

9

Petroleum Resources



Drill Bit

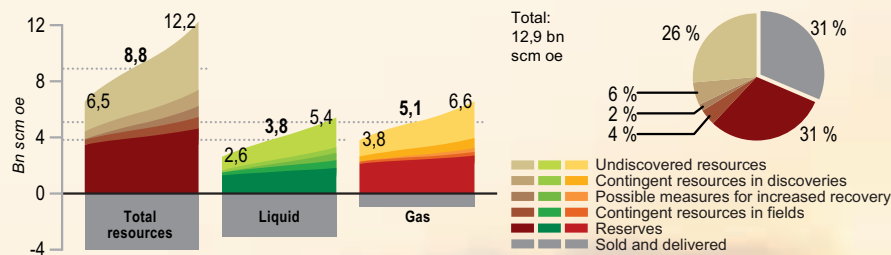


Figure 9.1 Petroleum resources and uncertainty in the estimates

The NPD's estimates of total discovered and undiscovered petroleum resources on the Norwegian continental shelf are 12.9 billion scm oil equivalent (oe). Around 4.0 billion scm oe have been recovered, 31 percent of the total resources. The remaining total recoverable resources amount to 8.8 billion scm oe, 5.2 billion scm of which are proven resources, with an estimated 3.4 billion scm oe undiscovered. It is also estimated that potential future measures for increased recovery may yield a total of 0.225 billion scm oe.

In 2004, exploration led to little resource growth. Four new discoveries have been made, containing total resources of around 17 - 22 mill. scm recoverable oil. Some of the resource estimates have not yet been completely evaluated and must still be regarded as very uncertain.

Since petroleum production began on the Norwegian continental shelf in 1971, 4.0 billion scm oe has been produced from 61 fields. In 2004, the Skirne and Kvitebjørn fields started production. 42 fields in the North Sea and 6 in the Norwegian Sea were on stream at the end of the year. The plans for development and operation (PDO) for the Kristin, Alvheim, Ormen Lange, Snøhvit and Urd fields have been approved, but they are not yet on stream. The PDOs for three new fields, Alvheim, Ormen Lange and Urd, were approved in 2004.

Figure 9.1 shows the total recoverable potential on the Norwegian continental shelf although the estimates are uncertain. The quantities are classified according to the Norwegian Petroleum Directorate's resource classification system for total resources, liquid and gas.

Resources

Resources is a collective term that covers technically recoverable quantities of petroleum. The resources are classified according to the maturity of the project that is necessary to recover them. The main classifications are reserves, contingent resources and undiscovered resources.

The detailed resource accounts as at 31.12.2004 are shown in table 9.1 and in the annex.

Reserves

Reserves cover remaining recoverable, sellable petroleum resources in petroleum deposits that the licensees have decided to develop, and for which the authorities have approved the PDO, or given PDO exemption for. Reserves also include petroleum resources that the licensees have decided to develop, but for which the plan has not been processed by the authorities in the form of a PDO approval or a PDO exemption. The reserves are estimated at 3.9 billion scm oe, and have been reduced by four percent from 4.1 to 3.9 billion scm over the last year. Submission of development plans for Alvheim, Urd, Vilje and Skinfaks and the amended PDO for Rimfaks added 54 million scm oe to the reserves. A number of projects for increased recovery from existing fields were also decided on, adding a total of 66 mill. scm oe. At the same time, 265 mill. scm oe was produced, leading to a net reduction in reserves of 144 mill. scm oe in 2004.

Contingent resources

The term "contingent resources" is used for discovered petroleum for which development has not yet been decided on.

In 2004, there was an increase in contingent resources in fields of 38 mill. scm oe. It is contingent resources in the planning stage that account for around 80 percent of this increase, deriving from improved recovery projects in several fields. The fields that contribute most to this increase are Ekofisk, Gullfaks, Åsgard and Gungne.

The estimate for contingent resources in discoveries has been reduced by 17 mill. scm oe to 746 mill. scm oe. This reduction is due to there being only four new discoveries on the Norwegian continental shelf during the year, to resources having been transferred to lower resource categories, and to a downgrading of the resource potential in discoveries 6405/7-1 and 6406/1-2.

The resource potential from possible future measures for increased recovery has been reduced this year by 175 mill. scm of oil. This year's oil estimate has been calculated at 125 mill. scm, while the gas estimate is 100 billion scm, which is unchanged from last year. Potential measures for increased recovery have been calculated based on the authorities' goal of achieving an average recovery rate for oil from oil fields of 50 percent and for gas from gas fields of 75 percent. The reduction in the oil potential from last year results from the fact that more projects for increased recovery have been realised this year, and have therefore been reported in lower resource categories.

Undiscovered resources

Undiscovered resources are quantities of petroleum that are assumed to be present in defined plays, confirmed and unconfirmed, which have not yet been proven by drilling (resource categories eight and nine). The estimate for the total undiscovered resources is 3.4 billion scm oe, and is unchanged in relation to last year's estimate.

The North Sea

A total of 7.1 billion scm oe has been discovered in the North Sea, and 3.6 billion scm oe has been produced. Remaining reserves amount to 2.7 billion scm oe, 38 percent of which is oil. Last year's production from the North Sea was 211 million scm oe, but because of increases in reserves in the fields that are on stream, and the additional reserves that have resulted from submission of development plans, the remaining reserves in the North Sea have not been reduced by more than 110 mill. scm oe in comparison with the previous years.

There are no major changes in the estimates for contingent resources and for undiscovered resources in the North Sea. Estimates for undiscovered resources indicate around 1.2 billion scm oe.

The Norwegian Sea

A total of 2.0 billion scm oe has been discovered in the Norwegian Sea, 0.4 billion scm oe of which has been produced. The remaining reserves amount to around 1.0 billion scm oe, 63 percent of which is gas. The production in 2004 was 55 mill. scm oe. This led to a reduction in remaining reserves of 33 mill. scm oe compared with last years resource account, despite increased reserves in some of the fields in production and addition of new reserves from Urd after PDO approval of the field. There are no major adjustments in the estimates for contingent resources and for undiscovered resources in the Norwegian Sea.

The Barents Sea

Oil equivalents of 0.2 billion scm oe have been discovered in the Barents Sea. Production will start in 2006, when the Snøhvit field comes on stream. There was little change in the estimates of contingent resources in fields and discoveries here last year.

Table 9.1 Resource accounts at 31.12.2004

Total recoverable potential	Status at 31.12.2004					Change from 2003				
	Oil	Gas	NGL	Cond	Total	Oil	Gas	NGL	Cond.	Total
Project status category	mill. scm	bn. scm	mill. tonnes	mill. scm	mill. scm oe	mill. scm	bn scm	mill. tonnes	mill. scm	mill. scm oe
Produced	2870	948	81	72	4044	162	78	13	1	265
Remaining reserves ¹	1225	2386	123	86	3930	-10	-75	-2	-56	-144
Contingent resources in field	278	190	31	13	539	10	23	1	3	38
Contingent resources in discovery	179	483	21	44	746	-50	23	-1	12	-17
Potential from improved recovery*	125	100			225	-175	0	0	0	-175
Undiscovered	1160	1900		340	3400	0	0	0	0	0
Total	5837	6007	255	556	12885	-63	48	12	-41	-33
North Sea										
Produced	2546	902	73	60	3647	132	64	9	-3	211
Remaining reserves ¹	1014	1579	65	6	2723	-27	-65	0	-18	-110
Contingent resources in field	220	137	24	7	409	5	11	1	0	18
Contingent resources in discovery	103	168	8	26	312	-17	14	3	6	9
Undiscovered	615	500		75	1190	0	0	0	0	0
Total	4498	3286	170	173	8281	92	24	13	-14	128
Norwegian Sea										
Produced	324	46	8	12	398	31	14	4	3	55
Remaining reserves ¹	210	646	52	62	1019	16	-9	-2	-38	-33
Contingent resources in field	51	49	7	6	119	8	12	0	2	23
Contingent resources in discovery	66	308	13	18	417	-32	9	-4	5	-25
Undiscovered	235	810		175	1220	0	0	0	0	0
Total	886	1860	80	274	3172	24	26	-2	-27	19
Barents Sea										
Produced	0	0	0	0	0	0	0	0	0	0
Remaining reserves ¹	0	160	5	18	188	0	-1	0	0	-1
Contingent resources in field	7	4	0	1	12	-3	0	0	0	-3
Contingent resources in discovery	10	7	0	0	17	-1	0	0	0	-1
Undiscovered	310	590		90	990	0	0	0	0	0
Total	327	761	5	109	1207	-4	-1	0	0	-5

¹ Includes resource categories 1, 2 and 3

* Resources from future measures for improved recovery are calculated only for the total recoverable potential and have not been broken down by area.