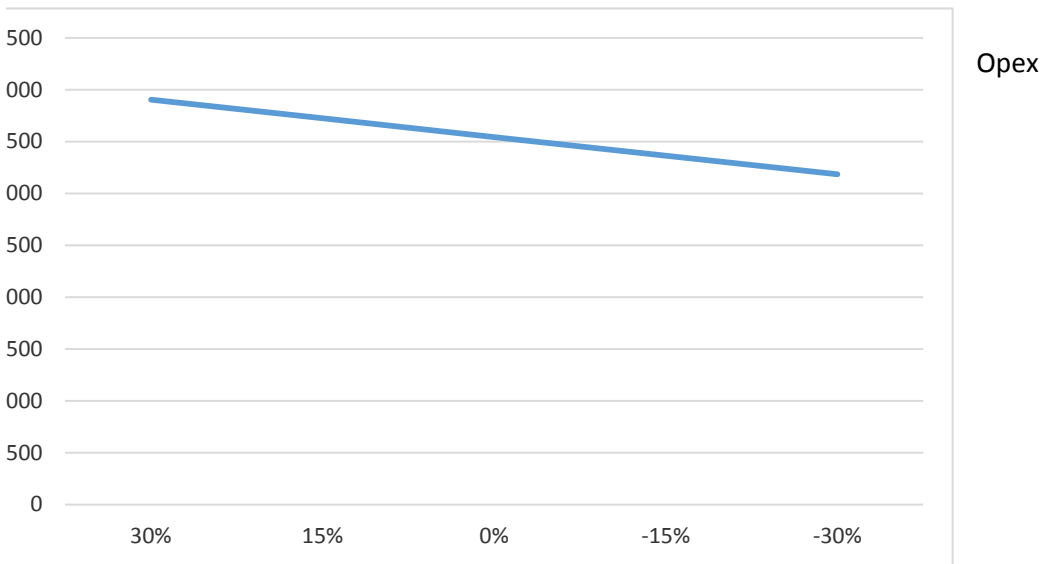
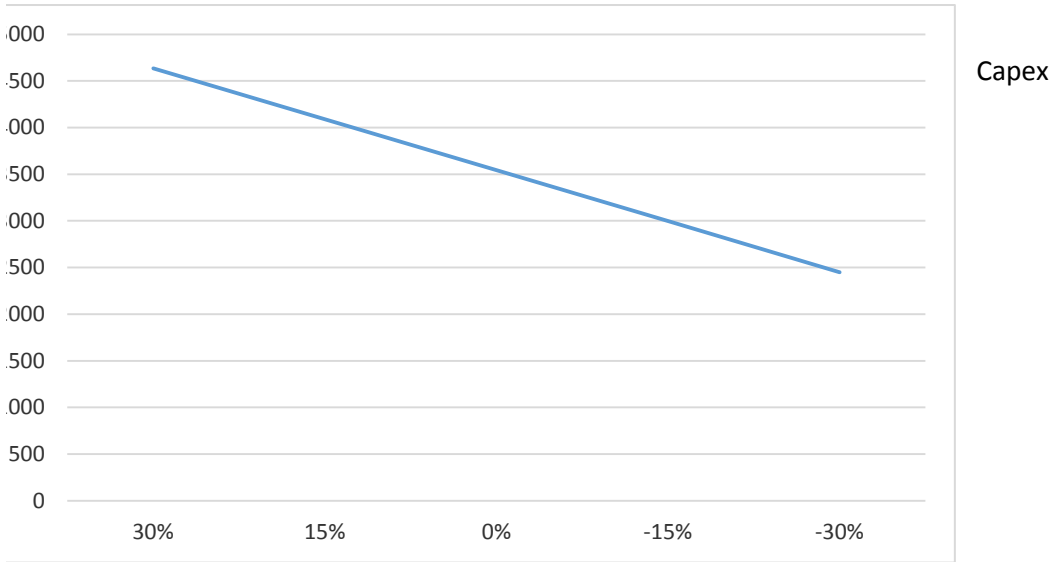
Production



Tax Rate







Exploration Well Analysis

Chance of Success	10%
Cost of Well	100 US\$mm
NPV of Success	3543
Dry Hole	-90.0
Successful Well	344
EMV	254

PSA Regime

	2020	2021	2022	2023	2024	2025
Company Revenues	0	0	0	0	620	1171
Operating Costs	0	0	0	0	-54	-100
Transport Costs	0	0	0	0	-33	-60
Operating Taxes	0	0	0	0	0	0
EBITDA	0	0	0	0	533	1011
Depreciation	0	0	0	0	-88.767	-163.877
EBIT	0	0	0	0	445	847
Tax on EBIT <i>Corporate Tax Rate</i>	0 20%	0	0	0	-88.9405	-169.379
Post tax cashflow	0	0	0	0	445	841
CAPEX	-1000	-1000	-1000	-1000	-150	-150
Free Cashflow (FCF)	-1000	-1000	-1000	-1000	295	691
Cumulative FCF	-1000	-2000	-3000	-4000	-3705	-3014
Discount Rate	10%					
Discount Factor	1.10	1.21	1.33	1.46	1.61	1.77
Discounted Cashflow (DCF)	-909	-826	-751	-683	183	390
NPV (\$mm)	819					
IRR (%)	13%					

Revenue Calculation

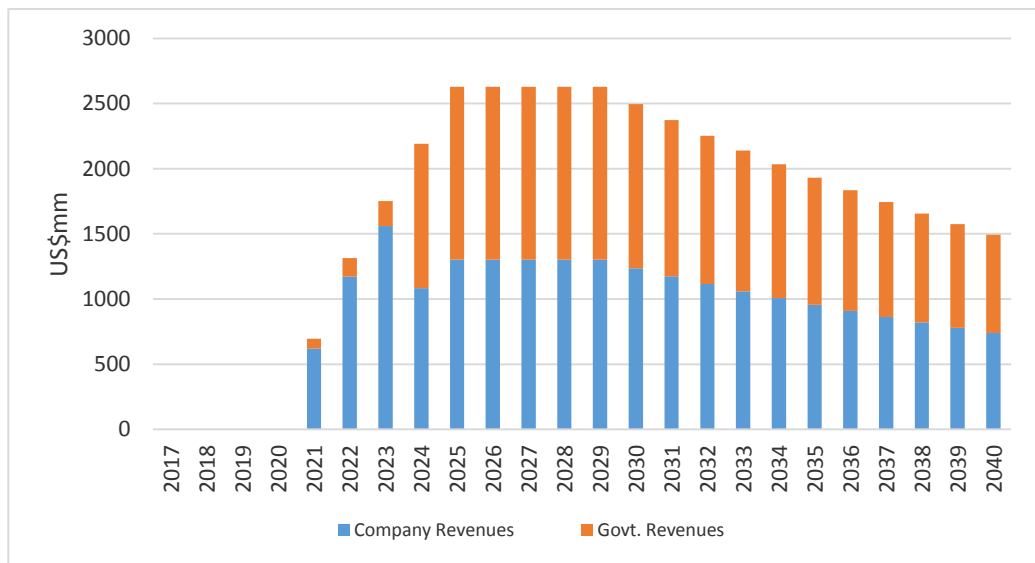
	Company	Govt				
Cost Oil	80%					
Profit Oil	50%	50%				
	2017	2018	2019	2020	2021	2022
Total Revenues	0	0	0	0	696	1314
Govt Royalty	0	0	0	0	7	13
Taxable Revenues	0	0	0	0	689	1301
	1%					
Cost Oil						
80% of Revenues	0	0	0	0	551	1041

Accumulated Cost Oil	0	0	0	551	1592	
Annual Costs	-1000	-1000	-1000	-237	-310	
Accumulated Costs	-1000	-2000	-3000	-3237	-3547	
Payback	-1000	-2000	-3000	-2685	-1955	
	0	0	0	0	0	
Cost Oil to Company	0	0	0	0	551	1041
Profit Oil	0	0	0	0	138	260
Profit Oil						
Company	0	0	0	0	69	130
Govt	0	0	0	0	69	130
Total Company Revenues	0	0	0	0	620	1171
	2017	2018	2019	2020	2021	2022
Company Revenues	0	0	0	0	620	1171
Govt. Revenues	0	0	0	0	76	143

2026	2027	2028	2029	2030	2031	2032	2033	2034
1561	1084	1301	1301	1301	1301	1301	1236	1174
-133	-167	-200	-200	-200	-200	-200	-190	-181
-80	-100	-120	-120	-120	-120	-120	-114	-108
0	0	0	0	0	0	0	0	0
1348	817	981	981	981	981	981	932	885
-219	-273	-328	-328	-328	-328	-328	-311	-296
1129	544	653	653	653	653	653	620	589
-226	-109	-131	-131	-131	-131	-131	-124	-118
1122	709	850	850	850	850	850	808	767
-150	-150	-150	-10	-10	-10	-10	-10	-10
972	559	700	840	840	840	840	798	757
-2042	-1484	-783	57	897	1737	2578	3375	4133
1.95	2.14	2.36	2.59	2.85	3.14	3.45	3.80	4.18
499	261	297	324	294	268	243	210	181

2023	2024	2025	2026	2027	2028	2029	2030	2031
1752	2190	2628	2628	2628	2628	2628	2497	2372
18	22	26	26	26	26	26	25	24
1734	2168	2602	2602	2602	2602	2602	2472	2348
1388	1734	2081	2081	2081	2081	2081	1977	1878

2980	4714	6795	8877	10958	13039	15121	17098	18977
-363	-417	-470	-330	-330	-330	-330	-314	-299
-3910	-4327	-4797	-5127	-5457	-5787	-6117	-6431	-6729
-930	387	1999	3750	5501	7253	9004	10668	12247
0	1	1	1	1	1	1	1	1
1388	0	0	0	0	0	0	0	0
347	2168	2602	2602	2602	2602	2602	2472	2348
173	1084	1301	1301	1301	1301	1301	1236	1174
173	1084	1301	1301	1301	1301	1301	1236	1174
1561	1084	1301	1301	1301	1301	1301	1236	1174
2023	2024	2025	2026	2027	2028	2029	2030	2031
1561	1084	1301	1301	1301	1301	1301	1236	1174
191	1106	1327	1327	1327	1327	1327	1261	1198



2035	2036	2037	2038	2039	2040	2041	2042	2043
1115	1060	1007	956	908	863	820	779	740
-171	-163	-155	-147	-140	-133	-126	-120	-114
-103	-98	-93	-88	-84	-80	-76	-72	-68
0	0	0	0	0	0	0	0	0
841	799	759	721	685	651	618	587	558
-281	-267	-254	-241	-229	-217	-207	-196	-186
560	532	505	480	456	433	412	391	371
-112	-106	-101	-96	-91	-87	-82	-78	-74
729	693	658	625	594	564	536	509	484
-10	-10	-10	-10	-10	-10	-10	-10	-10
719	683	648	615	584	554	526	499	474
4852	5534	6182	6797	7381	7935	8461	8960	9433
4.59	5.05	5.56	6.12	6.73	7.40	8.14	8.95	9.85
156	135	117	101	87	75	65	56	48

2032	2033	2034	2035	2036	2037	2038	2039	2040
2253	2141	2033	1932	1835	1743	1656	1573	1495
23	21	20	19	18	17	17	16	15
2231	2119	2013	1913	1817	1726	1640	1558	1480
1785	1695	1611	1530	1454	1381	1312	1246	1184

20761	22456	24067	25597	27050	28431	29743	30989	32173
-284	-271	-258	-245	-233	-222	-212	-202	-192
-7014	-7284	-7542	-7787	-8021	-8243	-8455	-8656	-8848
13747	15172	16525	17810	19030	20188	21288	22333	23325
1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0
2231	2119	2013	1913	1817	1726	1640	1558	1480
1115	1060	1007	956	908	863	820	779	740
1115	1060	1007	956	908	863	820	779	740
1115	1060	1007	956	908	863	820	779	740
2032	2033	2034	2035	2036	2037	2038	2039	2040
1115	1060	1007	956	908	863	820	779	740
1138	1081	1027	976	927	880	836	795	755

Questions

Real and Nominal

	2018	2019	2020	2021	2022	2023
Q1	100	102.5	105.1	107.7	110.4	113.1

Q2

	2018	2019	2020	2021	2022	2023
Real	60	60	60	60	60	60
Nominal	60	61.20	62.42	63.67	64.95	66.24

Inflation 2%

Real +1% 60 60.60 61.21 61.82 62.44 63.06

NPV and DCF

Q1

	2018	2019	2020	2021	2022	2023	2024	2025
US\$mm	100	100	100	100	100	100	100	100
Discount factor	1.10	1.21	1.33	1.46	1.61	1.77	1.95	2.14
Discount Rate	10%							
DCF	91	83	75	68	62	56	51	47
NPV	614							
NPV Excel	614							

Q2

	2018	2019	2020	2021	2022	2023	2024	2025
Capex	-187.5	-187.5	-187.5	-187.5	-187.5			
Cashflow						100	150	200
Net Cashflow	-188	-188	-188	-188	-188	100	150	200
Discount Factor	1.1	1.21	1.33	1.46	1.61	1.77	1.95	2.14
Discount Rate	10%							
DCF	-170	-155	-141	-128	-116	56	77	93
NPV	381							
NPV Excel	381							
IRR	16%							
Cost Inflation	1.25							

2026	2027
100	100
2.36	2.59
42	39

2026	2027	2028	2029	2030	2031	2032	2033	2034
250	300	300	300	300	300	300	270	243
250	300	300	300	300	300	300	270	243
2.36	2.59	2.85	3.14	3.45	3.80	4.18	4.59	5.05
106	116	105	96	87	79	72	59	48

2035	2036	2037
219	197	177
219	197	177
5.56	6.12	6.73
39	32	26