

Time Value of Money

Money	500				
	Year 1	Year 2	Year 3	Year 4	Year 5
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

Cost of printer ink	5				
	Year 1	Year 2	Year 3	Year 4	Year 5
US\$ flat	5	5	5	5	5
US\$ inflation	5.20	5.41	5.62	5.85	6.08
US\$					

Amount of printer ink					
	Year 1	Year 2	Year 3	Year 4	Year 5
US\$ no inflation or interest	100.0	100.0	100.0	100.0	100.0
US after inflation	96.2				
US\$ after inflation with interest					

	Year 1	Year 2	Year 3	Year 4	Year 5
Discount Rate = cost of money					

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

Year 6	Year 7	Year 8	Year 9	Year 10	
500	500	500	500	500	
670	704	739	776	814	
4%	4%	4%	4%	4%	4%
5%	5%	5%	5%	5%	5%
1.34	1.41	1.48	1.55	1.63	
	500	739			
	355.3407	338.4197	322.3045		

Year 6	Year 7	Year 8	Year 9	Year 10
5	5	5	5	5
6.33	6.58			

Year 6	Year 7	Year 8	Year 9	Year 10	2029
100.0	100.0	100.0	100.0	100.0	
	76.0				

Year 6	Year 7	Year 8
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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

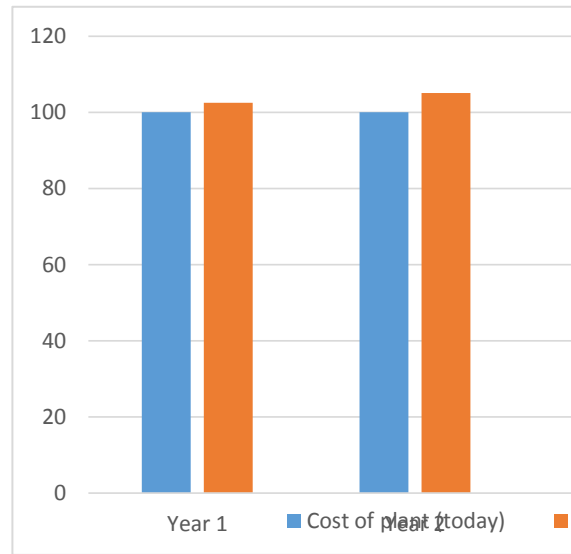
	Year 1	Year 2	Year 3	Year 4	Year 5
Real	100	100	100	100	100
Nominal	102.5	105.1	107.7	110.4	113.1
Inflation	2.5%	2.5%	2.5%	2.5%	2.5%
Inflation Factor	1.025	1.051	1.077	1.104	1.131
Capex US\$2020	500				
Nominal	538.8				

Oil Price

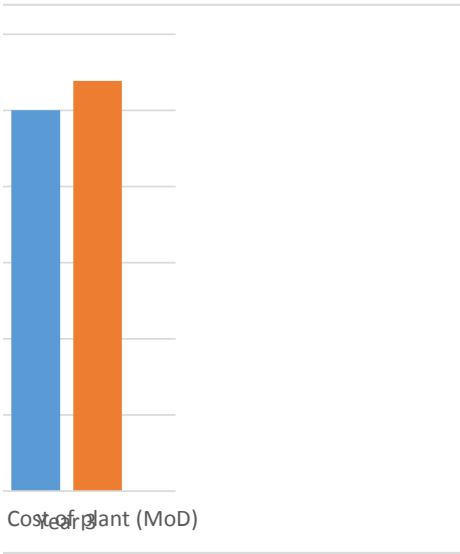
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Real	30	30	30	30	30			
Nominal	30.60	31.21	31.84	32.47	33.12			
Inflation	2%	2%	2%	2%	2%			
Inflation Factor	1.020	1.040	1.061	1.082	1.104			

	Year 1
Cost of plant (today)	100
Cost of plant (MoD)	103

Year 9 Year 10



Year 2	Year 3	Total
100	100	300
105	108	315



Example Discounted Cashflow

Example 1

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Cashflow	-10	-10	-10	20	20	20	20
Discount Factor	1.05	1.10	1.16	1.22	1.28	1.34	1.41
Discounted Cashflow	-9.5	-9.1	-8.6	16.5	15.7	14.9	14.2
NPV (Net Present Value)	72.7						
Discount Rate	5.0%						
Excel Calculation	72.7						
IRR	41.3%						

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	1.05	1.10	1.16	1.22	1.28	1.34	1.41
Discounted Cashflow	-190.5	-181.4	-172.8	65.8	62.7	59.7	56.9
NPV	234.5						
Discount Rate	5.0%						
IRR	9.57%						

IRR

Internal Rate of Return

Excel Calculation

	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	-190.5	-371.9	-544.6	-478.8	-416.2	-356.5	-299.6

Payback period

Discounted payback period

Year 8	Year 9	Year 10
20	20	20
1.48	1.55	1.63
13.5	12.9	12.3

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
1.48	1.55	1.63	1.71	1.80	1.89	1.98	2.08	2.18
54.1	51.6	49.1	46.8	44.5	42.4	40.4	38.5	36.6

Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16
-200	-120	-40	40	120				
-245.5	-193.9	-144.8	-98.0	-53.4	-11.0	29.4	67.9	104.5

Year 17	Year 18	Year 19	Year 20
100	100	100	100
-20	-20	-20	-20
80	80	80	80
2.29	2.41	2.53	2.65
34.9	33.2	31.7	30.2

Year 17	Year 18	Year 19	Year 20
139.4	172.7	204.3	234.5

WACC Calculation

Risk Free Rate 0.00%

Corporate Interest Rate 0.00%

Equity market return 0.00%

Company Beta 0

Corporate Tax Rate 0%

	Debt	Equity
Debt:Equity Split	100%	0%

Cost of Debt 0.00%

Cost of Equity 0.00%

WACC 0.00%

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%

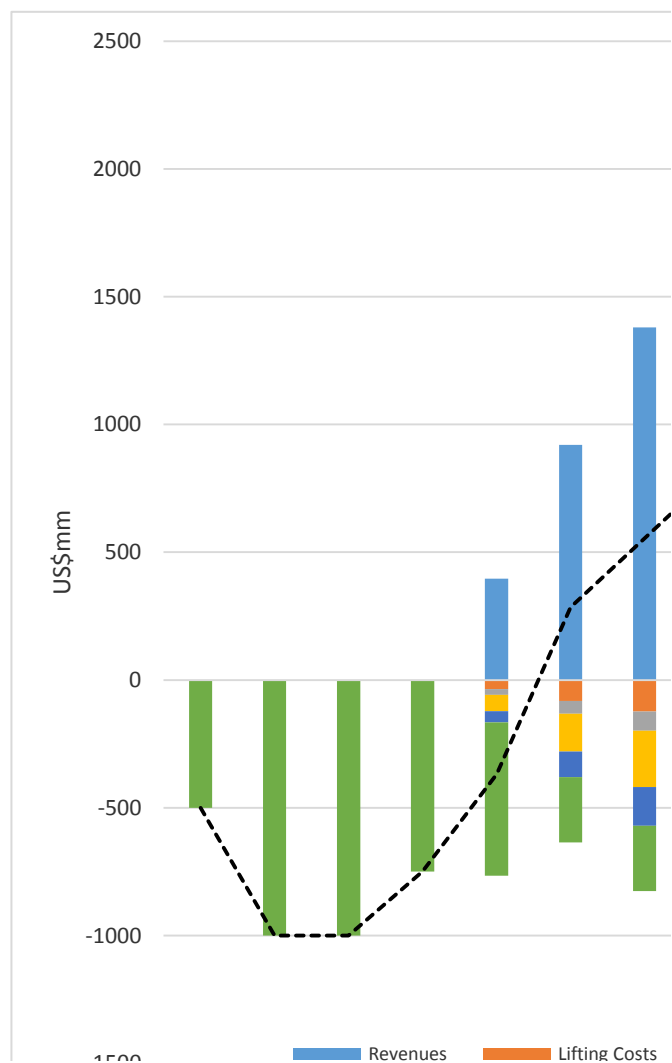
	2022	2023	2024	2025	2026	2027
Revenues	0	0	0	0	397	920
Operating Costs	0	0	0	0	-36	-82
Transport Costs	0	0	0	0	-22	-50
Operating Taxes	0	0	0	0	-65	-147
EBITDA (Pre-tax Cashflow)	0	0	0	0	274	640
Depreciation <i>Straight Line (0) or Unit of Prod (1)</i>	0 1	0	0	0	-60	-137
EBIT (Post Tax Profit)	0	0	0	0	214	503
Tax on EBIT <i>Corporate Tax Rate</i>	0 20%	0	0	0	-43	-101
Post tax cashflow	0	0	0	0	231	539
CAPEX	-500	-1000	-1000	-750	-600	-255
Free Cashflow (FCF)	-500	-1000	-1000	-750	-369	284
Cumulative FCF	-500	-1500	-2500	-3250	-3619	-3334
Discount Rate	10.0%					
Discount Factor	1.10	1.21	1.33	1.46	1.61	1.77
Discounted Cashflow (DCF)	-455	-826	-751	-512	-229	161
NPV (\$mm)	2255					
IRR (%)	17.0%					
Payback (years)	10	When does cumulative cashflow turn positive				
Excel Calculation						

Breakeven Oil Price **\$70.00** *After Goal Seek Function in Data:What If*

Alternative NPV (terminal value)						
FCF for 10 years	-454.545	-1000	-1000	-750	-369	284

Terminal Value						
Implied FCF	-454.545	-1000	-1000	-750	-369	284
Implied DCF	-413.223	-826	-751	-512	-229	161
NPV	3107					
Plus Cash	0					
Less Debt	0					
Total NPV	3107					
IRR	21%					
<i>EBITDA Multiple</i>	7					

	2022	2023	2024	2025	2026	2027
Revenues	0	0	0	0	397	920
Lifting Costs	0	0	0	0	-36	-82
Transport	0	0	0	0	-22	-50
Operating Taxes	0	0	0	0	-65	-147
Corporate Tax	0	0	0	0	-43	-101
Capex	-500	-1000	-1000	-750	-600	-255
Free Cashflow	-500	-1000	-1000	-750	-369	284





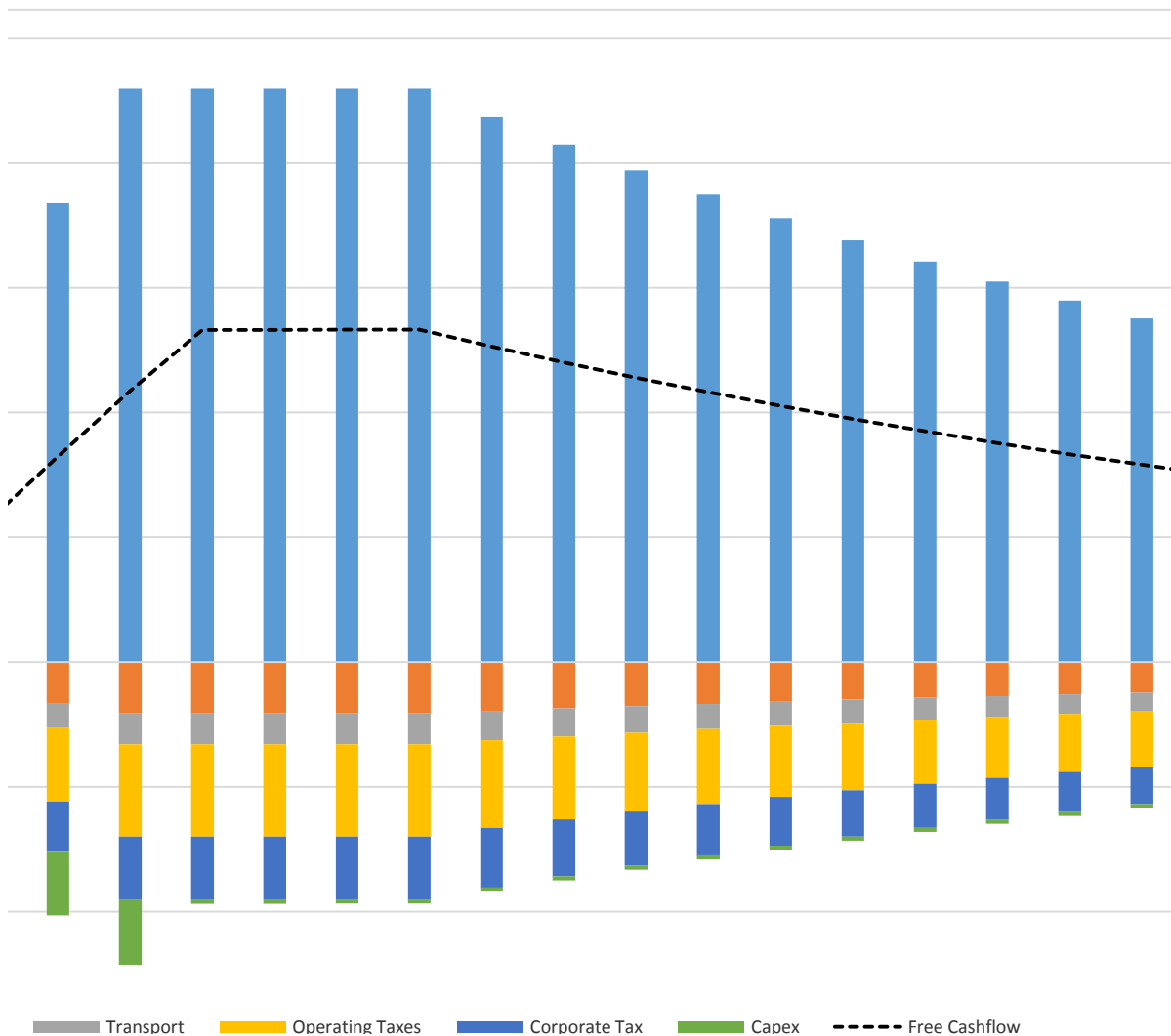
Base
High
Upside
Low
Downside

Results
NPV 2255 US\$mm
IRR 17% %

2028	2029	2030	2031	2032	2033	2034	2035	2036
1380	1840	2300	2300	2300	2300	2300	2185	2075
-124	-165	-206	-206	-206	-206	-206	-196	-186
-75	-100	-124	-124	-124	-124	-124	-118	-112
-221	-295	-369	-369	-369	-369	-369	-350	-333
960	1280	1600	1600	1600	1600	1600	1520	1444
-205	-273	-342	-342	-342	-342	-342	-325	-308
755	1007	1259	1259	1259	1259	1259	1196	1136
-151	-201	-252	-252	-252	-252	-252	-239	-227
809	1079	1349	1349	1349	1349	1349	1281	1217
-255	-255	-262	-18	-18	-17	-17	-17	-17
554	824	1087	1331	1331	1332	1332	1264	1200
-2780	-1956	-869	462	1792	3124	4456	5720	6920
1.95	2.14	2.36	2.59	2.85	3.14	3.45	3.80	4.18
284	384	461	513	466	424	386	333	287
554	824	1087	1331	1331				

					11203
554	824	1087	1331	1331	11203
284	384	461	513	466	3570

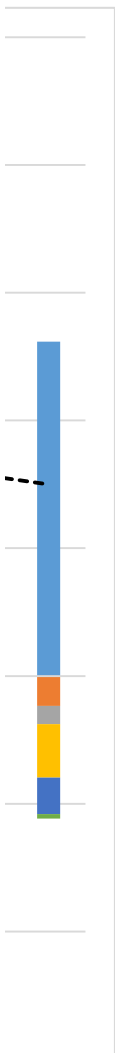
2028	2029	2030	2031	2032	2033	2034	2035	2036
1380	1840	2300	2300	2300	2300	2300	2185	2075
-124	-165	-206	-206	-206	-206	-206	-196	-186
-75	-100	-124	-124	-124	-124	-124	-118	-112
-221	-295	-369	-369	-369	-369	-369	-350	-333
-151	-201	-252	-252	-252	-252	-252	-239	-227
-255	-255	-262	-18	-18	-17	-17	-17	-17
554	824	1087	1331	1331	1332	1332	1264	1200



2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044

2037	2038	2039	2040	2041	2042	2043	2044	2045
1972	1873	1779	1690	1606	1526	1449	1377	1308
-177	-168	-159	-151	-144	-137	-130	-123	-117
-107	-101	-96	-91	-87	-83	-78	-74	-71
-316	-300	-285	-271	-257	-245	-232	-221	-210
1372	1304	1238	1176	1118	1062	1009	958	910
-293	-278	-264	-251	-239	-227	-215	-205	-194
1079	1025	974	925	879	835	793	754	716
-216	-205	-195	-185	-176	-167	-159	-151	-143
1156	1099	1044	991	942	895	850	808	767
-17	-17	-17	-17	-17	-17	-17	-17	-17
1139	1082	1027	974	925	878	833	791	750
8060	9141	10168	11142	12067	12945	13778	14568	15319
4.59	5.05	5.56	6.12	6.73	7.40	8.14	8.95	9.85
248	214	185	159	137	119	102	88	76

2037	2038	2039	2040	2041	2042	2043	2044	2045
1972	1873	1779	1690	1606	1526	1449	1377	1308
-177	-168	-159	-151	-144	-137	-130	-123	-117
-107	-101	-96	-91	-87	-83	-78	-74	-71
-316	-300	-285	-271	-257	-245	-232	-221	-210
-216	-205	-195	-185	-176	-167	-159	-151	-143
-17	-17	-17	-17	-17	-17	-17	-17	-17
1139	1082	1027	974	925	878	833	791	750

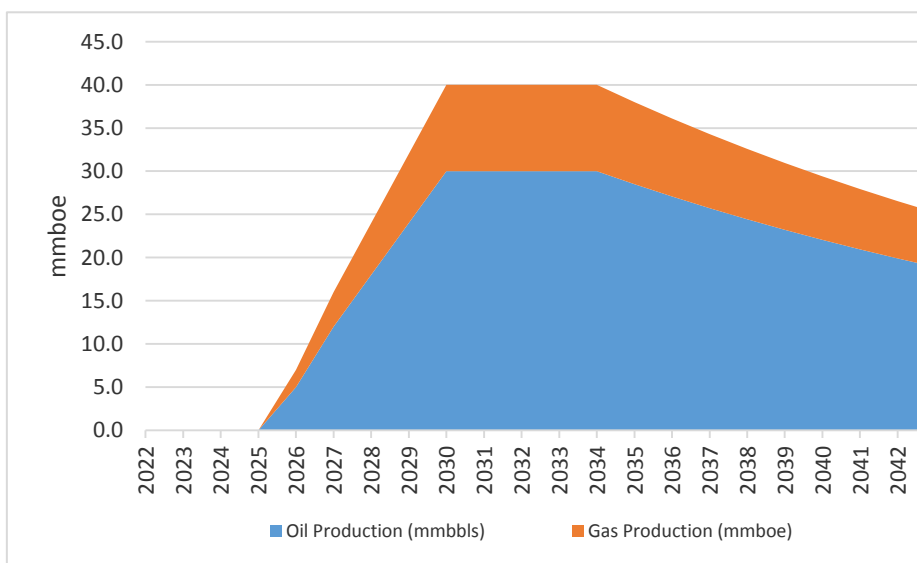


Production

	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%		

					1	
	2022	2023	2024	2025	2026	2027
Oil production	0.00	0.00	0.00	0.00	5.00	12.00
Total oil produced to 2040	454.8					
Barrels per day		0	0	0	13699	32877
Gas Production	0.00	0.00	0.00	0.00	12.00	24.00
Total gas produced to 2040	875.6					

	2022	2023	2024	2025	2026	2027
Oil Production (mmbbls)	0.0	0.0	0.0	0.0	5.0	12.0
Gas Production (mmboe)	0.0	0.0	0.0	0.0	2.0	4.0
Total (mmboe)	0.0	0.0	0.0	0.0	7.0	16.0



Production Scenarios

Total Produced

Oil Production Scenarios

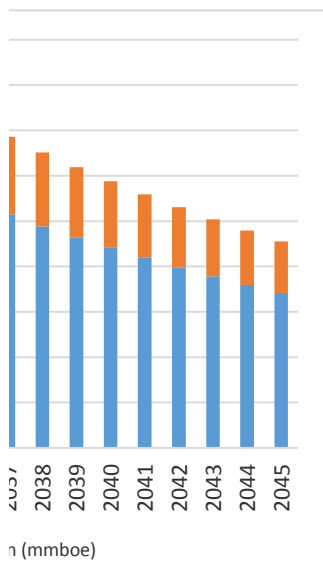
1	454.78
2	523.00
3	591.22
4	386.57
5	318.35

Gas Production Scenarios

1	911.57
2	1048.30
3	1185.04
4	774.83
5	638.10

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	35.0	35.0	35.0	35.0	35.0	35.0
Scenario 2	40.3	40.3	40.3	40.3	40.3	40.3
Scenario 3	45.5	45.5	45.5	45.5	45.5	45.5
Scenario 4	29.8	29.8	29.8	29.8	29.8	29.8
Scenario 5	24.5	24.5	24.5	24.5	24.5	24.5

Domestic Gas Price

Base Case	4.6	4.6	4.6	4.6	4.6	4.6
Scenario 2	5.2	5.2	5.2	5.2	5.2	5.2
Scenario 3	5.9	5.9	5.9	5.9	5.9	5.9
Scenario 4	3.9	3.9	3.9	3.9	3.9	3.9
Scenario 5	3.2	3.2	3.2	3.2	3.2	3.2

Export Gas Price

Base Case	9.1	9.1	9.1	9.1	9.1	9.1
Scenario 2	10.5	10.5	10.5	10.5	10.5	10.5
Scenario 3	11.8	11.8	11.8	11.8	11.8	11.8
Scenario 4	7.7	7.7	7.7	7.7	7.7	7.7
Scenario 5	6.4	6.4	6.4	6.4	6.4	6.4

Slope 13%

35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3
45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
29.8	29.8	29.8	29.8	29.8	29.8	29.8	29.8
24.5	24.5	24.5	24.5	24.5	24.5	24.5	24.5

4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8
7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4

2045

17.1

3.4

13.7

35

70

119

956

1075

34.1

4.6

9.1

17

17

78

155

233

1308

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%

70.0

80.5

91.0

59.5

49.0

35.0
40.3
45.5
29.8
24.5

4.6
5.2
5.9
3.9
3.2

9.1
10.5
11.8
7.7
6.4

Capital Expenditure

Reserves	667			
Capex per bbl	7.70			
Total capex	5133			
% before first oil	75%	3850		770
% first oil to peak	20%	1027		
Maintenance capex	5%	257		

	2022	2023	2024	2025	2026	2027
US\$mm	500	1000	1000	750	600	255
Before first oil	3850					
First oil to peak	1027					
Maintenance	257					
Total	5134					

Sensitivities

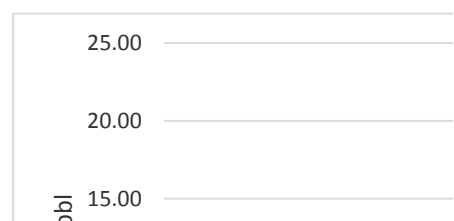
2	575	1150	1150	863	690	293
3	650	1300	1300	975	780	332
4	425	850	850	638	510	217
5	350	700	700	525	420	179
15%						
30%						
-15%						
-30%						

Field Comparisons

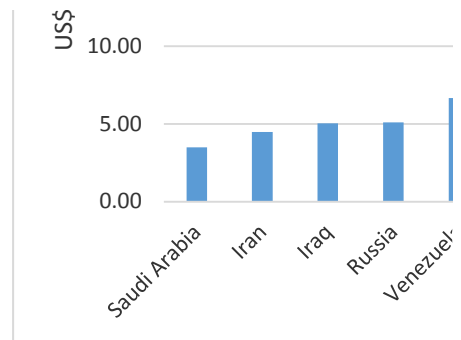
	Cost /bbl	Capex	Reserves	Peak Prod	Peak Prod
	US\$/bbl	US\$mm	mmbbls	kbpd	mmbbls
Kashagan (Kazakhstan)	10.46	136000	13000	1500	547.5
ACG (Azerbaijan)	4.00	20000	5000	620	226.3
Thunderhorse (Gulf of Mexico)	5.00	5000	1000	250	91.25
Novy Port (Russia onshore)	3.25	4500	1385	161	58.64
Ghawar (Saudi)	3.50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

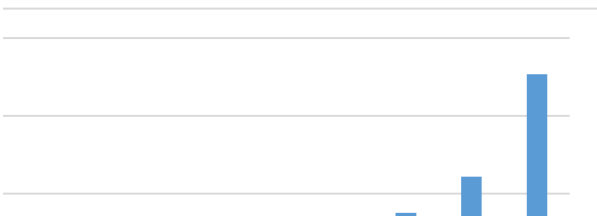
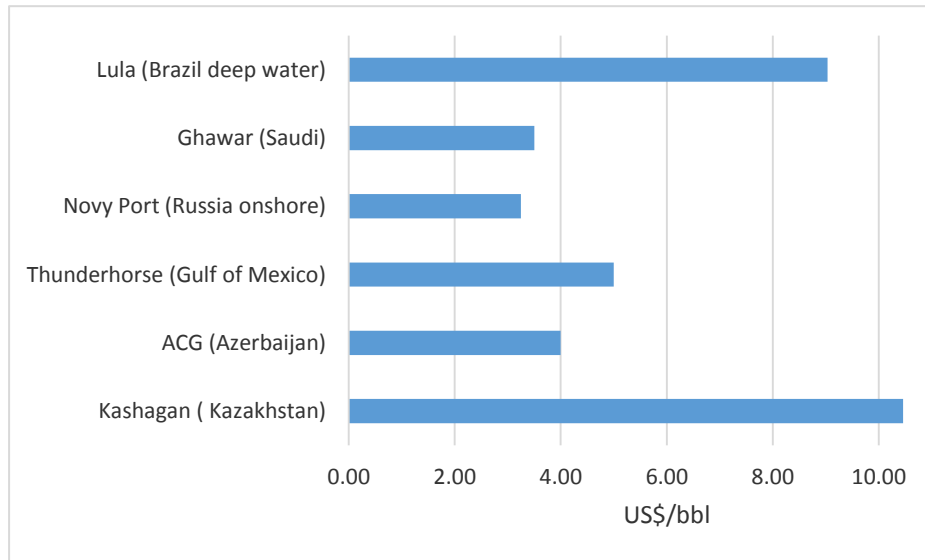


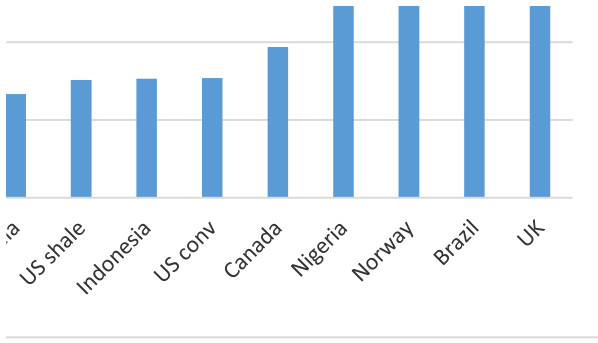
2028	2029	2030	2031	2032	2033	2034	2035	2036
255	255	262	18	18	17	17	17	17

293	293	301	21	21	20	20	20	20
332	332	341	23	23	22	22	22	22
217	217	223	15	15	14	14	14	14
179	179	183	13	13	12	12	12	12

Capex/
peak bbl
US\$/bbl

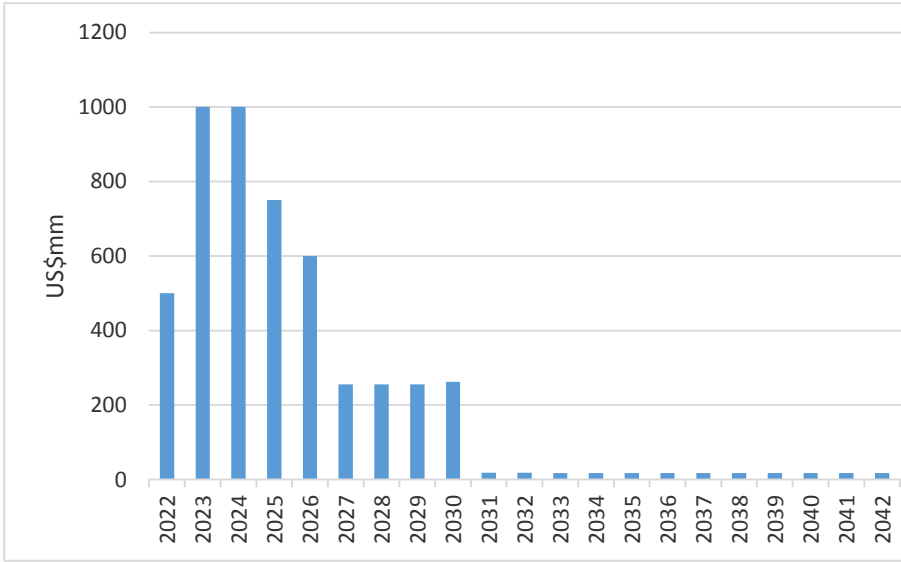
248
88
55
77
136
411





2037	2038	2039	2040	2041	2042	2043	2044	2045
17	17	17	17	17	17	17	17	17

20	20	20	20	20	20	20	20	20
22	22	22	22	22	22	22	22	22
14	14	14	14	14	14	14	14	14
12	12	12	12	12	12	12	12	12





Operating Costs

Lifting Costs 5.15 US\$/boe real
 Total for model 3094 US\$mm

	2022	2023	2024	2025	2026	2027	2028
US\$mm	0.0	0.0	0.0	0.0	36.1	82.4	123.6
Total	3125						

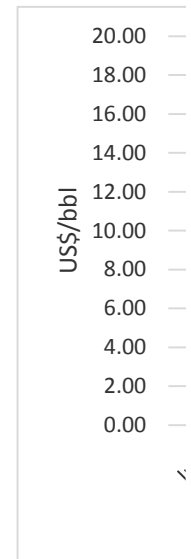
Base Case and Sensitivities

1	5.15
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 3.11 US\$/bbl
 Gas 0.52 US\$/mcf

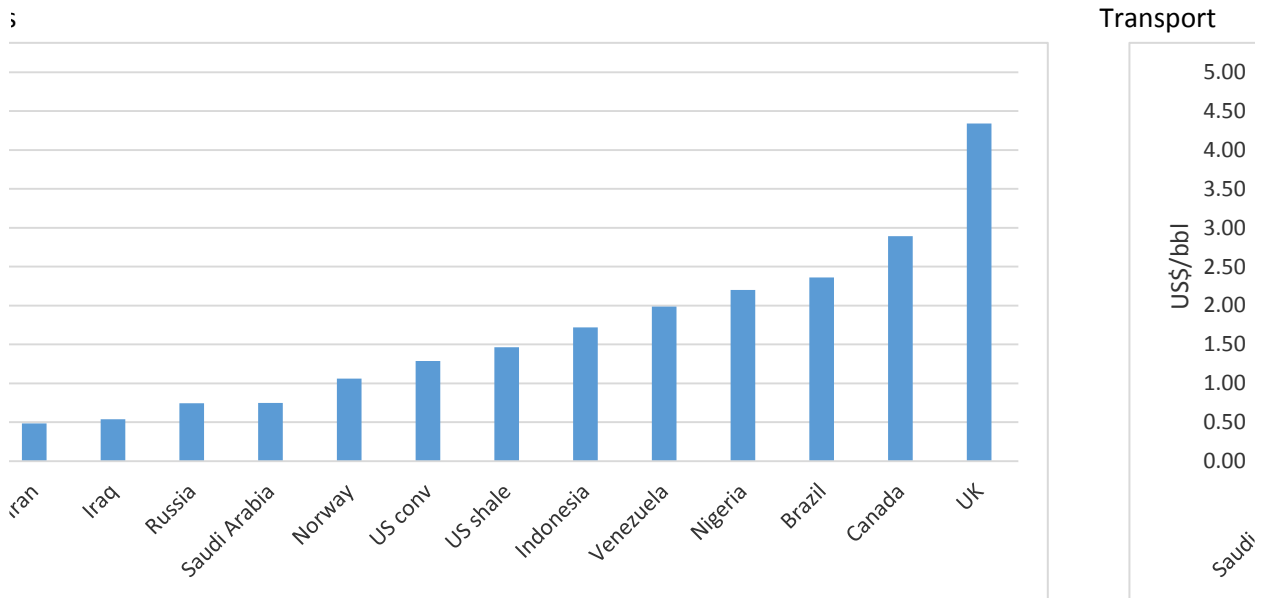
	2022	2023	2024	2025	2026	2027	2028
Oil (US\$mm)	0.0	0.0	0.0	0.0	15.6	37.3	56.0
Gas (US\$mm)	0.0	0.0	0.0	0.0	6.2	12.4	18.7

Total (US\$mm)	0.0	0.0	0.0	0.0	21.8	49.8	74.6
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Base Case and Sensitivities

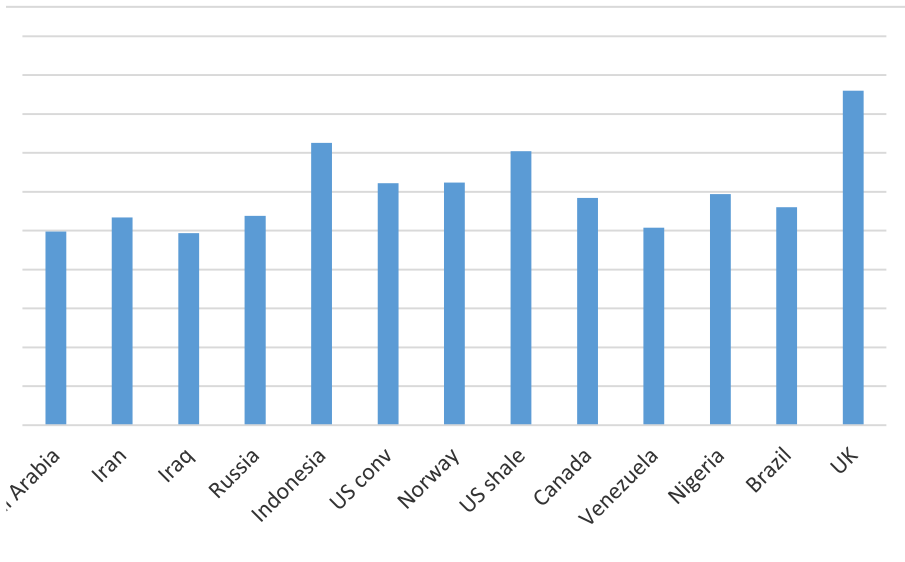
1	3.11
2	15%
3	30%
4	-15%
5	-30%

2029	2030	2031	2032	2033	2034	2035	2036
164.8	206.0	206.0	206.0	206.0	206.0	195.7	185.9



2029	2030	2031	2032	2033	2034	2035	2036
74.6	93.3	93.3	93.3	93.3	93.3	88.6	84.2
24.9	31.1	31.1	31.1	31.1	31.1	29.5	28.1

2037	2038	2039	2040	2041	2042	2043	2044
176.6	167.8	159.4	151.4	143.9	136.7	129.8	123.3



2037	2038	2039	2040	2041	2042	2043	2044
80.0	76.0	72.2	68.6	65.2	61.9	58.8	55.9
26.7	25.3	24.1	22.9	21.7	20.6	19.6	18.6

106.7

101.3

96.3

91.4

86.9

82.5

78.4

74.5

2045

117.2

2045

53.1

17.7

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	70	70	70	70	70	70
	2022	2023	2024	2025	2026	2027
Export Tax	0.0	0.0	0.0	0.0	40.0	96.0
Royalty	0.0	0.0	0.0	0.0	3.2	7.6
Other	0.0	0.0	0.0	0.0	2.0	4.6
Total	0	0	0	0	45.1	108.2

Export Tax

Cut-off point 30 US\$/bbl
Tax 25% above cut-off point

Export Tax (\$/bbl)	10	10	10	10	10	10
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Gas Tax

Export Tax 25% export revenues
Royalty 0.5 US\$/mcf

	2022	2023	2024	2025	2026	2027
Export Tax	0	0	0	0	14	27
Royalty	0	0	0	0	6	12
Total	0	0	0	0	20	39
Total Operating Taxes	0	0	0	0	65	147
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	5133
Years of Production	20
Annual Depreciation (US\$mm)	257

	2022	2023	2024	2025	2026	2027
Depreciation	0	0	0	0	257	257
<i>Production</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>
Total	5133					

Unit of Production

Total Reserves	667
Total Produced	601
Total Capex	5133
Depreciation per barrel	8.55

	2019	2020	2021	2022	2023	2024
Depreciation	0	0	0	0	60	137
Total	5185					

2028	2029	2030	2031	2032	2033	2034	2035	2036
257	257	257	257	257	257	257	257	257
1	1	1	1	1	1	1	1	1

2025	2026	2027	2028	2029	2030	2031	2032	2033
205	273	342	342	342	342	342	325	308

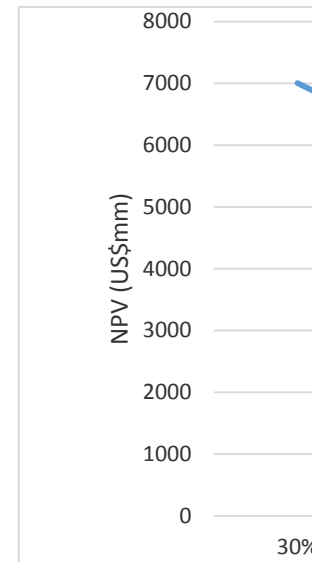
2037	2038	2039	2040	2041	2042	2043	2044	2045
257	257	257	257	257	257	257	257	257
1	1	1	1	1	1	1	1	1

2034	2035	2036	2037	2038	2039	2040	2041	2042
293	278	264	251	239	227	215	205	194

Sensitivities

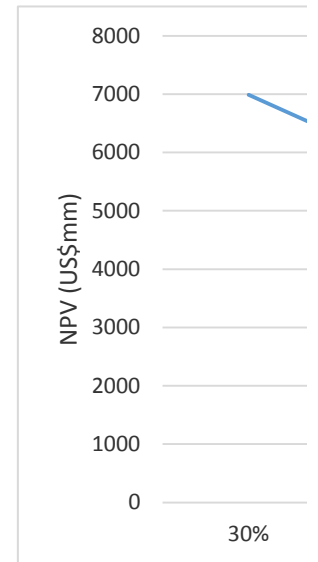
Oil Price

	NPV
30%	7005
15%	5677
0%	4348
-15%	3020
-30%	1692



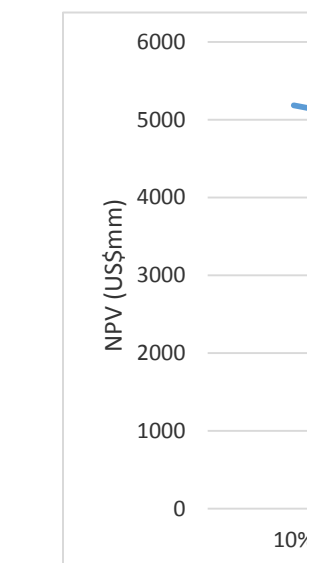
Production

	NPV
30%	6988
15%	5668
0%	4349
-15%	3029
-30%	1709



Capex

	NPV
30%	2855
15%	3602
0%	4349
-15%	5095
-30%	5842



Opex

	NPV
30%	3783
15%	4066
0%	4349
-15%	4632
-30%	4914

Corporate Tax Rate

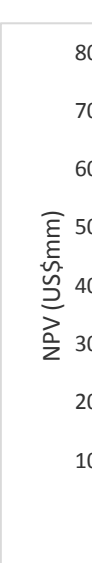
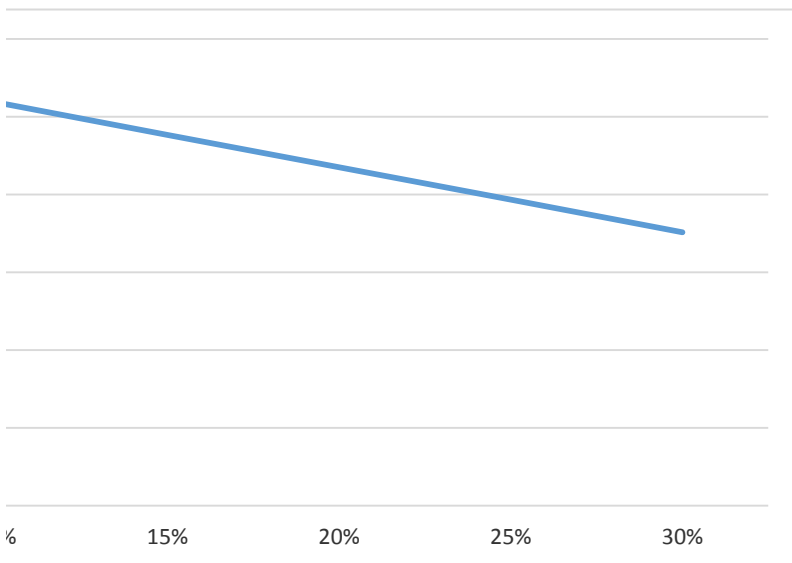
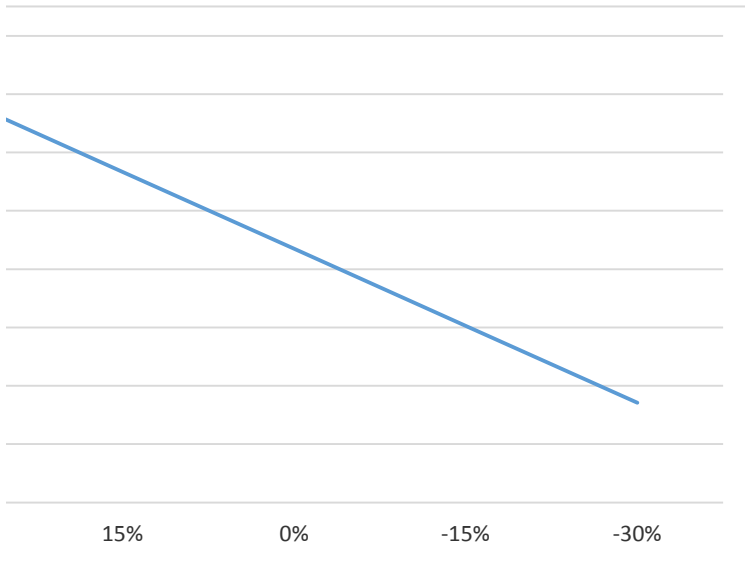
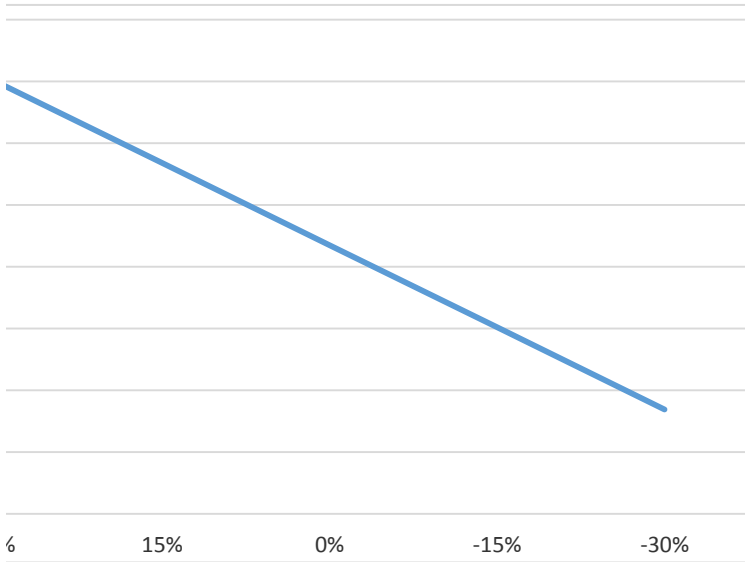
	NPV
10%	5184
15%	4766
20%	4349
25%	3931
30%	3513

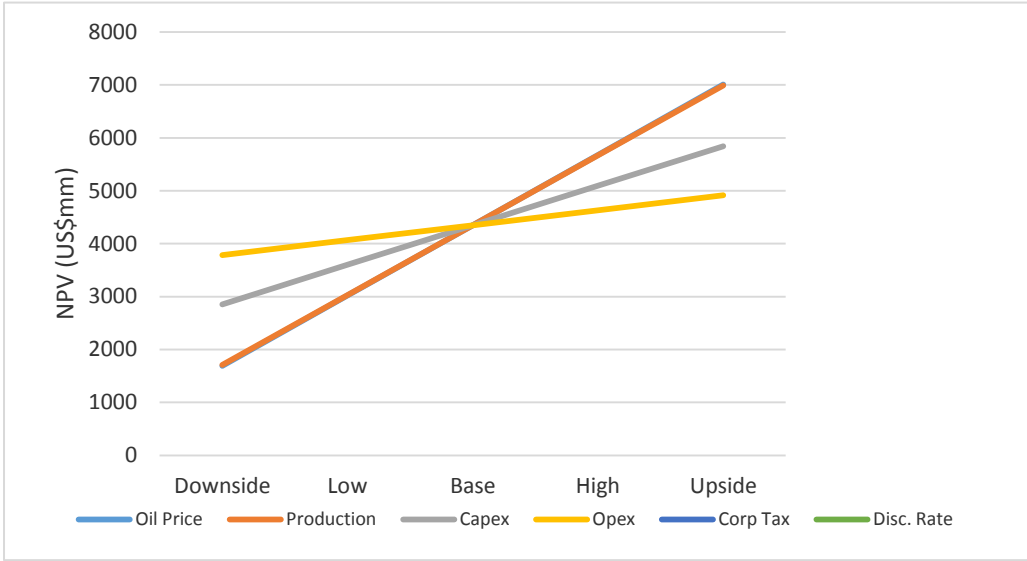
Discount Rate

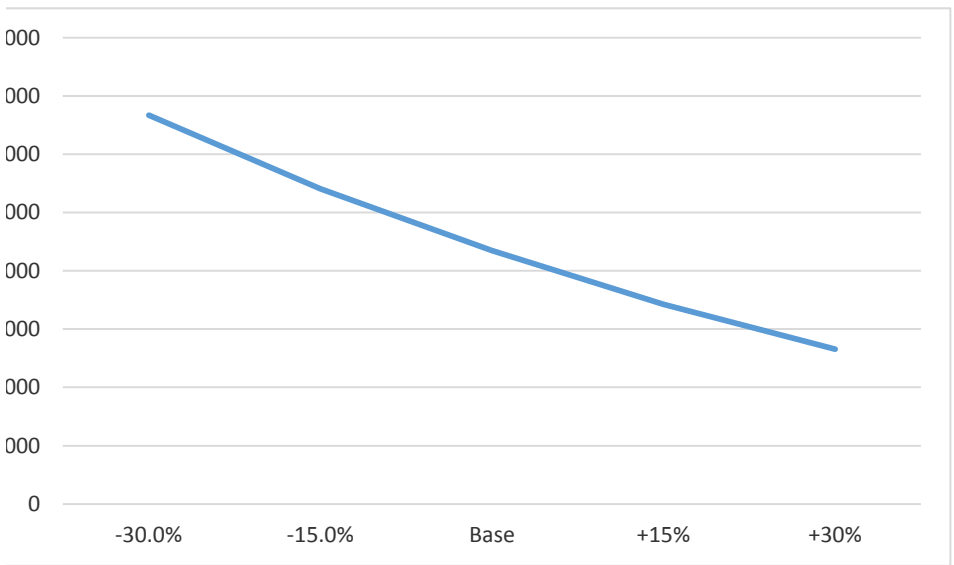
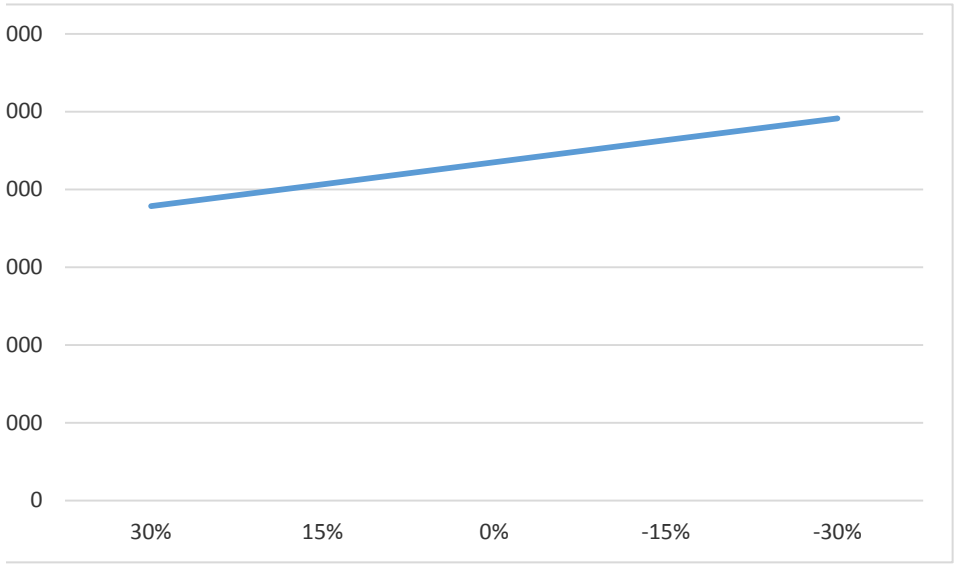
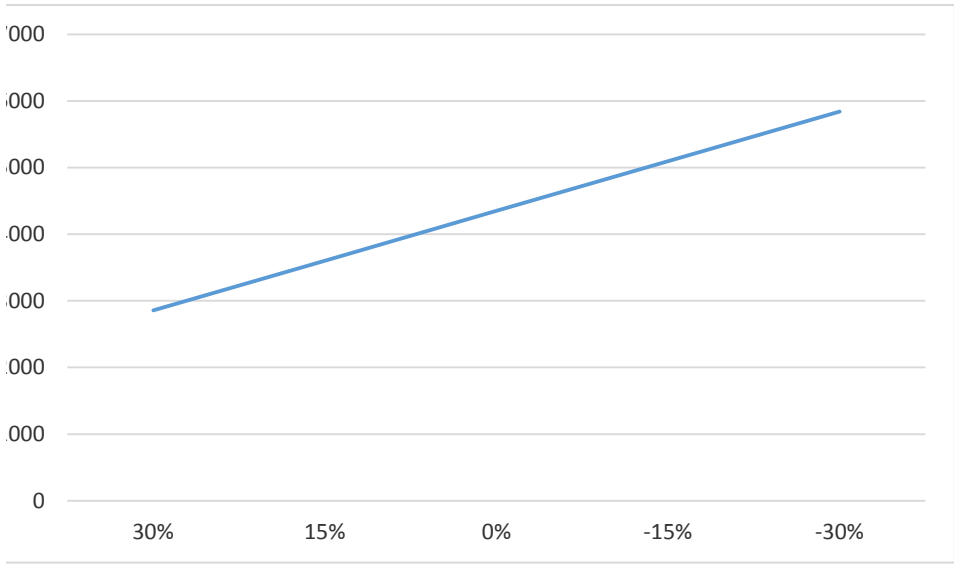
	NPV
-30.0%	6668
-15.0%	5406
Base	4349
+15%	3427
+30%	2654

Summary

	Oil Price	Production Capex	Opex	Corp Tax	Disc. Rate
Downside	1692	1709	2855	3783	
Low	3020	3029	3602	4066	
Base	4348	4349	4349	4349	
High	5677	5668	5095	4632	
Upside	7005	6988	5842	4914	







Exploration Well Analysis

Chance of Success	10%
Cost of Well	100 US\$mm
NPV of Success	2255
Dry Hole	-90.0
Successful Well	216
EMV	126

PSA Regime

	2017	2018	2019	2020	2021	2022
Company Revenues	0	0	0	0	354	820
Operating Costs	0	0	0	0	-36	-82
Transport Costs	0	0	0	0	-22	-50
Operating Taxes	0	0	0	0	0	0
EBITDA	0	0	0	0	296	687
Depreciation	0	0	0	0	-59.8179	-136.727
EBIT	0	0	0	0	236	551
Tax on EBIT	0	0	0	0	-47.2	-110.131
<i>Corporate Tax Rate</i>	20%					
Post tax cashflow	0	0	0	0	249	577
CAPEX	-500	-1000	-1000	-750	-600	-255
Free Cashflow (FCF)	-500	-1000	-1000	-750	-351	322
Cumulative FCF	-500	-1500	-2500	-3250	-3601	-3279
Discount Rate	10%					
Discount Factor	1.10	1.21	1.33	1.46	1.61	1.77
Discounted Cashflow (DCF)	-455	-826	-751	-512	-218	182
NPV (\$mm)	299					
IRR (%)	11%					

Revenue Calculation

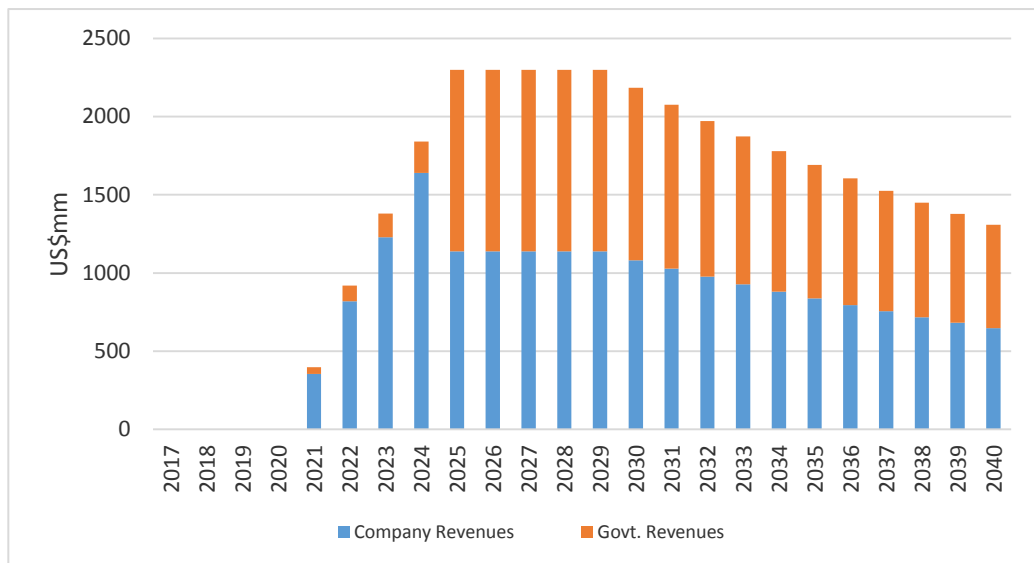
	Company	Govt				
Cost Oil	80%					
Profit Oil	50%	50%				
	2017	2018	2019	2020	2021	2022
Total Revenues	0	0	0	0	397	920
Govt Royalty	0	0	0	0	4	9
Taxable Revenues	0	0	0	0	393	911
	1%					
Cost Oil						
80% of Revenues	0	0	0	0	314	728

Accumulated Cost Oil	0	0	0	314	1043	
Annual Costs	-1000	-1000	-750	-658	-387	
Accumulated Costs	-1000	-2000	-2750	-3408	-3795	
Payback	-1000	-2000	-2750	-3093	-2752	
	0	0	0	0	0	
Cost Oil to Company	0	0	0	0	314	728
Profit Oil	0	0	0	0	79	182
Profit Oil						
Company	0	0	0	0	39	91
Govt	0	0	0	0	39	91
Total Company Revenues	0	0	0	0	354	820
	2017	2018	2019	2020	2021	2022
Company Revenues	0	0	0	0	354	820
Govt. Revenues	0	0	0	0	43	100

2023	2024	2025	2026	2027	2028	2029	2030	2031
1229	1639	1138	1138	1138	1138	1138	1081	1027
-124	-165	-206	-206	-206	-206	-206	-196	-186
-75	-100	-124	-124	-124	-124	-124	-118	-112
0	0	0	0	0	0	0	0	0
1031	1375	808	808	808	808	808	767	729
-205	-273	-342	-342	-342	-342	-342	-325	-308
826	1101	466	466	466	466	466	443	421
-165	-220	-93	-93	-93	-93	-93	-89	-84
866	1155	715	715	715	715	715	679	645
-255	-255	-262	-18	-18	-17	-17	-17	-17
611	900	453	697	697	698	698	662	628
-2668	-1769	-1316	-619	77	775	1472	2134	2762
1.95	2.14	2.36	2.59	2.85	3.14	3.45	3.80	4.18
313	420	192	269	244	222	202	174	150

2023	2024	2025	2026	2027	2028	2029	2030	2031
1380	1840	2300	2300	2300	2300	2300	2185	2075
14	18	23	23	23	23	23	22	21
1366	1821	2277	2277	2277	2277	2277	2163	2055
1093	1457	1821	1821	1821	1821	1821	1730	1644

2136	3593	5414	7235	9056	10877	12699	14429	16072
-453	-519	-592	-348	-348	-347	-347	-331	-315
-4248	-4768	-5360	-5708	-6057	-6404	-6752	-7082	-7398
-2113	-1175	54	1527	2999	4473	5947	7346	8675
0	0	1	1	1	1	1	1	1
1093	1457	0	0	0	0	0	0	0
273	364	2277	2277	2277	2277	2277	2163	2055
137	182	1138	1138	1138	1138	1138	1081	1027
137	182	1138	1138	1138	1138	1138	1081	1027
1229	1639	1138	1138	1138	1138	1138	1081	1027
2023	2024	2025	2026	2027	2028	2029	2030	2031
1229	1639	1138	1138	1138	1138	1138	1081	1027
150	201	1161	1161	1161	1161	1161	1103	1048



2032	2033	2034	2035	2036	2037	2038	2039	2040
976	927	881	837	795	755	717	682	647
-177	-168	-159	-151	-144	-137	-130	-123	-117
-107	-101	-96	-91	-87	-83	-78	-74	-71
0	0	0	0	0	0	0	0	0
693	658	625	594	564	536	509	484	460
-293	-278	-264	-251	-239	-227	-215	-205	-194
400	380	361	343	325	309	294	279	265
-80	-76	-72	-69	-65	-62	-59	-56	-53
613	582	553	525	499	474	450	428	406
-17	-17	-17	-17	-17	-17	-17	-17	-17
596	565	536	508	482	457	433	411	389
3358	3923	4459	4967	5450	5907	6340	6751	7140
4.59	5.05	5.56	6.12	6.73	7.40	8.14	8.95	9.85
130	112	96	83	72	62	53	46	40

2032	2033	2034	2035	2036	2037	2038	2039	2040
1972	1873	1779	1690	1606	1526	1449	1377	1308
20	19	18	17	16	15	14	14	13
1952	1854	1762	1673	1590	1510	1435	1363	1295
1561	1483	1409	1339	1272	1208	1148	1090	1036

17634	19117	20526	21865	23137	24345	25493	26583	27619
-300	-286	-273	-260	-248	-236	-225	-215	-205
-7698	-7984	-8257	-8517	-8764	-9000	-9226	-9441	-9645
9936	11133	12270	13349	14373	15345	16267	17143	17974
1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0
1952	1854	1762	1673	1590	1510	1435	1363	1295
976	927	881	837	795	755	717	682	647
976	927	881	837	795	755	717	682	647
976	927	881	837	795	755	717	682	647
2032	2033	2034	2035	2036	2037	2038	2039	2040
976	927	881	837	795	755	717	682	647
996	946	899	854	811	770	732	695	661

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
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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