



**NORWEGIAN OFFSHORE  
DIRECTORATE**

20 February 2024 | Sodir-03-24

**Resource Accounts for the Norwegian  
continental shelf as per 31 December 2023**

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## Table of Contents

<b>1 Resource Accounts for the Norwegian continental shelf 2023.....</b>	<b>1</b>
1.1 Petroleum resources on the Norwegian continental shelf .....	1
1.1.1 Resource development .....	4
1.2 Petroleum resources in Norwegian ocean areas .....	4
<b>2 Discovered resources.....</b>	<b>5</b>
2.1 Fields.....	5
2.1.1 Reserves.....	6
2.1.2 Contingent resources in fields.....	8
2.2 Discoveries.....	9
2.2.1 Contingent resources in discoveries .....	9
2.2.2 Many small and a few larger developments.....	11
2.2.3 Remaining discovered resources.....	12
<b>3 Undiscovered resources .....</b>	<b>13</b>
3.1 Undiscovered resources in opened and unopened areas.....	14
3.2 Undiscovered resources in Norwegian ocean areas.....	16
<b>4 Production .....</b>	<b>18</b>
<b>5 Appendix .....</b>	<b>20</b>

## 1 Resource Accounts for the Norwegian continental shelf 2023

### Primary trends:

- Reduction in the volume of overall petroleum resources
- Reduction in the volume of undiscovered resources, mostly in unopened areas
- Minor increase in the volume of reserves and contingent resources

### 1.1 Petroleum resources on the Norwegian continental shelf

Petroleum resources are discovered, and discoveries are developed as fields if they are economically and technologically viable, and the oil and gas is produced and sold. This results in dynamic resource accounts that change from year to year.

This report is an appendix to the [Resource Accounts as per 31 December 2023 \(Excel\)](#) for the Norwegian shelf in 2023. The report describes changes from last year's Resource Accounts with the aid of simple analyses, figures and tables.

According to the [Resource Accounts as per 31 December 2023 \(Excel\)](#), the estimates for the overall resource volumes (including what has been sold and delivered) on the Norwegian shelf are

- 8,193 million standard cubic metres (Sm<sup>3</sup>) of oil
- 6,566 billion Sm<sup>3</sup> of gas
- A total of 15,575 million Sm<sup>3</sup> of oil equivalent (o.e.)
- This is a reduction of 191 million Sm<sup>3</sup> of o.e. compared with the previous year

The total estimates for oil, liquids (sum of oil, condensate and natural gas liquids/NGL) and gas are shown in Table 1-1 along with changes from the Resource Accounts in 2022.

The petroleum resources are divided into resource categories, reserves, contingent resources and undiscovered resources. The categories are described in the report's appendices.

Discovered resources have increased by 93 million Sm<sup>3</sup> of o.e., compared with the Accounts from 2022. This is due to increases in reserves and contingent resources in fields and discoveries. Remaining discovered resources have been reduced by 148 million Sm<sup>3</sup> of o.e. The petroleum production in 2023 is 237 million Sm<sup>3</sup> of o.e. The change in the Resource Account is 242 million Sm<sup>3</sup> of o.e. The discrepancy is accounting technical and is due to the difference between the reported historical production and the database for production. Undiscovered resources have been reduced by 285 million Sm<sup>3</sup> of o.e., primarily in unopened areas.

In the table below, opened areas are defined as areas opened for petroleum activity. The volumes are listed in oil equivalent, o.e. (1,000 Sm<sup>3</sup> of gas = 1 Sm<sup>3</sup> of o.e.).

## Resource Accounts as per 31 December 2023

Table 1-1 Expected values for petroleum resources as per 31 December 2023 with changes from 2022. (Liquids are oil, condensate and NGL).

Product	Oil million scm		Sum liquids million scm		Gas billion scm		Sum oil eq. million scm	
	Total	Change	Total	Change	Total	Change	Total	Change
Produced	4 834	107	5 447	122	3 041	119	8 489	242
Reserves	950	-100	1 099	-116	1 366	-103	2 466	-218
Contingent resources in fields	321	10	391	15	291	31	647	47
Contingent resources in discoveries	243	16	356	20	233	3	494	23
<b>Total discovered resources</b>	<b>6 348</b>	<b>31</b>	<b>7 163</b>	<b>42</b>	<b>4 931</b>	<b>50</b>	<b>12 095</b>	<b>93</b>
<b>Remaining discovered resources</b>	<b>1 515</b>	<b>-75</b>	<b>1 717</b>	<b>-79</b>	<b>1 890</b>	<b>-69</b>	<b>3 607</b>	<b>-148</b>
Undiscovered resources (open areas)	1 000	65	1 000	-20	1 075	-15	2 075	-35
<b>Total open areas</b>	<b>7 348</b>	<b>96</b>	<b>8 163</b>	<b>22</b>	<b>6 006</b>	<b>35</b>	<b>14 170</b>	<b>58</b>
Undiscovered resources (unopened areas)	845	-150	845	-175	560	-75	1 405	-250
<b>Total</b>	<b>8 193</b>	<b>-53</b>	<b>9 009</b>	<b>-154</b>	<b>6 566</b>	<b>-40</b>	<b>15 575</b>	<b>-191</b>

Figure 1-1 shows how the resource categories have changed over the previous year. The change in the volume of overall resources in 2023 is 1.2 per cent of the total petroleum resources of 15,575 million Sm<sup>3</sup> of o.e. The Y axis in this plot starts at 15,000 million Sm<sup>3</sup> o.e. in order to highlight the various changes.

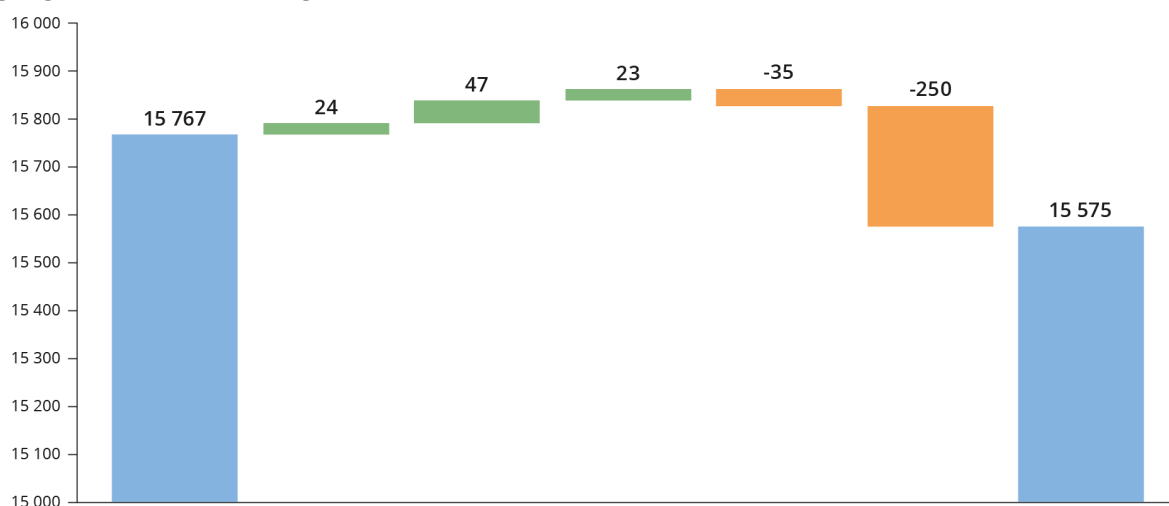


Figure 1-1 Changes in resource volume for 2023, distributed across resource categories in the Resource Accounts.

The volumes of contingent resources (no decision to develop) in fields and discoveries have increased by 47 million Sm<sup>3</sup> of o.e. and 23 million Sm<sup>3</sup> of o.e., respectively. In a field context, the primary cause of this increase is resources in projects in the planning phase. Regarding to contingent resources in discoveries, the increase is caused by results from exploration activity.

The decline in the volume of undiscovered resources was primarily caused by a reduction in the estimate for the Barents Sea North, which is an ocean area that has not yet been opened for petroleum activity. The Norwegian Offshore Directorate estimates the volume of undiscovered resources both in acreage opened for petroleum activities, as well as in unopened acreage.

## Resource Accounts as per 31 December 2023

These estimates contain the volumes of petroleum that we estimate could be extracted from deposits that have yet to be proven through drilling.

The overall petroleum resource volume has been reduced by 191 million Sm<sup>3</sup> of o.e., or 1.2 per cent, since 2022. This is the largest reduction since 2010.

The distribution of and uncertainty in the remaining resource volumes, along with the volume sold and delivered as per 31 December 2023, is shown in Figure 1-2.

The middle of the columns shows the expected volume of recoverable petroleum. Uncertainty in the overall estimates is illustrated with a low estimate on the left and a high estimate on the right in each column, and this declines along with an increasing level of maturity for the resources. For example, this means that there are more uncertainties associated with contingent resources than reserves, such as geology, flow properties and use of technology.

The pie chart on the right side of the figure shows the distribution across the resource categories for the overall resources. The total volume has declined compared with 2022, and the distribution has changed as a result of last year's production and the reduction in the volume of undiscovered resources.

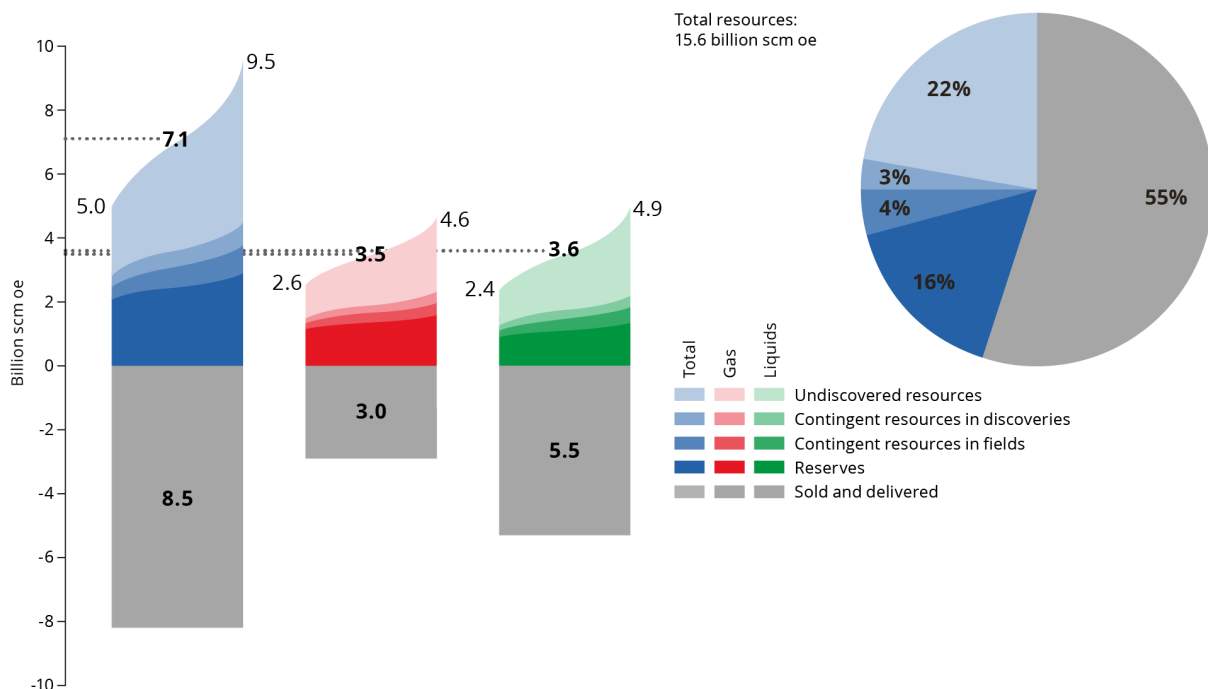


Figure 1-2 Petroleum resources and uncertainty in the estimates as per 31 Dec. 2023

### 1.1.1 Resource development

Resource estimates for petroleum will change over time. New information and knowledge change the expected value and uncertainty associated with the overall resources. As the resources are mapped, proven, matured and finally produced, their resource category will also change. Figure 1-3 below shows the changes in estimates per category for liquids and gas over the last ten years.

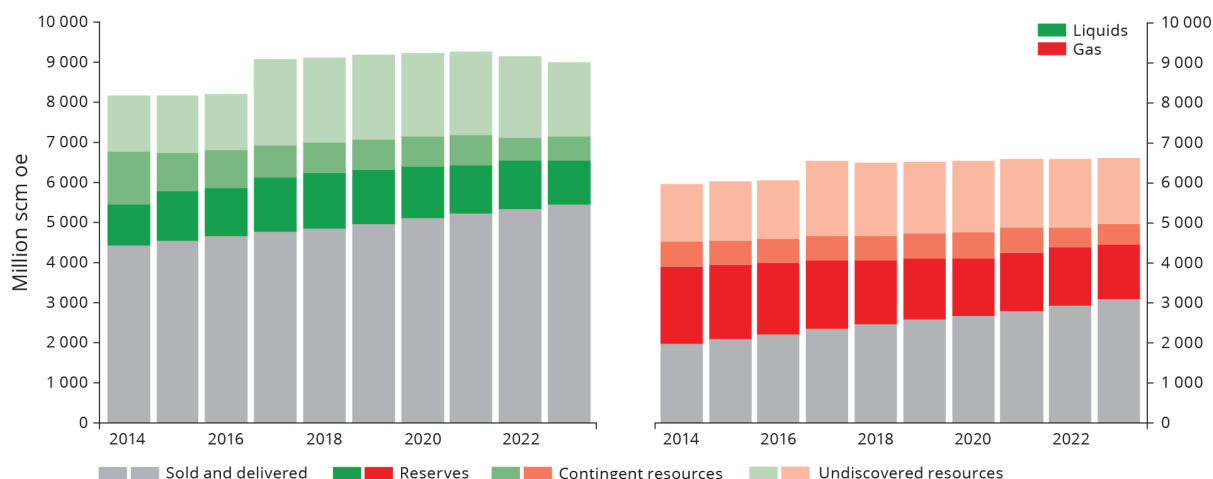


Figure 1-3 Development in expected value for volume of liquids and gas resources over the last ten years. Liquids on the left and gas on the right.

There has been a steady increase over time in discovered resources for liquids and gas, and this increase ended for liquids in 2022. Following a minor reduction last year, discovered resources have returned to a trend of continuous growth. 2023 yet again saw an increase in discovered liquids resources, while there is a reduction in the volume of undiscovered resources.

The increase in 2017 of the resource estimates for undiscovered resources was caused by the inclusion of the resources in the Barents Sea North.

### 1.2 Petroleum resources in Norwegian ocean areas

The three ocean areas - the North Sea, Norwegian Sea and Barents Sea - are different regards to geology, resource base, maturity and scope of infrastructure and knowledge. An overview of resources in the three ocean areas can be found in [the Resource Accounts as per 31 December 2023 \(link\)](#).

There has been petroleum activity in the North Sea since 1965. The Norwegian Sea and Barents Sea (areas north of the 62<sup>nd</sup> parallel) were opened for petroleum activities in 1980.

The remaining resources and distribution between discovered and undiscovered resources in opened and unopened areas, respectively, differ between the three ocean areas. The largest volume of undiscovered resources is in the Barents Sea, the last area to be opened. The expected estimates can be found in Figure 1-4, which shows the distribution for liquids and gas, respectively. The volume estimates do not reflect uncertainty, which declines with increasing

maturity. For example, the actual future production of contingent resources will be more uncertain than reserves.

In the North Sea, which has been an active petroleum province the longest, and therefore has more history, experience and available information, the majority of the liquids and gas are defined as reserves, which means that they have approved plans for production. Of the remaining resources in the North Sea, 60 per cent are classified as reserves, of which 47 per cent is liquids and 54 per cent is gas.

In the Norwegian Sea, reserves account for 34 per cent of the remaining resources, which are distributed between 32 per cent liquids and 68 per cent gas. The undiscovered resources make up the largest share of the remaining resources with 52 per cent.

Vast areas in the Barents Sea have yet to be opened for petroleum activity, and this is where we find the greatest expected value for undiscovered resources. Most of this, 82 per cent of the remaining liquids and gas resources in the Barents Sea, has yet to be discovered.

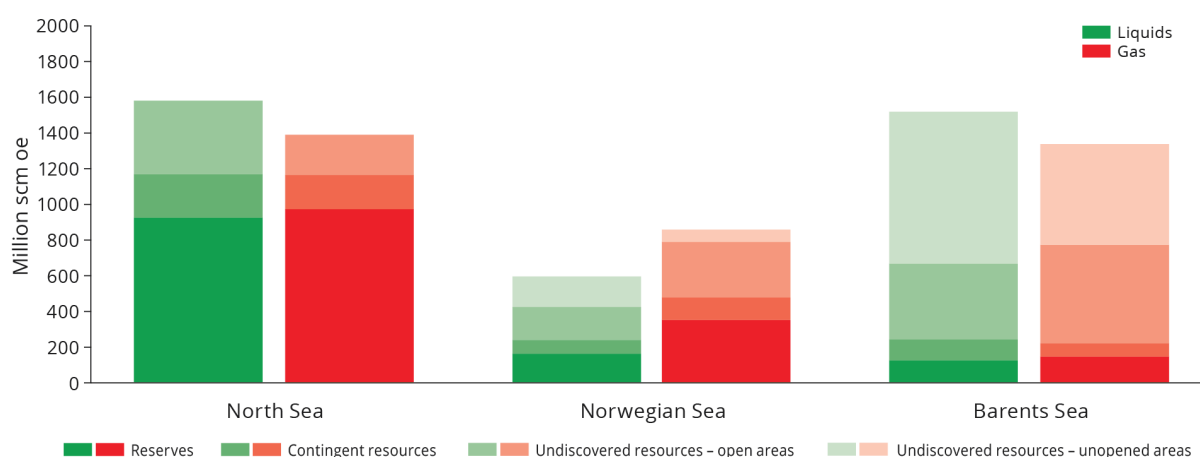


Figure 1-4 Distribution of remaining volumes of liquids and gas resources (expected values) distributed by ocean area and resource category. Liquids resources are shown in green and gas resources in red.

## 2 Discovered resources

### 2.1 Fields

[The Norwegian Offshore Directorate's resource classification system](#) defines petroleum resources as reserves once the operator has submitted a plan for development and operation (PDO) or decided to implement a measure to optimise recovery that does not require a PDO.

In 2023, the authorities approved 19 plans for development and operation (PDOs), and six PDO exemptions. This was the highest number of PDO approvals ever granted. 2023 saw the operators submit a PDO for 15/5-2 Eirin and applied for two PDO exemptions.

Discoveries are classified as fields once the authorities have approved a PDO. 92 fields were in production at year-end.

The fields that have produced the most oil and gas in 2023 are shown in the figures below:

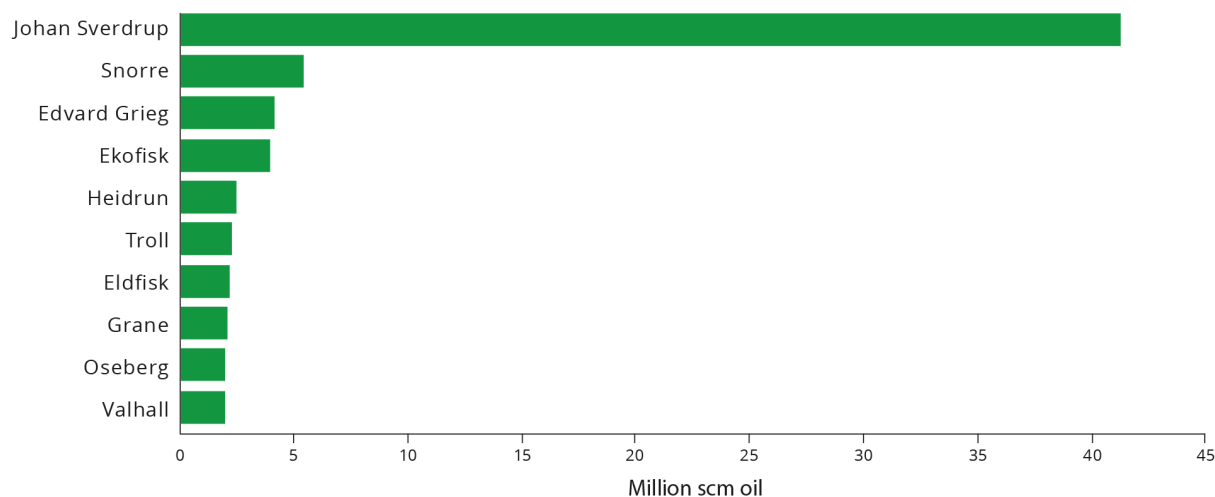


Figure 2-1 The ten largest fields in 2023 measured by oil production

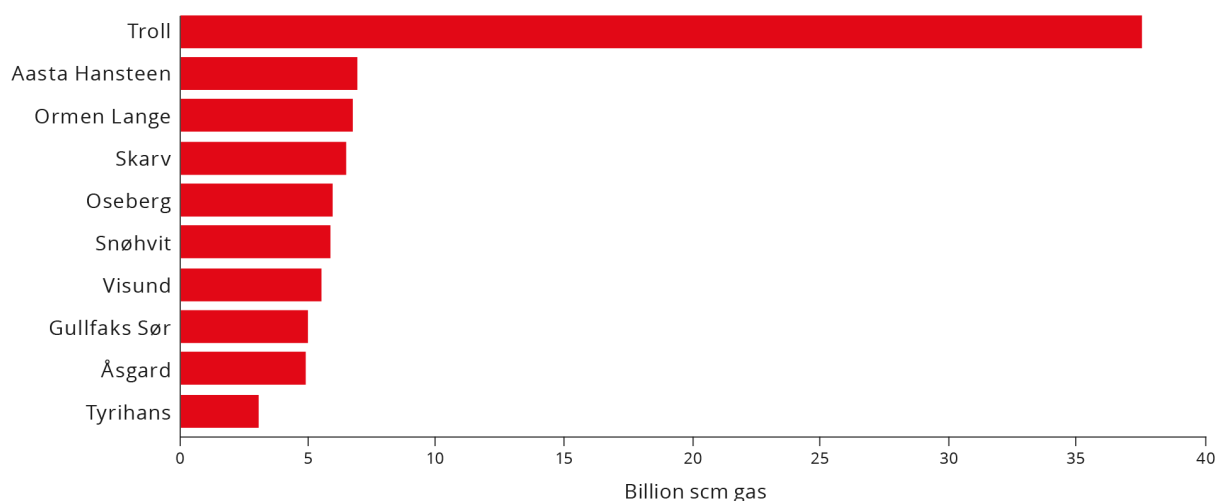


Figure 2-2 The ten largest fields in 2023 measured by gas production

### 2.1.1 Reserves

As shown in Table 1.1, remaining reserves total 950 million Sm<sup>3</sup> of oil and 1,366 billion Sm<sup>3</sup> of gas. The increase in overall remaining reserves from 2022 is 24 million Sm<sup>3</sup> of o.e. Estimates of reserves and historical production for each field can be found in the [Resource Accounts as per 31 December 2023 \(Excel\)](#).

**The Troll and Johan Sverdrup fields have the largest remaining reserves on the Norwegian shelf, with 605 billion Sm<sup>3</sup> of gas and 226 million Sm<sup>3</sup> of oil, respectively.** For information on additional fields, please see the link above.



This year's Resource Accounts reflect modest growth in gross reserves, which means reserves before deducting total production. Gross reserve growth for oil is 6 million Sm<sup>3</sup> and 17 billion Sm<sup>3</sup> for gas.

In 2014, the Norwegian Offshore Directorate established a goal for oil reserve growth of 1,200 million Sm<sup>3</sup> for the 2014-2023 period. This was done in an effort to ensure necessary attention devoted to reserve growth, and to simultaneously follow up the development in a systematic manner.

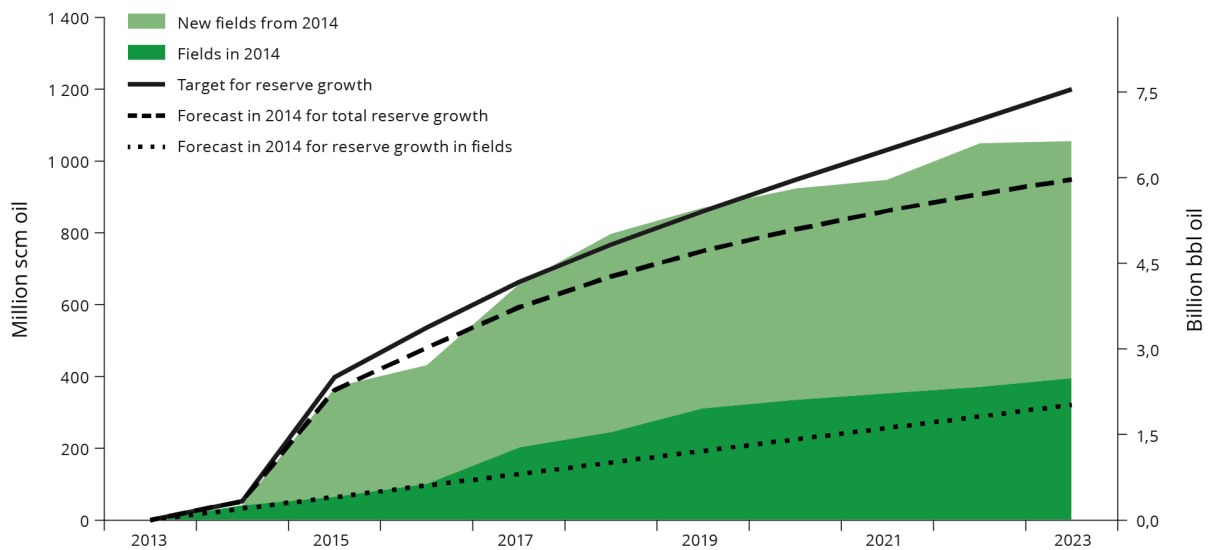


Figure 2-3 Growth in oil reserves from 2014 to 2023 compared with the Norwegian Offshore Directorate's forecast and goal from 2014. The growth is distributed between reserves from fields and from new fields approved after 2014.

Gross reserve growth for oil in 2023 came to 6 million Sm<sup>3</sup>, which is the lowest annual reserve growth during the measurement period. Fields that were approved as fields prior to 2014 saw an overall increase in reserves, while fields approved after 2014 saw a decline. Last year's changes were mainly due to updated models based on new operational assumptions, experience and production history. A low number of PDOs and PDO exemption applications were submitted in 2023. This also explains the modest increase in reserves compared with the previous Resource Accounts.

2023 is the last year of following up the goal. Figure 2-3 shows that reserves have increased throughout the period, but that the established goal was not reached. The fields approved for development or in production on the Norwegian shelf in 2014 have seen good reserve growth, and the reserve growth surpassed the 2014 forecast for the entire period as early as in 2020.

The largest contribution to growth in oil reserves came from new field developments decided during the ten-year period, such as the PDO approval for Johan Sverdrup in early 2014. The majority of this was included in the forecast. The status at year-end shows that discoveries made before the goal was established have also yielded an increase beyond the forecast from 2014.

Overall, the reserve growth, after ten years, amounts to approx. 1,050 million Sm<sup>3</sup>. This means that current reserves are more than 100 million Sm<sup>3</sup> higher than ten years ago since the oil production during same period was about 935 million Sm<sup>3</sup>. More detailed analysis and discussion of the reserve growth over the last ten years will be published in the Norwegian Offshore Directorate's resource report later this year.

The changes in gross reserves during the 2013-2023 period, including produced volumes, are shown in the figure below. The production is replaced by reserve growth in the years where the columns exceed production, shown with the dotted lines. The last ten-year period has seen an increase in liquids reserves, while there has been a reduction for gas; see Figure 2-4.

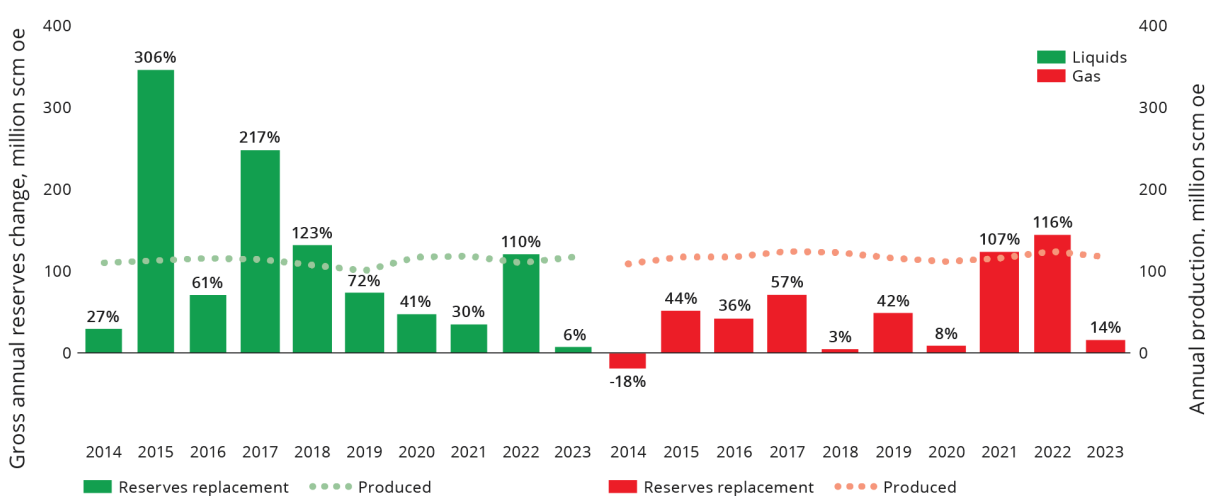


Figure 2-4 Reserve replacement and production development for liquids and gas over the last ten-year period. The percentage shows annual reserve replacement.

2023 saw a relatively low level of reserve replacement for liquids and gas; 6 and 14 per cent, respectively. Compared with 2022, which ended with more than 100 per cent reserve replacement for both liquids and gas, the primary explanation is that 21 PDOs were submitted in 2022, while only one PDO was submitted in 2023 for one discovery, 15/5-2 (Eirin).

1,125 million Sm<sup>3</sup> of liquids has been produced over the last ten years, and the Resource Accounts show that the remaining reserves are 14 million Sm<sup>3</sup> lower than in 2013. This means that the reserve replacement for liquids has been lower than 100 per cent over the last 10 years. Six per cent of produced liquids reserves were replaced in 2023.

1,172 billion Sm<sup>3</sup> of gas has been produced since 2013, and the Accounts show that the remaining reserves are 682 billion Sm<sup>3</sup> lower than in 2013. This yields a reserve replacement for gas of just under 50 per cent over the last 10 years, and 14 per cent of the produced gas reserves were replaced in 2023.

### 2.1.2 Contingent resources in fields

The expected value for contingent (no decision to develop) liquids resources in fields is 356 million Sm<sup>3</sup>; see Table 1-1. This is an increase of 16 million Sm<sup>3</sup> from 2022. For gas, the

expectation is 291 billion Sm<sup>3</sup>, and this is an increase of 31 billion Sm<sup>3</sup> from the previous year. The increase was caused by several future projects under consideration by the licensees.

The Resource Accounts for 2023 include 171 concrete, but not yet adopted, projects for improved petroleum production and extended lifetime. It is important to implement new technology in order to facilitate and firm up new projects for the fields.

Projects to improve recovery are dominated by new wells, both in the number of projects (75) and volume (about 120 million Sm<sup>3</sup> of o.e.). Other projects that could provide substantial contributions are further developments, low pressure and late-phase production. Fewer measures have been identified which utilise new injection or advanced methods.

Figure 2-5 shows a summary of these projects distributed by project type with associated resources distributed between liquids and gas.

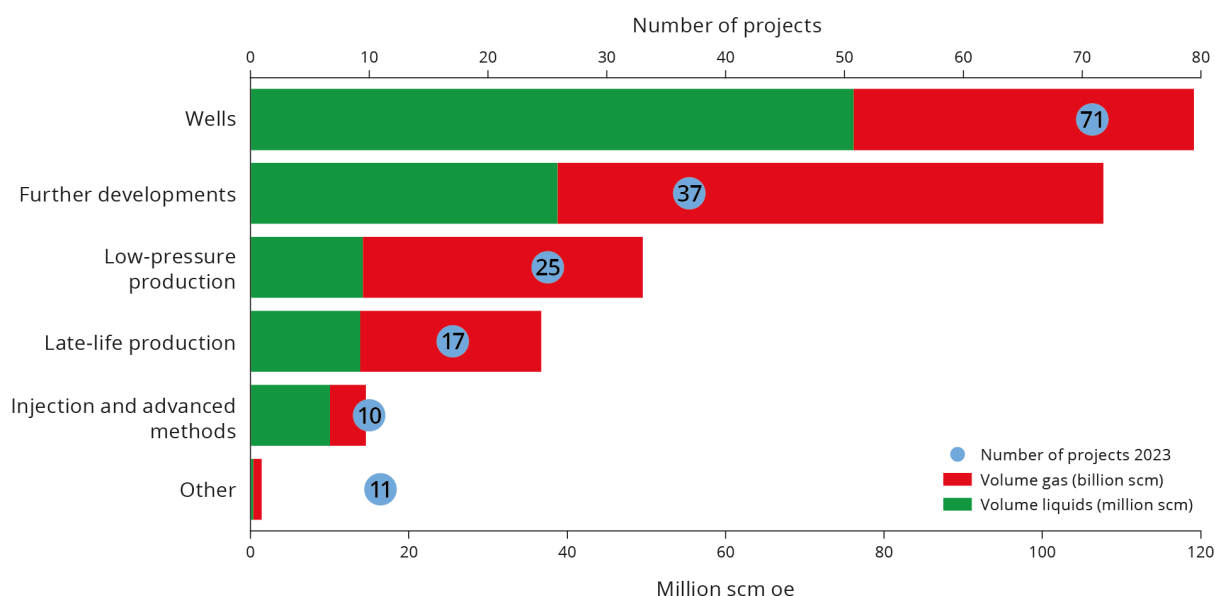


Figure 2-5 Concrete projects for improved recovery from fields; number of projects and resources

## 2.2 Discoveries

### 2.2.1 Contingent resources in discoveries

There is a total of 261 million Sm<sup>3</sup> of liquids and 233 billion Sm<sup>3</sup> of gas in discoveries without development decisions; see Table 1-1. The total volume in discoveries has increased by 23 million Sm<sup>3</sup> of o.e. compared with last year's Accounts. This increase was caused by results from exploration activity in 2023.

Fifteen discoveries were made in 2023, eight of which are included in the Resource Accounts as independent discoveries that are expected to be developed. The total resource estimate for these 8 discoveries is 48.5 million Sm<sup>3</sup> of o.e.

Seven of the discoveries were made in the North Sea and one in the Barents Sea. Of the seven discoveries not included in the current portfolio for future developments, five are considered to

be unlikely candidates for development and two are included in fields. One of these has already been approved for development.

In early 2023, the discovery portfolio consisted of 79 discoveries, and the portfolio remains at 79 discoveries at the end of 2023. Figure 2-6 shows an overview of developments in the number of discoveries in the portfolio through 2023, and Figure 2-7 shows equivalent info for the resource estimates.

A PDO has been submitted for one discovery 15/5-2 (Eirin), and resources have been matured to reserves. Six discoveries have been included in fields or other discoveries as resources with possible development in 2023, while five previous discoveries have been re-assessed as unlikely candidates for development.

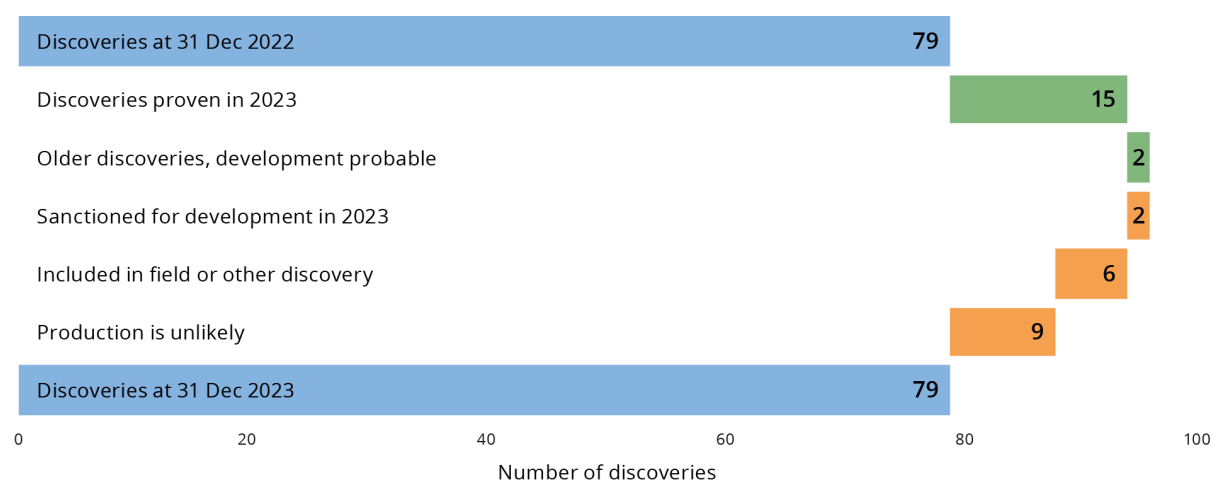


Figure 2-6 Overview of development in discovery portfolio through 2023. Categories in green show contributions to growth and categories in red show contributions to a reduction in the number of discoveries.

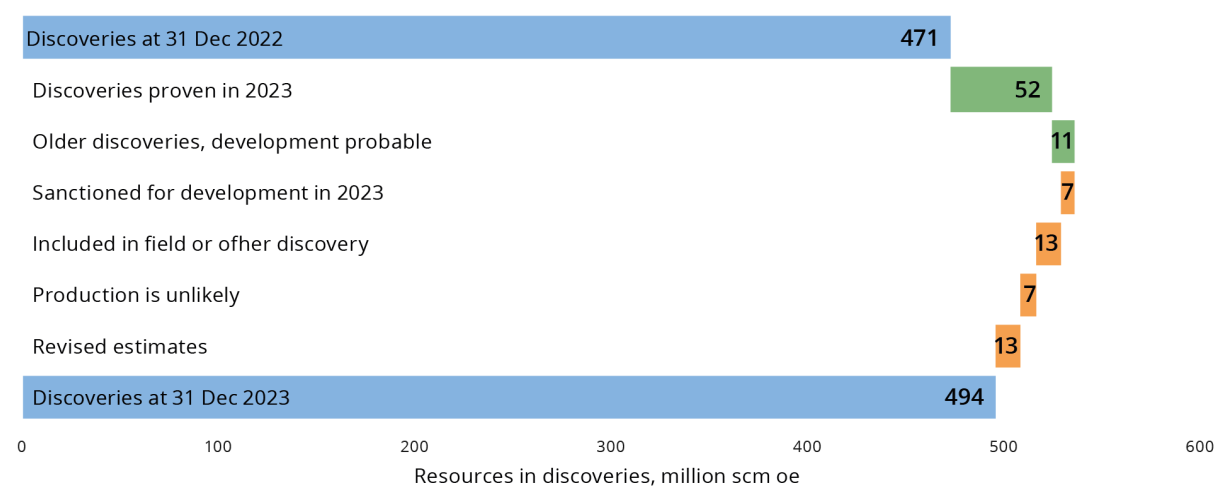


Figure 2-7 Overview of resource development in discovery portfolio through 2023. Categories in green show contribution to growth and categories in red show contributions to a reduction in resources without a development decision.

Assessments of whether discoveries will be profitable to develop will vary over time. Studies and measures could cause this status to change. In addition to changes associated with new discoveries and new categorisation, the updates also cover projections of what can be recovered from the various discoveries. Work is under way on new studies of the subsurface, changes in development solution concepts and conditions on the host installations.

**2.2.2 Many small and a few larger developments**

There are certain larger discoveries and several minor ones in all ocean areas on the Norwegian shelf.

The North Sea has seen the most discoveries, the largest of which is the gas discovery 35/2-1 (Peon). The largest in the Norwegian Sea is 6406/9-1 Linnorm, and 7324/8-1 (Wisting) is the largest discovery in the Barents Sea.

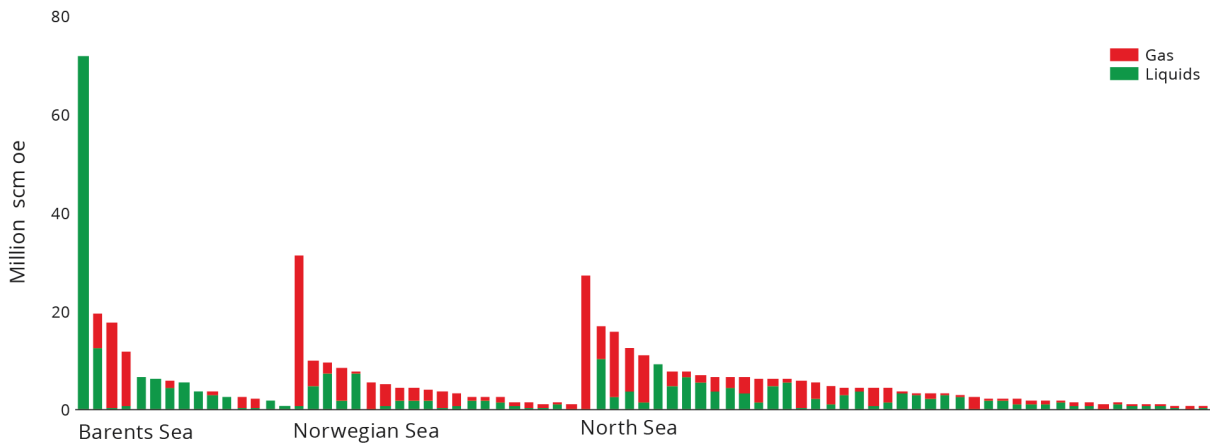


Figure 2-8 Discovery portfolio in the Resource Accounts.

Both new and old facilities are important for the further development of resources on the Norwegian shelf. A number of fields are tied into the existing infrastructure. Figure 2.9 shows that several more tie-backs/phase-ins are planned. New infrastructure is important for the development of resources in the area where it is established. This will allow for phasing in future discoveries, in addition to older discoveries that are not currently profitable for development.

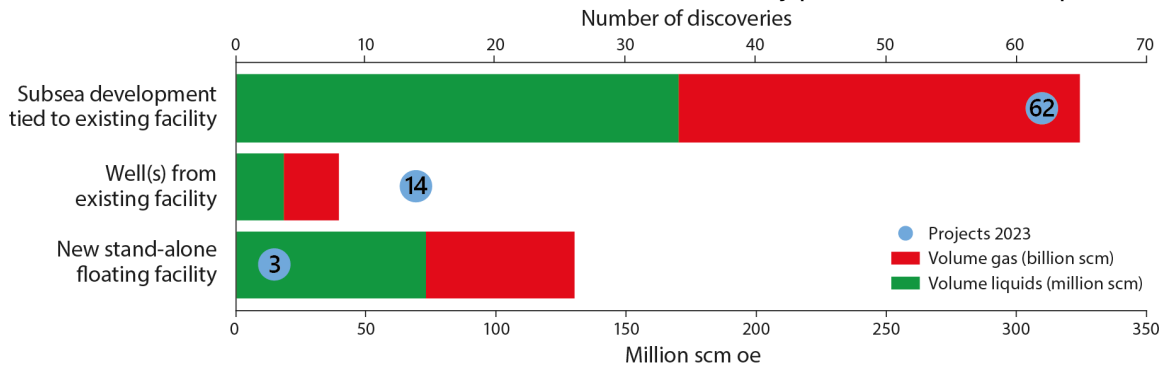


Figure 2-9 Likely development solutions for the 79 discoveries in this year's Resource Accounts, as well as overall resources per development solution

A development with phase-in to existing fields or other major development projects is planned for 76 of the 79 discoveries in the figure. Several of the current discoveries are highly likely to have joint solutions or to be incorporated into fields before a development decision is made.

The most common development concept is subsea developments, and this is the most likely solution for 62 of the discoveries. Another possible solution for smaller discoveries close enough to infrastructure is to use vacant well slots on existing fields. Such a solution has been presumed for 14 discoveries.

In order to invest in independent production facilities, the resource volumes need to be relatively high, or the project needs to be a coordinated development of multiple small discoveries. Such developments are used in areas that lack access to sufficient capacity, or which are far from existing infrastructure.

### 2.2.3 Remaining discovered resources

Figure 2-10 shows how the resource categories have changed since 2022. The X axis starts at 3,000 million Sm<sup>3</sup> of o.e. in an effort to highlight the changes. The changes in remaining discovered resources from 2022 amount to 4.9 per cent of overall remaining resources in 2023.

Remaining discovered resources have been reduced by over 150 million Sm<sup>3</sup> of o.e. from 2022 to 2023. 2023 saw a high level of production and a weak increase in reserves and contingent resources in fields and discoveries. The increase in gross reserves amounted to 24 million Sm<sup>3</sup> of o.e.

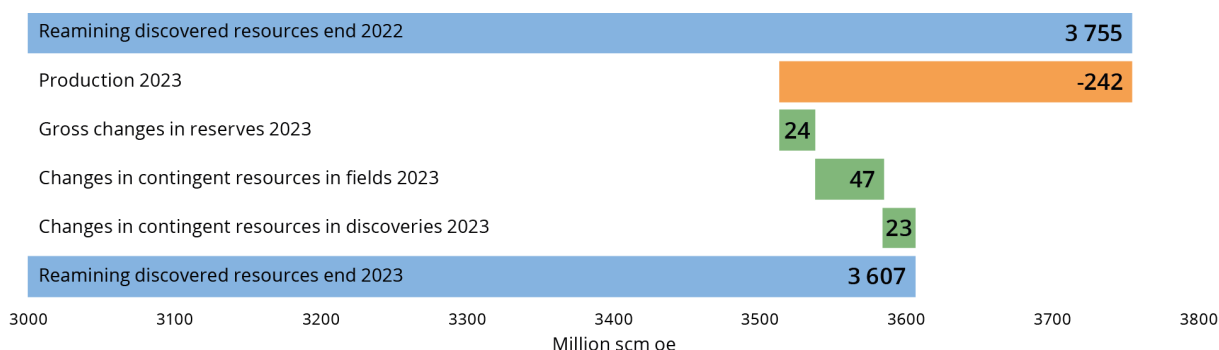


Figure 2-10 Overview of the changes in discovered resources from 2022 to 2023.

### 3 Undiscovered resources

Undiscovered resources are volumes of petroleum that we project could be recovered from deposits not yet proven through drilling. The estimates for undiscovered resources in areas opened for petroleum activities are updated on an annual basis. The update is based on assessments surrounding the previous year's exploration results, any potential new studies, as well as relevant information from the companies.

In areas that have not been opened for petroleum activities, the estimates are only updated if new data has been acquired in the area which has provided significant new information.

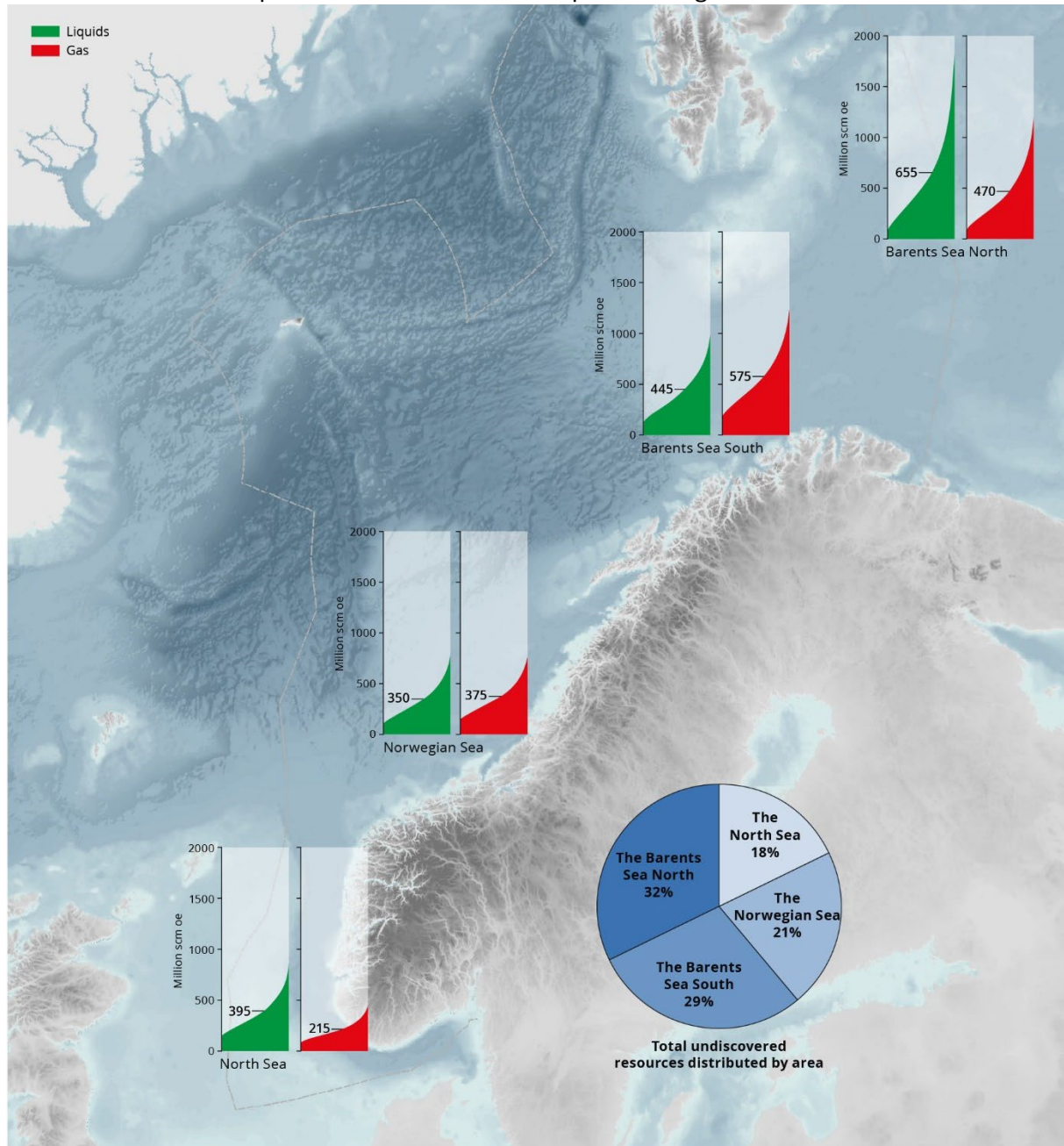


Figure 3-1 Distribution of undiscovered liquids and gas in the various ocean areas with range of uncertainty.

The pie chart in Figure 3-1 shows the percentage distribution between overall undiscovered resources in each ocean area. About 60 per cent of the undiscovered resources are in the Barents Sea. The Barents Sea North is the ocean area with the highest estimate for undiscovered liquids resources, while the Barents Sea South has the equivalent for gas resources. These are the ocean areas with the greatest uncertainty, which is reflected in the considerable range between the high and low estimates.

There are considerable undiscovered resources in the North Sea and Norwegian Sea as well. Due to existing infrastructure, there is a considerable potential for value creation in these ocean areas, even in discoveries of minor deposits. In the North Sea, we expect liquids to account for the largest share, while there is an equal distribution between undiscovered liquids and gas in the Norwegian Sea. The range of uncertainty shown in Figure 3-1 is from P95 to P05, which means that it is 95 per cent likely that the volume of undiscovered resources is higher than this value, and 5 per cent likely that the volume is greater than this value. The figures are listed in Tabell 3-1.

Table 3-1 Undiscovered resources by ocean area with range of uncertainty.

Ocean areas	Liquids million scm			Gas billion scm			Sum oil equivalents million scm		
	P95	Mean	P05	P95	Mean	P05	P95	Mean	P05
North Sea	150	395	835	90	215	440	300	610	1 100
Norwegian Sea	105	350	770	145	375	750	265	725	1 485
- Barents Sea South	135	445	990	190	575	1 230	330	1 020	2 185
- Barents Sea North	85	655	1 805	90	470	1 195	210	1 125	2 950
Barents Sea	385	1 100	2 325	430	1 045	2 015	845	2 145	4 280
<b>Total, NCS</b>	<b>945</b>	<b>1 845</b>	<b>3 200</b>	<b>905</b>	<b>1 635</b>	<b>2 650</b>	<b>1 940</b>	<b>3 480</b>	<b>5 700</b>

### 3.1 Undiscovered resources in opened and unopened areas

The Norwegian Offshore Directorate expects undiscovered resources to make up 22 per cent of the overall resources on the Norwegian shelf. 60 per cent of this is in opened areas. These are distributed across 28 per cent in the Barents Sea, 14 per cent in the Norwegian Sea and 18 per cent in the North Sea, as shown in Figure 3-2.

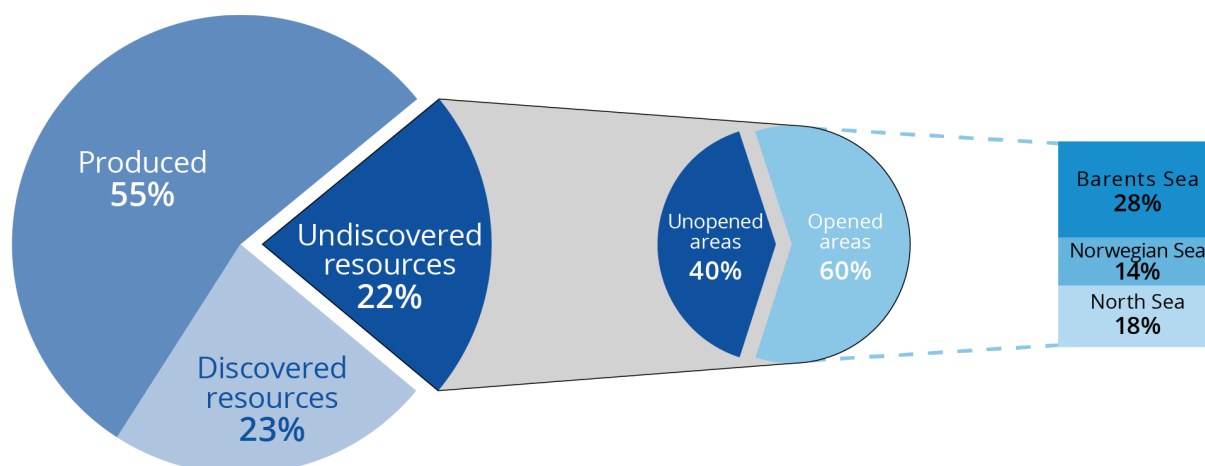


Figure 3-2 Distribution of undiscovered resources across opened and unopened areas.



## Resource Accounts as per 31 December 2023

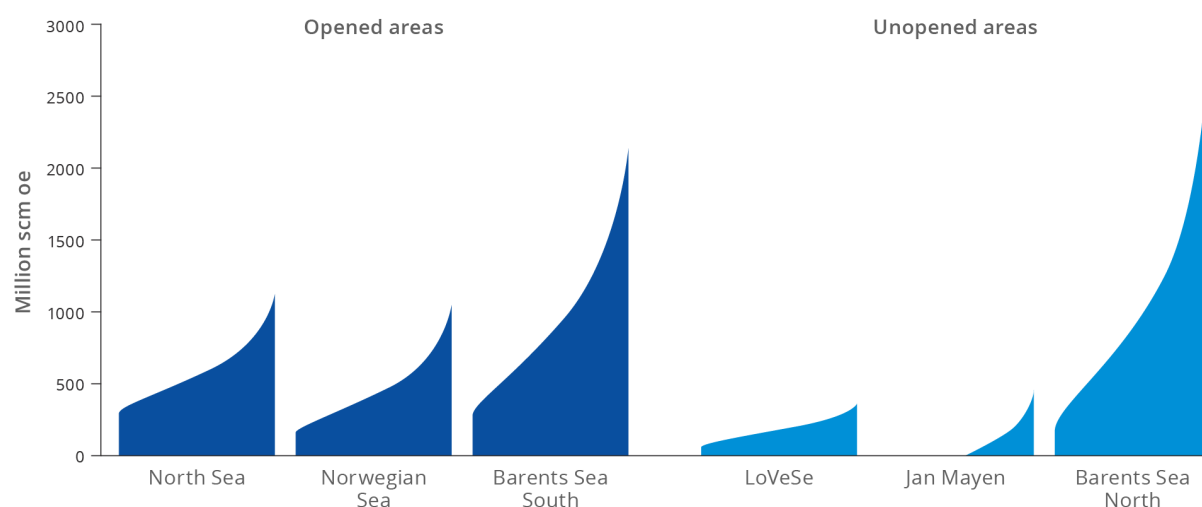


Figure 3-3 Undiscovered resources in opened and unopened areas with range of uncertainty. LoVeSe is an abbreviation for the areas of Lofoten, Vesterålen and Senja.

Despite the somewhat greater resource potential in the opened areas, the upside is greatest in the unopened part of the Barents Sea (Barents Sea North). This is also the area with the greatest uncertainty, as shown in Figure 3-3. The resources in LoVeSe are distributed between the Norwegian Sea and the Barents Sea South.

Ocean areas	All areas			Opened areas			Unopened areas		
	Liquids million scm	Gas billion scm	Sum oe million scm	Liquids million scm	Gas billion scm	Sum oe million scm	Liquids million scm	Gas billion scm	Sum oe million scm
North Sea	395	215	610	395	215	610			
Norwegian Sea	350	375	725	180	305	485	170	70	240
- Barents Sea South	445	575	575	425	555	555	20	20	20
- Barents Sea North	655	470	470				655	470	470
Barents Sea	1 100	1 045	2 145	425	555	980	675	490	1 165
<b>Total, NCS</b>	<b>1 845</b>	<b>1 635</b>	<b>3 480</b>	<b>1 000</b>	<b>1 075</b>	<b>2 075</b>	<b>845</b>	<b>560</b>	<b>1 405</b>

Table 3-2 Undiscovered resources by ocean area, in opened and unopened areas.

## 3.2 Undiscovered resources in Norwegian ocean areas

### North Sea

The estimate for undiscovered resources in the North Sea is 610 million Sm<sup>3</sup> of recoverable o.e. This is distributed between 395 million Sm<sup>3</sup> of oil and condensate (liquids) and 215 billion Sm<sup>3</sup> of gas, which represents a reduction of 25 million Sm<sup>3</sup> of recoverable o.e from the previous year. The decline reflects that there was significant exploration activity in the North Sea in 2023, with a total of 17 completed wildcat wells.

Even in a mature area such as the North Sea, there is still significant uncertainty in the estimates for undiscovered resources, as illustrated in Figure 3.1. The figure shows a probability distribution where the low end is the P95 estimate, and the high end is the P05-estimate. These figures indicate the expected value in the distribution. This is normally somewhat higher than the P50 value.

Even if one cannot rule out that larger discoveries could be made in the North Sea, we expect that the majority of discoveries will be relatively small. The average discovery size in the North Sea over the last five years is about 3.5 million Sm<sup>3</sup> of recoverable o.e.

### Norwegian Sea

The estimate for undiscovered resources in the Norwegian Sea is 725 million Sm<sup>3</sup> of recoverable o.e. This is distributed between 350 million Sm<sup>3</sup> of liquids and 375 billion Sm<sup>3</sup> of gas.

The resource estimates for the Norwegian Sea also include the resource volumes in the unopened areas off Lofoten and Vesterålen, as well as in the ocean area around Jan Mayen. These constitute about 33 per cent of the overall estimate. See Table 3-2 for the distribution between opened and unopened areas.

The average discovery size in the Norwegian Sea has increased over the last five years and is now 4.5 million Sm<sup>3</sup> of recoverable o.e.

### Barents Sea

The estimate for undiscovered resources in the Barents Sea is 2,145 million Sm<sup>3</sup> of recoverable o.e. This is distributed between 1,100 million Sm<sup>3</sup> of liquids and 1,045 billion Sm<sup>3</sup> of gas, which represents a reduction of 250 million Sm<sup>3</sup> of recoverable o.e. and is entirely linked to the Barents Sea North.

### Barents Sea South

The estimate for undiscovered resources in the Barents Sea South is 1,020 million Sm<sup>3</sup> of recoverable o.e. This is distributed between 445 million Sm<sup>3</sup> of liquids and 575 billion Sm<sup>3</sup> of gas. The changes in resource estimates here are so minor that they have had no impact on the rounded resource figures stated above.

The Barents Sea South has seen a relatively low level of exploration activity over the last five years. Only 18 wildcat wells have been completed, which is a reduction of nearly 50 per cent compared with the previous five-year period. A total of eight discoveries were made in these 18 wells, and the last six wells have all yielded discoveries. The average discovery size is about 4.3 million Sm<sup>3</sup> of recoverable o.e.

### **Barents Sea North**

In the Barents Sea, about 54 per cent of the resources are located in areas that have not been opened for petroleum activities, primarily in the Barents Sea North. This is the area with the highest likelihood of making new, major discoveries on the Norwegian shelf, but it is also the area with the greatest uncertainty. The Norwegian Offshore Directorate has conducted a geological evaluation of parts of the Barents Sea North based on new data acquired since the previous mapping in 2016. This has led to an update of the resource estimate for the area.

The estimate for undiscovered resources in the Barents Sea North is 1,125 million Sm<sup>3</sup> of recoverable o.e. This is distributed between 655 million Sm<sup>3</sup> of liquids and 470 billion Sm<sup>3</sup> of gas.

The overall resources have been reduced by 18 per cent from the previous estimate, which was 1,375 million Sm<sup>3</sup> of recoverable o.e. In percentage terms, this reduction is greater for liquids (21 per cent) than for gas (14 per cent).

## 4 Production

A total of 8,489 million Sm<sup>3</sup> of o.e. has been sold from the Norwegian shelf. The annual sales volumes for oil and gas are shown in Figure 4-1. Measured in oil equivalent (o.e.), more gas than oil has been sold over the last ten years.).

During the 1985–2005 period, oil production was significantly higher than gas production.

At year-end, 92 fields were classified as "producing" on the Norwegian shelf.

I 2023 startet produksjonen på fire nye felt,

- Fenja og Bauge i Norskehavet
- Tommeliten A and Breidablikk in the North Sea.

This was in addition to production starting from development projects Frosk (as part of Bøyla), Kobra East and Gekko (as part of Alvheim) and Blåbjørn (as part of Åsgard).

Five fields shut down in 2023; Flyndre and Heimdal with associated fields Atla, Skirne and Vale.

Oil production is presumed to reach a new peak of just under two million barrels per day in 2025, which is 60 per cent of the peak level from 2001.

Gas sales have been relatively high over the last ten years and are expected to remain at the same level moving forward, about 120 billion Sm<sup>3</sup>.

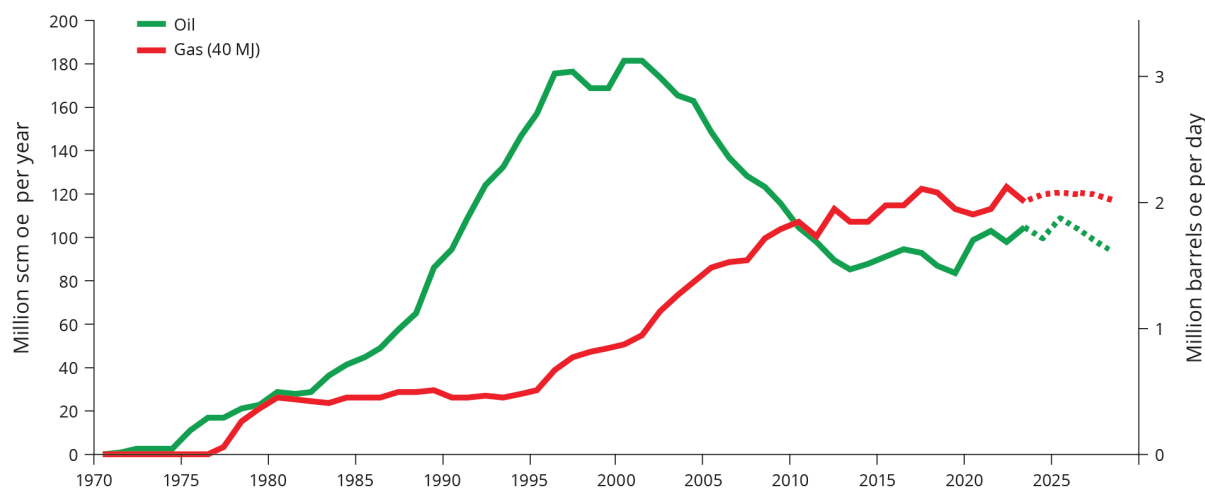


Figure 4-1 Historical sales of oil and gas with forecast (dotted lines) leading up to 2026.

Without new fields or major investments in existing fields, production from the Norwegian shelf will decline. As a result of high development activity in recent years, we expect production to increase over the short term. New fields will offset lower production from ageing fields.

The production level is uncertain over the longer term. This will depend, among other things, on which measures are implemented on the fields, which discoveries are approved for development, and when they come on stream. New discoveries, their size and how and when

they are developed, will also affect the production level moving forward. Historical total production and a forecast leading up to 2033, distributed by maturity of resources, is shown in Figure 4-2.

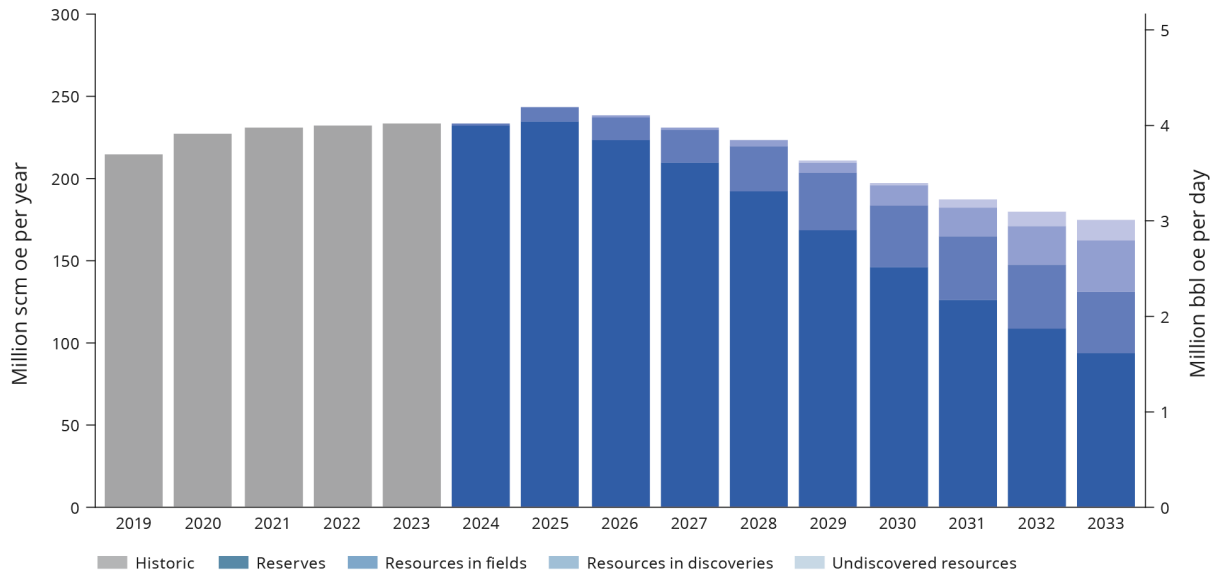


Figure 4-2 Historical total production and forecast distributed by maturity of resources.

## 5 Appendix

Conversion factors and designations:

<https://www.sodir.no/en/about-us/use-of-content/conversion-table/>

The Norwegian Offshore Directorate's resource classification and definitions:

<https://www.sodir.no/globalassets/1-sodir/regelverk/forskrifter/en/classification-of-petroleum-resources.pdf>

Resource categories:

- ✓ Resources is a general term for all oil and gas that can be recovered.
- ✓ Resources are classified according to maturity, which measures how far along they are in the planning phase leading to production.
- ✓ The primary classifications are reserves, contingent resources and undiscovered resources.
- ✓ Contingent resources are resources in projects awaiting a development decision.
- ✓ Reserves and contingent resources are total discovered recoverable resources.
- ✓ Reserves are recoverable petroleum volumes not yet produced, but which have been approved for production.

Plays and method for calculating undiscovered petroleum resources:

<https://www.sodir.no/en/facts/geology/plays/>