

Royal Norwegian Ministry of Petroleum and Energy

Valuation of State Direct Financial Interest, 2007

June 2008

Basis of Report

This report has been prepared for the Ministry of Petroleum and Energy by Wood Mackenzie Limited. The information upon which this report is based has either been supplied to us by Petro or the Ministry of Petroleum and Energy or comes from our own experience, knowledge and databases. The opinions expressed in this report are those of Wood Mackenzie. They have been arrived at following careful consideration and enquiry, but we do not guarantee their fairness, completeness or accuracy. The opinions, as of this date, are subject to change. We do not accept any liability for your reliance upon them.

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Role of Wood Mackenzie

Wood Mackenzie Limited (Wood Mackenzie) has been appointed by the Ministry of Petroleum and Energy (MPE) to undertake a valuation of the State's Direct Financial Interest (SDFI) portfolio of oil and gas assets. We have been requested to provide valuations using discount rates of 4% and 7% in real terms.

The principal aim is to quantify the change in value over the two year period from the start of 2006 to the end of 2007. As part of this process Wood Mackenzie has identified changes in value for individual assets and the reasons for those changes.

Approach

Wood Mackenzie has developed its approach in conjunction with the Ministry of Petroleum and Energy.

Petoro has provided Wood Mackenzie with datasets for SDFI assets at two points in time. The start year position was evaluated in the report prepared for the MPE by Wood Mackenzie in June 2006 and this has been the source of the opening value used in this report. The start dataset for this valuation was based on the Revised National Budget (RNB) 2006 (generated in late 2005). The end dataset is based on the RNB 2008 (generated in late 2007).

In both cases the RNB data is based on information (production and cost profile) provided by field operators. Changes to the data between start 2006 and end 2007 may be based upon differences in the operators' expectations from year to year, or changes to the field development plan.

The data has been run using the price assumptions from the National Budget (NB) 2006 and the Revised National Budget (RNB) 2008 assumptions as described in the methodology section. An additional valuation for reference purposes has been calculated under Wood Mackenzie's Q3-2008 price assumptions set in May 2008.

Summary and Conclusions

Wood Mackenzie has undertaken a valuation of the SDFI portfolio of oil and gas assets as at the end of 2007 and calculated the change in value over the two year period from the start of 2006. The final value of SDFI portfolio at the end of 2007 is **NKr 834.8 billion** (in start 2008 terms)

The change in value of the SDFI portfolio from the start of 2006 to the end of 2007 ('the valuation period') has been calculated by running valuations using the start and end period datasets, as supplied by Petoro. From this analysis the value of the SDFI portfolio has increased by **NKr 42.4 billion** (in start 2008 terms) during 'the valuation period', but would have decreased by **NKr 177.1 billion** (in start 2008 terms) had price assumptions remained at the National Budget 2006 (generated in late 2005). This decrease in value is because costs have increased, mainly due to market conditions, while prices are kept constant.

Excluding the strong impact during 'the valuation period' of increased forward price assumptions, a number of different factors have impacted the value. The most important one relates to the changed cost assumptions for individual assets. Investment decisions made by field operators at the end of 2007 are a reflection of the current oil price environment and certain decisions may not have been made if commodity prices had remained constant over 'the valuation period'. This cost factor is explored in greater detail in the section Key Value Change Drivers.

The key asset that has driven the decrease in the value of the SDFI portfolio during 'the valuation period' is the Troll Gas development. The key issue with the Troll Gas development was the postponement of the Troll Future Development (TFD) project in October 2007. The impact of delaying gas production from Troll Gas is only a small proportion of the change in value. Several capital intensive projects that were associated with the TFD project are still going ahead. The combination of new investments on Troll Gas, combined with a postponement of gas production has led to an overall decrease under constant prices. In addition, we have not assumed the possibility of increased oil production or reserves from the Troll oil field. However, the Troll Gas asset continues to be ranked number one with a remaining value of Nkr 279.4 billion (in start 2008 terms).

Valuations

Summary - Value Change Comparisons – 7% Discount Rate

In undertaking our valuation we have initially valued the datasets to show the value of the start 2006 dataset at 1 January 2006 and the end 2007 dataset at 1 January 2008. The opening value for the start year position is sourced from the equivalent report prepared for the Ministry of Petroleum and Energy in June 2006. The discount rate in all case is 7% in real terms. The oil prices used in this valuation are summarised in table 4.

To ensure comparability of the value of the datasets, we have made the following adjustments as described below and shown in table 1. The three parts are: Part 1, a comparison of the value change due to the difference between actual cash flows during 'the valuation period' and the estimated cash flows from the previous year's study. Part 2, the value change of the portfolio from start 2008 onwards including the value change due to constant prices and the value change due to increased prices. Part 3, the total value change for the portfolio.

All items are stated in 2008 terms unless otherwise stated.

Part 1

Part 1 calculates the value change between the estimated cash flow items as calculated for 2006 and 2007 from the previous year's study (step A), and the actual cash flows generated over the same period (step B). Taking the difference between the two (step C) we calculate that the increase in value for the cash flow items is **NKr 14.7 billion**.

Part 2

Part 2 begins with the start 2006 dataset value (as described in the previous year's study) in start 2006 terms. This figure is inflated into 2008 terms to give a value of **NKr 1,064.2 billion** (step D). This is calculated by inflating 2006 values by 4.01% x discount rate (to 2007) and then by 2.15% x discount rate (to 2008). We then deduct the estimated cash flows for 2006 and 2007 (step A) from the start 2006 value. This gives us a value of **NKr 807.1 billion** which is the start 2006 value from 2008 onwards (step F). The end 2007 value has been calculated to be Nkr 834.8 billion (step G). The difference between the two figures of **NKr 27.7 billion** gives the value increase of the future portfolio from start 2008 onwards (step H).

The next stage in part 2 is calculating the extent to which changes in oil and gas price assumptions have impacted on the value change. We have therefore run the end 2007 dataset using start 2006 oil and gas price assumptions, to isolate the impact of changes arising from different oil and gas price assumptions.

Using start 2006 price assumptions, the value of the end 2007 dataset falls from Nkr 834.8 billion (calculated with 2008 budget prices, step G) to Nkr 630.0 billion (calculated with 2006 budget prices, step I). By changing the assumptions during the 'valuation period', the value of the portfolio has therefore risen by Nkr 204.8 billion (step J). To calculate the total value due to revised prices we must also subtract the value increase in the portfolio including the estimated cash flow items of Nkr 27.7 billion (step H). Thus the value decrease of the underlying asset base (from start 2008 onwards) excluding the impact of changes to the assumptions is **NKr 177.1 billion** (step K).

The end 2007 dataset value is reconciled by taking the start 2006 value from 2008 onwards (step F), adding the value increase due to revised prices (step J) and finally subtracting the value decrease based on constant prices (step K). This reconciles the end 2007 portfolio value of **NKr 834.8 billion** (step G).

Part 3

The impact of these adjustments is such that if the 2006 and 2007 actual cash flows and future expectations at the start of 2008 were those predicted at the start of 2006, there would be no change in value. A higher value for the end year dataset than the start year dataset plus the change in cash flow value would show value increase. By contrast a lower value for the end year dataset would show value decrease. As a result of our valuation analysis, a value increase of some **NKr 42.4 billion** has been calculated (step L) which is the summation of the increase in value between the estimated and actual cash flows items and the change in value of the portfolio from 2008 onwards.

Table 1. Reconciliation Between the Start and End Year Valuations of Commercial Assets including the Impact of Oil Price Assumptions on the future portfolio value*

Value Component	Value** (Nkr billion)	Value** (Nkr billion)	Value** (Nkr billion)	Steps
Part 1 - Cash Flow Items				
Estimated Cash Flow 2006	130.8			
Estimated Cash Flow 2007	126.3			
Estimated 2006+2007 Cash Flow		257.1		A
Actual Cash Flow 2006	148.4			
Actual Cash Flow 2007	123.4			
Actual 2006+2007 Cash Flow		271.8		B
Increase in value between estimated and actual Cash Flows			14.7	C
Part 2 – Change in Future Value of Portfolio				
Start 2006 (from previous study) (2006 terms)	874.9			
Start 2006 (from previous study)	1,064.2			D
Estimated 2006+2007 Cash Flow	257.1			A
Start 2006 Value from 2008 onwards		807.1		F
End 2007 Value		834.8		G
Value increase of the portfolio from 2008 onwards			27.7	H
Impact of Oil Price on the future portfolio value				
End 2007 Value	834.8			G
End 2007 using start 2006 prices	630.0			I
Value change due to revised prices		204.8		J
Value Increase from 2008 onwards		27.7		H
Value decrease based on constant price assumptions			(177.1)	K
Reconciled Value Change in the Future Portfolio during 'the Valuation Period'				
Start 2006 Value from 2008 onwards	807.1			F
Value Increase due to revised prices		204.8		J
Value decrease based on constant price		(177.1)		K
End 2007 Value (2008 terms)			834.8	G
Part 3 – Total Value Change				
Realised change in value from 2006 and 2007 cash flows		14.7		C
Value Increase from 2008 onwards		27.7		H
Total Portfolio Value Change compared to 1 Jan 2006			42.4	L

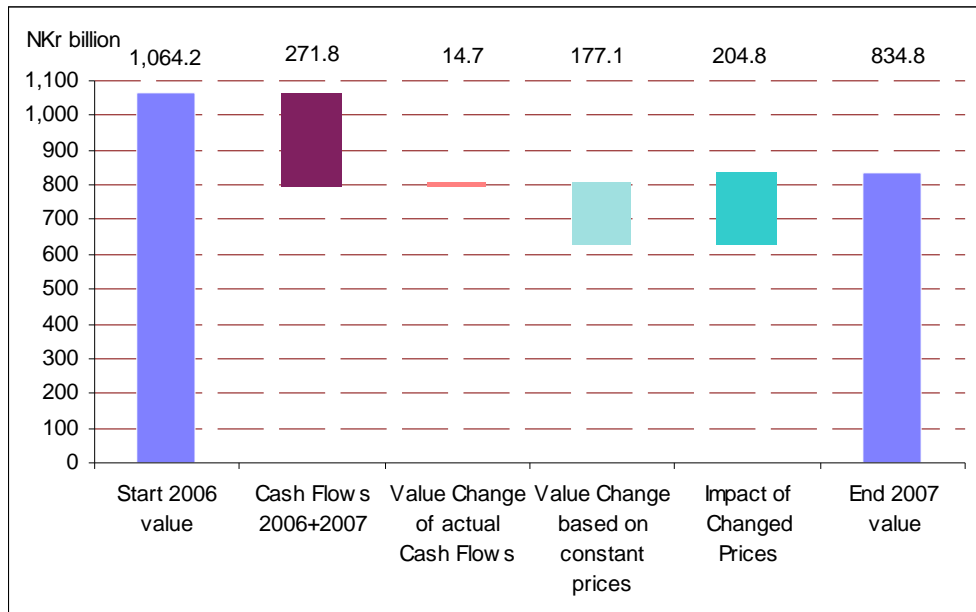
**All items are in 2008 terms unless otherwise stated

* Discounted at 7% in real terms.

Totals may not add due to rounding

Chart 1 graphically shows the steps from the start 2006 value to end 2007 value (all in 2008 terms).

Chart 1. Value Change During ‘the valuation period’



*All values are in 2008 terms

Summary - Value Change Comparisons – 4% Discount Rate

An additional valuation, requested by the MPE has been calculated for the end 2007 position using a 4% discount rate in real terms.

Wood Mackenzie has undertaken this valuation by recalculating the opening value for the start year position sourced from the equivalent report prepared for the Ministry of Petroleum and Energy in June 2006 at a 4% discount rate in real terms. The oil prices used in this valuation are summarised in table 4.

Again, to ensure comparability of the value of the datasets, we have made the following adjustments as described below and shown in table 2. The three parts are: Part 1, a comparison of the value change due to the difference between actual cash flows during 'the valuation period' and the estimated cash flows from the previous year's study. Part 2, the value change of the portfolio from start 2008 onwards including the value change due to constant prices and the value change due to increased prices. All items are stated in 2008 terms unless otherwise stated.

Part 1

Part 1 calculates the value change between the estimated cash flow items as calculated for 2006 and 2007 from the previous year's study (step A), and the actual cash flows generated over the same period (step B). Taking the difference between the two (step C) we calculate that the increase in value for the cash flow items is **NKr 22.2 billion**.

Part 2

Part 2 begins with the start 2006 dataset value (as described in the previous year's study) in start 2006 terms. This figure is inflated into 2008 terms to give a value of **NKr 1,237.4 billion** (step D). This is calculated by inflating 2006 values by 4.01% x discount rate (to 2007) and then by 2.15% x discount rate (to 2008). We then deduct the estimated cash flows for 2006 and 2007 (step A) from the start 2006 value. This gives us a value of **NKr 995.7 billion** which is the start 2006 value from 2008 onwards (step F). The end 2007 value has been calculated to be Nkr 1,022.4 billion (step G). The difference between the two figures of **NKr 26.7 billion** gives the value increase of the future portfolio from start 2008 onwards (step H).

The next stage in part 2 is calculating the extent to which changes in oil and gas price assumptions have impacted on the value change. We have therefore run the end 2007 dataset using start 2006 oil and gas price assumptions, to isolate the impact of changes arising from different oil and gas price assumptions.

Using start 2006 price assumptions, the value of the end 2007 dataset falls from Nkr 1,022.4 billion (calculated with 2008 budget prices, step G) to Nkr 790.3 billion (calculated with 2006 budget prices, step I). By changing the assumptions during the 'valuation period', the value of the portfolio has therefore risen by Nkr 232.1 billion (step J). To calculate the total value due to revised prices we must also subtract the value increase in the portfolio including the estimated cash flow items of Nkr 26.7 billion (step H). Thus the value decrease of the underlying asset base (from start 2008 onwards) excluding the impact of changes to the assumptions is **NKr 205.4 billion** (step K).

The end 2007 dataset value is reconciled by taking the start 2006 value from 2008 onwards (step F), adding the value increase due to revised prices (step J) and finally subtracting the value decrease based on constant prices (step K). This reconciles the end 2007 portfolio value of **NKr 1,022.4 billion** (step G).

Part 3

The impact of these adjustments is such that if the 2006 and 2007 actual cash flows and future expectations at the start of 2008 were those predicted at the start of 2006, there would be no change in value. A higher value for the end year dataset than the start year dataset plus the change in cash flow value would show value increase. By contrast a lower value for the end year dataset would show value decrease. As a result of our valuation analysis, a value increase of some **NKr 48.9 billion** has been calculated (step L) which is the summation of the increase in value between the estimated and actual cash flows items and the change in value of the portfolio from 2008 onwards.

Table 2. Reconciliation Between the Start and End Year Valuations of Commercial Assets including the Impact of Oil Price Assumptions on the future portfolio value*

Value Component	Value** (Nkr billion)	Value** (Nkr billion)	Value** (Nkr billion)	Steps
Part 1 - Cash Flow Items				
Estimated Cash Flow 2006	125.3			
Estimated Cash Flow 2007	116.4			
Estimated 2006+2007 Cash Flow		241.7		A
Actual Cash Flow 2006	142.2			
Actual Cash Flow 2007	121.7			
Actual 2006+2007 Cash Flow		263.9		B
Increase in value between estimated and actual Cash Flows			22.2	C
Part 2 – Change in Future Value of Portfolio				
Start 2006 (from previous study) (2006 terms)	1,076.8			
Start 2006 (from previous study) (2008 terms)	1,237.4			D
Estimated 2006+2007 Cash Flow	241.7			A
Start 2006 Value from 2008 onwards		995.7		F
End 2007 Value		1,022.4		G
Value increase of the portfolio from 2008 onwards			26.7	H
Impact of Oil Price on the future portfolio value				
End 2007 Value	1,022.4			G
End 2007 using start 2006 prices	790.3			I
Value change due to revised prices		232.1		J
Value Increase from 2008 onwards		26.7		H
Value decrease based on constant price assumptions			(205.4)	K
Reconciled Value Change in the Future Portfolio during 'the Valuation Period'				
Start 2006 Value from 2008 onwards	995.7			F
Value Increase due to revised prices		232.1		J
Value <i>decrease</i> based on constant price		(205.4)		K
End 2007 Value (2008 terms)			1022.4	G
Part 3 – Total Value Change				
Realised change in value from 2006 and 2007 cash flows		22.2		C
Value Increase from 2008 onwards		26.7		H
Total Portfolio Value Change compared to 1 Jan 2006			48.9	L

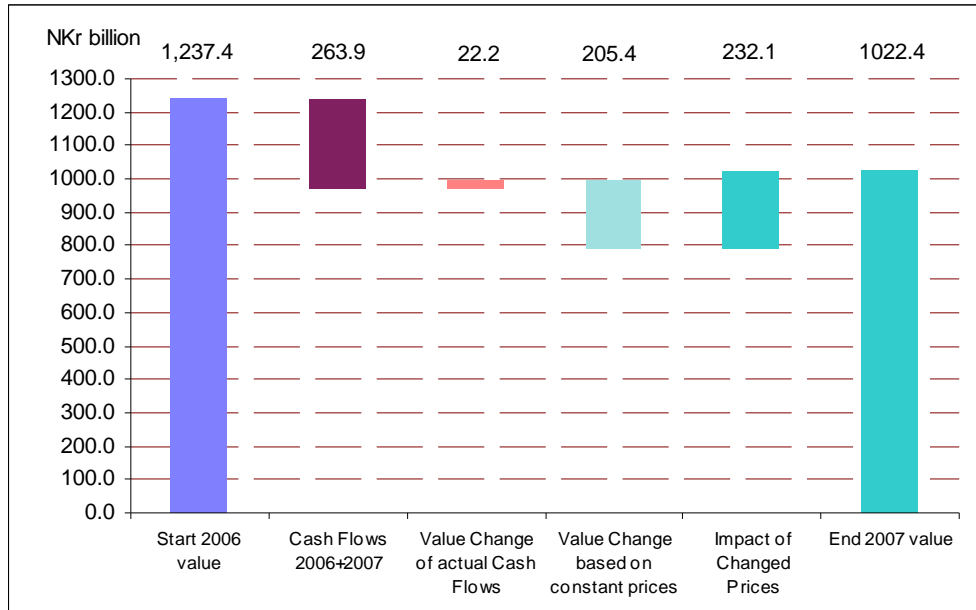
**All items are in 2008 terms unless otherwise stated

*Discounted at 4% in real terms.

Totals may not add due to rounding

Chart 2 graphically shows the steps from the start 2006 value to end 2007 value (all in 2008 terms).

Chart 2. Value Change During ‘the valuation period’ at a 4% discount rate in real terms*



*All values are in 2008 terms

Summary - Value Change Comparisons – WM prices

As a comparison to the standard valuation, Wood Mackenzie has calculated the portfolio value using its own internal Q3-2008 price assumptions as a substitute for the Revised National Budget (RNB) 2008 price assumptions. The oil prices used in this valuation are summarised in table 5.

Once again, to ensure comparability of the value of the datasets, we have made the following adjustments as described below and shown in table 3. The three parts are: Part 1, a comparison of the value change due to the difference between actual cash flows during 'the valuation period' and the estimated cash flows from the previous year's study. Part 2, the value change of the portfolio from start 2008 onwards including the value change due to constant prices and the value change due to increased prices. Part 3, the total value change for the portfolio.

All items are stated in 2008 terms unless otherwise stated.

Part 1

Part 1 calculates the value change between the estimated cash flow items as calculated for 2006 and 2007 from the previous year's study (step A), and the actual cash flows generated over the same period (step B). Taking the difference between the two (step C) we calculate that the increase in value for the cash flow items is **NKr 14.7 billion**.

Part 2

Part 2 begins with the start 2006 dataset value (as described in the previous year's study) in start 2006 terms. This figure is inflated into 2008 terms to give a value of **NKr 1,064.2 billion** (step D). This is calculated by inflating 2006 values by 4.01% x discount rate (to 2007) and then by 2.15% x discount rate (to 2008). We then deduct the estimated cash flows for 2006 and 2007 (step A) from the start 2006 value. This gives us a value of **NKr 807.1 billion** which is the start 2006 value from 2008 onwards (step F). The end 2007 value has been calculated to be Nkr 1,224.0 billion (step G). The difference between the two figures of **NKr 416.9 billion** gives the value increase of the future portfolio from start 2008 onwards (step H).

The next stage in part 2 is calculating the extent to which changes in oil and gas price assumptions have impacted on the value change. We have therefore run the end 2007 dataset using start 2006 oil and gas price assumptions, to isolate the impact of changes arising from different oil and gas price assumptions.

Using start 2006 price assumptions, the value of the end 2007 dataset falls from Nkr 1,224.0 billion (calculated with Wood Mackenzie's Q3 2008 prices, step G) to Nkr 630.0 billion (calculated with 2006 budget prices, step I). By changing the assumptions during the 'valuation period', the value of the portfolio has therefore risen by Nkr 594.0 billion (step J). To calculate the total value due to revised prices we must also subtract the value increase in the portfolio including the estimated cash flow items of Nkr 416.9 billion (step H). Thus the value decrease of the underlying asset base (from start 2008 onwards) excluding the impact of changes to the assumptions is **NKr 177.1 billion** (step K).

The end 2007 dataset value is reconciled by taking the start 2006 value from 2008 onwards (step F), adding the value increase due to revised prices (step J) and finally subtracting the value decrease based on constant prices (step K). This reconciles the end 2007 portfolio value of **NKr 1,224.0 billion** (step G).

Part 3

The impact of these adjustments is such that if the 2006 and 2007 actual cash flows and future expectations at the start of 2008 were those predicted at the start of 2006, there would be no change in value. A higher value for the end year dataset than the start year dataset plus the change in cash flow value would show value increase. By contrast a lower value for the end year dataset would show value decrease. As a result of our valuation analysis, a value increase of some **NKr 431.6 billion** has been calculated (step L) which is the summation of the increase in value between the estimated and actual cash flows items and the change in value of the portfolio from 2008 onwards.

Table 3. Reconciliation Between the Start and End Year Valuations of Commercial Assets including the Impact of Oil Price Assumptions on the future portfolio value*

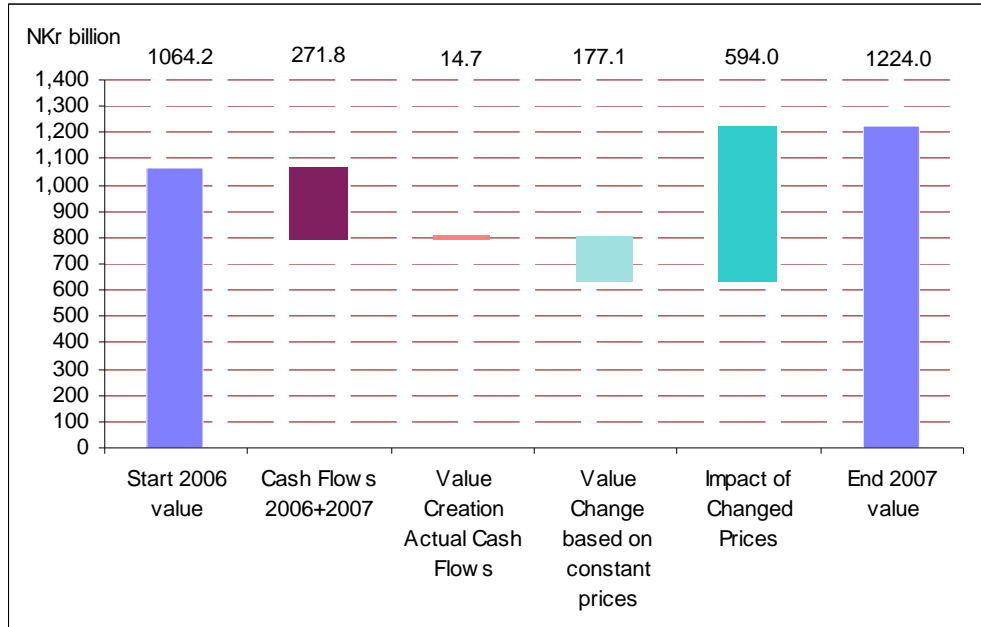
Value Component	Value** (Nkr billion)	Value** (Nkr billion)	Value** (Nkr billion)	Steps
Part 1 - Cash Flow Items				
Estimated Cash Flow 2006	130.8			
Estimated Cash Flow 2007	126.3			
Estimated 2006+2007 Cash Flow		257.1		A
Actual Cash Flow 2006	148.4			
Actual Cash Flow 2007	123.4			
Actual 2006+2007 Cash Flow		271.8		B
Increase in value between estimated and actual Cash Flows			14.7	C
Part 2 – Change in Future Value of Portfolio				
Start 2006 (from previous study) (2006 terms)	874.9			
Start 2006 (from previous study) (2008 terms)	1,064.2			D
Estimated 2006+2007 Cash Flow	257.1			A
Start 2006 Value from 2008 onwards		807.1		F
End 2007 Value		1,224.0		G
Value increase of the portfolio from 2008 onwards			416.9	H
Impact of Oil Price on the future portfolio value				
End 2007 Value	1,224.0			G
End 2007 using start 2006 prices	630.0			I
Value change due to revised prices		594.0		J
Value Increase from 2008 onwards		416.9		H
Value decrease based on constant price assumptions			(177.1)	K
Reconciled Value Change in the Future Portfolio during 'the Valuation Period'				
Start 2006 Value from 2008 onwards	807.1			F
Value Increase due to revised prices		594.0		J
Value decrease based on constant price		(177.1)		K
End 2007 Value (2008 terms)			1,224.0	G
Part 3 – Total Value Change				
Realised change in value from 2006 and 2007 cash flows		14.7		C
Value Increase from 2008 onwards		416.9		H
Total Portfolio Value Change compared to 1 Jan 2006			431.6	L

**All items are in 2008 terms unless otherwise stated

* Discounted at 7% in real terms.

Totals may not add due to rounding

Chart 3. Value Change During ‘the valuation period’ at a 7% discount rate in real terms



*All values are in 2008 terms

The result of using the Wood Mackenzie Q3 2008 price scenario is a significant increase in the value created by the ‘impact of changed prices’. The difference in value between using the RNB 2008 prices and Wood Mackenzie’s Q3 2008 prices is an overall increase in the end 2007 value in 2008 terms of Nkr 389.2 billion.

Key Value Change Drivers

The key asset that has increased in value in the SDFI portfolio over 'the valuation period' is the Kvitbjørn development. The primary reason for the increase in value is because of an increased estimate in the recoverable gas reserves following a reservoir re-evaluation during 2006. To a lesser extent the Tune, Gimle and Statfjord Øst have also made positive contributions. At the opposite end of the value change scale, the Troll Gas development has contributed significantly to a decrease in the overall value when analysing the portfolio on a constant price basis. The key issue with the Troll Gas development was the postponement of the Troll Future Development (TFD) project in October 2007.

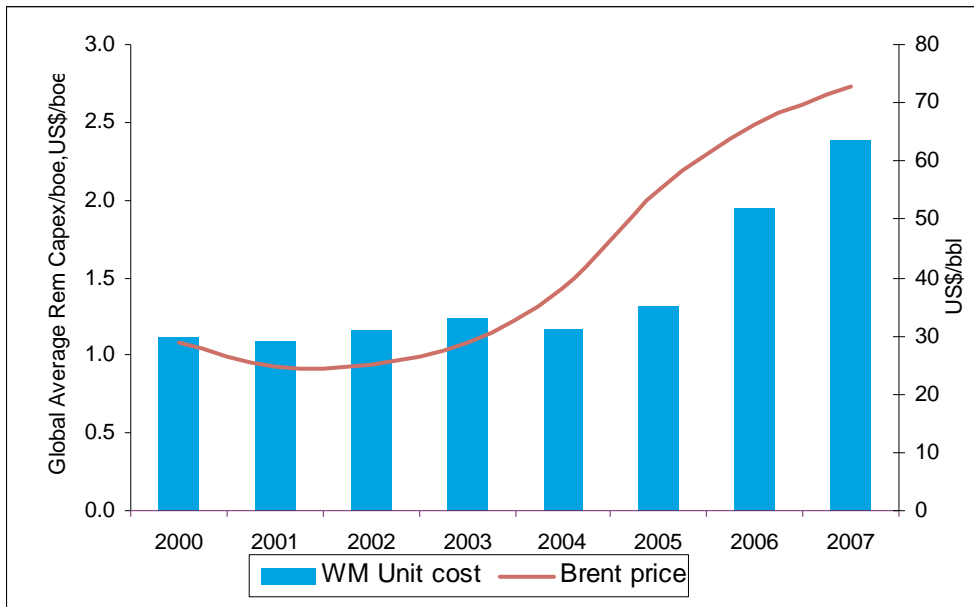
The TFD project was expected to provide increased off-take from Troll Gas and to build a new export pipeline from Kollsnes. The impact of delaying gas production from Troll Gas is only a small proportion of the change in value. Several capital intensive projects that were associated with the TFD project are still going ahead. These projects include: an extension to the living quarters, additional export pipelines from the field to Kollsnes, increasing the diameter of the tubing in the production wells and an additional compression project.

The key reasons for the decrease in value within the portfolio are the impact of a combination of both new costs and higher costs (due to market conditions), combined with a near term fall in both oil and gas production.

Compared to the end expectations at the end of 2005, forecast oil production in the current portfolio is lower every year until 2012. Similarly gas production (primarily from Troll Gas) is lower every year until 2021. However, declining gas production from the Oseberg area has reversed the decline in oil production considerably.

Capital investment levels within the SDFI portfolio have increased significantly. A number of investment decisions made on the current portfolio have been made because of the current oil price, many would not have been made at the end of 2005 given the price environment of the day. This is the main cause for the decrease in the portfolio value over 'the valuation period' based on constant NB 2005 prices. The increase in capital spend is a global phenomenon. As shown in Chart 4, Wood Mackenzie has calculated that the global average remaining capital spend per remaining reserves has increased by 82% from 2005 to 2007.

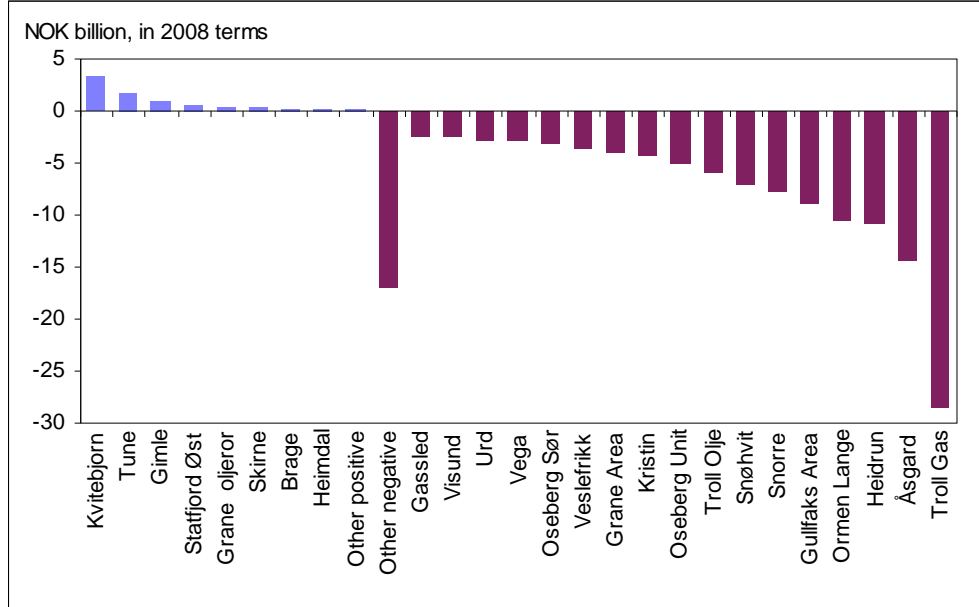
Chart 4. Wood Mackenzie's Global Average Remaining CAPEX/boe (US\$/boe)



Overall 11 assets (or grouping of assets) made a positive contribution with 42 assets (or grouping of assets) giving an overall negative performance.

The combination of increased capital spend without a corresponding increase in production has resulted in the overall decrease in portfolio value as shown by asset (or grouping of assets) in chart 5.

Chart 5. Value Change by Asset 2006 to 2008 - Excluding Impact of Changed Price Assumptions*

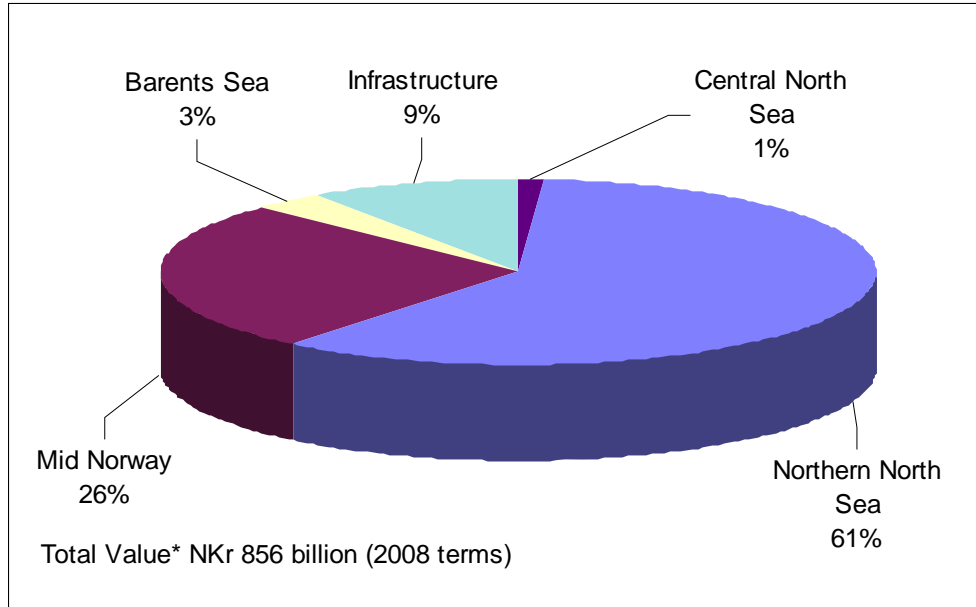


*The 'Other positive' category represents the cumulative value increase for all the other assets (not individually identified) that showed a positive value change during the year, with the 'Other negative' category reflecting the equivalent change for all the other assets that showed a negative change in value. The overhead items such as Insurance, Marketing, Budgets and the other exploration/corporate cash flow items have not been included in chart 5. The combined effect of these items resulted in a value increase of NOK 572 million in real 2006 terms.

Portfolio Analysis

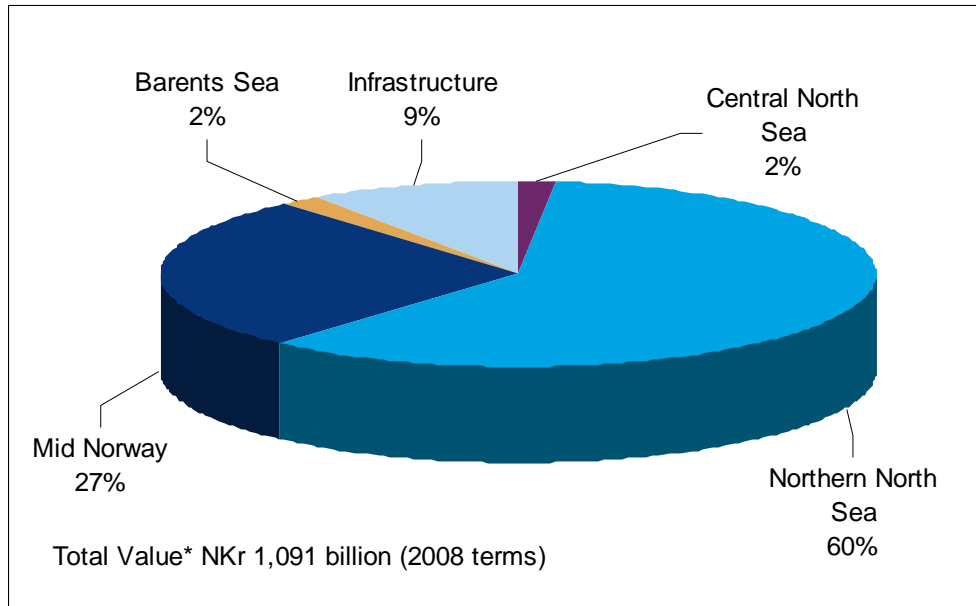
Charts 6 and 7 show the value distribution of the SDFI portfolio by location (excluding insurance, marketing and budget items) on the Norwegian Continental Shelf at the end of 2007 and start of 2006 respectively. Chart 8 shows the split by core asset area.

Chart 6. Value Distribution by Region (End 2007 value in 2008 Terms)



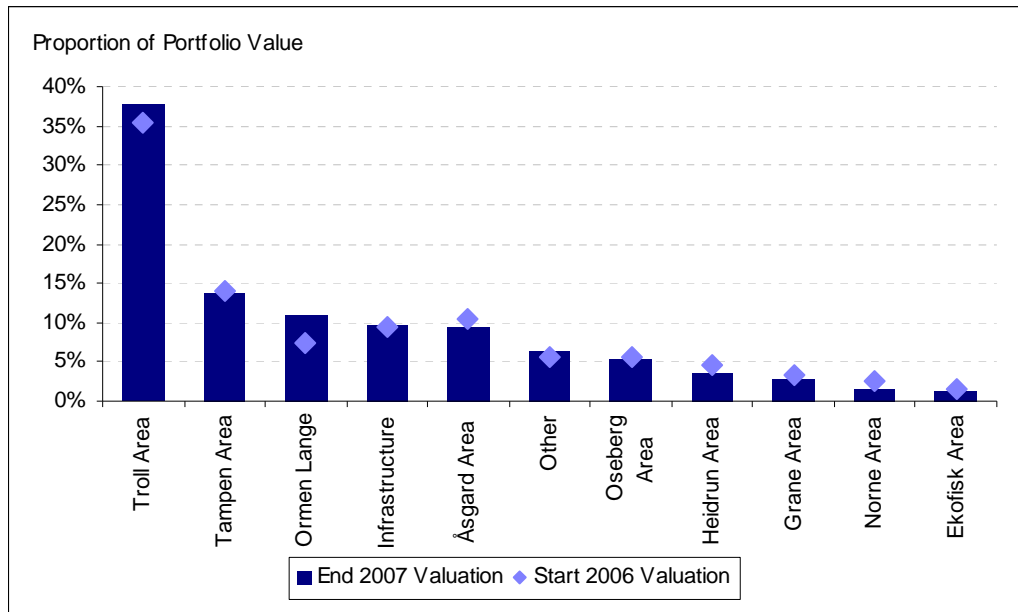
*Asset value only - excludes Insurance, Marketing and Budget items

Chart 7. Value Distribution by Region (Start 2006 value in 2008 Terms)



*Asset value only - excludes Insurance, Marketing and Budget items

Chart 8. Value Distribution by Core Area



Comparison of Production Profiles for Start vs. End Year Datasets

Charts 9 and 10 show the estimated future liquid and gas production profiles for the start and end year datasets.

The liquids profile for the near term is significantly lower during 2008, 2009 and 2010. Beyond this point, there is an increase in liquids production averaging at approximately 18% higher from 2012 to 2025. The lower estimation in the near term reflects the increased competition for resources, particularly drilling. The medium term recovery reflects improved oil recovery from existing reservoirs as shown by the increased number of enhanced oil recovery projects being undertaken.

The main difference in the gas production profiles between the two datasets is because of the postponement of the Troll Future Development project. However, the near term fall in gas production is offset from around 2025 when the gas reserves in the Troll Oil area are developed.

Chart 9. Liquids Production

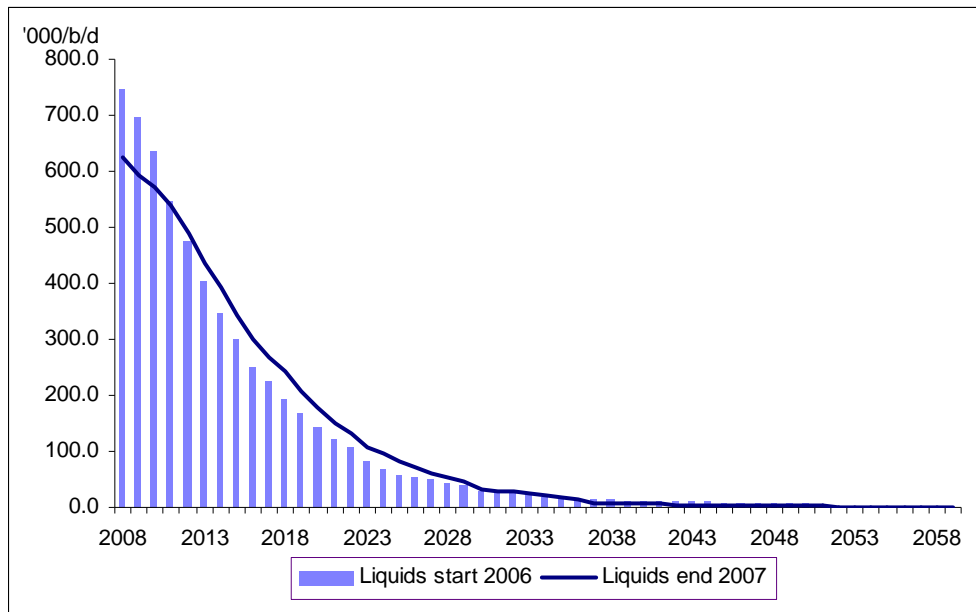
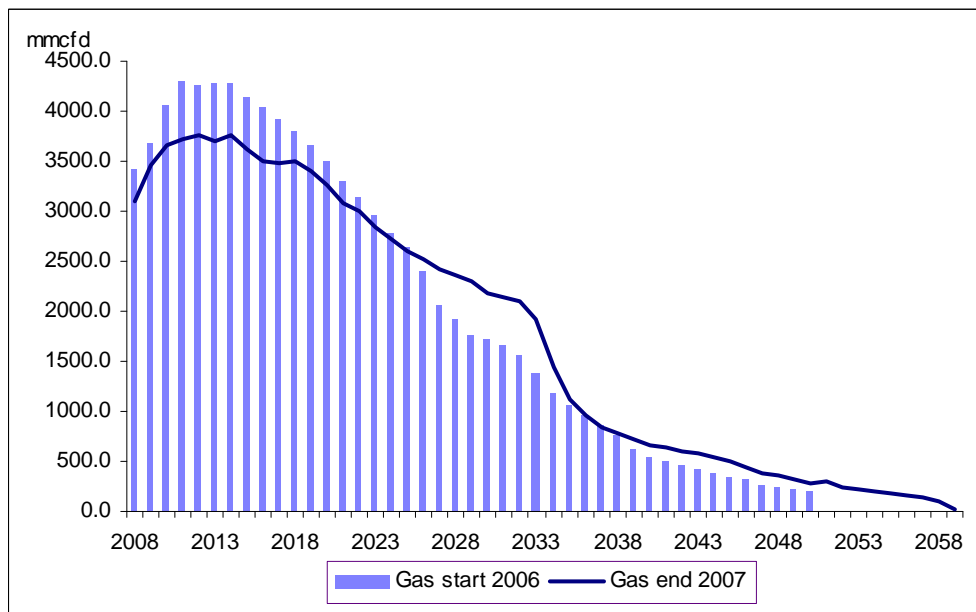


Chart 10. Gas Production



Comparison of Cost Profiles for Start vs. End Period Datasets

The capital investment profile in chart 11 shows a significant increase in near to medium term expenditure primarily based on cost inflation experienced within the oil and gas sector during 2006 and 2007. The increase in development drilling costs particularly with the increase in rig and support vessel rates has had the biggest impact on the total capital spend. Chart 12 shows that the operating cost profile from the 2008 dataset is similar, albeit at a higher level, to the 2006 dataset. Because transport tariff costs, which are mainly regulated, account for a substantial part of the totals, the difference is not as pronounced as that observed in the capital investment chart.

Chart 11. Capital Investment

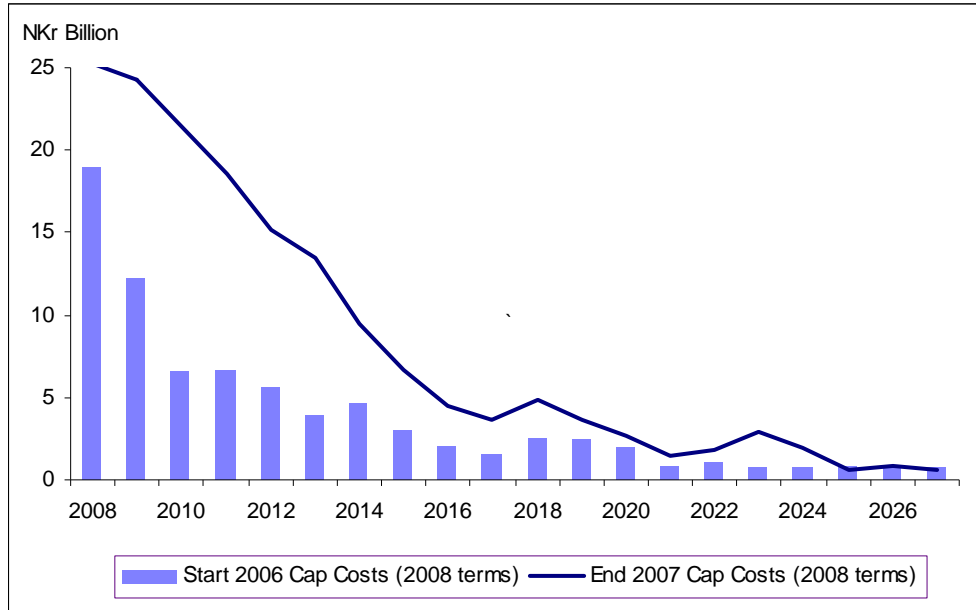
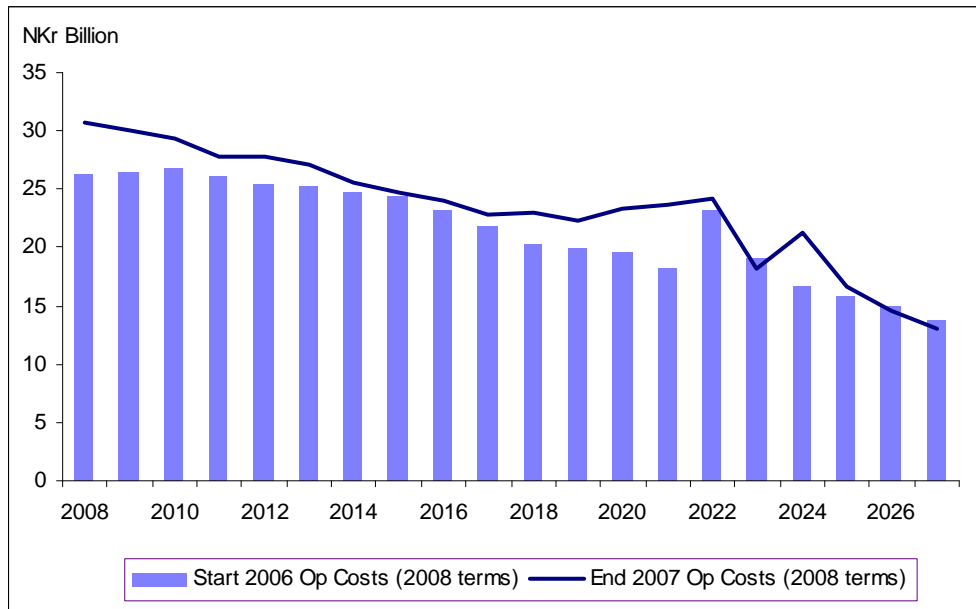


Chart 12. Operating Costs

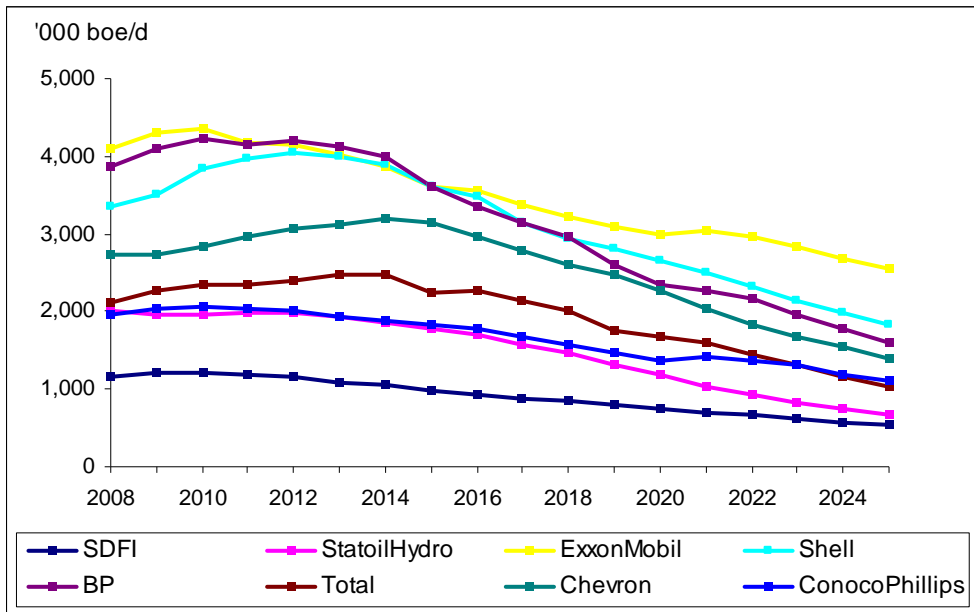


Benchmarking of Future Production Profile

In chart 13 we benchmark the forward entitlement production profile and reserves/production (R/P) ratio of the State DFI portfolio against a peer group consisting of the global portfolios of the main Norwegian player StatoilHydro and the major international players ExxonMobil, Shell, BP, Total, ConocoPhillips and Chevron. The production profiles are based on output from each company’s current portfolio of commercial fields and do not take account of likely additional production from discoveries that are categorised as technical discoveries or from yet to find reserves.

The SDFI’s future production profile demonstrates a very similar trend to that of StatoilHydro, albeit at a lower level. However, in the medium term we forecast that the underlying decline from StatoilHydro’s legacy oil assets will cause overall production to fall primarily from its Norwegian portfolio. This slower decline of the SDFI production profile (54% compared to StatoilHydro’s 66%, from 2008 to 2025) reflects the SDFI’s interests in long-life gas projects such as Troll, Ormen Lange and Snøhvit. However, when compared to the major oil companies, we would expect this picture of longevity for the SDFI’s production stream to be slowly eroded over time, given the maturing nature of the single continental shelf to which the portfolio is exposed.

Chart 13. Future Production – Comparison with Companies’ Global Profiles



* Source Wood Mackenzie CAT product Q2 2008, SDFI data refers to start 2008 dataset

Key Industry Trends in 2007

In this section of the report we reflect on the main trends that were seen in the upstream oil and gas industry during 2007 and the start of 2008. The issues have been grouped under two headings, to reflect those that impacted the industry globally as opposed to others that were more local to the North Sea area.

Global Themes

The overriding theme of 2007 was the continued rise in oil prices which has impacted the entire energy industry, and shows little sign of abating. The average price of Brent crude in 2007 was US\$ 72.63/bbl, up on the 2006 average of US\$ 66.32/bbl. This increase of just under 10% was notable for the fact that prices had remained relatively stable until August, when concerns over faltering OECD supply and continuing demand growth led to prices surging towards the US\$100/bbl barrier. Potential sources of major supply such as Nigeria and Venezuela faced political and fiscal upheavals, exacerbating existing tensions oversupply capacity in the Middle East. Meanwhile, the rapid motorisation of China and India's emerging economies shifted the centre of demand growth away from the USA. Strong oil prices continued into early 2008, reaching record levels, and currently show little sign of weakening.

Rising oil prices have led to significant increases in exploration activity as companies have sought to secure future sources of supply. International oil companies (IOCs), which provide just under a quarter of the world's oil supply, have continued to invest heavily in exploration. But replacing production with new discoveries has proven difficult, forcing the IOCs to rely on additional sources of new resource to support growth. Rising oil prices, increasing gas demand and technological improvements have assisted companies in developing these new resources, resulting in the pursuit of projects like the Canadian oil sands and stranded gas for LNG in the Middle East.

However the growth of IOCs has been squeezed by the rise of competition from the National Oil Companies, which have often pursued different agendas. Nationalism has grown, not only through nationalisation, as in Bolivia and Venezuela, but also through NOCs such as Gazprom exerting more power in the markets they operate in. Governments are also seeking to capture an increased share of the increased profits. The rise of the NOCs has created an additional strain on the human and technological resources of a service sector at full capacity, therefore constraining activity to grow reserves.

These constraints have caused major cost inflation across the industry. Global rig rates have continued to rise in 2007, whilst rising development costs have driven down returns on discoveries. Between 2006 and 2007, capital costs for the global top 500 projects increased on average by 67%. With oil prices increasing in the same period by under 10%, it is apparent that operator margins have been squeezed. The reduction in margins has seen a rise in the number of smaller projects gaining approval, as their shorter payback periods prove less risky than the higher but long-term returns associated with larger developments. In the UK, a number of developments with reserves under 25 mmboe have received development approval, and are all expected to achieve payback within three years. Elsewhere, rising LNG costs and complexities have had a direct impact on LNG prices.

Throughout 2007, corporate M&A activity has not increased in line with the rise in oil prices. Where deals have been done, investment returns have been greatest on acquisitions involving producing assets, where the impact of cost inflation is minimised, outperforming even deals focused on exploration assets. With the increased competition across the industry, it remains to be seen whether a consolidation of the large companies will occur again, as it did earlier in the late 1990s and the early part of this decade.

As the struggle for traditional resources continues, a greater focus is now being placed on unconventional hydrocarbons. Heavy oil, coal-bed methane, tight gas accumulations and shale oil deposits are believed to hold 3.6 trillion barrels of potential resources, highlighting the massive rewards on offer from unconventional plays. However these considerable reserves also hold significant challenges including technology, infrastructure, limiting environmental impact, and putting appropriate fiscal and regulatory terms in place. North America is currently leading the way in the development of unconventional hydrocarbons with a number of commercial projects in operation in the Lower 48 region. But market conditions outside North America are expected to encourage the development of unconventional hydrocarbons in Asia, Europe and Australasia. Rising demand for biofuels has also led to significant investments being made to pursue their development.

North West Europe Themes

Increased exploration activity was a major theme across the North Sea region throughout 2007. In the UK, 125 exploration and appraisal wells were spudded, representing the highest level of drilling activity since 1992. Norway recorded 33 E&A wells, a ten-year high, but only 11 wells were completed in The Netherlands. Despite the high levels of activity, discovery rates were low and in the UK only nine of the 40 completed exploration wells were successful. Around 150 mmbœ were discovered, representing 3.8 mmbœ per completed exploration well. Exploration in Norway was more successful, with 54% of the 24 exploration wells finding hydrocarbons, but the average discovery size of 21 mmbœ per well was down on the previous year. In the Netherlands, seven of the nine exploration wells were successful, but the average discovery size fell to 2.7 mmbœ per completed well. Although average discovery sizes were down, the majority of new finds in 2007 were close to existing infrastructure and offered potential tie-back opportunities.

Production from the North Sea region in 2007 continued to decline. In the UK, production increased by less than 1% to 3 billion boe, as natural depletion was offset by the start-up of 23 new fields. Buzzard was the most significant of these new developments, coming onstream in January and adding an average of around 145,000 b/d to UK production in 2007. The full impact of these new start-ups will be felt in 2008 when total production is expected to increase further. In Norway, total production fell to 4.2 billion boe, its lowest level since 2000. This was despite a rise in gas production following the start-up of the major Ormen Lange and Snøhvit projects. Although liquid production in Norway is expected to continue its decline, gas production is forecast to climb until 2011, bolstered by near term projects such as Gjøa and Skarv. Dutch gas production from the North Sea fell in 2007, but was offset by increased output from the massive onshore Groningen gas field.

The level of capital expenditure in Norway (excluding E&A) is estimated to have been NKr 74.2 billion in 2007, around NKr 7 billion lower than 2006. This was mainly due to several large projects finishing their main capital expenditure phase in 2006, such as Ormen Lange, Langeled and Snøhvit. In the near term, the majority of capital spending will occur on a combination of existing fields and new developments, of which eight received approval in 2007. In the UK, 15 separate developments received government approval during 2007, with associated reserves of 307 mmbœ. Capital cost associated with these developments is estimated at £1.2 billion (NKr 13.8 billion). Development activity in the Dutch sector remained buoyant. Estimated capital expenditure in 2007 was € 1 billion (NKr 8.5 billion), an increase of 7% from 2006. However, most of this is attributed to the ongoing onshore Groningen redevelopment project.

Corporate activity in the North Sea Area has remained low, similar to the global trend. High oil prices have meant companies are generally cash rich and have little incentive to sell, restricting access to assets for new and smaller companies. However increasing costs are likely to have encouraged some companies to sell late-life assets, in order to avoid rising costs and near-term decommissioning liability. The UK experienced its lowest number of corporate deals for 10 years, with commercial assets worth an estimated US\$1,191 million changing hands in 2007 (US\$1,738 in 2006). In Norway, only six deals were completed involving commercial assets, estimated to be worth US\$497 million in 2007 (US\$243 million in 2006). Corporate activity in Norway was dominated by two deals involving Skarv, for which E.ON Ruhrgas and PGNiG were willing to pay significant sums (US\$80 to 90/boe) to acquire an interest. These deals indicate the prices European utilities are willing and capable of paying to secure and diversify future gas supplies. In the Netherlands, four commercial deals were finalised, the most significant of which was the purchase of BP's Dutch exploration and production business by TAQA, the Abu Dhabi national energy company.

Methodology and Assumptions

The SDFI portfolio has been valued by Wood Mackenzie based on the methodology outlined below and in accordance with assumptions which are also set out in this section.

Standard Valuation Methodology

Wood Mackenzie's standard methodology for valuing oil and gas assets is designed to determine the price that would be paid by a willing buyer of assets in an open market transaction.

Since the value of the SDFI portfolio is calculated on a pre-tax basis, the valuation is not intended to reflect the price that could be achieved in the marketplace, as any buyers would be subject to Norwegian upstream taxation. The values we have calculated in this report are simply those which are arrived at using a mechanistic approach based upon field data provided by Petoro and economic assumptions provided by the MPE and Wood Mackenzie.

Commercial Fields, Pipelines and Onshore Assets

The SDFI portfolio contains interests in a number of 'commercial fields' – defined by Wood Mackenzie as being those in production, under development or where government consent for the development is likely within the next 2-3 years. It also has an interest in a number of offshore pipelines which transport produced oil and gas to the market and in several onshore industrial projects directly related to its upstream activities.

The principal methodology used by Wood Mackenzie to value the commercial fields, pipelines and onshore projects within the SDFI portfolio has been to construct a cash flow analysis for each field, pipeline and onshore project.

The cash flows have been run on the oil (and gas) price scenario relevant at the start or end dataset and discounted using a 7% discount rate in real terms to derive a net present value ('NPV') for each asset. An additional valuation has been calculated for the start 2006 and end 2007 datasets using a 4% discount rate in real terms.

Valuation Prices

The valuation of the assets has been undertaken with the following oil/NGL/gas price scenarios (as suggested by the MPE):

- ❑ one case, which is that used in the 2006 National Budget submission (autumn 2005) and which is relevant to the valuation of the SDFI portfolio as at 1 January 2006 (start year);
- ❑ a second case, which is that used in the Revised National Budget submission 2008 (spring 2008) and which is relevant to the valuation of the SDFI portfolio as at 1 January 2008 (end year);

These scenarios are outlined in more detail in Table 7.

Data Sources

Petoro has provided all the field data and the 2006 and 2007 cash flow items that we have used to form our conclusions on the valuation of the assets included in this report. The data consists of, inter alia, production, sales volumes and cost profiles for individual fields and infrastructure projects.

The information is based on Revised National Budget data 2007 as reported by the field operators. Petoro has also provided access to its personnel to discuss matters arising from our examination of the data.

Upstream - Key Assumptions

□ **Oil, NGL and Condensate Prices**

We have valued the SDFI's oil and gas assets in this report using the following oil/gas/NGL and condensate price assumptions. One of the price series is that used in the 2006 National Budget submissions and the other is 2008 Revised National Budget price series. Condensate prices have been assumed to equal oil prices and NGL prices have been assumed at a discount of 30% to the oil prices. The key oil price assumptions are set out in the table 4, and for comparison Wood Mackenzie's Q3-2006 and Q3-2008 price assumptions are in table 5:

Table 4. Oil Price Assumptions in real (2008) Terms

Prices Year	2006 Budget Oil Price Nkr/bbl	2008 Budget Oil Price Nkr/bbl	% Change
2008	290.0	500.0	72%
2009	270.0	400.0	48%
2010	260.0	370.0	42%
2011	250.0	370.0	48%
2012	240.0	370.0	54%
2013	230.0	250.0	9%
2014*	220.0	230.0	5%

*Oil prices are flat in real terms thereafter

Table 5. Wood Mackenzie's Q3 2008 Price Assumptions in real (2008) Terms for comparison

Prices Year	Wood Mackenzie Q3-2006 Oil Price Nkr/bbl	Wood Mackenzie Q3-2008 Oil Price Nkr/bbl	% Change
2008	277.7	560.7	102%
2009	226.1	500.3	121%
2010	230.7	516.1	124%
2011	232.8	462.6	99%
2012*	234.1	417.8	78%
2013	234.1	417.8	78%
2014	234.1	417.8	78%

*Oil prices are flat in real terms thereafter

The Wood Mackenzie prices are those used in its proprietary Global Economic Model (GEM). The Q3 2006 prices are similar to the NB 2006 prices. The Q3 2008 prices are those Wood Mackenzie believes are suitable approximations that companies use for long term planning assumptions and project economic hurdle rates.

Differentials to the Brent price (as supplied by Petoro) have been applied to specific fields in order to reflect crude quality/price differences beyond that of the portfolio average.

□ **Inflation**

All the data has been compiled and run in real terms, where nominal information was provided an inflation rate of 2.5% was used to discount items to 2008 terms.

□ **Exchange Rate**

All the data has been supplied and run in Nkr. Where appropriate the following Norwegian Kroner to US\$ exchange rates have been used. An exchange rate of Nkr 5.24/US\$ in 2008, Nkr 5.38/US\$ in 2009, Nkr 5.49/US\$ in 2009, Nkr 5.54/US\$ in 2010 and Nkr 5.57/US\$ in 2011, remaining flat in real terms thereafter.

□ **Discount Date**

Future cash flows have been discounted to 1 January 2006 or 1 January 2008 as appropriate.

□ **Discount/Inflation Rates**

The discount rate used for valuing all the assets is 7% per annum in real terms. Inflation rates used to inflate/deflate costs where applicable in 2006 are 2.15% and in 2007 4.01%. These rates are the MPE Inflation rates for investments and costs.

□ **Corporate Overheads**

A forward estimate of corporate overheads (as provided by the MPE) over and above those applicable to specific assets has been modelled as a separate 'item' within the SDFI portfolio. This comprises three items: Petoro's Budget from the MPE, insurance provisions and costs related to Statoil's (now StatoilHydro's) marketing of oil and gas.

□ **Resource Classification**

The resource classification attributed to the assets that make up the SDFI portfolio is based on the resource category up to and including RK4F (Resources in the planning phase). Resources in class RK5A (reserves in existing discoveries) are not included in the main valuation section.