Oil & Gas Authority

UKCS Unit Operating Costs in 2020

Executive Summary

Significantly lower oil and gas prices in 2020 compared with 2019 contributed to marked falls in both operating costs and production. Total operating expenditure (opex) dropped by nearly £0.8 billion (11%) to £6.5 billion. Production of hydrocarbons also fell, by 29 million barrels of oil equivalent (boe) (5%). The larger percentage fall in opex than production meant that average unit operating costs (UOC) fell from £11.9/boe in 2019 to £11.2/boe in 2020.

To access full report functionality visit our live [Unit Operating Cost Report]

Unit Operating Cost Summary

UOC remains within the OGA benchmark, signifying a positive year in OPEX and production

11.16 Unit Operating Cost (£/boe)

1.61 Production (MMboe/day)

6.55 OPEX (£billion)

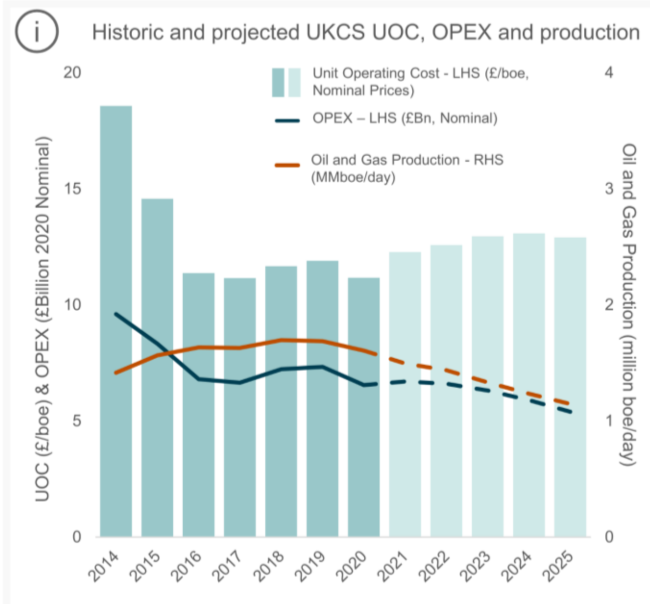
Unit Operating Cost Summary

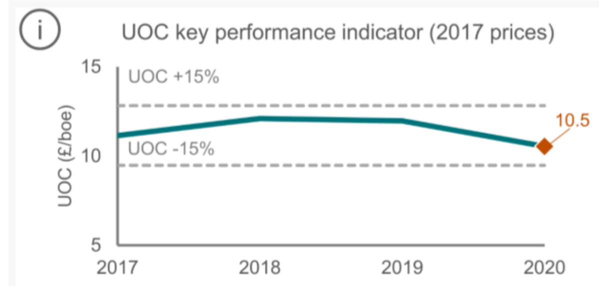
In 2020 prices, average Unit Operating Cost (UOC) in 2020 was £1.5/boe lower than in 2019. However, this seems likely to be a short-term reduction. The OGA projection is for UOC to rise in 2021 and beyond as operating costs increase and production decreases.

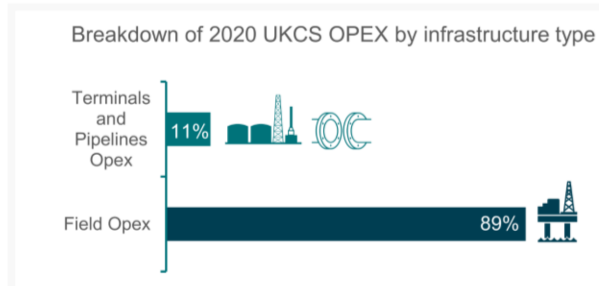
The current UOC remains within the OGA's key performance index boundaries of +/-15% of average UOC in 2017 in 2017 prices.

The majority of OPEX is incurred by fields with OPEX for pipelines and onshore terminals amounting to just over 10% of the total.

This summary page shows UOC including the OPEX and Production of the Pipelines and Terminals. On subsequent pages, Pipelines & Terminals have been removed to show the Field level UOC.







UOC Key Performance Indicator
UOC in 2020 has dropped in both 2020 prices, but it has also dropped significantly when comparing it to the 2017 prices. The OGA uses the 2017 price, along with an upper and lower limit to track how the costs have changed through time. The drop in 2020 from 2019 is considerable but it remains within the benchmark boundaries meaning it is a positive year for the UOC.

Historic and Projected UKCS UOC, OPEX and Production
In 2020, production and OPEX both decreased from to 2019. However, the reduction in OPEX has been more substantial than the production decline. This large OPEX decline is the key driver associated with the UOC drop. The decline is likely related to a lower commodity environment, forcing operators to reduce costs in more competitive market conditions. UOC is predicted to increase over the coming year as the impact of the Covid-19 pandemic is reduced.

To access full report functionality visit our live [Unit Operating Cost Report]

UKCS Field Unit Operating Cost Regional Breakdown

NNS & WoS remains the highest cost region in 2020

11.00 Field Unit Operating Cost 2020 (£/boe)

-0.53 UOC Change 2019 - 2020 (£/boe)

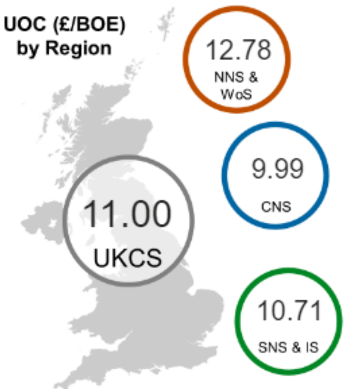
-5% UOC Change 2019 - 2020 (%)

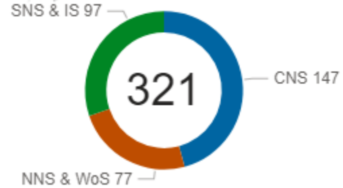
UOC, Production & OPEX Regional Variation Variables:

There are regional variations in average UOC. The NNS & WoS remains the region with the highest average operating cost per boe. UOC did drop slightly between 2019 and 2020 but by only 1 per cent; both total OPEX and production both fell by 8 percent.

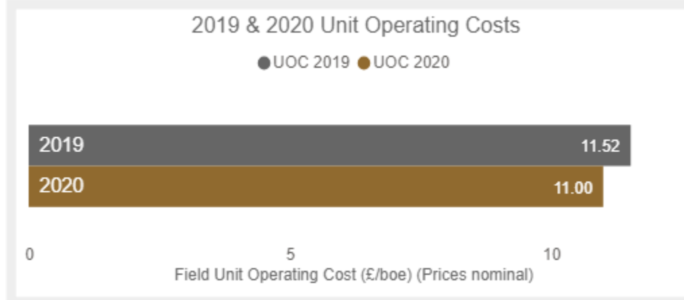
The CNS remains the region with the lowest average UOC. Total OPEX in the CNS fell by 8 per cent while total production fell by only 1 percent which resulted in a 7 percent fall in average UOC.

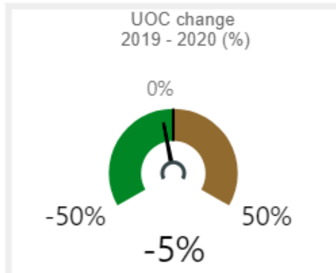
Average UOC in the SNS & IS fell by 8% driven by a 20 percent reduction in total OPEX against a 14 percent fall in production.

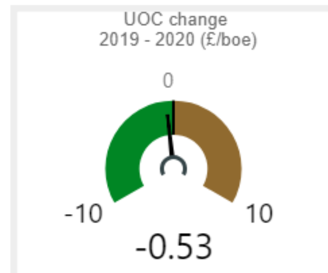




Count of Field







Select filter

UOC

OPEX

Production

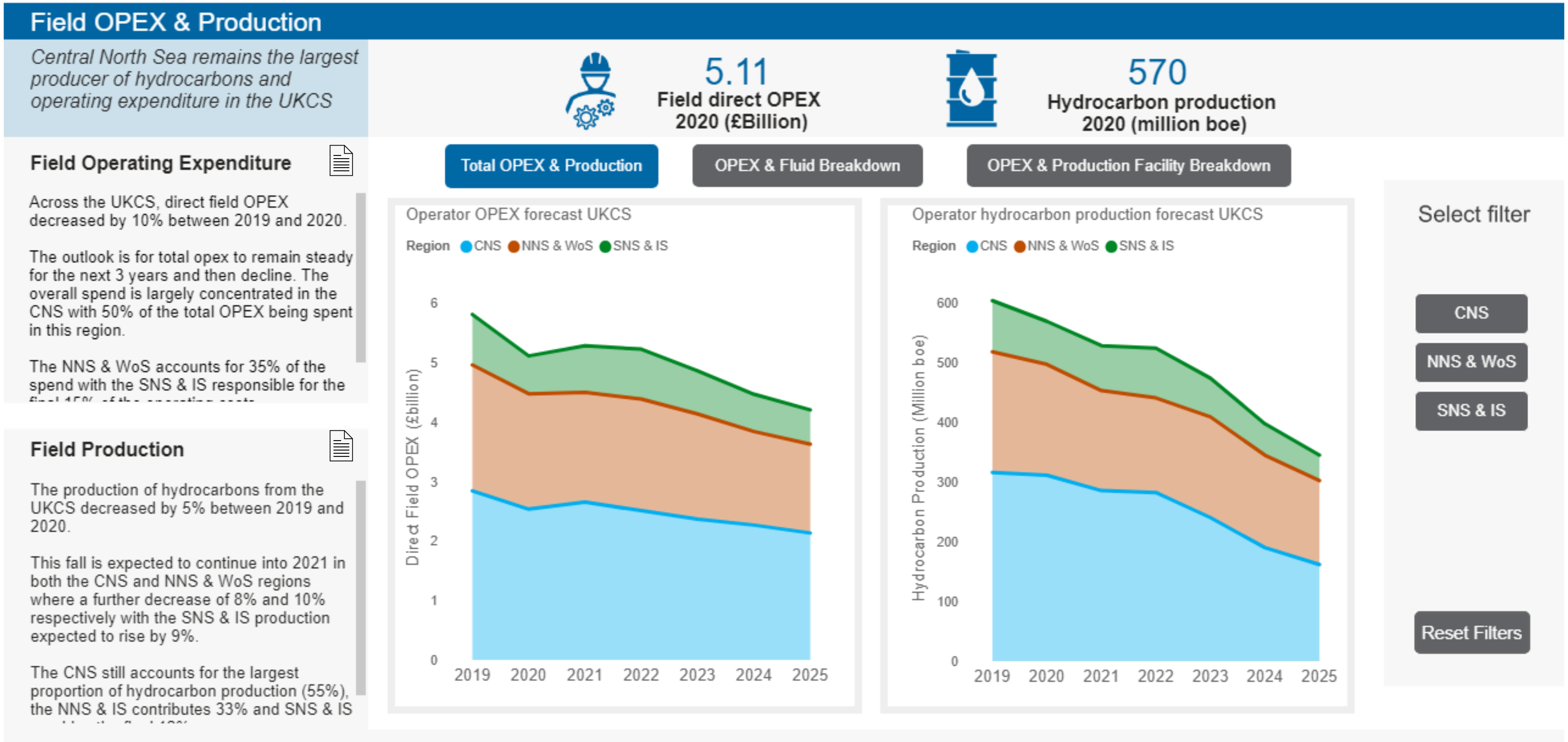
CNS

NNS & WoS

SNS & IS

Reset Filters

To access full report functionality visit our live [Unit Operating Cost Report]



Field Operating Expenditure

Across the UKCS, direct field OPEX decreased by 10% between 2019 and 2020.
The outlook is for total OPEX to remain steady for the next 3 years and then decline. The overall spend is largely concentrated in the CNS with 50% of the total OPEX being spent in this region.
The NNS & WoS accounts for 35% of the spend with the SNS & IS responsible for the final 15% of the operating costs.

Field Production

The production of hydrocarbons from the UKCS decreased by 5% between 2019 and 2020.
This fall is expected to continue into 2021 in both the CNS and NNS & WoS regions where a further decrease of 8% and 10% respectively with the SNS & IS production expected to rise by 9%.
The CNS still accounts for the largest proportion of hydrocarbon production (55%), the NNS & IS contributes 33% and SNS & IS provides the final 12%.

To access full report functionality visit our live [Unit Operating Cost Report]

Field OPEX & Production

Central North Sea remains the largest producer of hydrocarbons and operating expenditure in the UKCS

5.07
Field direct OPEX 2020 (£Billion)

570
Hydrocarbon production 2020 (million boe)

Total OPEX & Production | OPEX & Fluid Breakdown | OPEX & Production Facility Breakdown

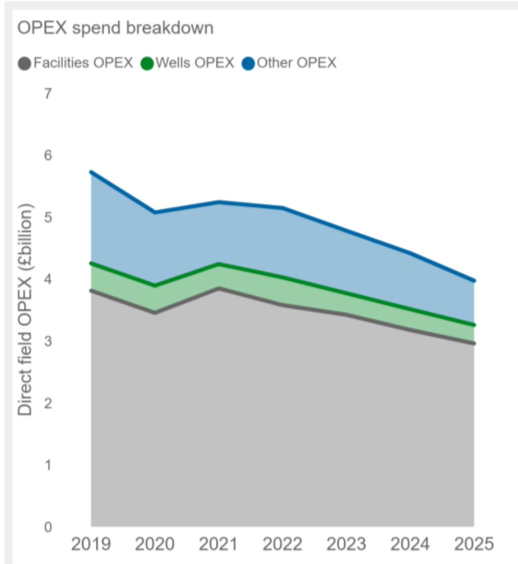
Field Operating Expenditure

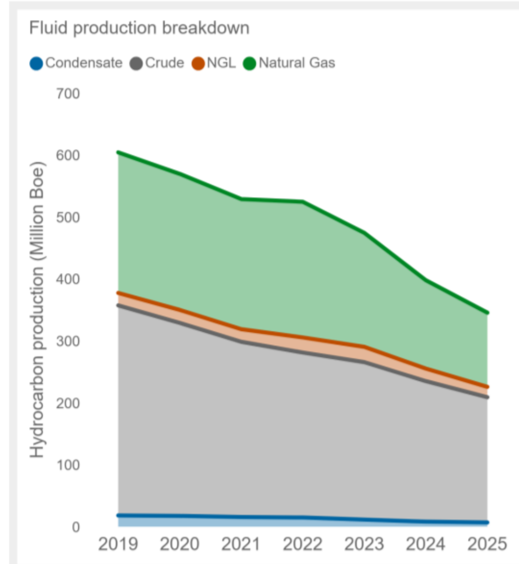
Facilities and Logistics & administration (L&A) both fell by 10% and 20% respectively whilst wells OPEX remained steady. Going forward into 2021, all three spend categories are forecast to increase or remain level; however, beyond 2022 all components of the direct opex are expected to decline.

Field Production

In 2020, Crude oil and natural gas combined account for the UKCS main production fluid type. Approximately 93% of the UKCS fluids are either natural gas or crude oil with the remaining 7% being split by NGLs (4%) and Condensate (3%).

Looking ahead, the UKCS is expected to enter period of production decline. The breakdown percentage of the fluid type is likely to remain the same, with a possibility of natural gas reducing its share over time.





Select filter

CNS

NNS & WoS

SNS & IS

Reset Filters

To access full report functionality visit our live [Unit Operating Cost Report]

Field OPEX & Production

Central North Sea remains the largest producer of hydrocarbons and operating expenditure in the UKCS

5.07
Field direct OPEX 2020 (£Billion)

242
Hydrocarbon production 2020 (million boe)

Total OPEX & Production | OPEX & Fluid Breakdown | OPEX & Production Facility Breakdown

Field Operating Expenditure

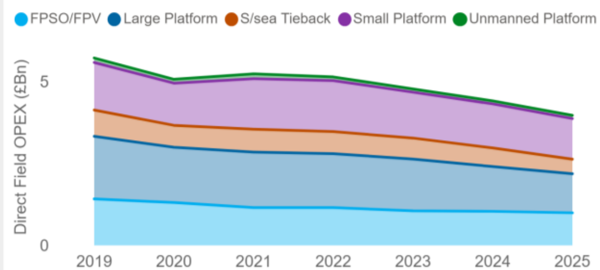
The breakdown of spend between infrastructure type is more uniform. Large Platforms accounted for the highest proportion of OPEX spend at 26%. Subsea tiebacks and small platforms accounted for 24% and 23% respectively. The lowest portion of OPEX spend was made on FPSO/FPV (22%) and Unmanned platforms (5%).

Field Production

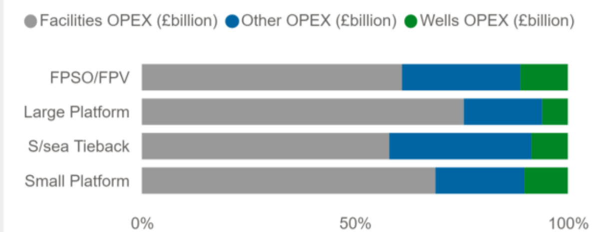
Hydrocarbon production has a diverse range of facility type. Small platforms produce the highest proportion (31%) of the hydrocarbon volume and is set to increase the proportion (35%) over the coming 2 years.

By 2024 all existing hydrocarbon production facilities are expected to have seen a fall in their production volumes as North Sea fields continue to age and deplete.

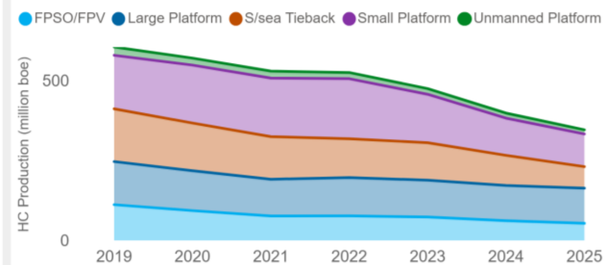
Direct OPEX of UKCS facilities from 2019-2026



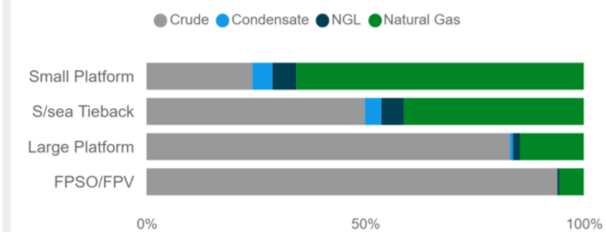
2020 direct OPEX breakdown



Hydrocarbon production by facility type 2019-2026



2020 Hydrocarbon production breakdown



To access full report functionality visit our live [Unit Operating Cost Report]

Field Cost Breakdown

Floating production (FPSO/FPV) has the highest UOC by infrastructure

11.00 Field Unit Operating Cost 2020 (£/boe)*

2.92 Fixed platform average OPEX per tonne (£ million/tonne)

**Some fields have been exluded from this page to retain operator and field anonymity.*

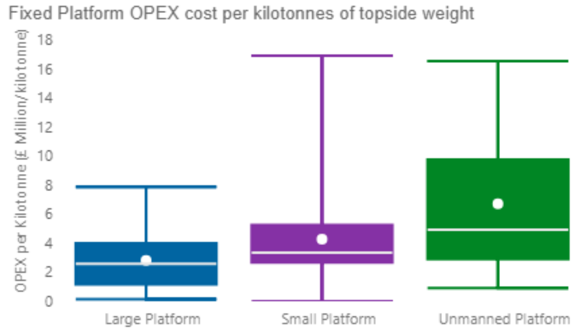
Field Breakdown

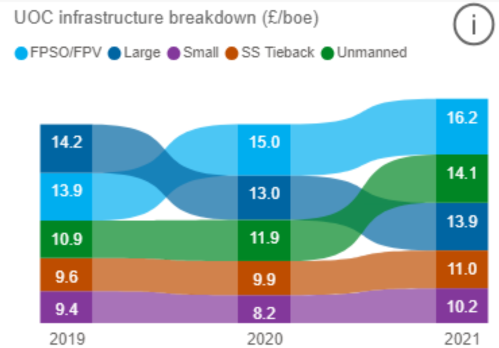
Within the Field Cost Breakdown page there is now a breakdown of the infrastructure costs, water depth and age cost variability.

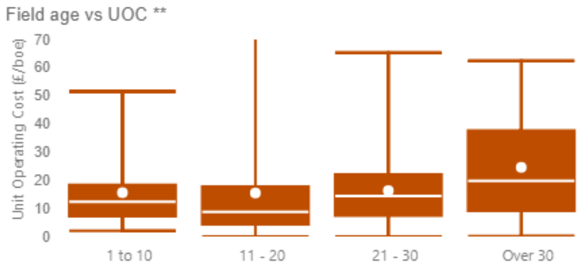
FPSO/FPV's have the highest UOC and have become more costly than large platforms. Large & small platforms have both dropped their UOC by over £1.0/boe.

When breaking down the OPEX per tonne of fixed infrastructure weight, the large platforms have the lowest costs. Large platforms have the tightest spread of costs and lowest average cost, with unmanned platforms being more expensive per tonne possibly related to the higher efficiency of large UKCS platforms.

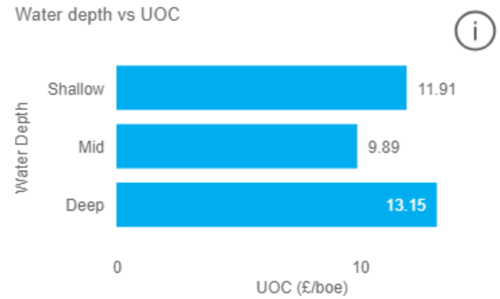
The eldest fields (over 30 years old) in the UKCS have the highest mean operating costs with the younger fields (under 30 years old) have average operating costs below £20/boe.







***Unit operating cost axis capped at £70/boe to remove outlying data*



Select filter

Field Size

Region

Large Field

Medium field

Small Field

2020

2019

Reset Filters

UOC Key Performance Indicator

UOC in 2020 has dropped in both 2020 prices, but it has also dropped significantly when comparing it to the 2017 prices. The OGA uses the 2017 price, along with an upper and lower limit to track how the costs have changed through time. The drop in 2020 from 2019 is considerable but it remains within the benchmark boundaries meaning it is a positive year for the UOC.

Historic and Projected UKCS UOC, OPEX and Production

In 2020, production and OPEX both decreased from to 2019. However, the reduction in OPEX has been more substantial than the production decline. This large OPEX decline is the key driver associated with the UOC drop. The decline is likely related to a lower commodity environment, forcing operators to reduce costs in more competitive market conditions. UOC is predicted to increase over the coming year as the impact of the Covid-19 pandemic is reduced.

To access full report functionality visit our live [Unit Operating Cost Report]

Unit Operating Cost Operator Breakdown

12 of 28 Operators reduced UOC from when compared with 2019

11.00 Field Unit Operating Cost 2020 (£/boe)

-0.53 UOC change 2019 - 2020 (£/boe)

-5% UOC change 2019 - 2020 (%)

Small Cap	JV & NOC	Mid Cap	Private Equity	Supermajor
14.3	12.2	11.3	10.3	9.7

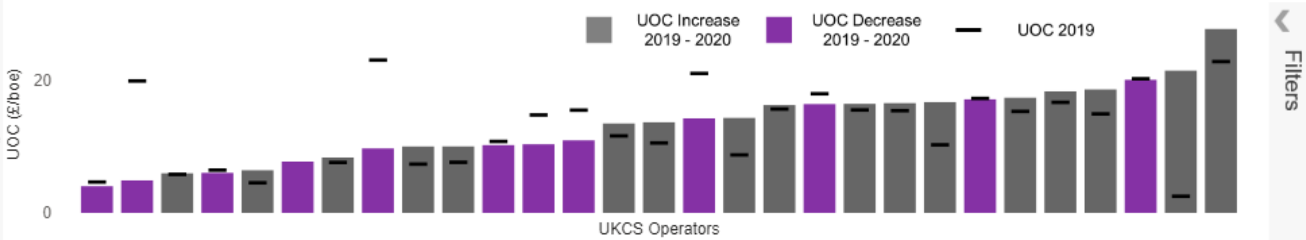
UOC Per Operator

Unit operating cost has fallen for 12 of the 28 operators in the UKCS. This downward shift was primarily driven by decreasing OPEX costs likely as a result of the Covid-19 pandemic and a low commodity price environment. Conversely, higher UOC operators was primarily driven by a decrease in production.

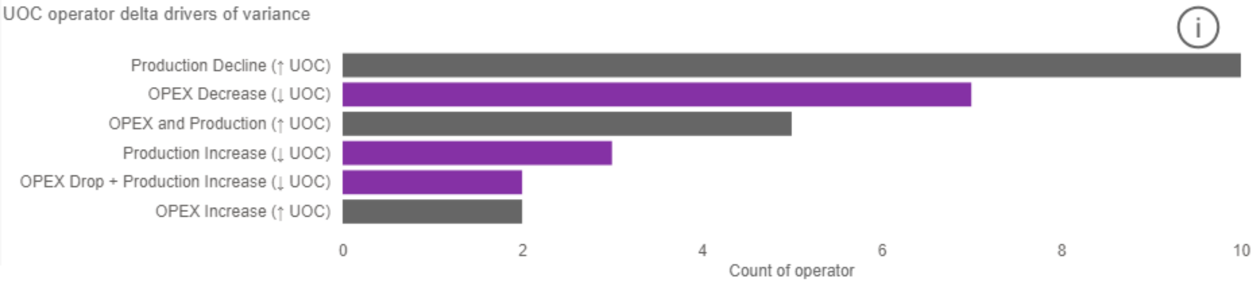
Small Cap operators have the highest average operating cost at £14.3/boe, followed by JV & NOC at £12.2/boe, then Mid Cap at £11.3/boe, Private Equity at £10.3/boe and Supermajors with the lowest average operating costs at £9.7/boe.

Supermajors also saw the largest fall in average UOC between 2019 and 2020. As supermajors are a major contributor to the UKCS UOC their drop of £1.24/boe (-11%) will be one of the main overall drivers to the lower UOC in 2020.

UKCS operator Unit Operating Costs (2019 - 2020)



UOC operator delta drivers of variance



Operator Delta Drivers of variance

Production decline is the main driver for the operators who increased their UOC. Over 1/3 of UKCS operators saw a drop in production and subsequent drop of UOC.

Conversely, operators (7) who dropped UOC did so because they were able to make savings to OPEX, which was the main UOC decrease driver.

To access full report functionality visit our live Unit Operating Cost Report

Unit Operating Cost & Production Efficiency

CNS is the lowest operating cost and highest production efficiency region

11.00
Field Unit Operating Cost 2020 (£/boe)

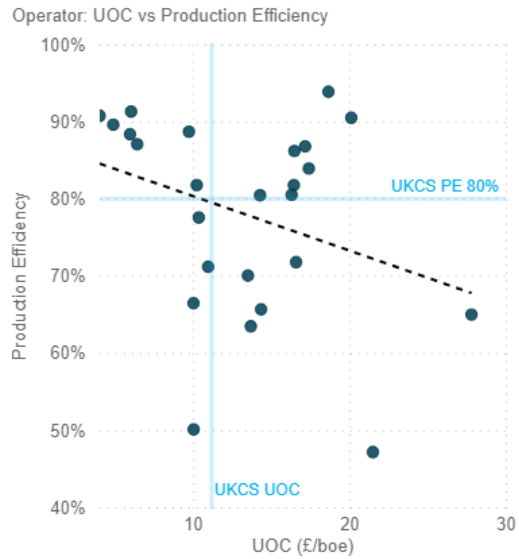
80%
Production Efficiency (%)

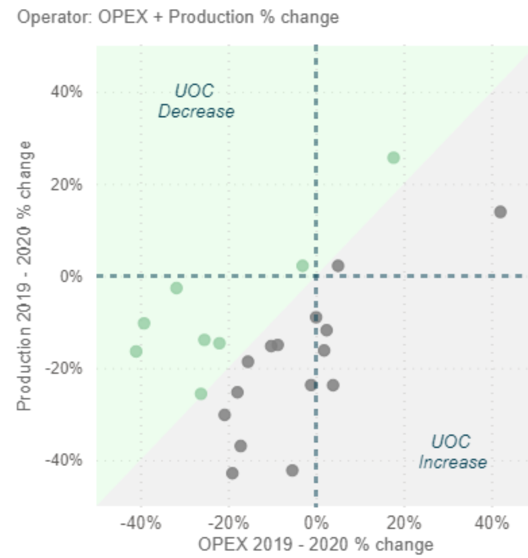
UOC and Production Efficiency

Production Efficiency (PE) reached the UKCS PE target for the 2nd consecutive year. This was a slight increase of 0.21% from 2019 and the equivalent of gaining 1.31 mmboe as a result of improved efficiency. For a full analysis of the UKCS PE click here.

The inverse relationship between UOC and PE, which was identified in 2019, is also evident in 2020. Hubs which have a higher PE generally have a lower operating cost.

This relationship remains evident in the CNS and NNS & WoS regions where there are large numbers of hubs which have a high PE and low UOC. In the SNS & IS region the trend is not continued. The majority of hubs have a low UOC (<£30/boe) but few hubs have a high PE.





Select filter

Hub/Field

Operator

CNS

NNS & WoS

SNS & IS

Reset Filters

To access full report functionality visit our live Unit Operating Cost Report

Unit Operating Cost and CO_2 Emissions

NNS & WoS remains the highest cost region in 2020

21.03
Mean Carbon intensity ($kgCO_2$/boe)

+/- -1.22
Mean carbon intensity change 2019 - 2020 ($kgCO_2$/boe)

Emissions and UOC

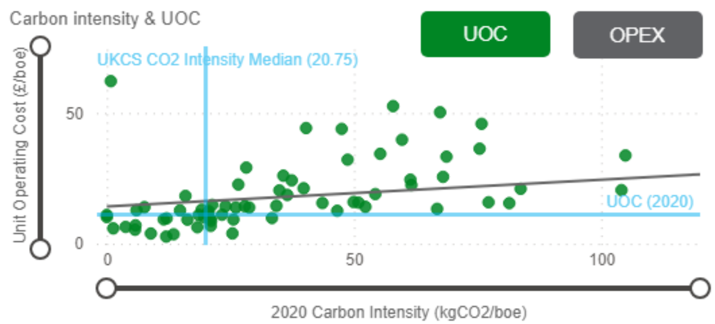
When comparing emissions intensity with Unit Operating Cost, there is a positive correlation. This correlation is reinforced when plotting the CO_2 emissions against OPEX, suggesting larger, more costly installations, produce more emissions.

A negative relationship is displayed when plotting UOC and total CO_2 emissions for the year. This is likely caused by larger installations which have a higher throughput and as such have low costs per barrel but produce a lot of direct emissions.

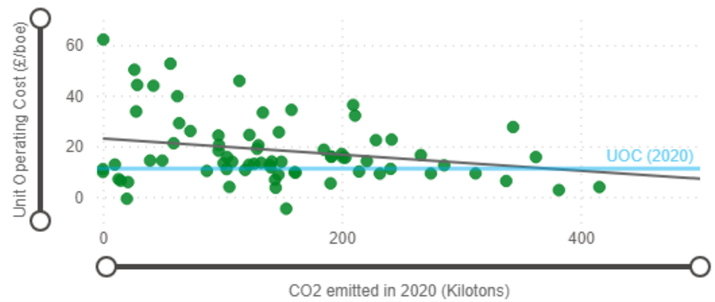
For more insight into the UKCS emissions please refer to the Emissions monitoring report which is due to be published in the second half of 2021.

**CO2 Emissions data source: EU ETS. Includes CO2 Emissions from combustion (inc. flaring and liquid and/or gaseous fuel use) on facilities which exceed 20 MW of thermal input)*

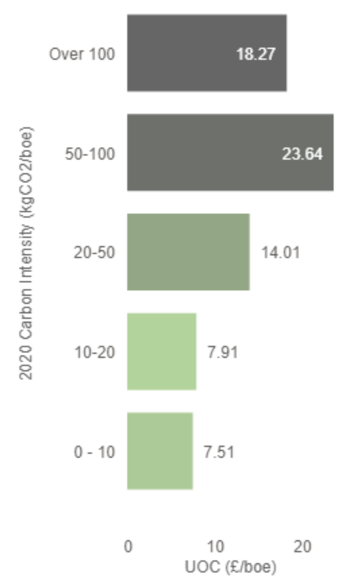
Carbon intensity & UOC



CO2 emitted & UOC



Aggregated UOC by carbon intensity



Select filter

CNS

NNS & WoS

SNS & IS

Reset Filters

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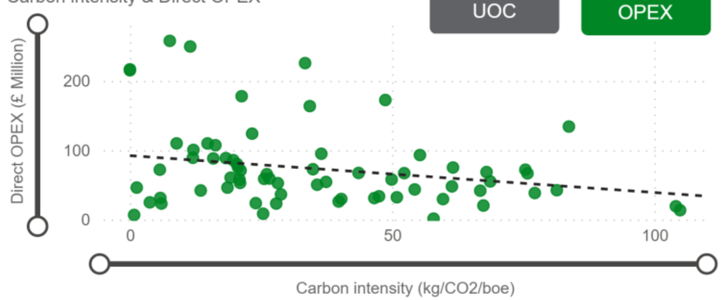

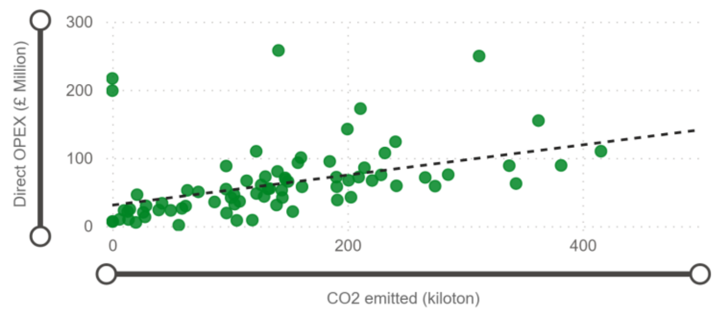

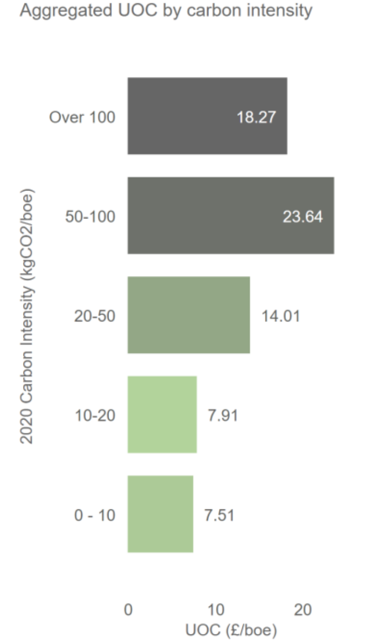

Select filter

CNS

NNS & WoS

SNS & IS

Reset Filters

To access full report functionality visit our live Unit Operating Cost Report

Glossary and Notes

UKCS-level data on outturn and projected production, OPEX and UOC are consistent with the OGA's February 2021 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 needs/ field life expectancy, fluid type, geographical location, heat and pressure of the reservoir, subsurface geological conditions and fluid export proximity and available.

Field Size
The field size filter has been defined by the HCIIP values provided by operators in the 2020 UK Stewardship Survey. A small field has been defined in this report as having a HCIIP of <50mmboe. A Medium field is defined as 50 - 199 mmboe and a Large field is >200mmboe.

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 need to produce oil and gas.

Wells OPEX
Costs incurred keeping wells producing hydrocarbons. Example projects include completions workovers or wellhead maintenance.

Facilities OPEX
Expenditure that goes towards keeping the surface or subsurface facility operating.

Other OPEX
Operating costs not directly attributed to Wells and Facilities eg insurance costs.

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 + Other 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

FPSO/FPV
Floating production storage and offloading/Floating Production Vessel

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.

Water Depth
Water depth has been grouped to retain field anonymity. In this report, shallow water is defined as; Shallow water <100m, Mid Depth 100 - 199, Deep water >200 m.

NNS & WoS
Northern North Sea and West of Shetland.

SNS & IS
Southern North Sea and Irish Sea.

CNS
Central North Sea

To access full report functionality visit our live Unit Operating Cost Report