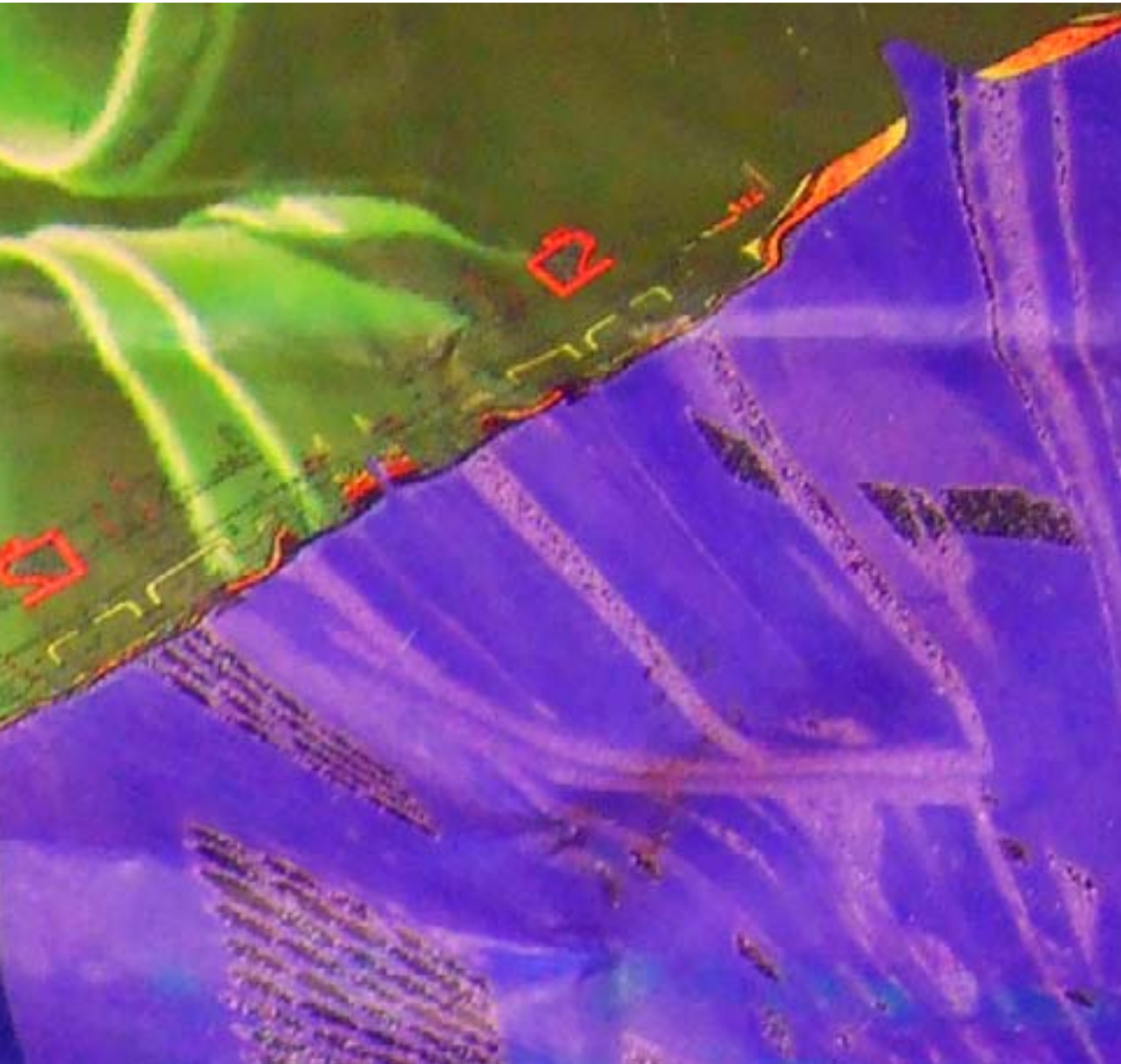


10 Petroleum resources



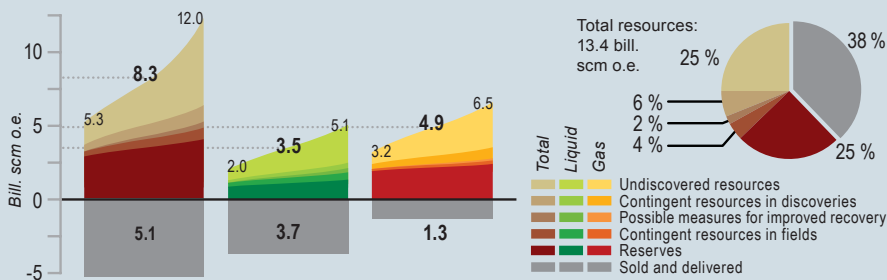


Figure 10.1 Petroleum resources and uncertainty in the estimates per 31.12.2008
(Source: Norwegian Petroleum Directorate)

The Norwegian Petroleum Directorate (NPD) estimates that the total discovered and undiscovered petroleum resources on the Norwegian continental shelf amount to approximately 13 billion standard cubic meters of oil equivalents (scm o.e.). Of this, a total of 5.1 billion scm o.e., corresponding to 38 per cent of the total resources, have been produced. The total remaining recoverable resources amount to 8.4 billion scm o.e. Of this volume, 5.0 billion scm o.e. are proven resources, while the estimate for undiscovered resources is 3.4 billion scm o.e.

The resource growth from exploration activity in 2008 was good. 25 new discoveries were made from a total of 56 exploration wells. The total growth of recoverable resources from exploration activity is 50 million scm oil and 72 billion scm gas. Several of the discoveries are still being evaluated and the estimates are thus very uncertain.

Since production started on the Norwegian continental shelf in 1971, petroleum has been produced from a total of 73 fields. In 2008, three new fields, Alvheim, Vilje and Volve, came on stream. At the end of 2008, 51 of the producing fields are located in the North Sea, nine in the Norwegian Sea and one in the Barents Sea. PDOs for two new fields, Morvin and Yttergryta, were approved in 2008, and a PDO for 3/7-4 Trym is under consideration at the Ministry of Petroleum and Energy. In addition, amended PDOs for Ekofisk, Urd and Norne were approved by the authorities, and PDO exemptions were granted for Varg and 30/9-14 G Sentral.

Figure 10.1 shows the total recoverable resource potential on the Norwegian continental shelf. The volumes are divided according to the NPD's resource classification, and show total resources, liquid and gas.

Resources

"Resources" is a collective term that covers technically recoverable quantities of petroleum. The resources are classified according to maturity, see figure 10.2. The classification shows the magnitude of petroleum volumes decided by the licensees for development or approved by the authorities for development (reserves), volumes dependent on clarification and decisions (contingent resources) and volumes expected to be discovered in the future (undiscovered resources). The main resource classes are thus reserves, contingent resources and undiscovered resources.

The detailed resource accounts as of 31 December 2008 are shown in Table 10.1 and in tables in Appendix 2.

Reserves

Reserves include remaining recoverable petroleum resources in deposits for which the authorities have approved the PDO or granted a PDO exemption. Reserves also include petroleum resources in deposits that the licensees have decided to develop, but for which the authorities have not as yet completed processing of either a PDO approval or a PDO exemption.

Gross gas and liquid reserves increased by 39 million scm o.e. in 2008. The reason is an increase in gross reserves on several fields, among others, Tyrihans, Ula and Alvheim. In addition, approved plans for development and operation of Morvin and Yttergryta and a development decision for 3/7-4 Trym, have led to that resources now have been entered as reserves. Since 243 million scm o.e. were produced in 2008, the resource accounts show a net reduction in remaining reserves of 204 million scm o.e., corresponding to approximately six per cent.

With regard to the authorities' goal of maturing 800 million scm of oil to reserves before 2015, 29 million scm of oil matured to reserves in 2008. In the period 2005 to 2008 the total reserves growth has been 232 million scm o.e.

Contingent resources

Contingent resources include discovered quantities of petroleum for which a development decision has yet to be made. Contingent resources in fields, excluding resources from possible future measures to improve recovery (resource category 7A), were increased by 34 million scm o.e. The reason for this increase is a general maturing of resources in projects on fields in 2008, and that many new projects for improved recovery have been realised.

The estimate for contingent resources in discoveries has increased by 129 million scm o.e. to 775 million scm o.e. This reflects the good resource growth from exploration in 2008, and that six discoveries where development was considered to be not very likely (resource category 6), now are being evaluated by a new operator.

There are no changes in the resource potential for possible future measures to improve oil recovery (resource category 7A) compared to last year. Oil is estimated at 145 million scm o.e. and gas is estimated at 77 million scm o.e.

Undiscovered resources

Undiscovered resources include petroleum volumes expected to be present in defined plays, confirmed and unconfirmed, but which have not yet been proven by drilling (resource categories 8 and 9). The estimate of total undiscovered resources is 3.4 billion scm o.e., unchanged from last year.

The North Sea

Production from the North Sea in 2008 totalled 176 million scm o.e., and the growth in gross reserves was 16 million scm o.e. The remaining reserves in the North Sea were thus reduced by 160 million scm o.e. Contingent resources in fields increased by 32 million scm o.e. due, i.a. to that several projects for improved recovery were realised. Contingent resources in discoveries increased by 42 million scm o.e. due to a relatively good resource growth from exploration and increased resource estimates from, amongst others, 15/3-1 Gudrun and the discovery 16/1-8. Twelve new discoveries were made in the North Sea in 2008, eight oil discoveries, three oil/gas discoveries and one gas discovery.

The Norwegian Sea

Production from the Norwegian Sea in 2008 was 64 million scm o.e. In spite of increased reserves in some fields in production and additional new reserves from Morvin and Yttergryta, remaining reserves were reduced by 41 million scm o.e. compared to last year. Nine new discoveries were made in the Norwegian Sea in 2008, one oil discovery, seven gas discoveries and one gas/condensate discovery. In spite of this, the estimate for contingent resources in discoveries has been reduced by 21 million scm o.e. compared to the accounts for last year. The reason is, among others, that some of the resources have matured to reserves and that the discoveries 6605/8-1 and 6706/6-1 have been moved to resource category 6 where recovery is not very likely.

The Barents Sea

Production from the Barents Sea in 2008 was 3 million scm o.e. There are no changes in contingent resources in fields, but the estimate for contingent resources in discoveries has increased the past year. The increase of 108 million scm o.e. is due to four new discoveries in the Barents Sea in 2008, one oil/gas discovery and three gas discoveries. In addition, there are three discoveries located in re-awarded production licences. The new operator is re-evaluating these discoveries.

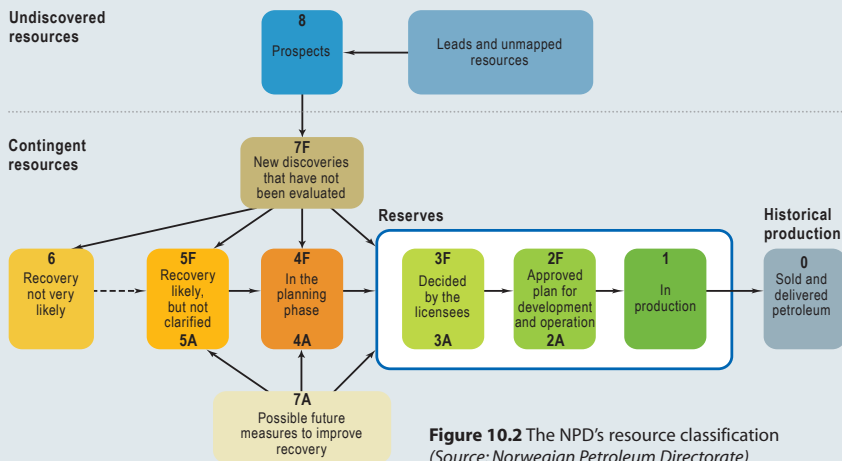


Figure 10.2 The NPD's resource classification (Source: Norwegian Petroleum Directorate)

Table 10.1 Resource accounts per 31.12.2008

Project status category	Resource accounts per 31.12.2008					Changes from 2007				
	Oil mill scm	Gas bill scm	NGL mill tonnes	Cond mill scm	Total mill scm o.e.	Oil mill scm	Gas bill scm	NGL mill tonnes	Cond mill scm	Total mill scm o.e.
Total recoverable potential										
Produced	3405	1333	116	96	5055	122	101	8	4	243
Remaining reserves*	919	2215	120	43	3407	-93	-97	-3	-8	-204
Contingent resources in fields	333	181	28	5	572	15	15	3	-2	34
Contingent resources in discoveries	210	512	14	27	775	41	107	-2	-15	129
Potential from improved recovery**	145	77			222	0	0	0	0	0
Undiscovered	1260	1875		265	3400	0	0	0	0	0
Total	6273	6193	277	437	13431	86	126	6	-20	202
North Sea										
Produced	2975	1202	95	73	4430	97	67	5	3	176
Remaining reserves*	708	1405	65	0	2237	-76	-74	-4	-3	-160
Contingent resources in fields	286	108	13	3	422	23	10	0	-2	32
Contingent resources in discoveries	130	170	4	16	325	25	31	-5	-4	42
Undiscovered	620	500		55	1175	0	0	0	0	0
Total	4720	3385	177	147	8589	69	34	-4	-6	90
Norwegian Sea										
Produced	431	128	21	23	621	25	31	3	1	64
Remaining reserves*	211	652	49	26	983	-17	-21	1	-4	-41
Contingent resources in fields	47	65	15	1	141	-8	5	3	0	2
Contingent resources in discoveries	21	226	9	9	273	1	-16	3	-11	-21
Undiscovered	220	825		150	1195	0	0	0	0	0
Total	930	1896	93	209	3212	1	-1	9	-14	4
Barents Sea										
Produced		2	0	1	3	0	2	0	1	3
Remaining reserves*	0	158	6	17	187	0	-2	0	-1	-3
Contingent resources in fields	0	8	0	1	10	0	0	0	0	0
Contingent resources in discoveries	59	116	0	2	177	15	92	0	0	108
Undiscovered	420	550		60	1030	0	0	0	0	0
Total	479	835	7	81	1408	15	92	0	0	108

* Includes resource categories 1, 2 and 3

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