NORWEGIAN OIL AND GAS INVESTMENT ANALYSIS FOR THE NCS 2022-26

Norsk olje&gass

Investment analysis for the NCS 2022-26

The oil and gas industry's investment analysis for the Norwegian continental shelf (NCS) has been prepared by Norwegian Oil and Gas. Published annually, it provides estimates for investment activity on the NCS over the next five years, based on the companies' own investment plans at the end of the present year.

This report is intended for investors and the financial market, politicians, journalists and others who want an overview of the industry's plans for activity on the NCS.

It covers all present and planned NCS activity related to oil and gas, including electrification projects, cessation, pipeline transport and other infrastructure – including onshore activities. The analysis builds on Norwegian Oil and Gas members' own estimates for their NCS projects, and includes both sanctioned and unsanctioned projects. Based on company reporting, the analysis provides a picture of the level of investment from 2022 to 2026 on the basis of existing plans. Norwegian Oil and Gas makes no independent assessments of possible developments which are not currently included in company investment plans.

Norwegian Oil and Gas has received data this year from 13 operator companies. These operate fields which accounted for 98 per cent of NCS production in 2020. From that perspective, the data in this report represents an updated aggregation of the operator companies' own investment budgets, with estimates and adjustments made by Norwegian Oil and Gas.

In recent years, the report's investment estimates for the following year have proved close to the actual figures. That also appears to apply for the 2020 analysis from Norwegian Oil and Gas. Because of continuing uncertainty in the market related to the pandemic and its aftereffects, we take the view that uncertainty in the investment estimates presented in this year's report is rather greater.

All projects are presented in aggregated form to take account of stock market sensitivities, competitive considerations and confidentiality requirements, and the report makes no assessments of individual projects.

The level of activity on the NCS is high, and characterised by the shift towards the region becoming a diversified energy supplier. While petroleum continues to dominate, other energy industries are emerging. This analysis concerns itself solely with investment related to oil and gas operations.

Summary and conclusions

Total investment in 2022 is estimated at **NOK 174 billion**, down by six per cent from 2021 measured in fixed prices. This is a smaller decline than we estimated last year. That reflects an expectation of increased exploration activity, as well as updated cost estimates for certain development projects as notified in the central government budget for 2022.

Total investment is set to rise from 2023 because a number of project are expected to be sanctioned by the end of 2022. This has also been communicated in several other analyses presented in 2021, including those from Statistics Norway, Rystad Energy and Norges Bank.

Compared with last year's report, the analysis shows rather higher investment for each year in the period. The companies matured a substantial number of potential projects during 2021. This means that new projects have entered the portfolio and that concepts have changed for some projects included in last year's portfolio in order to optimise resource utilisation in the discovery while simultaneously safeguarding project profitability. Similarly, some projects have been removed from this year's analysis because of a new overall assessment. This confirms the continuous profitability assessments being made among the companies.

The industry itself has unveiled ambitious goals for reducing greenhouse gas (GHG) emissions from its operations by 40 per cent in 2030 and to near zero in 2050. At the same time, active efforts are being made to meet the target of a 50 per cent emission reduction set by the Storting (parliament) in connection with the temporary changes to the petroleum tax regime approved in the summer of 2020. As in 2020, we see a growing number of electrification projects in the portfolio. This indicates that the climate goals are well integrated in plans for further development of the NCS.

In earlier years, our investment analyses have emphasised that a number of project at an early planning stage could be realised although they were not included in the estimate at that point. That could raise investment spending further along the five-year period. A look back at previous analyses shows that this expectation has been correct. Clear signs of the same trend can be seen in this year's analysis. An upside potential, particularly for 2026, exists for the level of investment.

Year of uncertainty in 2021

The Covid-19 period is something nobody could have predicted and few will forget. A full shutdown of the world economy has been replaced by solid growth in 2021.

A number of changes to working life have occurred as a result of the pandemic, including altered commuting patterns and fewer foreign workers. Costs have risen for a number of input factors, such as steel, aluminium and electronics, while deficiencies have arisen which mean that deliveries have been delayed on a worldwide basis. The autumn of 2021 has been characterised by extremely high energy prices, with natural gas prices in particularly now far above the historical average.

At the same time, the threat of new Covid-19 variants with associated consequences is also present – most recently in the form of Omicron. We therefore believe that, overall, uncertainty associated with the estimates could be somewhat greater in this year's analysis.

In recent years, the Norwegian supplier industry and the operator companies have shown the ability to maintain operations on the NCS. Despite a number of challenges, they have delivered good quality largely on time and to budget. Although we believe that rather greater uncertainty attaches to the figures this year, the trend is clear – the NCS delivers strong results with low risk.

Base data and method

This analysis is based on information about investment plans shared by operator companies on the NCS with Norwegian Oil and Gas. The data in this report are an updated aggregation of the operator companies' own investment budgets, with estimates and adjustments made by Norwegian Oil and Gas.

We have received data from 13 operator companies this year. They operate fields which accounted for 98 per cent of NCS production in 2020. Companies with operatorships covering either fields or discoveries have reported estimates for their whole investment to Norwegian Oil and Gas.

The reported figures are aggregated in accordance with the following categories.

- **Investment in fields and discoveries:** goods, services and production drilling for fields on stream and under development.
- **Cessation and removal:** costs associated with cessation and removal of existing infrastructure.
- **Pipeline transport and onshore activities:** investment in onshore plants and in pipeline infrastructure able to accept third-party volumes. Field-specific pipeline investments, such as umbilicals, risers and flowlines, are included under investment in fields and discoveries.
- **Exploration and concept studies:** costs related to exploration and concept studies for new discoveries.

The analysis includes both sanctioned and unsanctioned investments. By contrast, the latest estimate for 2022 provided by Statistics Norway for November covers only sanctioned spending. Our analysis accordingly gives somewhat higher figures than Statistics Norway, while uncertainty is also higher because the estimate is conditional on a certain pace of project progress at the companies.

Uncertainty increases over the period because the unsanctioned part of the portfolio represents an ever-larger part of total investment. This is spending related to projects which could still change in scope or be rescheduled to a later time.

Based on empirical considerations and knowledge of the industry, Norwegian Oil and Gas believes it is likely that an upside potential exists for the level of investment in the analysis, particularly for 2026. A series of discoveries made in recent years are still not incorporated in our estimate, but are included in estimates from such sources as the Norwegian Petroleum Directorate (NPD).

Status and outlook on the NCS

TOTAL INVESTMENT

In recent years, investment estimates for the following year produced by the analysis have proved close to the actual figures. The estimate for total 2021 investment in the 2020 analysis was NOK 3.9 billion lower than in Statistic Norway's latest investment survey for November 2021. This is because exploration activity has been rather higher than expected, reflecting generally high oil and gas prices in 2021.

Total investment in 2022 is estimated at **NOK 174 billion**. Measured in fixed prices, this is down by six per cent from 2021 when compared with the latest Statistics Norway survey. However, the decline is smaller than was estimated in last year's Norwegian Oil and Gas analysis. That reflects expectations of increased exploration activity as well as the provision of updated cost estimates for certain development projects.

After 2022, total investment is expected to increase gradually up to 2025 along a rather higher trajectory than was estimated at the same time last year. This partly reflects increased investment in fields and discoveries. Substantial uncertainties exist for exploration spending down the road, and the

FIGURE 01 TOTAL INVESTMENT DEC 2020 VERSUS DEC 2021
(NOK MILL IN 2022 VALUE)

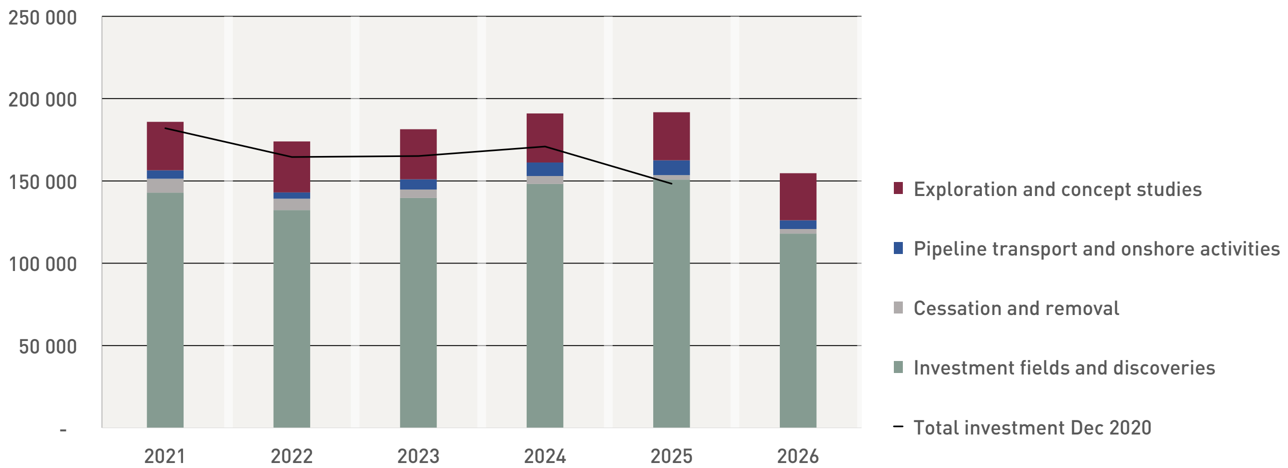


FIGURE 02 NORWEGIAN OIL AND GAS FORECASTS, DECEMBER 2021
(NOK MILL IN 2022 VALUE)

	2021	2022	2023	2024	2025	2026
Investment in fields and discoveries	142 888	132 300	139 700	148 200	150 800	118 000
Cessation and removal	8 448	6 900	5 100	4 800	2 700	2 800
Pipeline transport and onshore activities	5 115	3 800	6 200	8 200	9 000	5 300
Exploration and concept studies	29 469	31 000	30 400	29 800	29 200	28 600
Total	**185 919***	**174 000**	**181 400**	**191 000**	**191 700**	**154 700**
Estimated real growth		-6 %	4 %	5 %	0 %	-19 %
Total investment, Dec 2020	182 000	164 500	165 100	170 900	148 300	

* Statistics Norway survey, November 2021 (2022 value).

2022 estimate has been projected in real terms for subsequent years. That also explains some of the increase, because the same methodology was used in last year's analysis.

A more detailed review is presented in the chapters below.

INVESTMENT IN FIELDS AND DISCOVERIES

Norwegian Oil and Gas estimated last year that 2021 investment in fields and discoveries would be about NOK 140 billion. That is about NOK 86 million lower than Statistics Norway's latest investment survey for November 2021 measured in current prices.

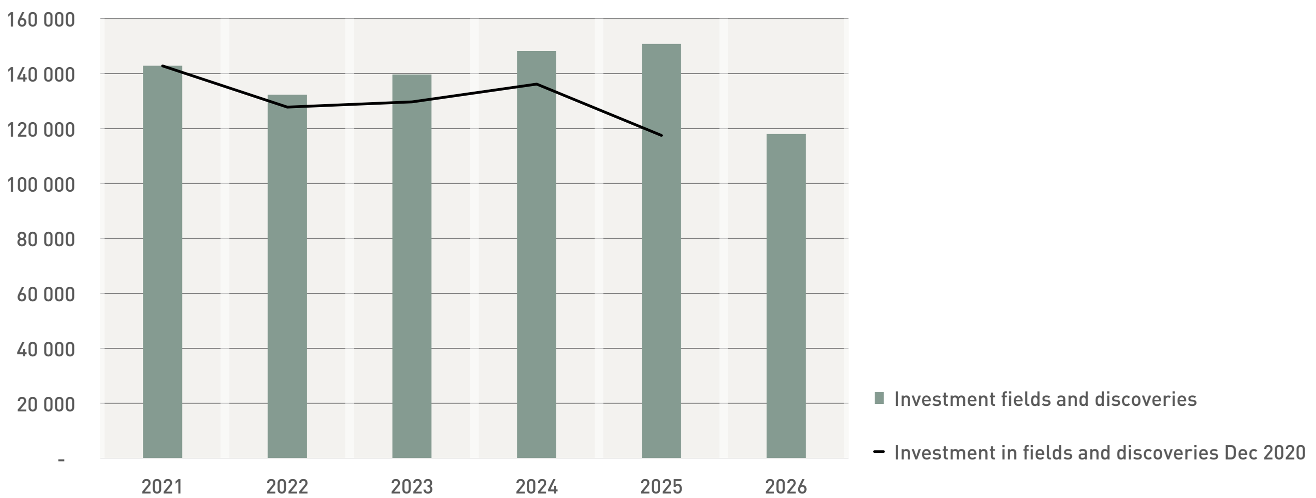
This year's analysis confirms the trend from earlier years, where investment in fields and discoveries will fall somewhat in 2022 before gradually rising over the period. The reason for the 2022 decline is that several development projects are approaching completion, with spending related to these being thereby phased down. However, the level of investment in 2022 is somewhat higher than estimated at the same time last year. Updated cost estimates for certain development projects, as notified in the government's 2022 budget, are the main reason. The coronavirus pandemic and infection control measures have caused delays to several developments, and some projects have also increased somewhat in scope.

The level of investment in 2023 and 2024 has risen somewhat from the estimate made at the same time last year. Activity related to maturing projects was high in 2021, reflecting the temporary changes to the petroleum tax regime. This has brought some new projects into the portfolio. Furthermore, a number of projects included in last year's portfolio have changed in terms of scope and/or development solution in order to optimise resource utilisation in the relevant discoveries with regard to overall project profitability.

While some new projects have entered the portfolio, others have been removed as in previous years after an updated overall assessment. This is a natural part of the maturation process in a project, and bears witness that good profitability calculations are continuously being made among the companies. Viewed in isolation, this reduces investment compared with last year, but the effects mentioned above pull in the opposite direction. The net effect is some increase in investment estimates for these years.

Investment in fields and discoveries rises somewhat in 2025 from 2024, and fairly substantially from the 2025 estimate made last December. The main reason is that new projects have entered the portfolio compared with 2020, including large electrification projects and concept adjustments related to other developments. New projects included in the portfolio were in the

FIGURE 03 INVESTMENT IN FIELDS AND DISCOVERIES DEC 2020 VERSUS DEC 2021 (NOK MILL IN 2022 VALUE)



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pipeline in 2020 but have now been matured into specific investment plans.

At present, investment towards 2026 is set to decline. This is because a number of projects initiated before 2024 will then be approaching production and thereby helping to reduce investment. On the other hand, uncertainty prevails about the phasing of this spending, since several of the projects remain to be sanctioned. However, large development projects with a long investment profile as well as projects planned to start up after 2024 help to keep investment up. According to NPD statistics, 97 discoveries on the NCS are still not sanctioned for development but could be relevant in the future. A substantial proportion of these continue to be excluded from our analysis because we do not make our own assessment of possible developments, concept choices and subsequent investment over and above self-reporting by the companies. On that basis, an upside potential exists for investment in 2026. Its effect can be seen by comparing estimates made last year and this for 2025.

CESSATION AND REMOVAL

Estimates related to cessation and removal are roughly in line with our estimates in December 2020 for 2022-24. But a small decline is seen in 2025, reflecting reduced costs related to certain cessation and removal projects. A substantial part of the cessation and removal activity is concentrated in the North Sea.

PIPELINE TRANSPORT AND ONSHORE ACTIVITIES

The estimate for pipeline transport and onshore activities has been increased from last year's figure. This is partly because of several electrification projects further along the period. In that respect, the trend is an indication that the companies have incorporated the climate obligations unveiled in January 2020 in their plans. However, several of the projects are still in their planning phase and changes can be expected in existing projects.

EXPLORATION AND CONCEPT STUDIES

Exploration is that part of the industry's investment which has the greatest short-term sensitivity to changes in market conditions, and exploration and concept studies are therefore the most difficult activities to provide accurate estimates for.

In last year's analysis, Norwegian Oil and Gas estimated spending on exploration and concept studies at NOK 25 billion. This reflected an expectation that just over 30 exploration wells would be spudded during 2021.

The figure so far this year is 36, and the Statistics Norway survey for November shows an investment of just under NOK 29 billion in exploration and concept studies. This bears witness to a somewhat higher level of exploration activity than we estimated at 1 January, probably because of persistently high oil and gas prices.

Concept studies form an increasingly substantial proportion of this investment category. This trend was identified in last year's analysis as well, but is an effect which will also be felt in 2022. That relates to the large number of projects expected to be sanctioned by the end of 2022.

Based on plans reported by the operators, we estimate that NOK 31 billion will be invested in exploration and concept studies during 2022 with an expectation that just over 40 exploration wells will be spudded. This indicates that exploration activity is expected to be rather higher next year at the same time as concept studies continue to represent a significant part of this investment.

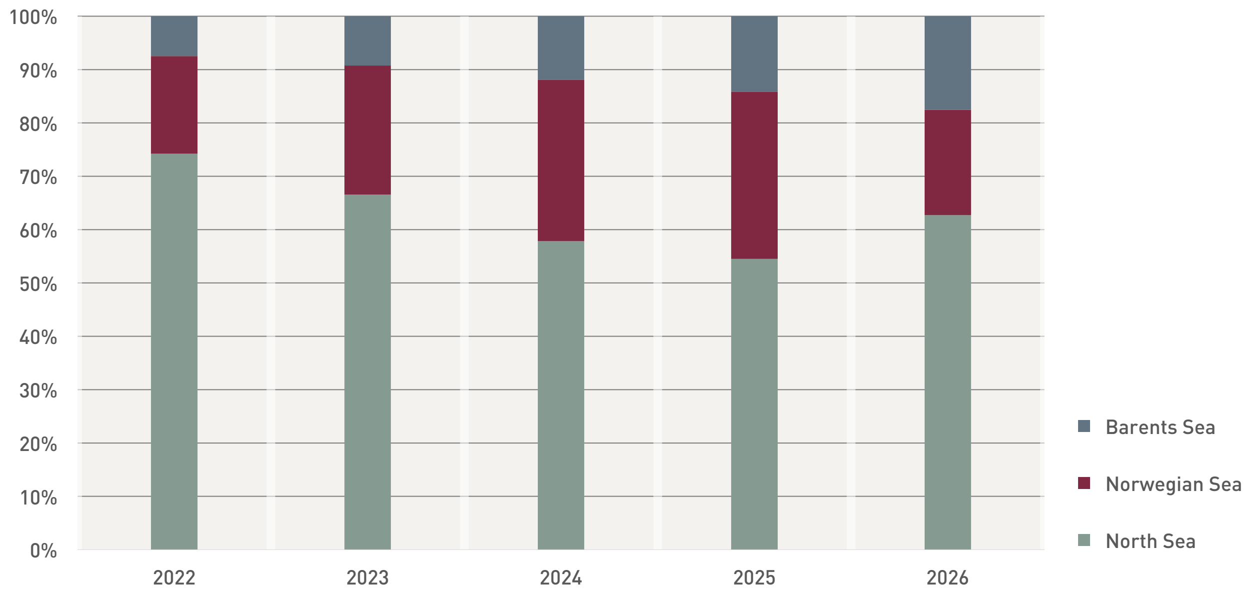
Field investment by NCS area

Substantial sums will be invested in Norway's North Sea sector in coming years. This spending covers both large stand-along developments and a number of smaller projects to tie discoveries back to existing infrastructure. The latter helps to make even small discoveries profitable, and extending production life – through new technology, for example – represents good resource management.

As in earlier years, we see a rising level of investment in other areas of the NCS over the period. Several projects are under way in the Norwegian Sea, including Fenja and Njord Future. New projects are also expected to be initiated here. A substantial number of potential developments are under maturation in both the Norwegian and Barents Seas, and several projects have been included in the analysis since last year. Some increase in investment is therefore also expected in the Norwegian Sea.

The Barents Sea is the least mature area of the NCS for petroleum activity, with less infrastructure in place and less geology explored. However, projects which could give rise to substantial investment are also expected in this area during the period. Precisely because the Barents Sea infrastructure is less developed than in other NCS areas, every new project will mean a big gain for future development.

FIGURE 04 INVESTMENT IN FIELDS AND DISCOVERIES BY NCS AREA



Uncertainty in future investment

Sanctioned projects include investment in fields on stream, such as production wells and minor modifications, and in ongoing development projects where tied-in reserves are classified in resource classes 2 or 3.

Investment in unsanctioned projects includes developing resources classified as resource classes 4 and 5 – either in completely new discoveries and fields or in existing fields. The common denominator for these is that a final investment decision has not been taken.

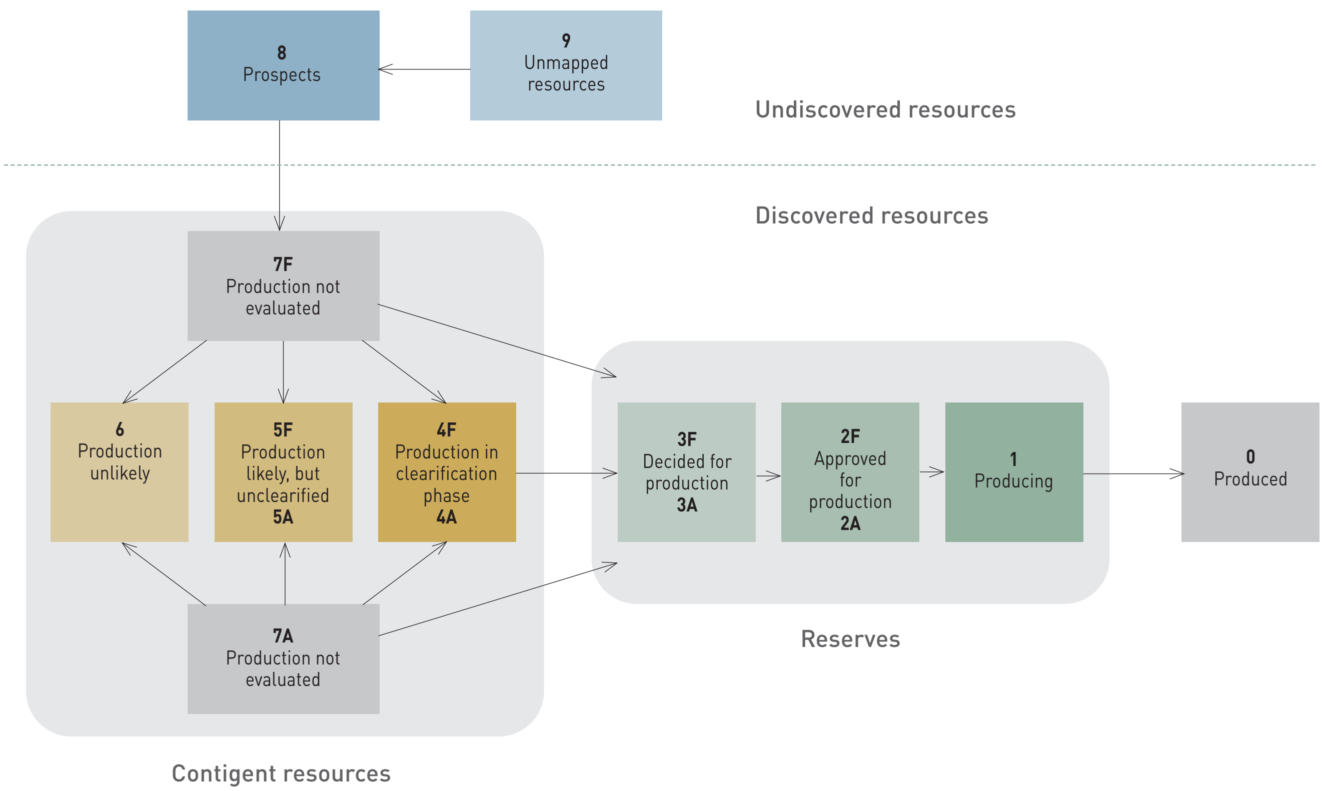
Compared with last year, investment and the share of it related to sanctioned projects will rise over the next few years. The opposite applies for investment related to unsanctioned projects.

This is because several projects have been sanctioned during the year. In addition, rescheduling and cost changes for certain developments compared with last year have helped to boost investment in this category even further.

Where investment related to unsanctioned projects is concerned, a decline is seen over the next few years since several developments have been sanctioned. However, new projects will help to maintain the share of unsanctioned projects at roughly the same level as in 2020 over the period.

In addition to spending being transferred to the sanctioned-project category as investment decisions are taken, the overall level of investment in the unsanctioned category could be affected by

FIGURE 05 OVERVIEW OF NPD´S RESOURCE CLASSIFICATION
SOURCE: NPD



rescheduling, postponements, cancellations, concept changes, new discoveries and so forth. These effects also made themselves felt during 2021. Flexibility in this category is far greater than for investment already sanctioned.

Looking ahead, final investment decisions are expected for a large number of projects. These will help to reduce uncertainty in the estimates and transfer more investment into the sanctioned-project category over the period. At the same time, a number of projects are being matured and have still not been included in this analysis. That means an upside potential exists for the overall level of investment later in the period. Nevertheless, the companies will constantly have to assess capacity both internally and in the supplier industry and, if this starts to tighten, projects may have to be rescheduled to a later time.

FIGURE 06 INVESTMENT IN FIELDS AND DISCOVERIES BY SANCTIONED STATUS (NOK MILL IN 2022 VALUE)