



Oil & Gas
Authority

UKCS Operating Costs 2019 Report

Executive Summary

In 2019, the operating cost environment on the United Kingdom Continental Shelf (UKCS) was one of stability, with operating expenditure (OPEX), production and unit operating cost (UOC) all remaining stable from 2018 to 2019. Total OPEX decreased marginally (by £3 million, 0.4%) to £7.3 billion in 2019 (2019, real prices). Production also saw a small decrease (0.6%) from 1.70 to 1.69 million barrels of oil equivalent per day. This resulted in UOC remaining at £11.9/boe from 2018 to 2019.

The OGA acknowledges that the cost landscape of the UKCS has changed within the past few months due to the COVID-19 pandemic. This report uses data as reported by operators of sanctioned activities in the 2019 UK Stewardship Survey and the OGA's February 2020 projections. Please note that forward projections of costs may have changed since the collection of this dataset.



OPEX
(£billion)



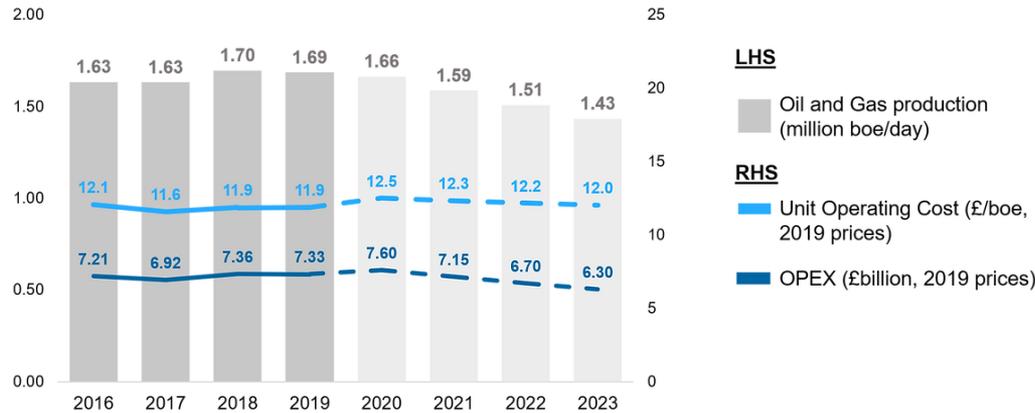
Production
(mmboe/day)



Unit Operating Cost
(£/boe)

| | | | |
|------|------|------|------|
| 2018 | 7.36 | 1.70 | 11.9 |
| 2019 | 7.33 | 1.69 | 11.9 |

Executive Summary



Historic and forecast OPEX, Production and UOC (2019, real prices)

Operating costs for offshore fields grew by 3% in 2019 while OPEX for pipelines and terminals decreased by 15% (2019, real prices).

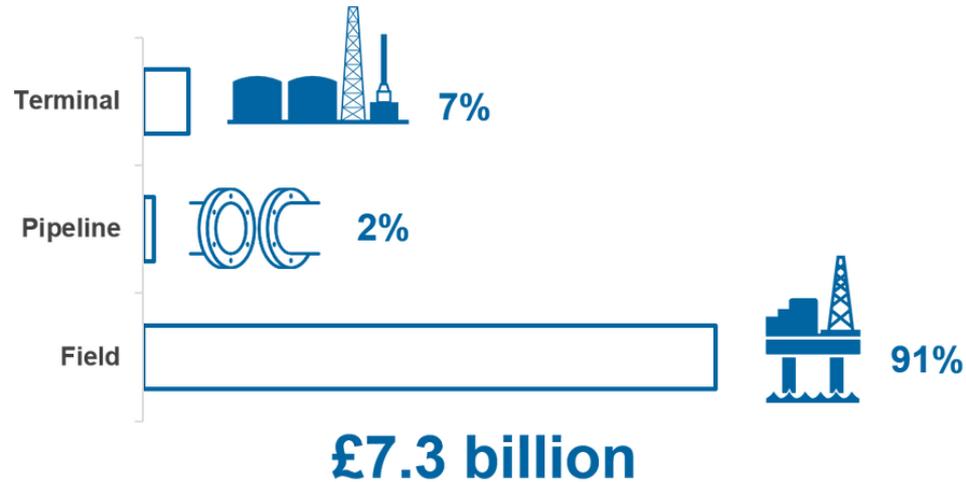
Half of operators saw a decrease in their average UOC, with this improvement in cost efficiency driven by both OPEX reductions and production gains.

At the time of data collection, UOC was predicted to remain relatively stable over the next few years peaking at £12.5/boe in 2020, a 5% increase (2019, real prices). This is influenced by both production decline and slight OPEX increase predicted in 2020. This increase is within the OGA's KPI envelope of +/-15% of the 2017 UOC (in 2017 prices).

Total UKCS Operating Costs

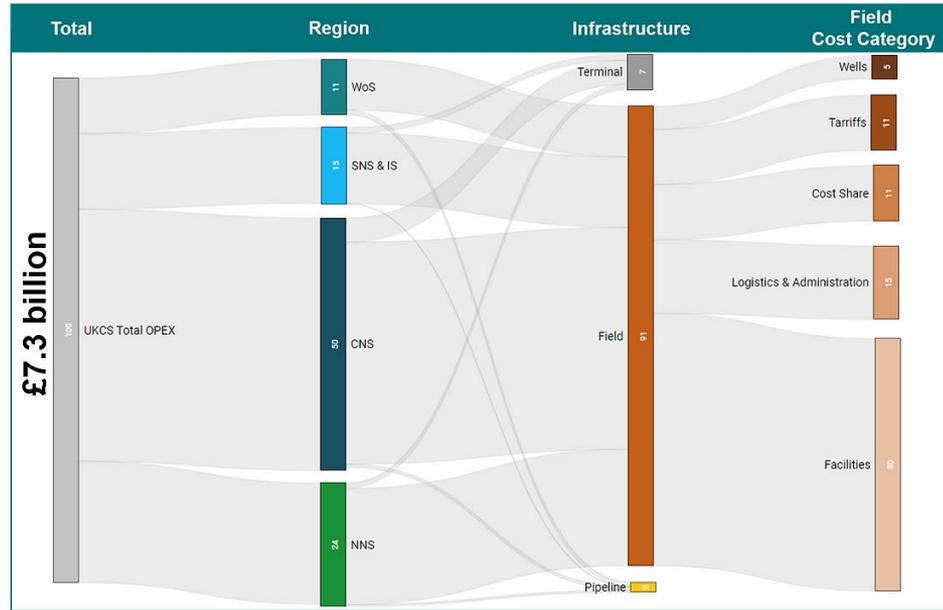


Total OPEX for the UKCS remained stable at £7.3 billion in 2019 (2019, real prices). OPEX for offshore fields made up 91% of the gross total, with the remainder comprised of terminals (7%) and pipelines (2%) OPEX.



Breakdown of 2019 UKCS OPEX by infrastructure type

Total UKCS Operating Costs



Composition of total UKCS Operating Costs, broken down by geography, infrastructure and activity cost allocation. The figures within the bars show the percentage breakdown of costs. 50% of operating costs are concentrated in the Central North Sea (CNS) fields. 91% of UKCS operating costs are associated with field activity.

The OGA's February 2020 projection forecast OPEX rise of 4% in 2020 to £7.6 million. This increase is predominantly caused by new fields coming online (post 2018 start ups). Following 2020, the projection estimates total OPEX to fall at average rate of 6% per annum. This fall is predominantly due to fields ceasing production and falling OPEX as fields which began production in the past few years (prior to 2018) begin to stabilise their costs.

At field level, 51% of operators reduced their total OPEX in 2019. The level of OPEX reduced is roughly equal to the amount of OPEX increased hence the overall trend of OPEX is one of stability from 2018 to 2019. At operator level 56% of operators increased their total OPEX in 2019.

Total OPEX by Infrastructure Category

UKCS OPEX is collected within three distinct infrastructure categories; Field OPEX (subsurface, subsea and/or topside operating costs), Pipeline OPEX (trunklines) and Terminal OPEX (onshore receiving). Operating expenditure linked to offshore fields constitute most of the cost at 91% of the total in 2019. Terminals made up 7% and pipelines the remaining 2%.

In the 2019 UKCS Stewardship Survey, cost data was collected on 15 pipeline systems. The total cost to operate these pipelines was £153 million. The 2019 total operating costs associated with the 21 onshore receiving terminals was £625 million. Total incomes from tariff, cost share and transportation and processing services for both terminals and pipelines were higher than their respective costs resulting in -£179 million OPEX for pipelines and -£107 million OPEX for terminals.

OPEX for terminals and pipelines decreased by 16% and 13% respectively from 2018 to 2019. One of the reasons for this decrease was a number of pipeline systems and corresponding terminal in the SNS ceased production at the end of 2018.

Field OPEX is further divided into costs associated with direct running of the field which are facilities, wells, logistics & administration costs (direct OPEX) and indirect costs including cost share payments into other fields/terminals and transportation and/or processing tariff payments to other fields/terminals. These indirect costs contributed 22% of field OPEX in 2019.

This section focuses on the largest tranche of UKCS OPEX, that associated with the direct operating of offshore fields. In this section we refer to direct OPEX - which is defined as the sum of wells, facilities and logistics and administration (L&A) OPEX, it excludes tariffs and cost share payments. The amount spent on direct OPEX remained relatively stable in 2019 at £6.0 billion, an increase of £26.4 million (3%) from 2018 (2019 real prices) with 44% of fields decreasing their field OPEX.

Facilities OPEX and wells OPEX both saw relatively large increases of 13% and 21% respectively whilst logistics and administration (L&A) OPEX decreased by nearly a quarter (24%). These changes were forecast in last years data which forecast a rise in facilities & wells OPEX with a decrease in L&A OPEX.

The rise in facilities OPEX was predominantly caused by a combination of recent start up fields (post 2018) and an increase in facilities OPEX among older fields. Notably a number of older fields, situated in the Irish Sea and Central North Sea managed to reduce their facilities OPEX by up to 40%.

The fall in L&A OPEX was driven by a combination of fields ceasing production in 2020 and fields that have recently changed operators.

Wells OPEX increased by 21% reflecting an increase in drilling activity across the UKCS in 2019. The increase was predominantly driven by drilling programmes on recently started up fields as well as enhanced oil recovery drilling programmes and also well maintenance work.

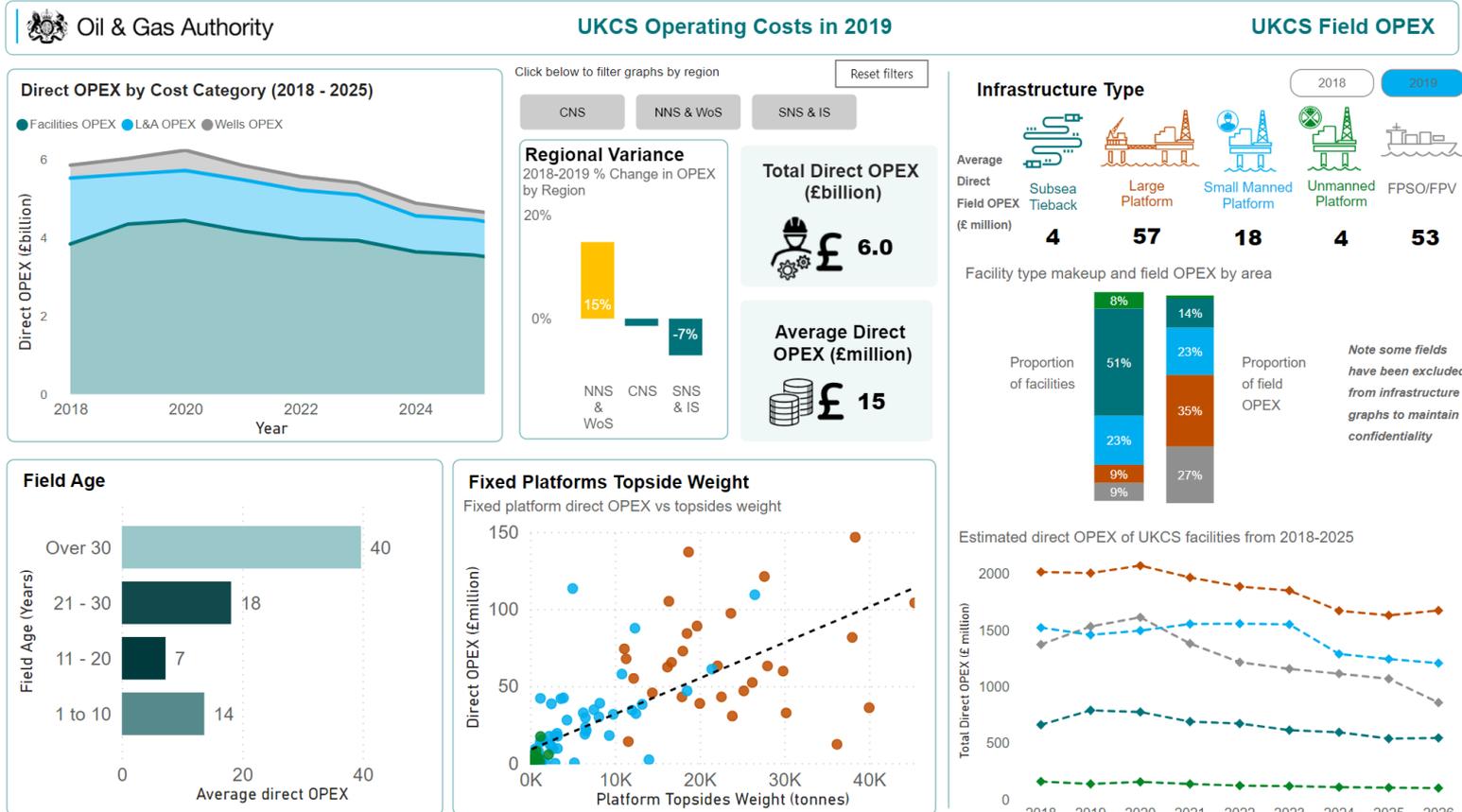
Going forward, direct OPEX is forecast to increase by £200 million from 2019 to 2020 caused predominantly by new field activity.

Post 2020, field OPEX is projected to fall by a quarter by 2025 to £4.5 billion. 55% of this fall is attributed to fields which will cease production between 2020 and 2025.

The average direct OPEX for a field in the UKCS in 2019 was £15 million. This average varies considerably across the basin and is driven by factors such as facility type, field age and field region. For example, areas such as the NNS tends to have older and larger infrastructure than other regions resulting in a variation in direct OPEX across the UKCS.

UKCS Operating Costs in 2019

The interactive dashboard below explores the drivers of UKCS field OPEX. Views can be filtered by year and regions using the buttons in the centre and top right of the dashboard. The reset filter button returns the dashboard to the default view. The dashboard can be viewed full screen by clicking the button in the right hand corner.



Regional Variations

In 2019 two out of the three regions decreased their direct OPEX, this was an improvement from the previous year where all three regions increased their direct OPEX.

The largest improvement in direct OPEX was in the Southern North Sea and Irish Sea (SNS & IS) which saw a 7% decrease in OPEX (2018-2019). This reduction was predominantly caused by fields which will cease production in the next few years. Excluding fields which will cease production by 2022 the reduction in the direct OPEX within the area is 4%, with several late life assets seeing large reductions in direct OPEX specifically reductions of up to 50% in facilities OPEX.

The Northern North Sea and West of Shetland (NNS & WoS) was the only region which saw an increase in direct OPEX, increasing 15% from 2018 to 2019. This increase in direct OPEX was caused overwhelmingly by the expected increase in direct OPEX of recent (post 2017) start up fields. Excluding these start-ups, the NNS & WoS saw a 4% increase in direct OPEX.

Following the trend of last year's dataset, the Central North Sea (CNS) maintained a relatively consistent level of direct OPEX, with a marginal decrease of 1%. Drivers of this was a 28% reduction in L&A OPEX.

Infrastructure Type Variations



Infrastructure Type Variations

In 2019, unmanned platforms and subsea tiebacks were the cheapest infrastructure types to operate, averaging direct OPEX of £4 million/ year. Large steel platforms, small steel platforms and unmanned platforms all saw a reduction in their average direct OPEX from 2018 to 2019. With subsea tiebacks seeing an increase of £1 million (25%) and FPSO's increasing by £7 million (15%).

FPSO's saw the largest increase (15%) in direct OPEX. This was forecasted in 2018 and is predominantly due to recently started up fields both in the NNS & WoS and CNS regions.

Large steel platforms have the highest direct OPEX of any infrastructure type, accounting for 36% of the total UKCS's direct OPEX in 2019. Interestingly in a reversal of trends seen in previous years cost reports the average cost of large steel platforms was £10 million higher in the CNS than the NNS & WoS. This is a substantial difference from last year's survey and has been caused by both improvements in the NNS & WoS and cost increases in the CNS.

The SNS & IS has the lowest average direct OPEX at £7 million per field. This is mainly due to the infrastructure composition of the SNS which favours less costly infrastructure of small steel platforms which make up 47% of the facilities and 81% of the costs.

In terms of total direct OPEX by infrastructure type. In 2019 FPSO's overtook small steel platforms. Looking forward OPEX is expected to peak for most infrastructure types in 2020 before steadily decreasing. FPSO's will see the largest reduction in direct OPEX, reducing by 47% (2020-2026). This is predominantly caused by a number of FPSO fields (around one third) ceasing production over the next 5 years.

| | | Average Direct OPEX (£ billion) by infrastructure type | | |
|-----------------------|---|--|------|---|
| | | 2018 | 2019 | |
| Subsea Tiebacks |  | 4 | 4 | ↔ |
| Large Steel Platforms |  | 58 | 57 | ↓ |
| Small Steel Platforms |  | 19 | 18 | ↓ |
| Unmanned Platforms |  | 5 | 4 | ↓ |
| FPSO/FPV |  | 46 | 53 | ↑ |

Field Age Variations

As could be expected, the oldest fields (>30 years) have an average direct OPEX almost three times as high as the youngest fields (<10 years old).

Fields aged 1 – 10 years old saw the largest annual increase with the average direct OPEX increasing from £10 million to £14 million. This increase is predominantly caused by several large projects coming online in 2019 as well as an expected ramp up in direct OPEX associated with recent start-ups (2017 onwards). Excluding these recent start up fields would result in an average OPEX of £9 million in 2019.

A number of these start up fields are in the NNS & WoS and this is reflected in the data where average direct OPEX for fields less than 10 years old increased from £9 million to £15million (2018 – 2019).

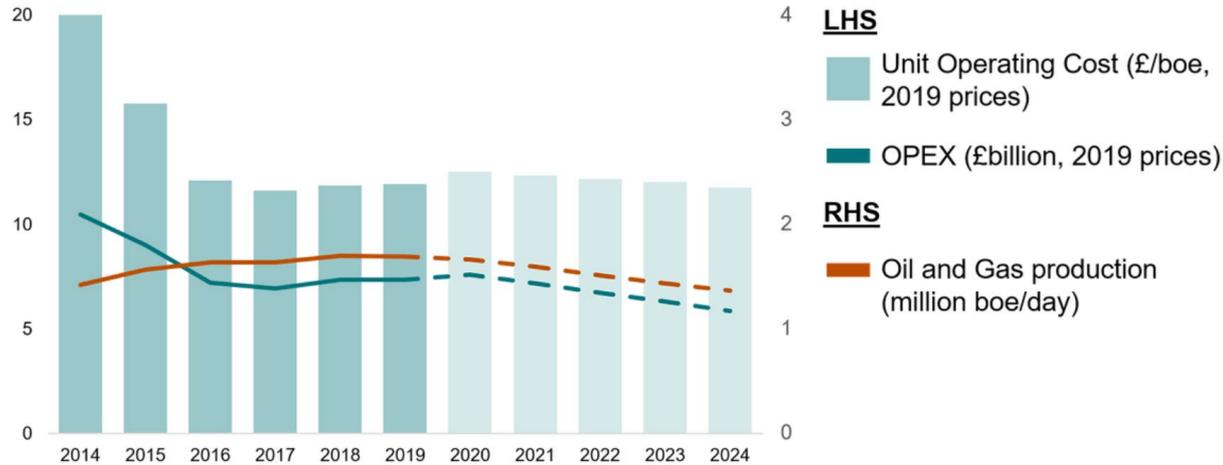
The NNS & WoS had the biggest difference where the average direct OPEX of the youngest fields is one third of that of the oldest.

Fields aged 11 to 20 years old have the lowest direct OPEX, across regions with fields of this age in the CNS seeing a £2 million average decrease in direct OPEX from 2018.

Topsides Weight Variations

A positive correlation can be observed between 2019 direct OPEX and topsides weight of platforms. This relationship is strongest in small manned platforms and unmanned platforms in the SNS & IS and weakest among the large steel platforms of the NNS & WoS.

Unit Operating Cost



Historic and projected UKCS UOC, OPEX and Production (2019, real prices)

Unit Operating Cost (UOC) has remained stable at £11.9/boe between 2018 and 2019. UKCS average UOC remains at approximately two thirds of the 2014 level (2019 real prices).

Production across the UKCS decreased marginally from 1.70 to 1.69 million boe/day, OPEX remained consistent at £7.3 billion which resulted in UOC remaining at £11.9/boe from 2018 to 2019.

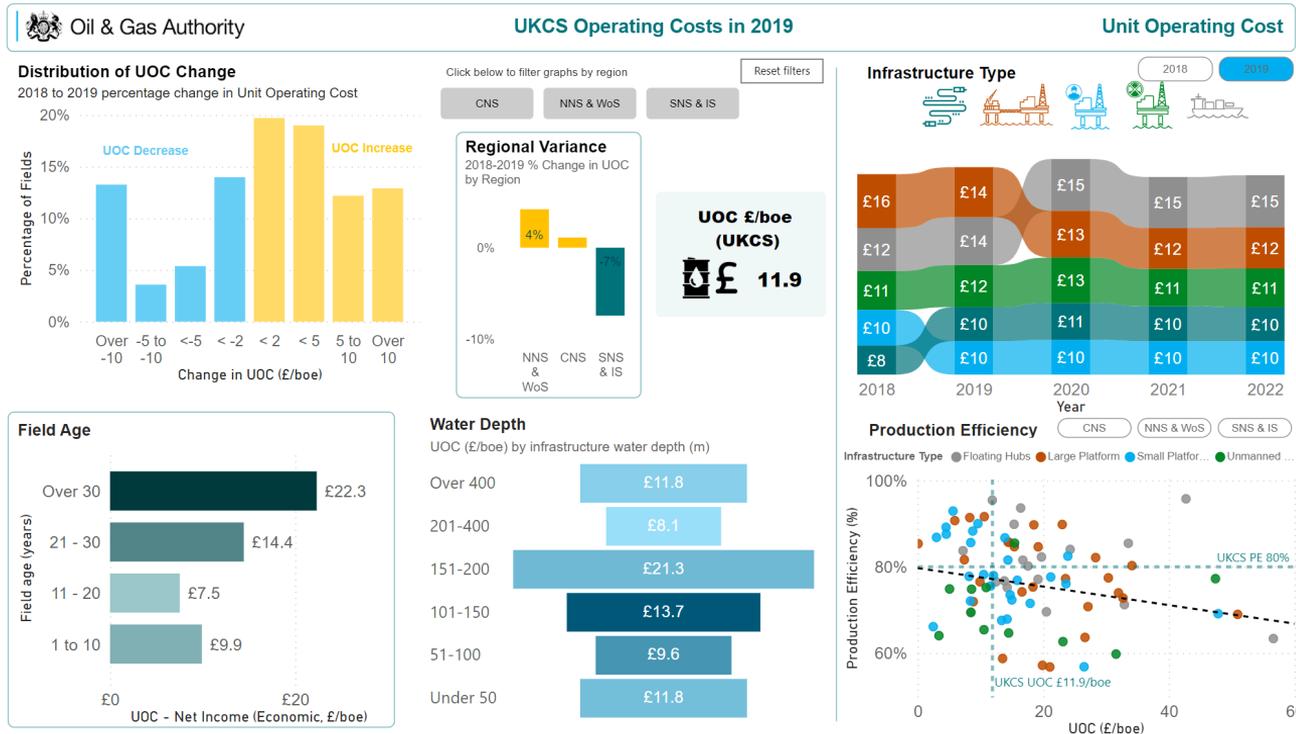
The OGA's February 2020 projection suggested that UOC will remain relatively consistent over the next few years, peaking at £12.5/boe in 2020, a 5% increase (2019, real prices). This is influenced by both production decline and slight OPEX increase predicted in 2020.

Unit Operating Cost



UOC is defined as the total cost of field operations for a given time period, divided by the amount of hydrocarbons produced in that same timespan. It is beneficial in its ability to enable the benchmarking of similar fields. It is also a useful indicator of the extent to which industry is containing its costs. The UOC for the UKCS in 2019 was £11.9/boe. This value varies across the basin and is driven the same factors which drive field OPEX, including infrastructure type, field age and field region.

The interactive dashboard explores the drivers of Unit Operating Cost. Views can be filtered by year and regions using the buttons in the centre and top right of the dashboard. The reset filter button returns the dashboard to the default view. The dashboard can be viewed full screen by clicking the button in the right hand corner.



Regional Variations

Following the trend of direct OPEX, the NNS & WoS increased its UOC in 2019 (by 4%). The increase was driven by total OPEX which increased by 9%. At field level, 65% of fields increased their total OPEX with 29% of field increasing their OPEX by over 50%. Production increased by 2% in the region.

The SNS & IS saw the largest decrease in its UOC (-7%). This was driven both by a 5% decrease in OPEX and a 2% increase in production. On a field level 46% of fields in the region decreased their OPEX whilst 40% of fields boosted their production. This is a positive story in a region where 47% of the infrastructure is over 20 years old.

The CNS saw a UOC rise of 3%. This was driven both by a 2% OPEX increase and 1% production decrease.

On a field basis, 35% of fields had a UOC of £10/boe or lower, a decrease of 8 percentage points from last years survey. 35% of fields are operating at over £20/boe, increasing by 3 percentage points from 2018. 64% of fields had an increase in their UOC for 2019.

Infrastructure Type Variations

2019 saw a £4 range in the UOC between the average of the costliest type of infrastructure facility (large manned platforms) and the cheapest (subsea tiebacks and small steel platforms).

The largest UOC improvement was in large steel platforms which saw a 13% decrease in UOC in 2019 which was driven by a UOC reduction in the NNS & WoS. This was the result of a large increase in production (+43% from 2018) within the large steel platform category, predominantly from recently started up fields (post 2017) in this region.

Subsea tiebacks saw the largest UOC rise, increasing by 25% since 2018. This was caused by a UOC increase across all regions and driven by OPEX increases in the NNS, WoS & SNS and production decline in the SNS & IS.

Looking forward, FPSO's are projected to overtake large steel platforms in 2020 to become the highest UOC infrastructure type, with the NNS & WoS and CNS both forecasting UOC increases. This is driven by a 12% production fall in the CNS and a 10% OPEX increase in the NNS & WoS.

Unmanned platforms in the SNS & IS are predicated to see the largest UOC decrease, falling by a quarter from 2020 to 2022. This is caused by a fall in field OPEX, as around 40% of these fields are expected to cease production in the next three years.

Field Age Variations

Across the UKCS, there is an £12/boe difference in the average UOC between the oldest and the newest fields. Fields over 30 years old saw the largest improvement in UOC from 2018, falling from £25/boe in 2018 to £22/boe in 2019. This was primarily driven by a decrease in OPEX with 56% of fields this age reducing their field OPEX.

Field Water Depth Variations

Looking at facility water depth, the unit operating cost increases with depth down to 200 m. This is mainly due to infrastructure type. With shallower waters <200 m permitting the use of small facility types (small steel platforms & unmanned platforms) which have lower UOC for 2019 than larger facility types. Over 200 m depth on the UKCS, non-fixed platform facilities and subsea tiebacks prevail. These are associated with large fields, which are relatively young and produce large volumes of hydrocarbons resulting in an overall lower UOC.

Production Efficiency and UOC

Looking at the relationship between Production Efficiency (PE) and UOC there is a noticeable inverse relationship between high operating efficiency (PE) and low UOC. This correlation is particularly strong in the CNS which has a large number of hubs with high PE and low UOC, the CNS also has the lowest UOC of all regions at £11.1/boe. The trend is not observed in the SNS & IS where most of the hubs have low UOC but have operating efficiencies (PE) below the UKCS average.

UOC by Operator



The average UOC for the UKCS in 2019 was £11.9/boe. UOC by operator ranged from £25/boe to under £5/boe. This is a slight increase on the range seen in 2018 (£24/boe to less than £3/boe).

The interactive dashboard below explores unit operating cost by company type. Views can be filtered by year and regions using the buttons in the centre and top right of the dashboard. The reset filter button returns the dashboard to the default view. The dashboard can be viewed full screen by clicking the button in the right hand corner.

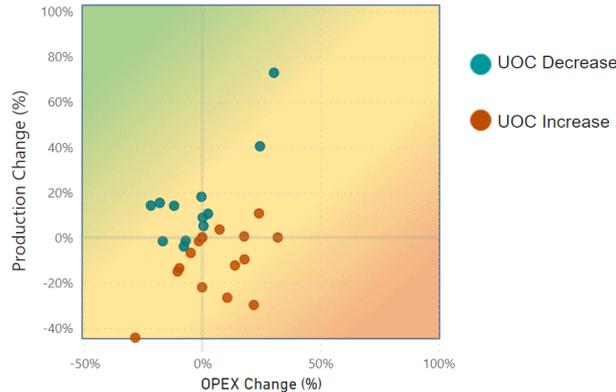
2019 UOC by Hub operator organisation type

Click here to filter graphs by organisation type

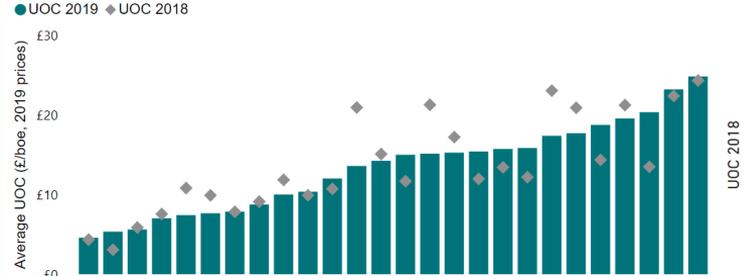
Reset filters



2018 to 2019 Production, OPEX and UOC Change by Operator

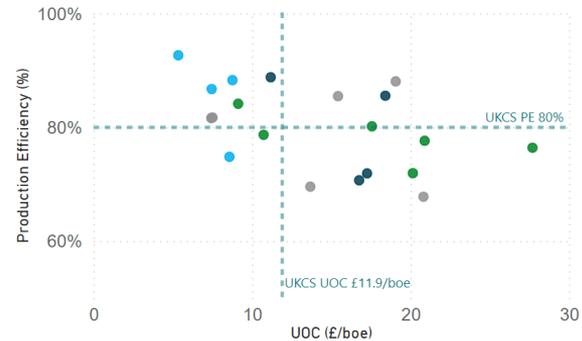


2018 and 2019 UOC by Operator



2019 UOC and PE by Operator

Infrastructure Type ● JV & NOC ● Mid Cap ● Small Cap ● Supermajor & Large Cap



Looking at UOC by organisation type, small cap operators had the largest average UOC in 2019 at £14/boe. Mid cap operators have the lowest unit operating costs at £9/boe and also the narrowest range from £6 to £10. Joint Ventures and National Oil Companies (JV & NOCs) have the largest range of operating cost with both the lowest (£5/boe) and highest (£25/boe) UOC.

Half of operators decreased their UOC between 2018 and 2019 (out of a total of 26 operators with costs during these years). Of those 50%, 53% decreased their OPEX and 77% increased their production.

One success story involves an operator with predominantly ageing assets who managed to decrease both their OPEX by 18% and boost their production by 15%, leading to a decrease in UOC of £6.1/boe.

Of the 50% who increased their UOC the main driver was production decline with 76% seeing a decrease in production. 54% of operators also saw an increase in OPEX.

PE data is collected on a hub level whereas UOC data is collected on a field level, therefore a comparison between PE and UOC has been performed on a hub level. The hub operator does not necessarily operate all fields within their hub therefore operator level UOC based on hubs may be different to that based on fields. Looking at the PE/ UOC comparisons by company type, Mid Cap companies appear to be the best performers, reaching generally above the UKCS average PE and below the UKCS average UOC.

Notes

UKCS-level data on outturn and projected production, OPEX and UOC are consistent with the OGA's February 2020 projections published [here](#). Lower-level analyses of production, OPEX and UOC (by region or infrastructure type, for example) use "raw" data as reported by operators of sanctioned activities in the 2019 UK Stewardship Survey.

The type of facility used for developing an offshore oil or gas field is determined by a range of factors such as: water depth, meteorological/ oceanographical conditions, number of wells needed/ field life expectancy, fluid type, geographical location, heat and pressure of the reservoir, subsurface geological conditions and fluid export proximity and availability.

Glossary of terms

| | |
|--|--|
| United Kingdom Continental Shelf (UKCS) | Term given to describe the region of waters surrounding the UK, to which it has mineral rights. |
| OPEX | Operating Expenditure. The costs incurred running and maintaining the infrastructure needed to produce oil and gas. |
| Wells OPEX | Costs incurred keeping wells producing hydrocarbons. Example projects include interventions or wellhead maintenance. |
| Facilities OPEX | Expenditure that goes towards keeping the surface or subsurface facility operating. |
| Logistics and administration (L&A) OPEX | Includes seaborne and airborne logistics to the facility as well as other cash payments such as insurance. |

| | |
|--|--|
| Logistics and administration (L&A) OPEX | Includes seaborne and airborne logistics to the facility as well as other cash payments such as insurance. |
| Tariff payments OPEX | Payments to a third party for transportation and processing of produced hydrocarbons on a fixed cost basis. |
| Cost share payments OPEX | Like tariff payments but on a shared proportional cost basis. |
| Direct OPEX | Wells + Facilities + L&A OPEX |
| Unit Operating Cost (UOC) | Sum of the total net operating costs divided by the sum of the total production – in barrels of oil equivalent (boe) – over the same time period. Reported here in pounds sterling per boe, as the Stewardship Survey, where these data were collected, is conducted in this UK domestic currency. |
| Barrels of oil equivalent (boe) | The combination of crude oil, condensate, natural gas liquids (NGL) and natural gas. Gas volumes are converted to oil equivalent using an industry standard gas conversion factor of 5800 standard cubic feet of gas to one boe. |
| Large manned platform | Those platforms – which are permanently manned – where the jacket weighs 10,000 tonnes or more. This definition also includes a small number of concrete gravity based structure. |
| Small manned platform | Those platforms – which are permanently manned – where the jacket weighs less than 10,000 tonnes or more. |

| | |
|------------------------------|---|
| Jacket (platform) | The subsea frame supporting the deck and topsides of a fixed offshore platform |
| Topsides (platform) | The surface section of an offshore structure, outside of the splash zone, on which all of the operation equipment, accommodation and other facilities are located. |
| Production efficiency | The AWP (actual wellhead production) divided by the EMPP (economic maximum production potential) of an offshore hub. A measure of what a hub produced against what it could (economically) theoretically produce. |
| NNS & WoS | Northern North Sea and West of Shetland. |
| SNS & IS | Southern North Sea and Irish Sea. |
| CNS | Central North Sea |



Oil & Gas Authority

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