Yale School of Management

Detailed Research Report

Hess Corporation (HES)

Oct 22, 2018

Recommendation

SELL

Downside

22.64%

Recommendation Factors

Fair Value ($)	49.17
EBIT (TTM) ($MM)	-5,009
Market Cap ($ B)	19.67
P/E Ratio (Q2-18)	1,945x
P/B vs Industry	2.11 vs 1.21

Basic Information

Last Trade ($)	**63.56**
Trade Date	10/19/2018
Market Cap ($ B)	19.67
Trailing P/E	1,945x
Forward P/E	62.36x
P/B	2.11x
EPS	-11.42
Dividend/share(S)	0.25
Dividend Yield	0.25%
D/E	0.64
Beta	1.47

Valuation Forecast Analysis

Last Trade	**$63.56**
High Growth Price	$59.59
Neutral Grw Price	$49.17
Low Growth Price	$38.71

Industry & Sector ($MM)

Industry	Oil & Gas
Sector	E&P

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Key takeaways:

- **Tall claims with little backing**:
  - "Recoverable resources" of 4.2 billion boe versus a mere 45 mboe of "proved reserves" making the reserve-replacement ratio to be 1:100.
  - Management claims "enterprise-wide focus on safety" but in Q2 2017, there fire in the Enchilada platform that consequently impacted the production for 6 months.

- **Poor Performance**:
  - Sale of assets led to impairing $4.2 billion in 2017
  - Poor standards – Company hoping to "create positive free cash flows post 2020"
  - Consistent eroding of shareholders' equity by $13 Billion in last 3 years

- **Poor Corporate Governance**:
  - Share repurchase of $1.5 Billion and debt repayment of $500 million while a subsidiary went for a failed IPO worth a mere $340 million.
  - Management increased their salaries by 20% while consistent losses

- **The equity price is clearly overvalued** because even in the best case scenario our valuation suggests that the unless the weighted annual average WTI price is $82.10, the equity warrants a sell. It is important to note here that in the entire history the weighted annual average WTI price has never been above $88.
  - High Growth Scenario Valuation: $60.71
  - Neutral Growth Scenario Valuation: $49.94
  - Low Growth Scenario Valuation: $38.16

Hess Corporation (HES)

Oct 22, 2018

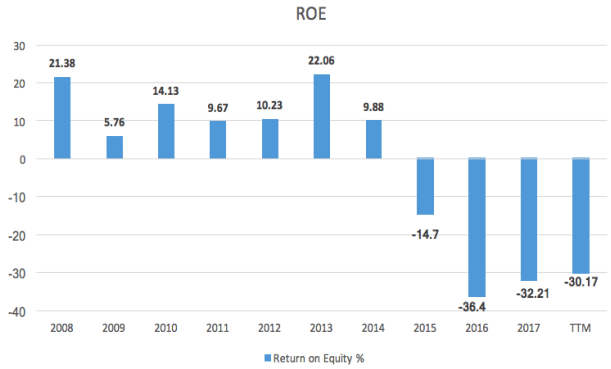
The Story

Founded in 1919, Hess has been a E&P company historically (known as Amerada Hess Corporation), headquartered in New York City, placed at 394 in the 2016 list of Fortune 500 corporations. However, starting 1966, Hess increased its activities in the oil refinery and other downstream business. Hess bought interests in several gas stations networks and with a majority stake bought in Feb 200, in Meadville Corporation, Hess rebranded all Merit Gas stations as Hess. Starting early 2010s, like many of its competitors, Hess also started to move away from its refinery businesses that after decades of technology trickle-down, was significantly squeezed on prices from both ends, that from the customer facing pump stations and from its suppliers, the E&P firms. Refinery business also faces greater and rather regular environmental and legal scrutiny in comparison to E&P Business; that many a time result in fines. E&P business on the other hand is more closely tied to the oil price, thus it does not face as immense price pressures as a refinery does. Also, in E&P sector the business's account payables are reduced significantly.

In 2014, Hess completed a multi-year transformation back to its original business model of being a core exploration and production company by exiting all downstream operations, generating approximately $13 billion from assets sales beginning in 2013. However, within a year of this transformation (completed in 2014), the oil prices started to tank and remained low for another 2-3 years. These years yielded cash rich Hess (from recent sale of businesses) to sail through the slump but EBIT continued to stay negative despite oil prices rising. Hess also sold many of its oil fields since entering core E&P business to concentrate its assets in Guyana offshore wells, where oil prospects seem high.

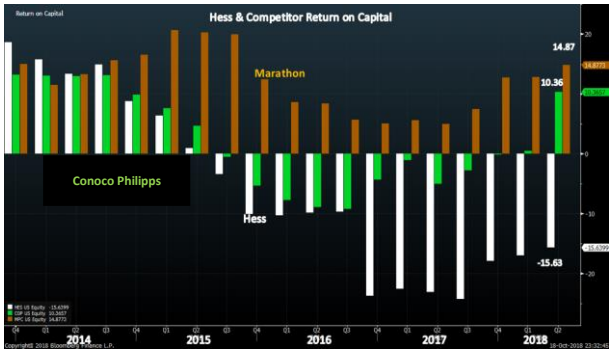
Financial Analysis

ROE has been negative over the last 4 years, the company has destroyed value worth $13.4 Billion.

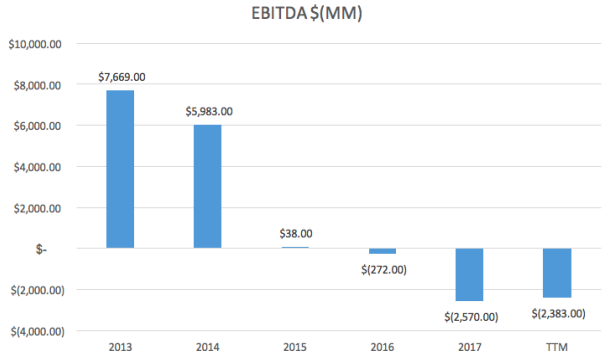


Similarly, **EBITDA has been negative** over the last four years because of decreasing revenue (24.50% CAGR). The EBITDA is expected to barely turn positive in 2018. The EBITDA has been negative because of decline in oil prices and depletion of major reserves. On the contrary, the industry average for the EBITDA is $2.8 billion.

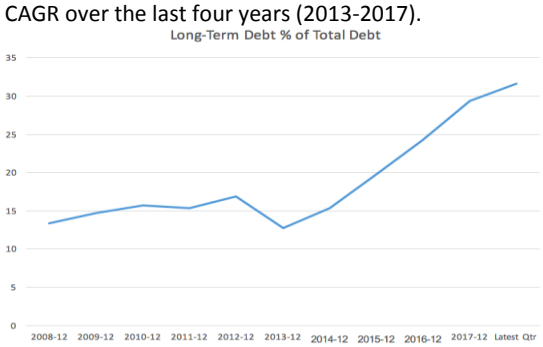
Hess has the worst performance among its immediate competitors on the parameters of Return on Capital. Starting 2015 Hess had by far the worst returns.



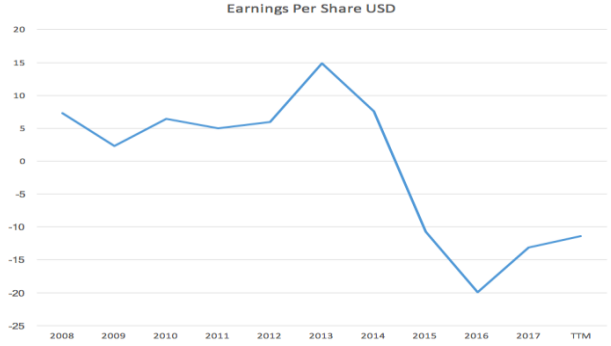
In Q2 2018, Hess had a negative ROC equal to -15.63% whereas, Conoco Philips has a ROC of 10.35% and Marathon had a ROC of 14.87%.



Similarly, the **Long Term Debt** is increasing substantially, thereby increasing the financial leverage. At the same time even short term debt has been increasing at approximately 9% CAGR over the last four years (2013-2017).



The company borrowed $459 million dollar of Debt in 2017 alone, whereas on the other hand the company is announcing share repurchase programs and assuring the investors that it will reduce the long term debt between 2018-2020. Simultaneously, despite the oil price almost tripling from the lowest price back in early 2016, the EPS of the company do not seem to recover soon. **The EPS remains negative**.



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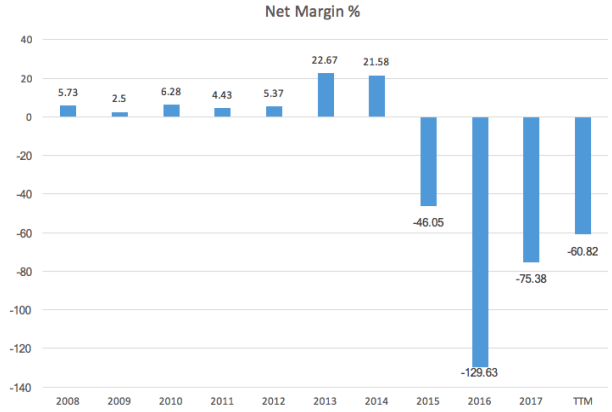
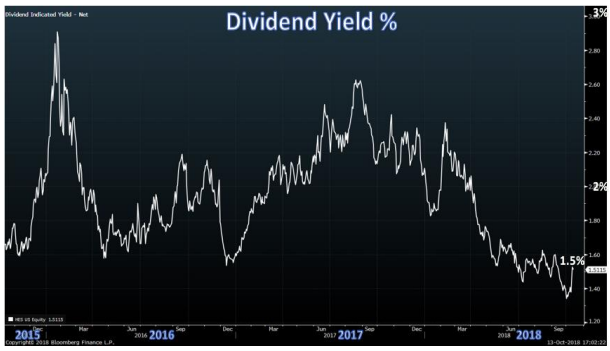
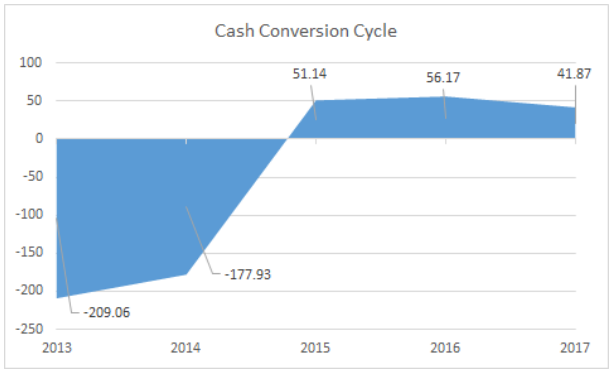
The Net Margin has also only gone down in the last few years. The company seems to have very low operating margins because the company continues to make losses even at relatively medium oil prices in the bracket of $55-$70. The most important driver of Net Margin has been an increase in DD&A and Impairment by 36.77% CAGR over the last four years.



No wonder the company has **reduced its dividend yield** from something as high as close to 3% to now 1.5%. Therefore, the company is not an attractive investment even to those, looking for a dividend income.

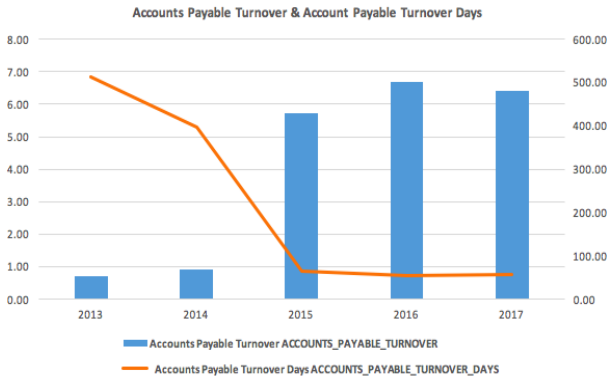


Hess' **Cash Conversion Cycle is also negatively impacted**. It has decreased substantially starting 2013, till date. In fact, in 2017 The CCC was equal to 41.87 days meaning that company is unable to collect cash as fast as it did back in 2013.



On the contrary, the average CCC in the oil and gas industry for the upstream sector is only 11 days. The main driver that influenced this performance was the policy for account payable. The company drastically reduced the amount of time in paying its short term obligations in the last years.

This happened because in 2013 Hess Corp sold its refining business that has freed-up $1 billion of working capital and therefore the amount of payables days decreased tremendously. In 2013, Account Payable turnover were 512 days whereas after Hess disinvestment from its refining business the total amount was reduced to 56.92 days. Therefore, the accounts payable changed by -35.76% CAGR, meaning that the liquidity reserves of corporation came by its refining business and that there is a big question now, whether Hess will be able to collect cash at the same rate as it did in the past.



Hess has improved on days' inventory outstanding and account receivable (days sales of outstanding) over the last 5 years because of the use of better technology (hydraulic fracturing). However, investors need to remember that that the average CCC in the oil and gas industry for the upstream sector is 11 days whereas for Hess it is ~ 42 days.

Cash Conversion Cycle

In Millions of USD except Per Share 12 Months Ending	FY 2013 12/31/2013	FY 2014 12/31/2014	FY 2015 12/31/2015	FY 2016 12/31/2016	FY 2017 12/31/2017
Accounts Receivable Turnover	**4.25**	**5.82**	**5.53**	**5.41**	**5.79**
Days Sales Outstanding	85.94	62.75	66.06	67.64	63.04
Inventory Turnover	**1.67**	**2.32**	**7.49**	**8.43**	**10.20**
Days Inventory Outstanding	217.96	157.23	48.72	43.41	35.78
Accounts Payable Turnover	**0.71**	**0.92**	**5.74**	**6.67**	**6.41**
Accounts Payable Turnover Days	512.96	397.91	63.64	54.88	56.95
Cash Conversion Cycle	**-209.06**	**-177.93**	**51.14**	**56.17**	**41.87**

P/E Analysis: Clearly Hess' P/E is way above industry average of 12.39.

*Poor **P/E**,*
*Negative **EBITDA**,*
*Increasing **LT Debt**,*
*Reduced **Margin**,*
*Lower **Dividend Yield**,*
*Poor **CCC**,*
*Poor **P/B**, with*
*Increasing **D/E***
*Burning **Retained Earnings***
*Reducing **Equity***
Destroying Value

Blended Forward P/E	
Hess Corp	62.36
ConocoPhillips	14.14
Suncor Energy Inc	12.16
Imperial Oil Ltd	14.12
Husky Energy Inc	12.31
Antero Resources Corp	10.21
Phillips 66	11.47
Marathon Petroleum Corp	10.89
Enable Midstream Partner	15.49
Par Pacific Holdings Inc	11.65
CVR Refining LP	5.18
Superior Plus Corp	14.18
Parkland Fuel Corp	18.73
Petrus Resources Ltd	4.55
Crius Energy Trust	11.18
Tidelands Royalty Trust B	--
Mean (Including HES US)	12.39

P/B is more than twice the Industry average i.e. 2.11 versus 1.0, therefore making Hess an expensive purchase.

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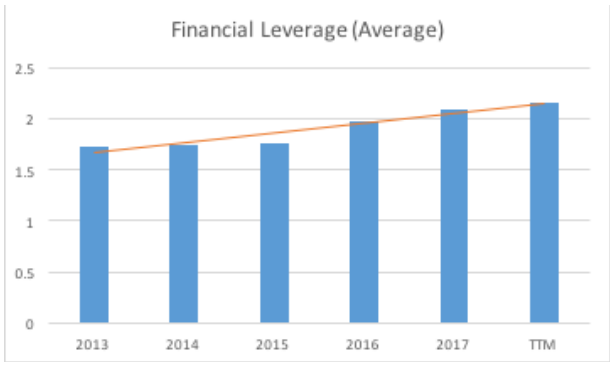
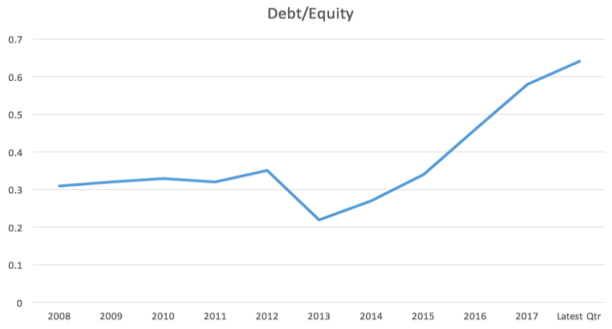
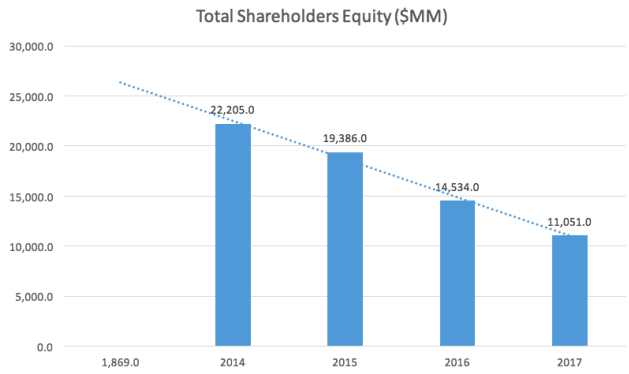


D/E is rising when the company is consistently losing money. Interestingly, D/E is rising despite sale of assets and the company being in cash rich position because the equity of the company is reducing and the long term debt is increasing. **The industry average D/E is 0.39, whereas that of Hess is almost double i.e. 0.64.**



The company has been consistently destroying value by reducing the value of **Shareholders' Equity** by 15% CAGR.

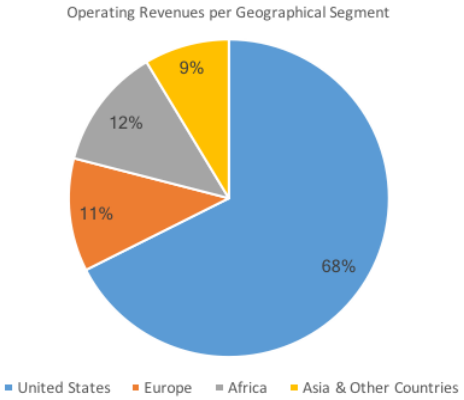


At the same time, Hess is also burning their **retained earnings** (from the period of higher oil prices and from the sale of assets in the recent past) consistently by 23.41 CAGR from 2013 to 2017.

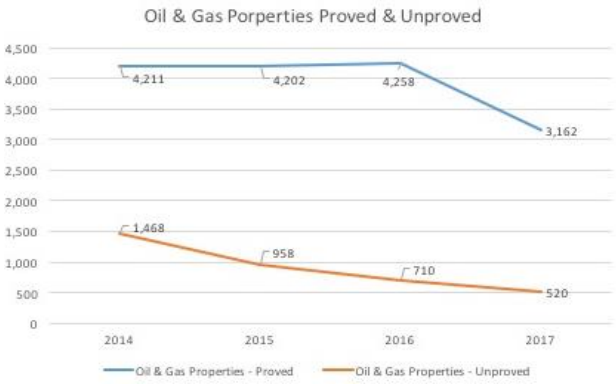
Shift in Asset-base from EU to Guyana

Hess has several oil fields in operation, across the world but its assets are concentrated in the US for now. African assets are concentrated in Libya and Ghana where Ghana produces majorly Gas and Libya is under the civil war. The European assets are concentrated in Norway and Denmark.

However, starting 2017 Hess sold its Norway assets under huge impaired costs ($4.3 billion) and Hess plans to sell its Denmark assets by Q4 2018. With a history of huge impairments and hurried sales, it will not be a surprise if Hess impairs another few billion dollars in the sale of Denmark's assets.



In nutshell, the company is poised to sell its entire European asset base and invest that to acquire assets in Guyana's offshore Stabroek oil field and surprisingly for an E&P company both proved and unproved wells are reducing.



US Asset Production (Bakken)

Interestingly, while the shift in asset base happens from Europe to Guyana, the production in the US has been going down despite no connection between the assets in EU or in Guyana with the US assets and this is when the US assets produce 68% of the revenues.

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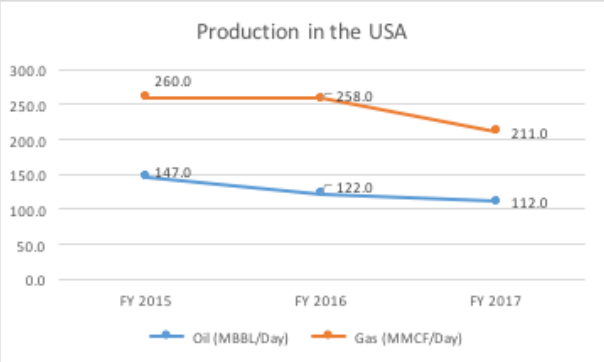


Despite decrease in production, the US site - **Bakken** increased revenues by 12% in the YoY (quarterly basis) because of an increase in oil price. Hess is planning to add at least two additional rigs in the onshore site by the end of 2018. Bakken produces 110,000 bopd and the Gulf of Mexico site produces 60,000 bopd and the total production of Hess is 240,000 bopd Therefore, Bakken alone is close to 50% of the production.

Gulf of Mexico Fire & Impairment of $1.7 billion

Gulf of Mexico's production comes from the offshore Stampede Oil and Gas field. It produces about 66,000 bopd which is about 28% of Hess' production. However, in Q2 2017, there was a fire in the Enchilada platform that consequently impacted the production for 6 months. Production revived in Q1 2018 with 41,000 boed. Gulf of Mexico. At Stampede the company is currently installing additional wells.

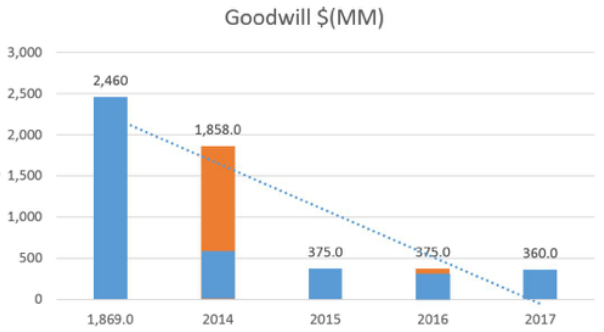
In Q4, 2017 the company accounted impairment regarding Stampede Fields by $1.7 billion primarily because of a lower long-term crude oil price outlook.

Sale of Assets Impair Another $2.5 Billion

To develop Guyana Exploration and Production site Hess disinvested from higher cost mature assets from Equatorial Guinea and Norway. However, Hess sold both of these assets under huge impaired costs worth $2.5 Billion.

$4.2 billion impaired in 2017 alone

Hess is committed to sell its Denmark assets by Q4 2018 and then even Permian EOR is on the line to be sold. However, clearly, the company seems to have a history of impairing assets. More likely than not, huge impairments to the order of billions of dollars is a concerning matter for investors because it suggests either poor negotiating skills or some sort of hurriedness on the part of Hess' management to sell these long performing assets.



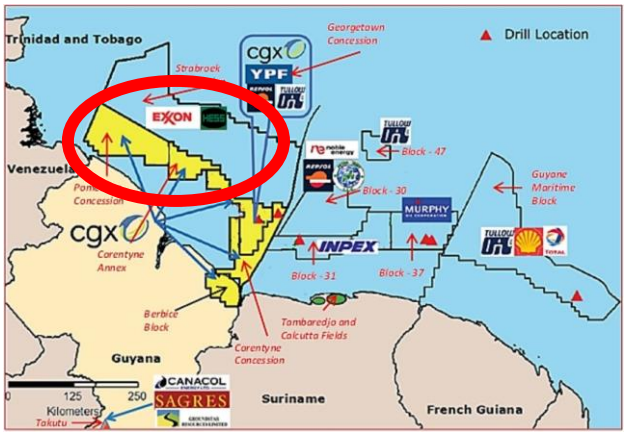
Hess bets on Guyana amid tall claims

The Stabroek Block is 6.6 million acres. Esso Exploration and Production Guyana Limited (joint venture between Exxon Mobil and Guyana Government) is the operator and holds a 45 percent interest in the Stabroek Block. Hess Guyana Exploration Ltd holds a 30 percent interest and CNOOC Nexen Petroleum Guyana Limited (joint venture between Canadian company Nexen and the China National Offshore Oil Corporation) holds a 25 percent interest.

Stabroek block was formed as a consequence of the tectonic plate shifts in the Aptian age as there are identifiable analogies between the West African offshore petroleum system and the Guyana-Suriname offshore petroleum system.

In particular, both basins demonstrate strong similarities with regards to source, timing, burial, compaction and trap mechanisms. Companies already successful across West Africa, intend to extend proven West African plays to South America. However, there are significant differences between the Guyana-Suriname and West African basins. Particularly, West African reservoirs are not as deep as the reservoirs in the Guianas. This difference in depth can cause the reservoirs to have different characteristics. At greater depths, the Turonian reservoirs in the Guianas are likely to have higher temperatures and pressures, resulting in higher reservoir gas to oil ratios and potentially greater compaction.

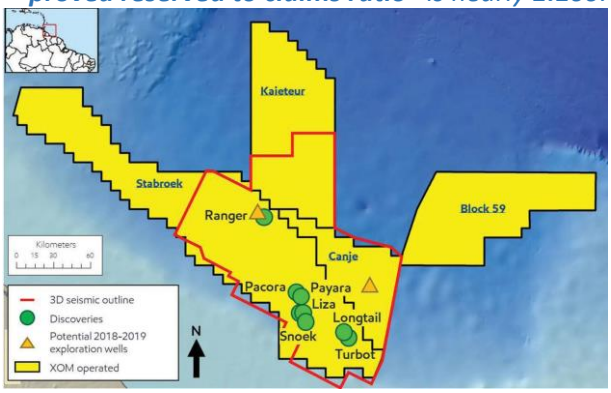
This has led to a high regional activity and clustering of oil E&P companies from across the world in Guyana's offshore fields.



Hess has acquired a stake in the Stabroek block shown in Yellow above. The block has had several discoveries and the claims for "recoverable resources" are as high as 4.2 billion

boe. So far 8 discovery wells have been drilled and they have confirmed **high-quality, oil-bearing sandstone reservoir**. The potential exploration wells for 2018-19 are only 2 – Payara and Ranger.

*The "proved reserves" in the block are only 45 mboe whereas the claims for "recoverable resources" are as high as 4.2 billion boe. Thus the **"proved reserved to claims ratio"** is nearly **1:100**.*



The first of the wells to start producing from Stabroek block shall be Liza. Hess aims to produce 120,000 bopd post 2020.

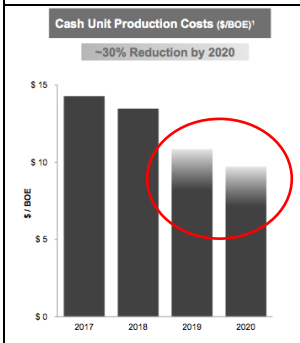
Tall misleading claims & Poor Governance

Claims	Reality
"Hess plans to decrease $150 million per year because we initiated a cost reduction program" *– Q2 2018 presentation*	-Not clear what constitutes this program -Management increased their salaries by 20% last year amid continued years of losses, poor asset sales strategy and billions of dollars impaired
"Financial strength provides ability to return $1.5 billion to shareholders and reduce debt by $500 million "Commenced $1.5 B of share repurchases and reduce debt by $500 MM" *– Q2 2018 presentation*	-Hess Midstream (a subsidiary) went for a failed IPO in 2017 by raising only $340 million instead of the targeted $360 million. -If Hess has $1.5 B for share repurchase and $500 Million to reduce debt, why is the LT debt still increasing? Moreover, why would the company that is commencing a share repurchase plan worth $1.5 B need to go for an IPO worth just $340 million?
They also claim "4.2 billion recoverable resources" *– Q2 2018 presentation*	Footnotes read - "No assurances can be given, however, that these events will occur or that these projections will be achieved, and actual results could differ materially from those projected as a result of certain risk factors."
"Increasing cash returns to shareholders by reducing debt" *– Q2 2018 presentation*	The Shareholder equity has been consistently eroding at 23.41% CAGR from 2013 to 2015 Dividend yield has decreased to 1.51% (2017) instead of 3% (2013)
Hess plans to generate 70% of its cash flow through 2020 from Guyana and Bakken. *– From 10k 2017*	-68% of the revenues already come from Bakken. Guyana will not start producing before 2021.
"Asset monetizations have exceeded expectations - ~$3.4 B proceeds in 2017" *– Q2 2018 presentation*	Impaired $4.2 billion dollars in asset sales!
Hess claims to reduce the production costs per BOE by 30% on average in the next 2 years *– From 10k 2017*	In the last 2 years, the costs have come down only by 7% (from $15.43 to $14.30). *– From 10k 2017*
Generate free cash flow at $50/bbl Brent post 2020 *– Q2 2018 presentation*	If a company worth billions of dollars is aiming to produce mere free cash flows and that too after a few years, it is a **very poor standard.**
"Enterprise-wide focus on continuous improvement to ensure "everyone, everywhere, every day, home safe" *– Q2 2018 presentation*	In Q2 2017, there was a fire in the Enchilada platform that consequently impacted the production for 6 months. *– From 10k 2017*
"Account for cost of carbon in all significant new investments" *– Q2 2018 presentation*	"We are generally not recognizing deferred tax benefit or expense in certain countries, primarily the U.S., Denmark (hydrocarbon tax only), Malaysia, and Guyana, while we maintain valuation allowances against net deferred tax assets in these jurisdictions." *– From 10k 2017*

Hess Corporation (HES)

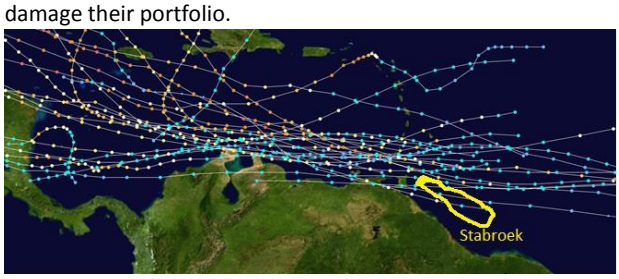
Asset Monetizations:
Exceeded Timing and Value Expectations

	Sales Price ($MM)	Avoided ARO[1] ($MM)	Value Realized ($MM)	Production Sold (MBOED)	Implied Production Multiple $ / BOED[2]	Completion Date
Norway	$2,000	$1,000	$3,000	24	$125,000	December 2017
Equatorial Guinea	650	300	950	28	34,000	November 2017
Permian EOR	600	--	600	8	73,000	August 2017
Midstream IPO	175[3]	--	175	--	--	April 2017
Denmark	TBD					TBD

Claims	Reality
"Implied multiple assumes gross proceeds plus avoided ARO* divided by production sold." *– Q2 2018 presentation*	-**Clear Shenanigan** – because "Implied production multiple" should not include avoided ARO*. *Asset Retirement Obligations
 *– Q2 2018 presentation*	The very graphic representation of the unit production cost is ambiguous.

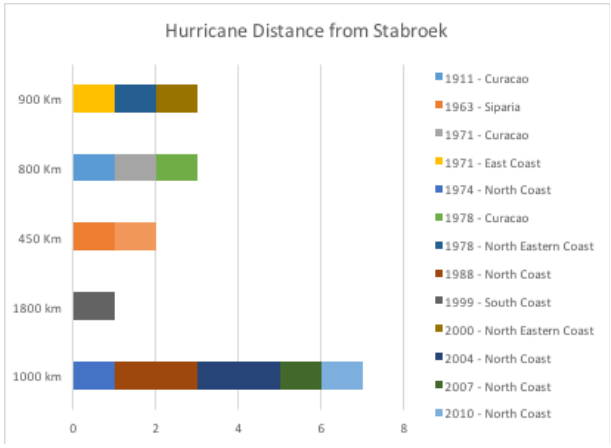
Risks

1. **Oil Price volatility**: Oil being a commodity, the prices are volatile. Hess Corporation is highly dependent on the market prices of crude oil and the WTI and BRENT indexes determines the value of proved reserves, revenues, operating cash-flows, operating margins, liquidity and future earnings.
2. **Political Instability in Libya and Guyana**: Hess Corporation business is operated in areas (Libya and Guyana) where there could be political instability affecting the business performance.
3. **Joint Venture and Hess's non-controlling interest**: Hess Corporation does not have controlling interests in its biggest bet – Stabroek block in Guyana. Exxon Mobil is the operator under the joint venture agreement.
4. **Catastrophic events "not adequately covered by insurance"**: Hess Corporation Business is exposed to Catastrophic events such as hurricanes, fires, explosions, blowouts and pipeline interruption and ruptures and the form 10-k clearly mentioned that Hess cannot guarantee any assurance that its insurance will adequately protect the company in such cases and this may significantly damage their portfolio.



Source: National Hurricane Center, US

Guyana has long been assumed to be immune to hurricanes and tropical storms but the changing weather patterns are not to be taken lightly. It is important that Hess pays close attention to these changes especially after the 2005 floods and the fact that **Guyana has always been 6 feet below sea level**.



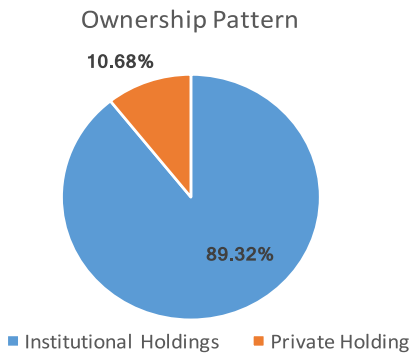
Source: National Hurricane Center, US

5. **Carbon tax and Environmental Risks**: Hess Corporation business is subject to environmental risk and regulation that can increase administrative, civil or criminal penalties because of damages of the environment or noncompliance of existing regulation.

Ownership Issues

Hess is owned 89.32% by institutional funds.

Therefore, Hess faces increased risks of falling prey to short-termism.



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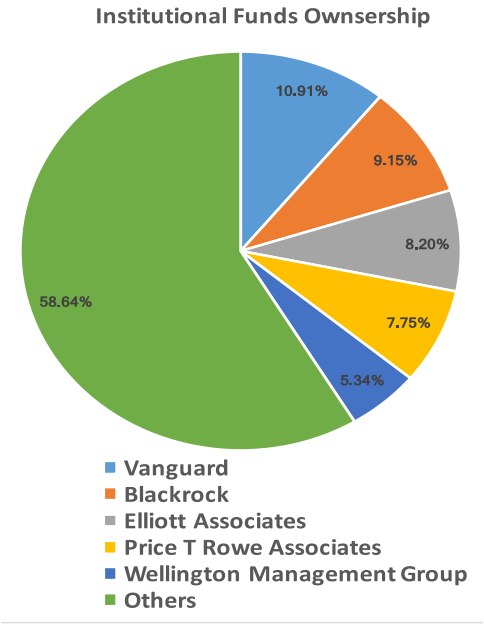
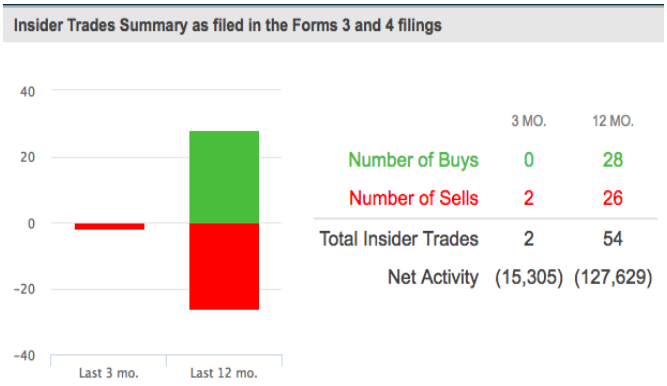
Oct 22, 2018

Moreover, among Institutional fund investors, top 5investors hold close to 40% of the institutional investors' holdings.



It is to be noted from Forms 3 and 4 filings that in the last 3 months, insider trades have sold 7.15% of the holdings of Hess.

3 out of top 4 institutional investors have reduced their position in Hess over the last 12 months.



Top Institutional Funds' holdings of Hess over the lass 2 years:

Vanguard – Hold 2018

Blackrock Asset Management – Sell 2018

T Rowe Price Associates – Sell 2018

Wellington Management Group – Sell 2018

Valuation

Neutral Scenario

Revenue Assumptions:

1. **Escalating Oil Price**: The revenues are based on an escalating oil and gas price based on analysts' industry report from 2018 to 2020 and from 2021 to 2025 the oil price will be based on the estimates of the Canada Energy Board. Thus, the **weighted average price of WTI from 2018 to 2025 is considered to be $80.66 and for gas, it is estimated to be $18.35** (price of gas in 2017, as per Hess' report).
1. **Increased production from Hess**: from 2018 to 2020, Hess' production will depend strongly on Bakken. The assumption stands that the company will meet its expectation relying on the positive revision evident at Bakken from 2015 to 2017. Thus, the U.S onshore site will reach 120K bopd in 2020. In fact, Gulf of Mexico (GoM) cannot increase its production as GoM reserves have decreasing R/P ratio. A marginal increase in Malaysia JDA's gas site production has been considered in order to cover for loss of production from natural depletion of other reserves and uncertain political environment in Libya. **The total increase in production will be equal to 3.28% CAGR from 2018 to 2020.** The gas to oil production ratio is 20:80 and we assume the same proportion for our valuation estimates. For Hess Midstream revenue we maintain the same ratio with Hess' revenues (2017).

Revenue Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Weighted Average Price Gas	18.35	18.35	18.35	18.35	18.35	18.35	18.35	18.35
Weighted Average Oil Price WTI	61.00	75.00	91.00	87.50	80.50	77.65	77.90	79.00
Canada Energy Board Oil Price Estimation WTI & Analyst Estimate	67.00	90.00	92.00	83.00	78.00	77.30	78.50	79.50
Gas/Oil ratio	0.20							
Gas boe Production/day	60,000	61,968	64,000	70,253	77,117	84,651	92,921	102,000
Oil Production/day	240,000	247,871	256,000	281,011	308,467	338,604	371,686	408,000
Production/day	300,000	309,839	320,000	351,264	385,583	423,255	464,607	510,000
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	9.77%	9.77%	9.77%	9.77%	9.77%
Oil Price % Variation		22.95%	21.33%	-3.85%	-8.00%	-3.54%	0.32%	1.41%

2. **Guyana's production is as per the industry reserves replacement ratio of 30.10%**: Guyana will start producing oil starting 2021 until 2023. In 2017, the proved reserves in Guyana were equal to 45 mboe, whereas the company claimed 4.2 billion of "recoverable resources" in the last quarter. Liza phase 5 will finish post 2024. Therefore, in this scenario, we have assumed that the company will maintain the industry reserve-replacement ratio 30.10%. Furthermore, Hess' participation is equal to 1.2 billion of recoverable resources i.e. 30% of the jointly owned Stabroek block. **Thus, revenue will increase up to 9.77% CAGR from 2021 to 2025.** Bakken will increase during these years but at the same important site as GoM will have a natural decline compensating the differential.
3. **Inflation and rise in costs**: The cost of revenue will increase because of **US inflation rate of 2.4%** (Source IMF) so the costs will grow at the same rate as inflation. DD&A and Capex will also depend on the **U.S inflation rate** (IMF) from 2018 and 2025. Non-operating expenses are also assumed to increase at the inflation rate.

Capex & DD&A								
	2018	2019	2020	2021	2022	2023	2024	2025
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Capex $MM (based on Hess' estimates for 2020 and the same CAGR used)	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Capex increase by year (assuming constant for Hess in E&P sector)	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%

4. **Decreasing unit cost per barrel**: As per the 10K's affirmation, they will be able to decrease in the unit cost per barrel produced from Guyana starting 2021 and from Bakken between 2019 to 2021 because of introduction of hydraulic fracturing which renders a current break-even at $40 per barrels. From 2019 to 2021, Hess Corporation is expecting to produce at the cost of $33, $29 and $26 per barrel. Therefore, taking a conservative assessment, we assume a decrease in the cost of revenue to reach $15 per barrel by 2021 and then remain stable against Hess's claims of $13 per barrel. After 2021, the cost of producing will not decrease anymore according to Hess Company Presentation report.

Cost of Revenue Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Operating Cost per Barrel	18.43	17.00	16.00	15.00	15.00	15.00	15.00	15.00
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	9.77%	9.77%	9.77%	9.77%	9.77%

5. **Capex of $2.4 B by 2020**: Furthermore, Hess Corporation affirmed that is going to reach a capital expenditure **of $2.4 B in 2020**. The company in the second quarter of 2018 affirmed that it would spend 2.1 billion in 2018. After 2020, we have assumed the same % increase per year in Capex because the E&P company will continue to invest in FPOS, PP&E other equipment in addition to buying new wells and oil fields. Therefore, **the present rate of Capex has been carried forwarded until 2025 i.e. 6.90%.**
6. **Net working Capital** will increase at the same production rate mentioned in the revenue assumptions.

WACC

U.S Corporate Tax Rate for New York State								
	2018	2019	2020	2021	2022	2023	2024	2025
U.S Corporate Tax Rate for New York State	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%	26.10%

- The **corporate tax** is equal to 26.10% in NY state where Hess is headquartered.
- Hess' **Beta** is equal to 1.40
- **Market Premium Risk** is equal to 6.5% (*source: Damodaran*)
- **Risk free rate** is the US Treasury bond yield 10 years with a rate of 3.17%
- **Hess Corporation has been assumed to have constant 10% WACC**.

DCF Analysis:

In Millions of USD except Per Share	FY 2016	FY 2017	FY 2018 Est	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue	4,762	5,466	5,806	7,102	8,809	9,316	9,449	10,025	11,037	12,277
Cost of revenues	1,440	1,164	1,386	1,896	1,843	1,897	2,082	2,286	2,509	2,754
Gross profit	**3,322**	**4,302**	**4,420**	**5,206**	**6,966**	**7,419**	**7,367**	**7,739**	**8,529**	**9,523**
% margin	**70%**	**79%**	**76%**	**73%**	**79%**	**80%**	**78%**	**77%**	**77%**	**78%**
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
Non Operating Expenses	3,455	6,216	6,030	1,932	1,979	2,026	2,075	2,124	2,175	2,228
EBIT	**-3,854**	**-5,778**	**-5,009**	**797**	**2,280**	**2,434**	**2,057**	**2,079**	**2,489**	**3,072**
% margin	**-81%**	**-106%**	**-86%**	**11%**	**26%**	**26%**	**22%**	**21%**	**23%**	**25%**
Income Tax Expense	2,222	-1,837	-1,629	208	595	635	537	543	650	802
NOPLAT	**-6,076**	**-3,941**	**-3,380**	**589**	**1,685**	**1,799**	**1,520**	**1,536**	**1,839**	**2,270**
%margin	**-128%**	**-72%**	**-58%**	**8%**	**19%**	**19%**	**16%**	**15%**	**17%**	**18%**
NOPLAT	-6,076	-3,941	-3,380	589	1,685	1,799	1,520	1,536	1,839	2,270
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
CAPEX	2,251	1,937	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Δ Net Working Capital	249	1,697	257	266	292	320	351	386	423	423
Free Cash Flow	**-5,332**	**-4,692**	**-3,471**	**555**	**1,701**	**1,872**	**1,661**	**1,754**	**2,146**	**2,720**
Present Value FCF			-3,471	504	1,406	1,407	1,134	1,089	1,211	19,189

- For calculating the **Terminal Value,** perpetual growth in the Low Growth Scenario is equal to World GDP adjusted by renewable energy industry increase of 1.60% based on an incremental increase caused by regulations on oil and gas sector, increased impacts of climate change, volatility of crude oil and natural gas prices and reduced amount of exploitable resources in the world post 2030.

Enterprise Value FCF (MM)	**22,469**
Terminal Value	
FCFn * (1+g)/ (wacc-g)	**34,674**
Wacc	10%
Renewable Increase CAGR from 2030 to 2050	1.60%
g	2.00%
Market Value of Debt (MM)	**7,718**
Number of Share(MM)	300
Equity Value	14,751
Share Price	**$ 49.17**

The Stock Price in Neutral growth scenario has a fair value of $49.17

Conclusion: The Market has already priced-in the discoveries and even the unproved reserves as proved reserves. Furthermore, from the last trade price it seems that the market is also pricing-in the additional increase from Bakken and the decrease in the marginal cost per unit. **It's a clear sell with -22.46% downside risk**.

High Growth Scenario

Revenue Assumptions:

2. **Escalating Oil Price**: The revenues are based on an escalating oil and gas price based on analysts' industry report from 2018 to 2020 and from 2021 to 2025 the oil price will be based on the estimates of the Canada Energy Board. Thus, the **weighted average price of WTI from 2018 to 2025 is considered to be $80.66 and for gas, it is estimated to be $18.35** (price of gas in 2017, as per Hess' report).
3. **Increased production from Hess**: from 2018 to 2020, Hess' production will depend strongly on Bakken. The assumption stands that the company will meet its expectation relying on the positive revision evident at Bakken from 2015 to 2017. Thus, the U.S onshore site will reach 120k bopd in 2020. In fact, Gulf of Mexico (GoM) cannot increase its production as GoM reserves have decreasing R/P ratio. A marginal increase in Malaysia JDA's gas site production has been considered in order to cover for loss of production from natural depletion of other reserves and uncertain political environment in Libya. **The total increase in production will be equal to 3.28% CAGR from 2018 to 2020.** The gas to oil production ratio is 20:80 and we assume the same proportion for our valuation estimates. For Hess Midstream revenue we maintain the same ratio with Hess' revenues (2017).

Revenue Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Weighted Average Price Gas	18.35	18.35	18.35	18.35	18.35	18.35	18.35	18.35
Weighted Average Oil Price WTI	61.00	75.00	91.00	87.50	80.50	77.65	77.90	79.00
Canada Energy Board Oil Price Estimation WTI & Analyst Estimate	67.00	90.00	92.00	83.00	78.00	77.30	78.50	79.50
Gas/Oil ratio	0.20							
Gas boe Production/day	60,000	61,968	64,000	71,061	78,900	87,604	97,269	108,000
Oil Production/day	240,000	247,871	256,000	284,242	315,600	350,418	389,076	432,000
Production/day	300,000	309,839	320,000	355,303	394,500	438,022	486,346	540,000
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	11.03%	11.03%	11.03%	11.03%	11.03%
Oil Price % Variation		22.95%	21.33%	**-3.85%**	**-8.00%**	**-3.54%**	**0.32%**	**1.41%**

4. **Guyana's production is more than the industry reserves replacement ratio i.e. 35.40%** (instead of 30.10%): Guyana will start producing oil starting 2021 until 2023. In 2017, the proved reserves in Guyana were equal to 45 mboe, whereas the company claimed 4.2 billion of "recoverable resources" in the last quarter. Liza phase 5 will finish post 2024. Therefore, in this scenario, we have assumed that the company will produce more than the industry reserves replacement ratio of 30.10% i.e. at the rate of 35.40%. Furthermore, Hess' participation is equal to 1.2 billion of recoverable resources i.e. 30% of the jointly owned Stabroek block. **Thus, revenue will increase up to 6.58% CAGR from 2021 to 2025.** Bakken will increase during these years but at the same important site as GoM will have a natural decline compensating the differential.

Cost of Revenue Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Operating Cost per Barrel	18.43	17.00	16.00	15.00	15.00	15.00	15.00	15.00
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	**5.59%**	**5.59%**	**5.59%**	**5.59%**	**5.59%**

Capex & DD&A								
	2018	2019	2020	2021	2022	2023	2024	2025
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Capex $MM (based on Hess' estimates for 2020 and the same CAGR used)	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Capex increase by year (assuming constant for Hess in E&P sector)	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%

Non Operating Expenses								
	2018	2019	2020	2021	2022	2023	2024	2025
Overhead Rate	$ 6,090	$ 6,236	$ 6,386	$ 6,539	$ 6,696	$ 6,857	$ 7,021	$ 7,190
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%

Net Working Capital Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	11.03%	11.03%	11.03%	11.03%	11.03%

- For calculating the **Terminal Value,** perpetual growth in the Low Growth Scenario is equal to World GDP adjusted by renewable energy industry increase of 1.60% based on an incremental increase caused by regulations on oil and gas sector, increased impacts of climate change, volatility of crude oil and natural gas prices and reduced amount of exploitable resources in the world post 2030.

DCF ANALYSIS:

In Millions of USD except Per Share	FY 2016	FY 2017	FY 2018 Est	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue	4,762	5,466	5,806	7,102	8,809	9,423	9,667	10,374	11,554	13,000
Cost of revenues	1,440	1,164	1,386	1,896	1,843	1,919	2,130	2,365	2,626	2,916
Gross profit	**3,322**	**4,302**	**4,420**	**5,206**	**6,966**	**7,504**	**7,537**	**8,009**	**8,928**	**10,084**
% margin	**70%**	**79%**	**76%**	**73%**	**79%**	**80%**	**78%**	**77%**	**77%**	**78%**
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
Non Operating Expenses	3,455	6,216	6,030	1,932	1,979	2,026	2,075	2,124	2,175	2,228
EBIT	**-3,854**	**-5,778**	**-5,009**	**797**	**2,280**	**2,519**	**2,228**	**2,349**	**2,888**	**3,632**
% margin	**-81%**	**-106%**	**-86%**	**11%**	**26%**	**27%**	**23%**	**23%**	**25%**	**28%**
Income Tax Expense	2,222	-1,837	-1,629	208	595	658	581	613	754	948
NOPLAT	**-6,076**	**-3,941**	**-3,380**	**589**	**1,685**	**1,862**	**1,646**	**1,736**	**2,134**	**2,684**
%margin	**-128%**	**-72%**	**-58%**	**8%**	**19%**	**20%**	**17%**	**17%**	**18%**	**21%**
NOPLAT	-6,076	-3,941	-3,380	589	1,685	1,862	1,646	1,736	2,134	2,684
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
CAPEX	2,251	1,937	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Δ Net Working Capital	249	1,697	257	266	295	327	364	404	448	448
Free Cash Flow	**-5,332**	**-4,692**	**-3,471**	**555**	**1,698**	**1,928**	**1,774**	**1,936**	**2,416**	**3,109**
Present Value FCF			-3,471	504	1,403	1,448	1,212	1,202	1,363	21,934

Enterprise Value FCF (MM)	**25,596**
Terminal Value	
FCFn * (1+g)/ (wacc-g)(MM)	**39,635**
Wacc	10%
Renewable Increase CAGR from 2030 to 2050	1.60%
g	2.00%
Market Value of Debt (MM)	**7,718**
Number of Share(MM)	300
Equity Value	17,878
Share Price	**$ 59.59**

The Stock Price in High growth scenario has a fair value of $59.59.

Conclusion: Even with the High Growth scenario, the Share Price will be $59.59, thus it is below the current market price, therefore **warranting a sell**.

Low Growth Scenario

Revenue Assumptions:

1. **Escalating Oil Price**: The revenues are based on an escalating oil and gas price based on analysts' industry report from 2018 to 2020 and from 2021 to 2025 the oil price will be based on the estimates of the Canada Energy Board. Thus, the **weighted average price of WTI from 2018 to 2025 is considered to be $80.66 and for gas, it is estimated to be $18.35** (price of gas in 2017, as per Hess' report).
5. **Increased production from Hess**: from 2018 to 2020, Hess' production will depend strongly on Bakken. The assumption stands that the company will meet its expectation relying on the positive revision evident at Bakken from 2015 to 2017. Thus, the U.S onshore site will reach 120k bopd in 2020. In fact, Gulf of Mexico (GoM) cannot increase its production as GoM reserves have decreasing R/P ratio. A marginal increase in Malaysia JDA's gas site production has been considered in order to cover for loss of production from natural depletion of other reserves and uncertain political environment in Libya. **The total increase in production will be equal to 3.28% CAGR from 2018 to 2020.** The gas to oil production ratio is 20:80 and we assume the same proportion for our valuation estimates. For Hess Midstream revenue we maintain the same ratio with Hess' revenues (2017).

Revenue Assumptions	2018	2019	2020	2021	2022	2023	2024	2025
Weighted Average Price Gas	18.35	18.35	18.35	18.35	18.35	18.35	18.35	18.35
Weighted Average Oil Price WTI	61.00	75.00	91.00	87.50	80.50	77.65	77.90	79.00
Canada Energy Board Oil Price Estimation WTI & Analyst Estimate	67.00	90.00	92.00	83.00	78.00	77.30	78.50	79.50
Gas/Oil ratio	0.20							
Gas boe Production/day	60,000	61,968	64,000	69,406	75,269	81,627	88,522	96,000
Oil Production/day	240,000	247,871	256,000	277,625	301,076	326,509	354,089	384,000
Production/day	300,000	309,839	320,000	347,031	376,345	408,136	442,612	480,000
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	8.45%	8.45%	8.45%	8.45%	8.45%
Oil Price % Variation		22.95%	21.33%	**-3.85%**	**-8.00%**	**-3.54%**	**0.32%**	**1.41%**

2. **Assuming negative revision in the "recoverable resources" of Guyana by 33.33%**: This assumption is based on the form 10k filings of Hess for 2017 stating *"It is difficult to estimate the magnitude of any potential negative or positive change in proved reserves as of December 31, 2018, due to a number of factors that are currently unknown, including 2018 crude oil prices, any revisions based on 2018 reservoir performance, and the levels to which industry costs will change in response to*

movements in commodity prices." (-10K (2017) page 40). In this scenario, Guyana will represent 25% of their total recoverable resources which represents a lower-side standard deviation from the industry average. Therefore, post 2020 the revenues will increase at only 4.56%. We maintain the same assumptions for Bakken and GoM.

3. All the parameter based on production will be influenced by this decrease.

Cost of Revenue Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Operating Cost per Barrel	18.43	17.00	16.00	15.00	15.00	15.00	15.00	15.00
Unit Cost Decrease		-13.16%	-11.16%	-9.16%				
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	8.45%	8.45%	8.45%	8.45%	8.45%

Capex & DD&A								
	2018	2019	2020	2021	2022	2023	2024	2025
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%
Capex $MM (based on Hess' estimates for 2020 and the same CAGR used)	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Capex increase by year (assuming constant for Hess in E&P sector)	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%	6.90%

Non Operating Expenses								
	2018	2019	2020	2021	2022	2023	2024	2025
Overhead Rate	$ 6,090	$ 6,236	$ 6,386	$ 6,539	$ 6,696	$ 6,857	$ 7,021	$ 7,190
US Inflation rate (IMF)		2.40%	2.40%	2.40%	2.40%	2.40%	2.40%	2.40%

Net Working Capital Assumptions								
	2018	2019	2020	2021	2022	2023	2024	2025
Rate of increase in Production (based on Hess' estimates)		3.28%	3.28%	8.45%	8.45%	8.45%	8.45%	8.45%

DCF analysis

In Millions of USD except Per Share	FY 2016	FY 2017	FY 2018 Est	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue	4,762	5,466	5,806	7,102	8,809	9,204	9,222	9,666	10,515	11,555
Cost of revenues	1,440	1,164	1,386	1,896	1,843	1,874	2,032	2,204	2,390	2,592
Gross profit	**3,322**	**4,302**	**4,420**	**5,206**	**6,966**	**7,330**	**7,190**	**7,463**	**8,125**	**8,963**
% margin	**70%**	**79%**	**76%**	**73%**	**79%**	**80%**	**78%**	**77%**	**77%**	**78%**
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
Non Operating Expenses	3,455	6,216	6,030	1,932	1,979	2,026	2,075	2,124	2,175	2,228
EBIT	**-3,854**	**-5,778**	**-5,009**	**797**	**2,280**	**2,344**	**1,881**	**1,803**	**2,085**	**2,511**
% margin	**-81%**	**-106%**	**-86%**	**11%**	**26%**	**25%**	**20%**	**19%**	**20%**	**22%**
Income Tax Expense	2,222	-1,837	-1,629	208	595	612	491	470	544	655
NOPLAT	**-6,076**	**-3,941**	**-3,380**	**589**	**1,685**	**1,733**	**1,390**	**1,332**	**1,541**	**1,856**
%margin	**-128%**	**-72%**	**-58%**	**8%**	**19%**	**19%**	**15%**	**14%**	**15%**	**16%**
NOPLAT	-6,076	-3,941	-3,380	589	1,685	1,733	1,390	1,332	1,541	1,856
DDA	3,244	2,883	2,266	2,477	2,707	2,959	3,235	3,535	3,864	4,224
CAPEX	2,251	1,937	2,100	2,245	2,400	2,566	2,743	2,932	3,135	3,351
Δ Net Working Capital	249	1,697	257	266	288	312	339	367	398	398
Free Cash Flow	**-5,332**	**-4,692**	**-3,471**	**555**	**1,704**	**1,814**	**1,543**	**1,568**	**1,872**	**2,330**
Present Value FCF			**-3,471**	**504**	**1,409**	**1,363**	**1,054**	**974**	**1,057**	**16,443**

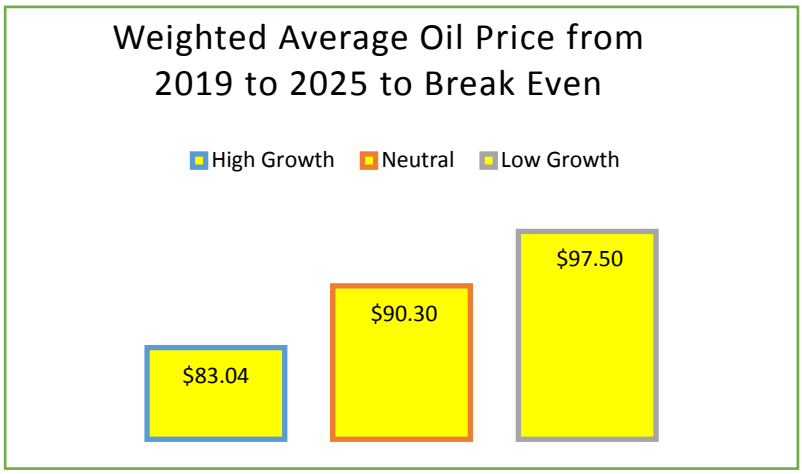
- For calculating the **Terminal Value**, perpetual growth in the Low Growth Scenario is equal to World GDP adjusted by renewable energy industry increase of 1.60% based on an incremental increase caused by regulations on oil and gas sector, increased impacts of climate change, volatility of crude oil and natural gas prices and reduced amount of exploitable resources in the world post 2030.

Enterprise Value FCF (MM)	**19,332**
Terminal Value	
FCFn * (1+g)/ (wacc-g)	**29,713**
Wacc	10%
Renewable Increase CAGR from 2030 to 2050	1.60%
g	2.00%
Market Value of Debt (MM)	**7,718**
Number of Share(MM)	300
Equity Value	11,614
Share Price	**$ 38.71**

The Stock Price in the low growth scenario has a fair value of $38.71 – clearly warranting an immediate Sell.

Weighted Average Annual Oil Price from 2019-25 to break-even Current Share Price

In our analysis, we did not perform a sensitivity analysis regarding the WTI oil price and that is why we decided to analyse the break-even weighted average oil price for the current market price.



The Chart perfectly explains the relation for the three scenarios:

1. For **Neutral Growth** the weighted annual average oil price should be equal to $90.30 to break even the current market price of the equity.
2. For **High Growth** the weighted annual average oil price should be equal to $83.04 to break even the current market price of the equity.
3. For **Low Growth** the weighted annual average oil price should be equal to $97.50 to break even the current market price of the equity.

However, in the last 6 years, the weighted annual average WTI price was $66.26 and in the entire history the weighted annual average WTI price has never been above $88.
Therefore, Hess US Equity is a clear SELL at this moment.

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