



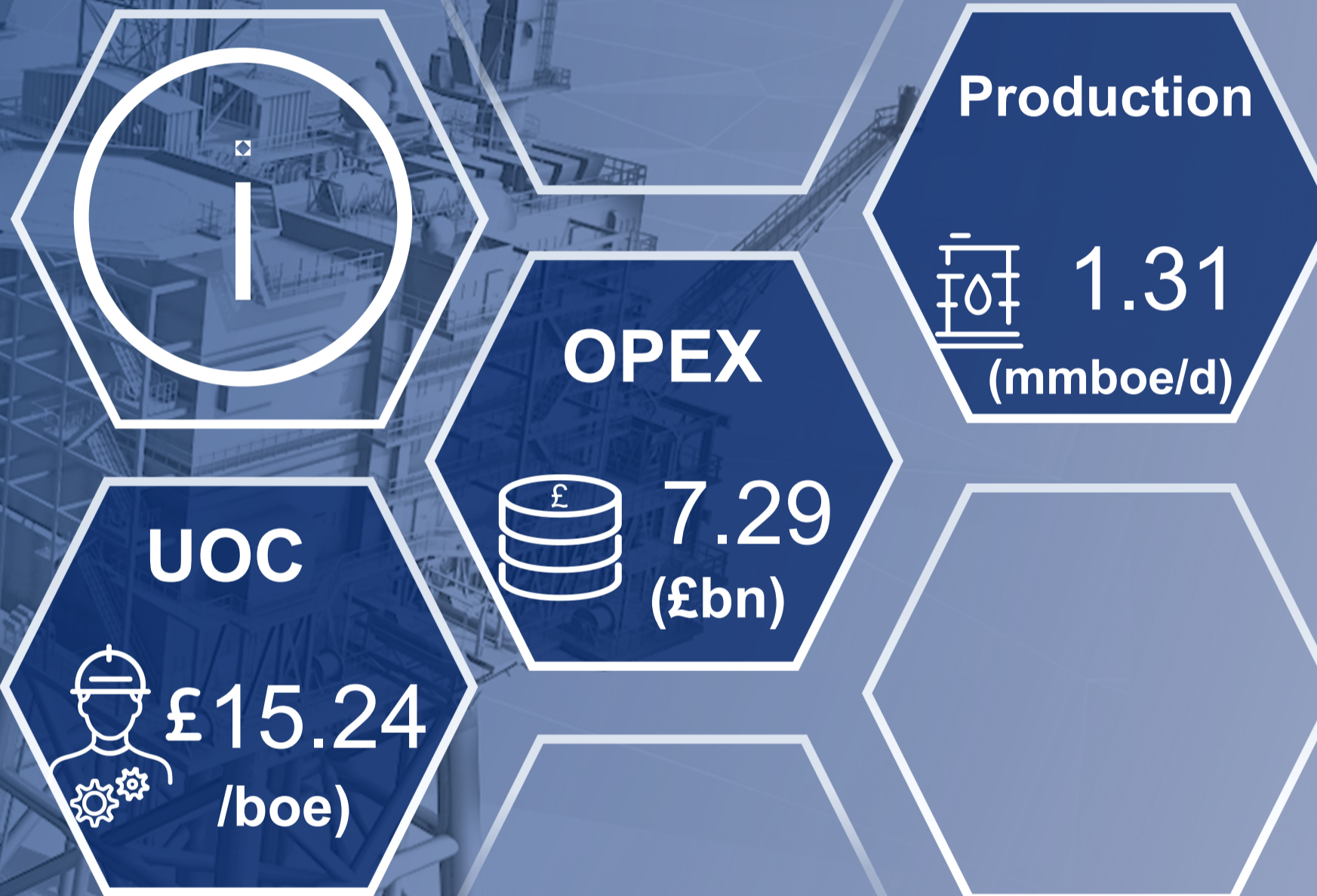
North Sea
Transition
Authority

UKCS Operating Costs in 2021

Executive Summary

Unit operating costs (UOC) increased from £11.1 per barrel of oil equivalent (boe) to £15.2/boe on the UK Continental Shelf (UKCS) in 2021 amid difficult operating conditions as a result of the continuing Covid19 pandemic. The execution of previously delayed shutdowns together with planned maintenance contributed to lower than forecast production and higher operating expenditure (OPEX).

Global economic conditions suggest that OPEX will remain high and subject to inflationary pressures at least in the short term, while production projections for the UKCS remain largely unchanged, meaning potentially higher UOC in the coming years. Continuing the cost discipline and efficiency focus demonstrated by operators in recent years will help to ensure the UKCS remains competitive internationally on a cost basis.



Unit operating cost summary

UOC rises in 2021, above the NSTA upper benchmark level.

15.24
UKCS unit operating cost 2021 (£/boe)

7.29
OPEX (£Bn)

1.31
Hydrocarbon production (mmboe/d)

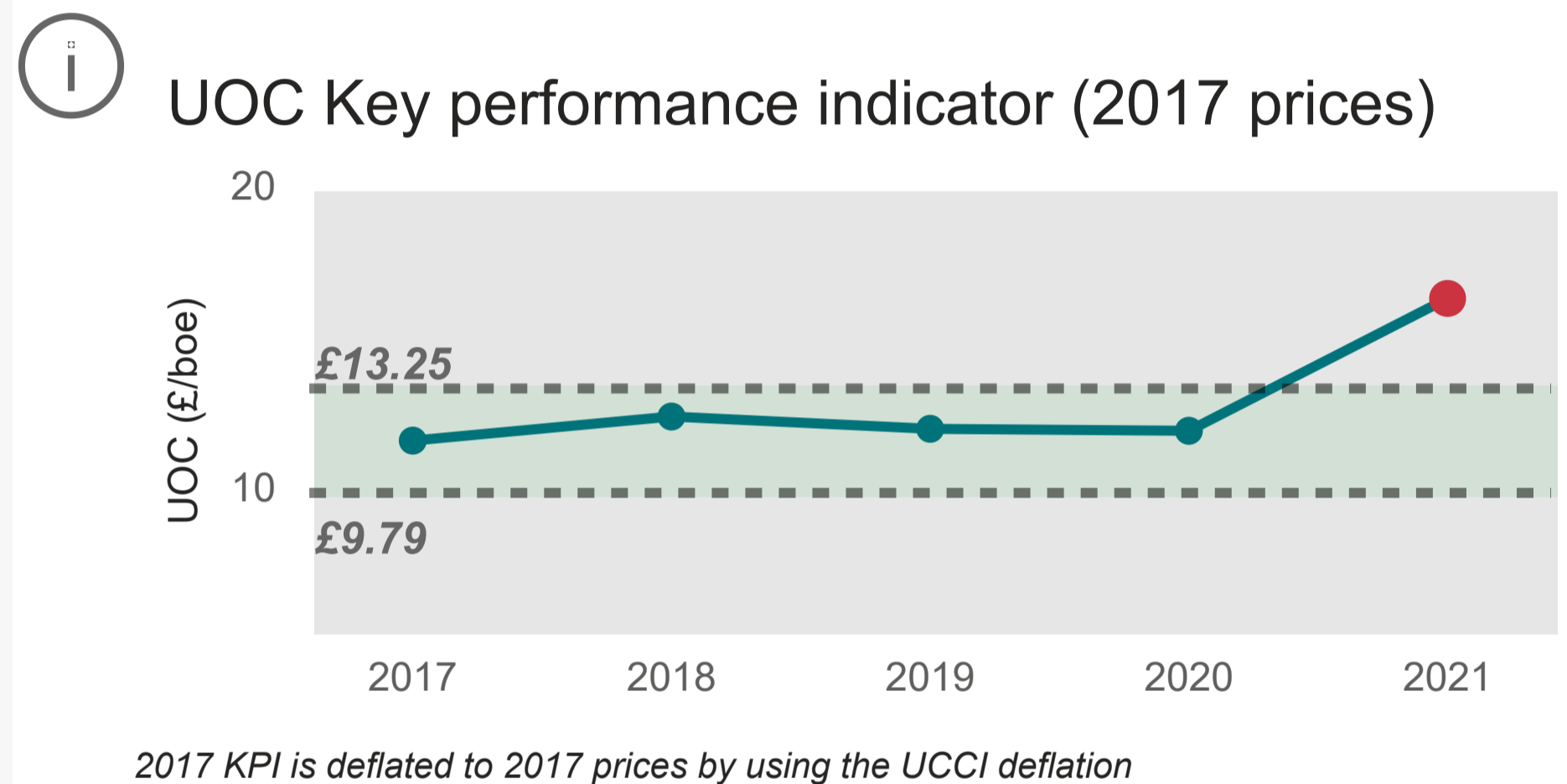
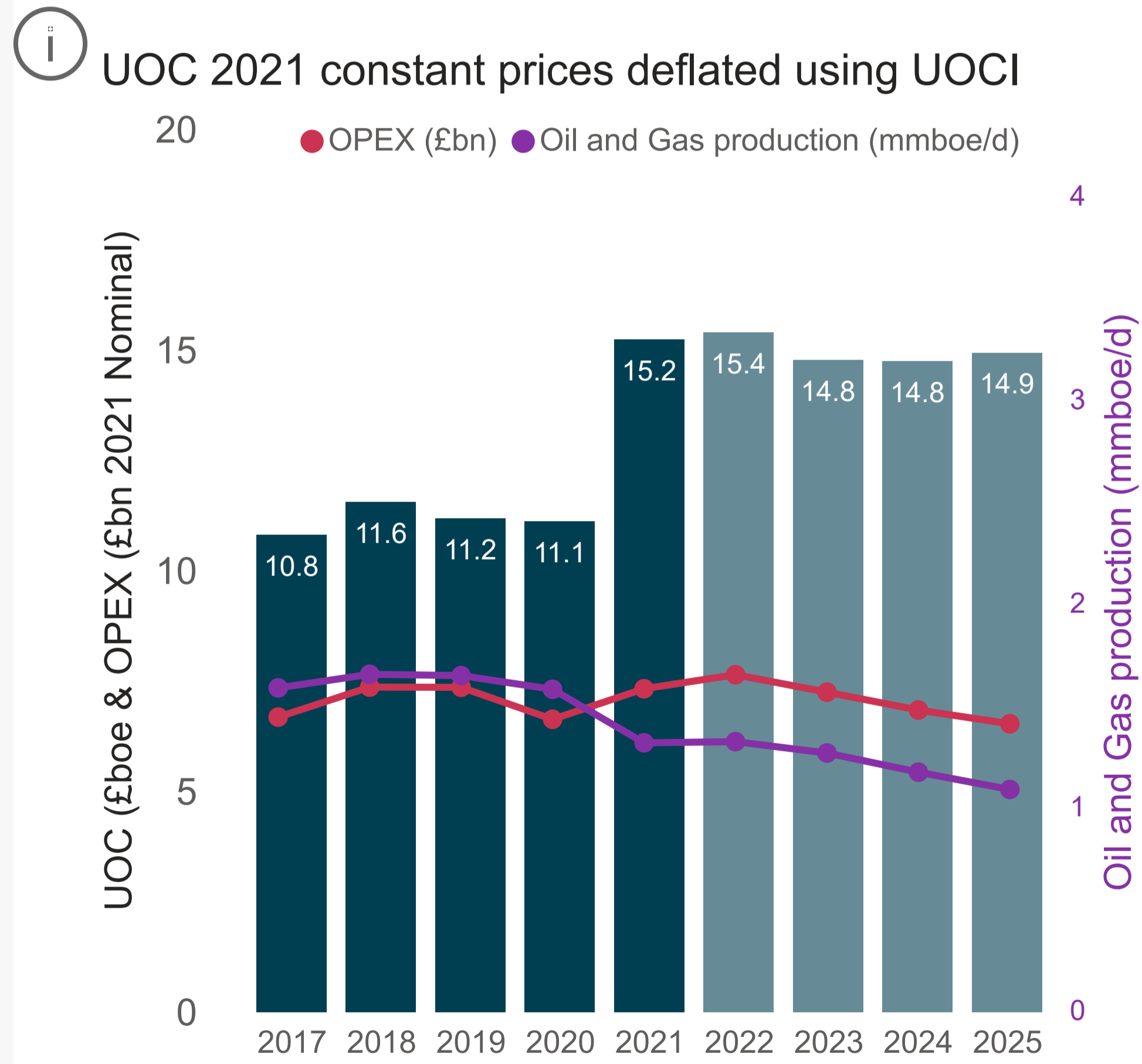
Unit operating cost summary

In 2021, the average UOC rose by £4.1/boe compared with 2020 (in 2021 prices). This rise in UOC is primarily associated with lower production and, to a lesser extent, an increase in OPEX.

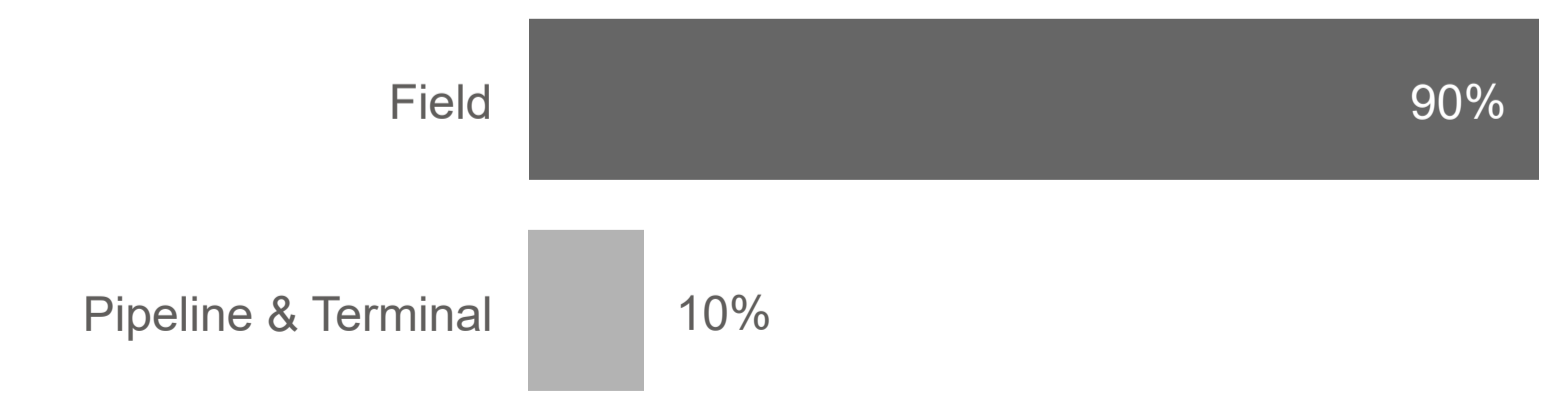
The main drivers behind lower production include delayed shutdowns and planned maintenance that rendered key infrastructure out of action and Covid-19 related operational restrictions. In addition, the Forties Pipeline System (FPS) was closed for a significant period of time which forced a decline in production from many associated fields in the Central North Sea (CNS).

The NSTA projects UOC will be sustained at 2021 levels despite a slight rise in production as inflationary pressures lead to increases in OPEX.

90% of OPEX is associated with field costs.



2021 UKCS OPEX by infrastructure type



Unit operating cost for the UKCS summary is calculated by dividing the total OPEX costs (from fields, terminals and pipelines) and dividing by the total hydrocarbon sales production.

UKCS field unit operating cost regional breakdown

UOC has increased across all regions in the UKCS

13.56
 Field unit operating cost 2021 (£/boe)

2.54
 UOC change 2020 - 2021 (£/boe)

23%
 UOC change 2020 - 2021 (%)

UOC, production & OPEX regional variation:

Average UOC increased in all regions of the UKCS in 2021. The CNS region recorded the biggest increase, with an 8% rise in OPEX and 15% decrease in production, resulting in UOC going up 28%. The CNS region accounts for the highest share of production and OPEX, giving it the biggest impact on the overall UKCS UOC.

Similarly, UOC in the Southern North Sea & Irish Sea (SNS & IS) rose due to an increase in OPEX and a decrease in production.

The Northern North Sea (NNS) and West of Shetland (WoS) were the only regions with a 5% decrease in OPEX from the previous year. However, this decrease was not enough to offset the effects of production decline (17%), resulting in a slightly smaller increase in UOC compared to other regions.

**Total field OPEX - includes OPEX other, OPEX Wells, OPEX Facilities, Cost share payments to other fields and terminals & transportation tariffs*

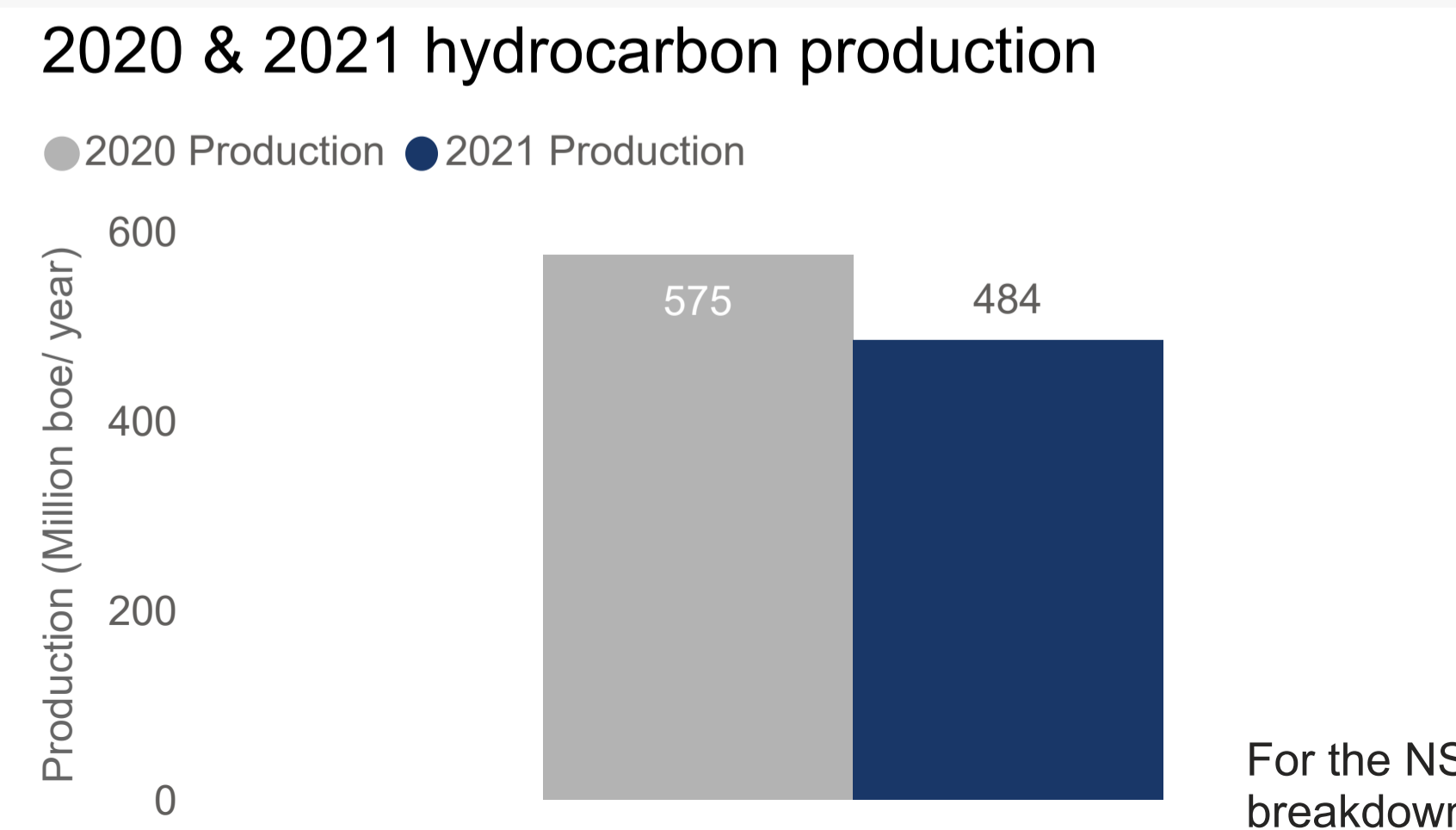
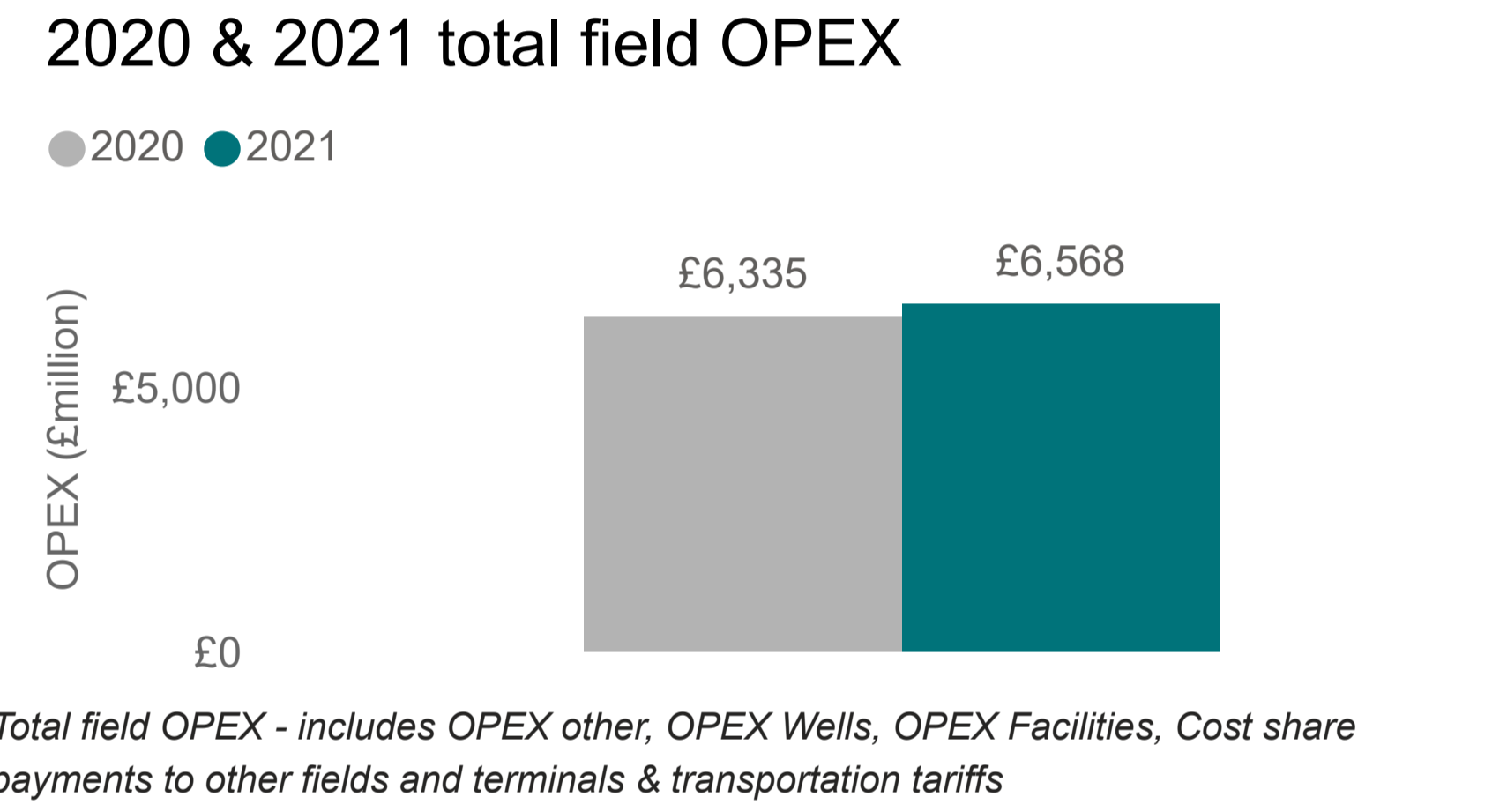
Field Unit Operating Cost 2021 (£/boe)

13.56

Field UOC is calculated by summing the field OPEX and taking away the net income. This is divided by the field production sales values which have been converted to boe. Fields which have passed COP have also been removed from the calculation.

<p>UOC (£/boe)</p> <p>2.54 23%</p>	<p>Total OPEX (£MM)*</p> <p>233 4%</p>	<p>Production mmboe</p> <p>-90 -16%</p>
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UOC has increased due to both an increase in OPEX and decrease in Production



Select Filter

CNS

NNS & WoS

SNS & IS

For the NSTA geographical region breakdown [click here](#)



5.5
Field direct OPEX
2021 (£Billion)*

*OPEX transportation/processing tariffs and cost share payments have not been evaluated. Direct OPEX is defined as the sum of Facilities, Wells and Other OPEX.



484
Hydrocarbon production
2021 (million boe)

CNS NNS & WoS SNS & IS

Field OPEX

Direct OPEX rose from £5.2bn in 2020 to £5.6bn in 2021, a year-on-year increase of 7%. It is forecast to remain at this level in 2022.

The main driver in OPEX is facility costs (£0.5bn increase). This is expected to slightly decrease from £4bn to £3.8bn in 2022.

Wells OPEX was £0.5bn in 2020–2021 and is forecast to remain at this level in 2022.

“Other” OPEX (operating costs not directly attributed to wells and facilities, for example, insurance costs) declined by 18% from £1.2bn in 2020 to £1bn in 2021, but is expected to return to £1.2bn in 2022.

It is possible that operators increased spending in 2021 in an effort to address infrastructure maintenance backlogs.

Field production

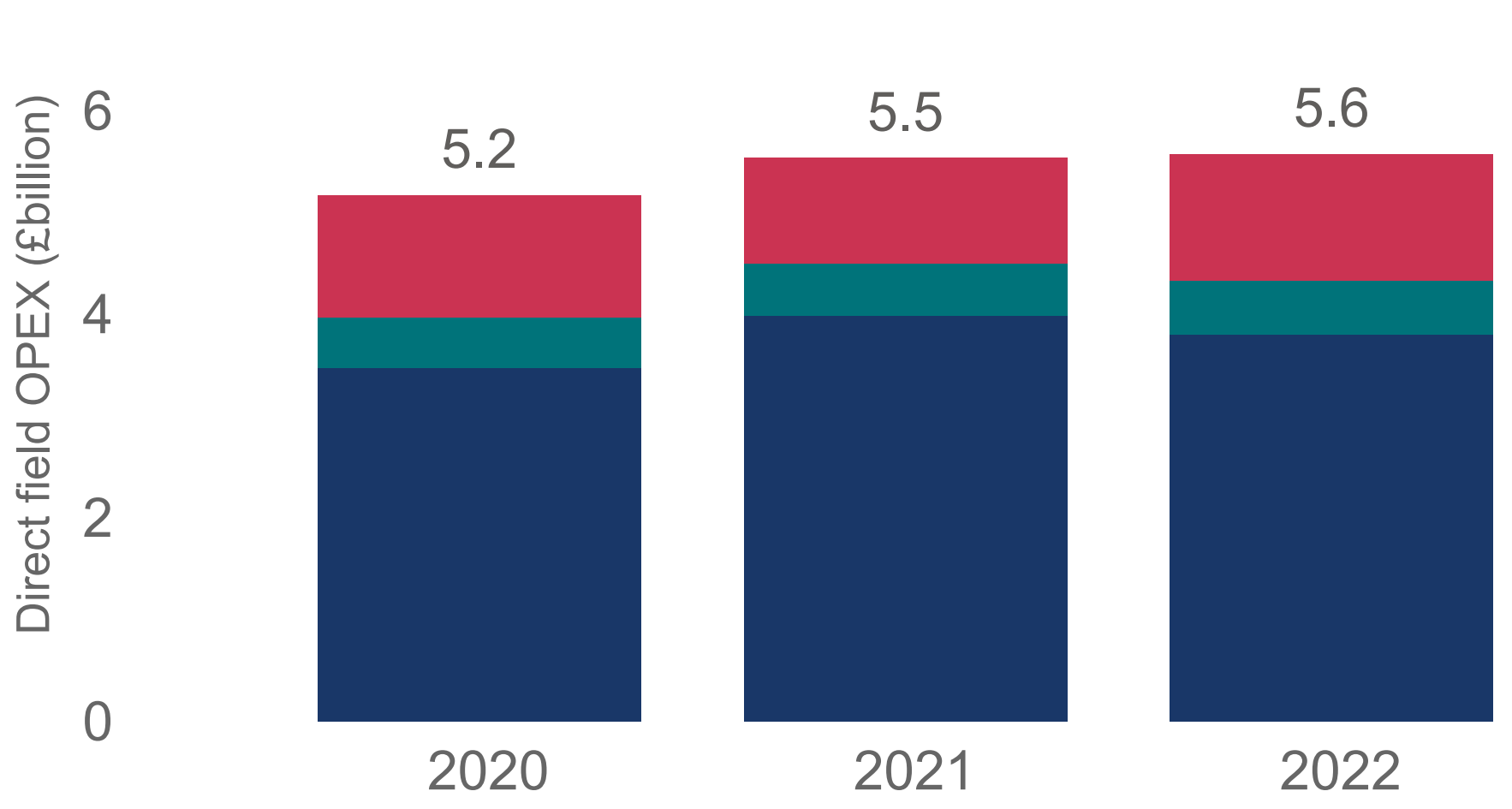
Production sales volumes declined by approximately 15% from 2020 to 2021. The drop in production is partly due to the natural decline of the mature UKCS basin. However, in 2021 the decline was more severe due to the increased amounts of maintenance completed in the summer months. Major maintenance projects were conducted in the Central North Sea (CNS), leading to the temporary shutdown of many of the UKCS’s largest producers. Hydrocarbon production is expected to increase in 2022, however, it is not expected to recover to 2020 levels.

In 2021, crude oil and natural gas accounted for 93% of UKCS production sales, NGLs made up 4% and condensate 3%.

While the UKCS is expected to enter a period of production decline, the share of fluid types is likely to remain the same.

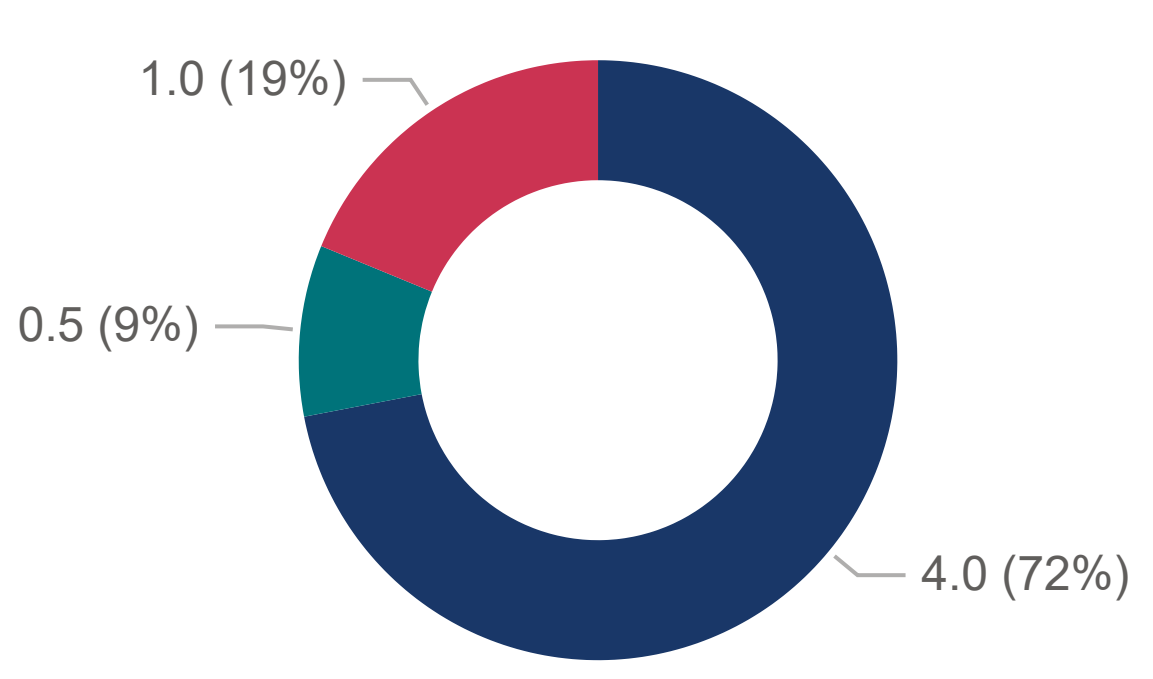
Direct OPEX spend breakdown

Facilities OPEX Wells OPEX Other OPEX



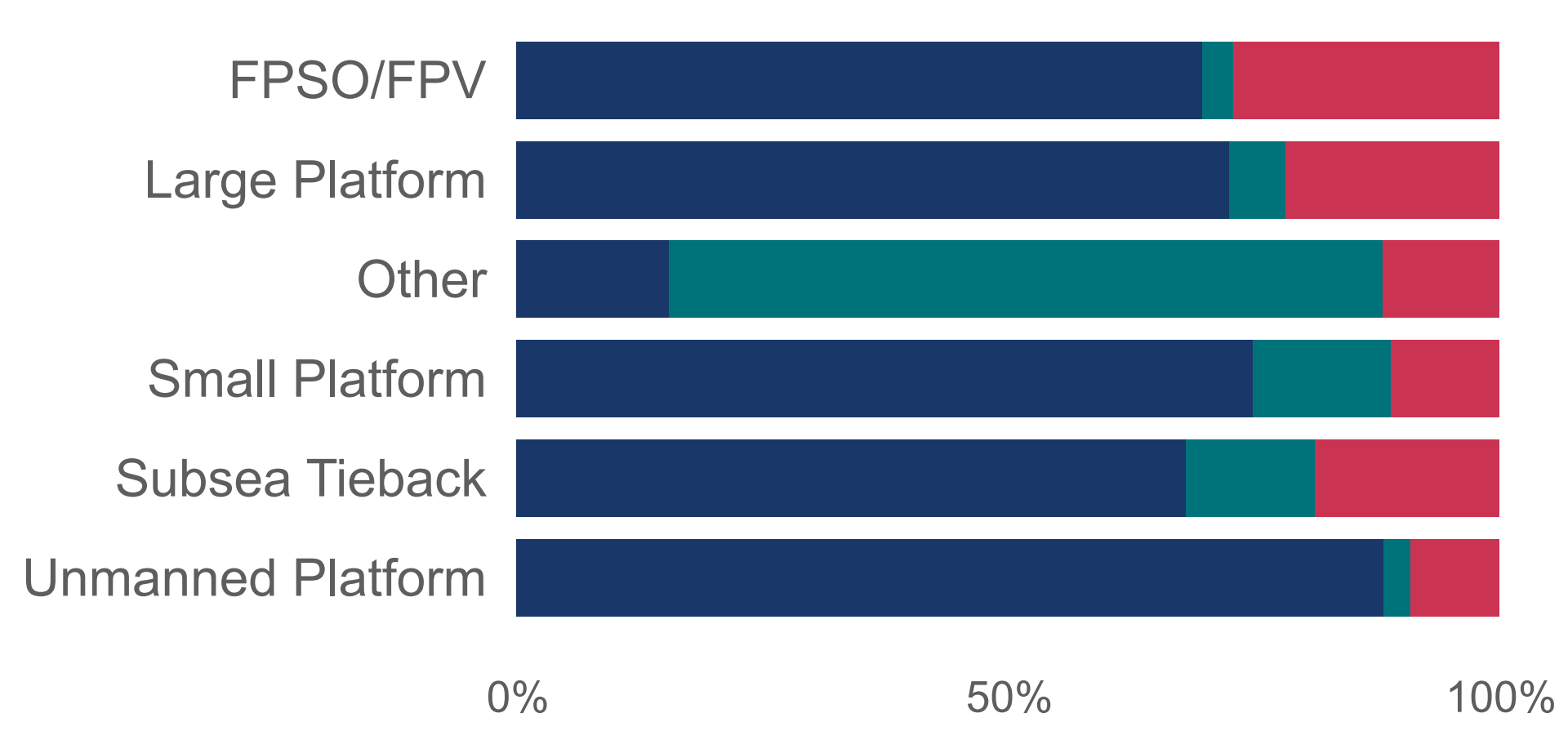
Direct OPEX spend breakdown (2021)

Facilities OPEX (£bn) Wells OPEX (£bn) Other OPEX (£bn)



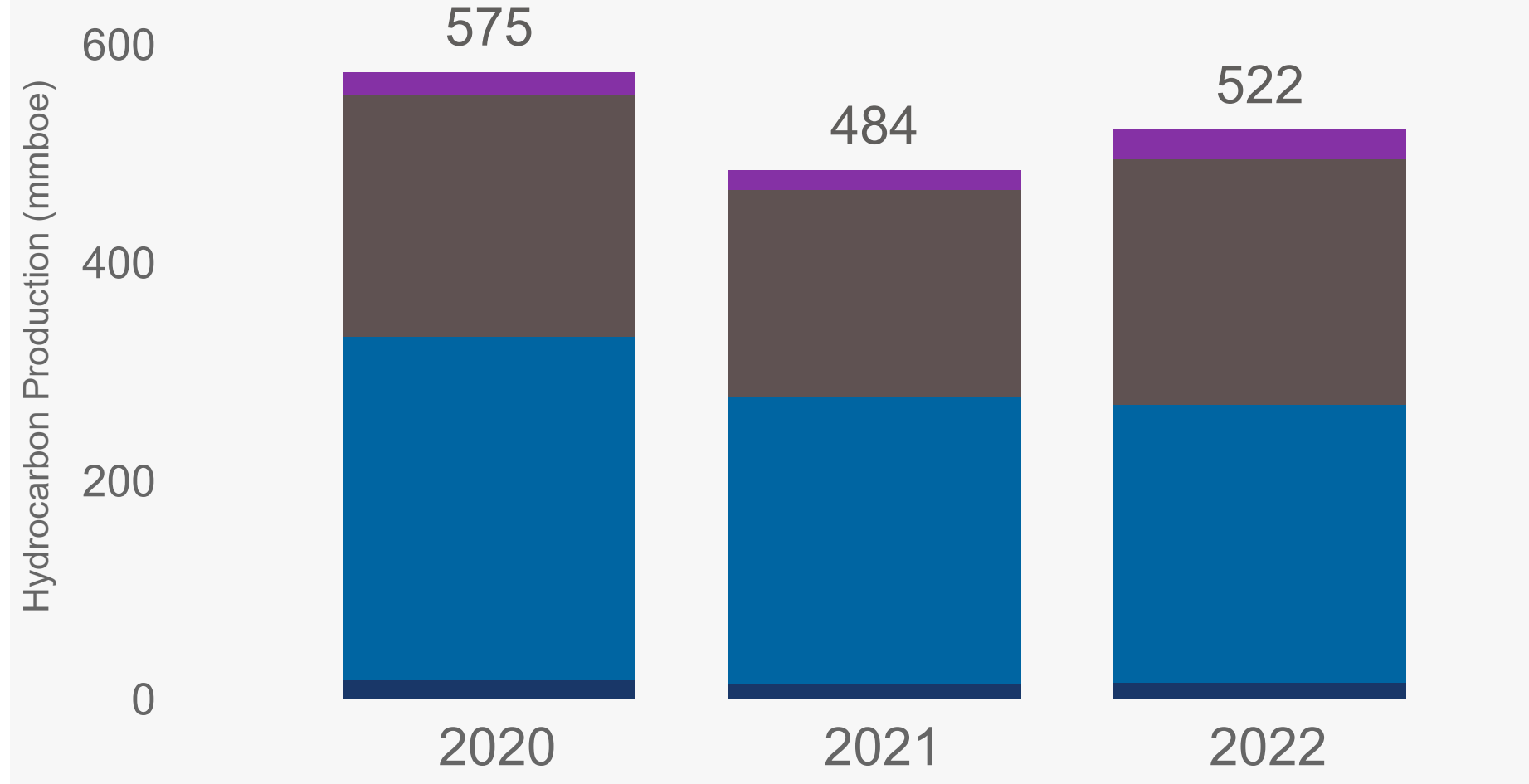
2021 infrastructure direct OPEX breakdown

Facilities OPEX (%) Wells OPEX (%) Other OPEX (%)



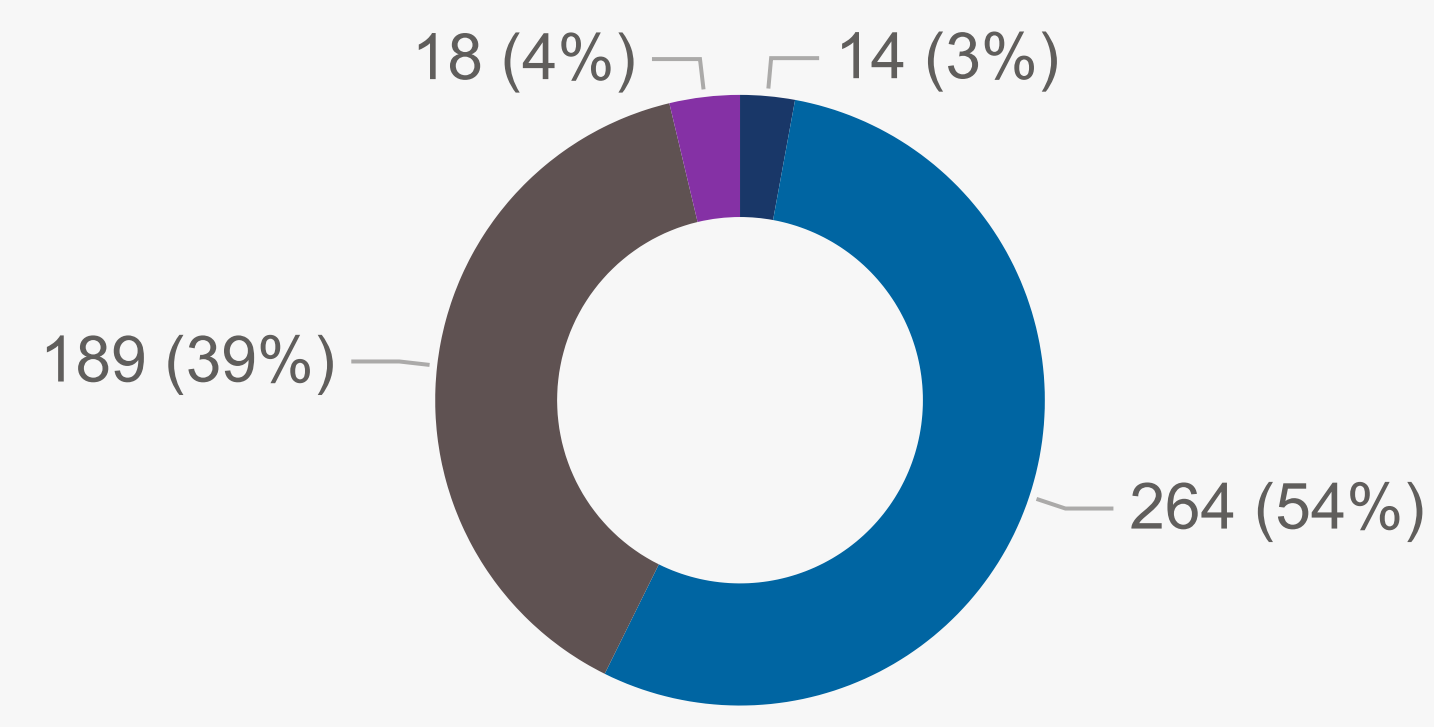
Hydrocarbon sales production breakdown

Condensate (mmboe) Crude (mmboe) Natural Gas (mmboe) NGL (mmboe)



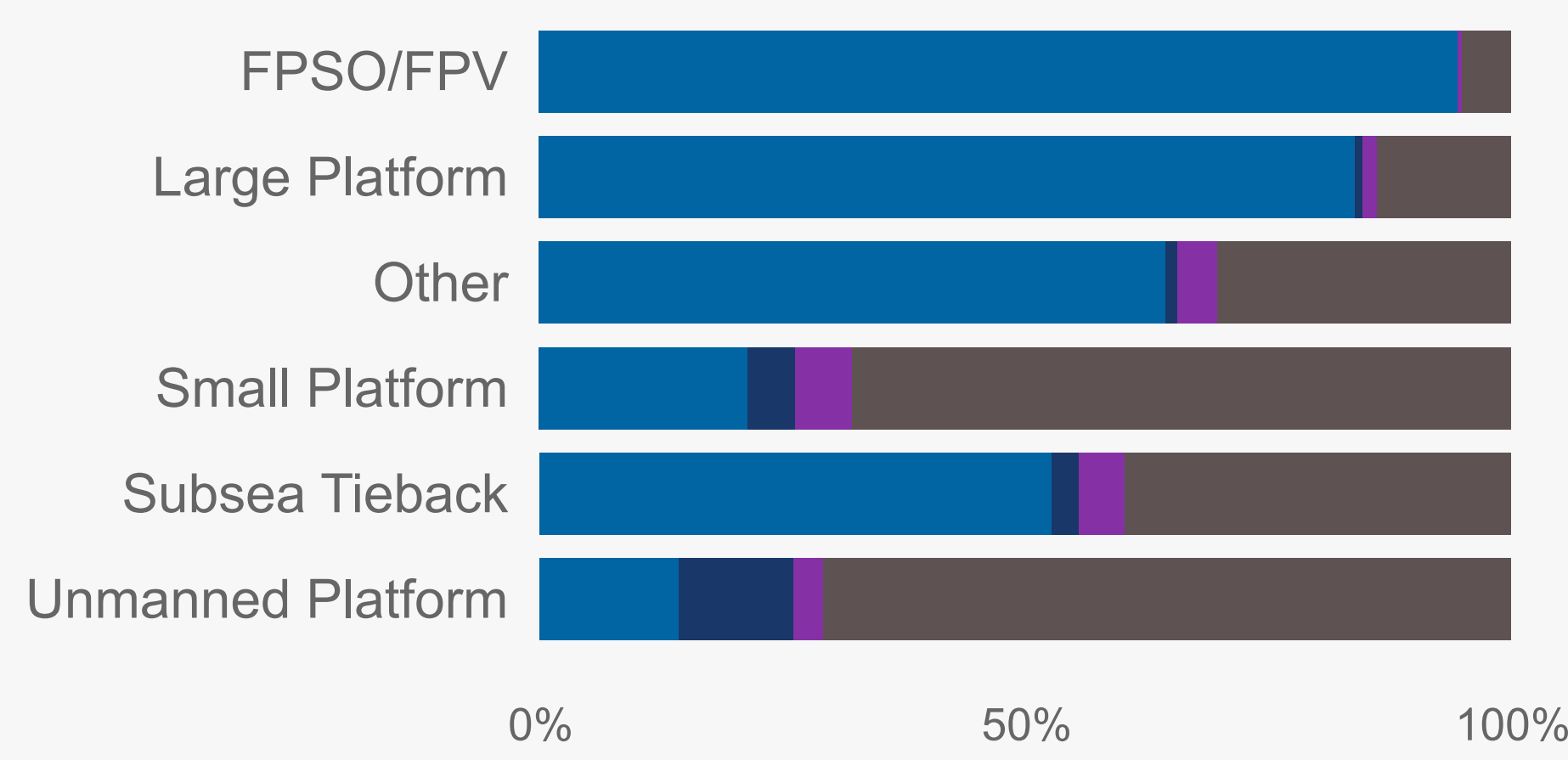
Hydrocarbon fluid sales production breakdown (2021)

Condensate (mmboe) Crude (mmboe) Natural Gas (mmb...) NGL (mmboe)



2021 Hydrocarbon sales production breakdown

Crude (%) Condensate (%) NGL (%) Natural Gas (%)

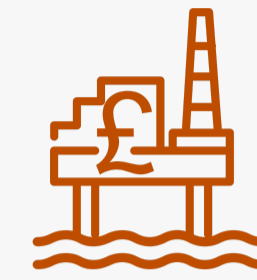


Field cost breakdown

Large and unmanned platforms have the highest UOC by infrastructure type



13.56
Field unit operating cost 2021 (£/boe)*



4.08
Fixed platform average OPEX per tonne (£ million/tonne)

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

Field breakdown

The majority of UKCS fields/hubs have OPEX of below £100m per year and fewer than 5mmboe of production per year. This is because the UKCS is a mature basin with aging assets, declining rates of production, and high infrastructure running costs.

Production is most challenging from fields in deeper waters. UOC for deeper-water assets is approximately 20% higher compared with medium and shallow water fields. However, UOC is similar for shallow and deep-water assets in the CNS.

Large platforms, unmanned platforms and FPSO/FPV infrastructure also had higher operating costs in 2021.



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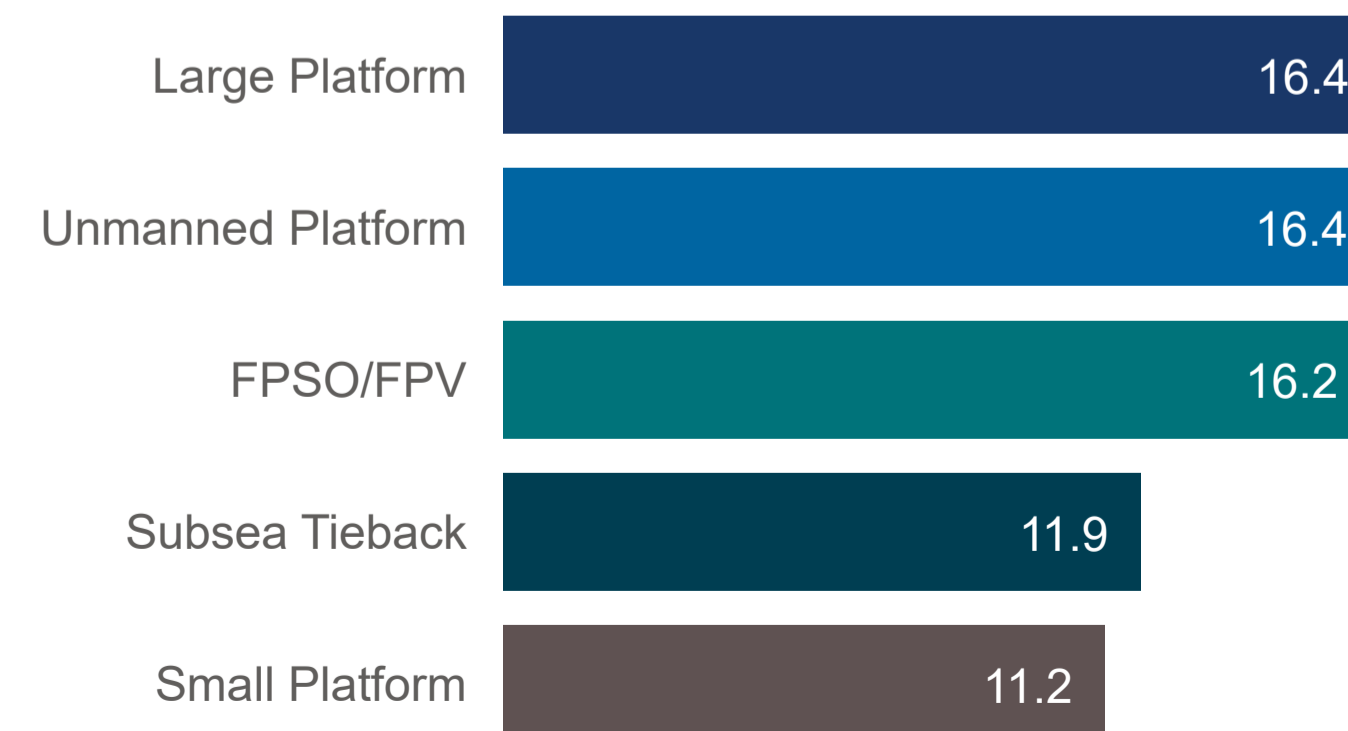
* Data plotted as Hubs & fields to retain confidentiality of fields

UOC by water depth



Shallow Water = 0 - 50m. Medium = 50 - 125m. Deeper water 125m +

UOC infrastructure breakdown (£/boe)



Select Filter

- CNS
- NNS & WoS
- SNS & IS

Reset Filters

Unit operating cost operator breakdown

20 of 27 Operators increased UOC when compared to 2020



13.56
Field Unit Operating Cost 2021 (£/boe)



2.54
UOC change 2020 - 2021 (£/boe)



23%
UOC change 2020 - 2021 (%)

UOC per operator

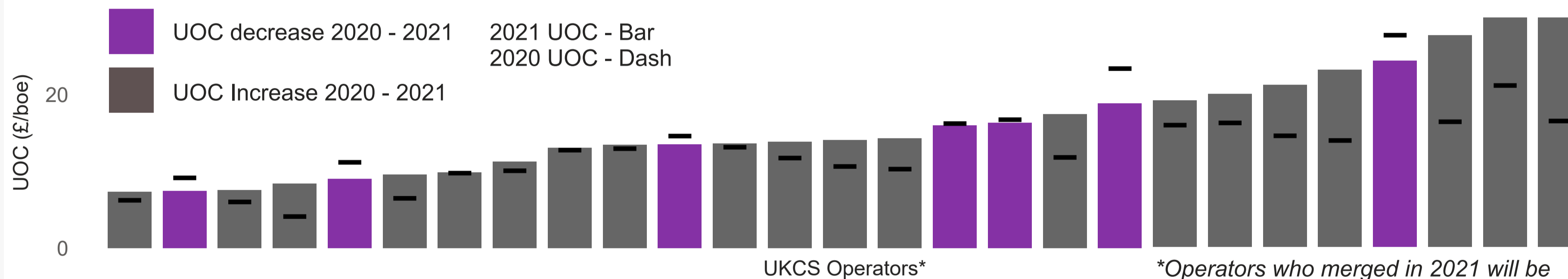
UOC rose for 20 of the 27 UKCS operators in 2021. For most operators, this increase was primarily driven by decreasing production. Production was lower in 2021 due to delayed shutdowns and maintenance backlogs. OPEX (either OPEX alone or OPEX and production combined) increased for 16 operators, driving UOC up. Lower UOC was driven by decreases in OPEX and production increases.

Mid-cap operators had the highest average operating cost, at £17.5/boe, followed by joint ventures and national oil companies, at £17.4/boe. Small-cap and private equity operators had operating costs of £15.6/boe and £13.0/boe respectively, while supermajors had the lowest average operating costs, at £11.0/boe.

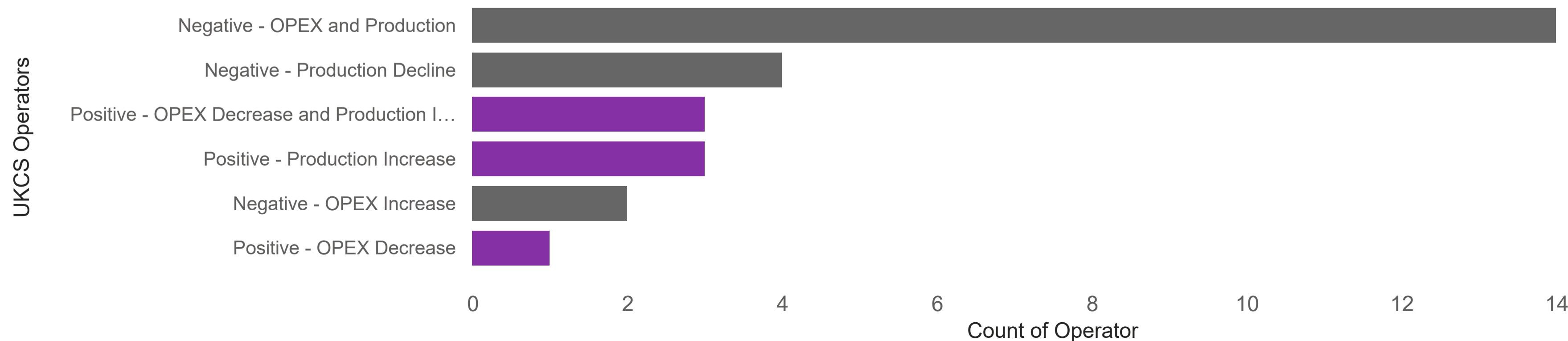
UOC rose for all operator types, though small-cap operators recorded the smallest rise, of £1.24/boe (9% increase).

Mid Cap	JV & NOC	Small Cap	Private Equity	Supermajor
17.5	17.4	15.6	13.0	11.0

UKCS operator Unit operating costs (2020 - 2021)



UOC change drivers



Filters

Unit operating cost & production efficiency

SNS & IS has the lowest operating costs but also the lowest production efficiency



13.56
Field Unit Operating Cost 2021 (£/boe)



73%
Production Efficiency (%)

UOC and production efficiency

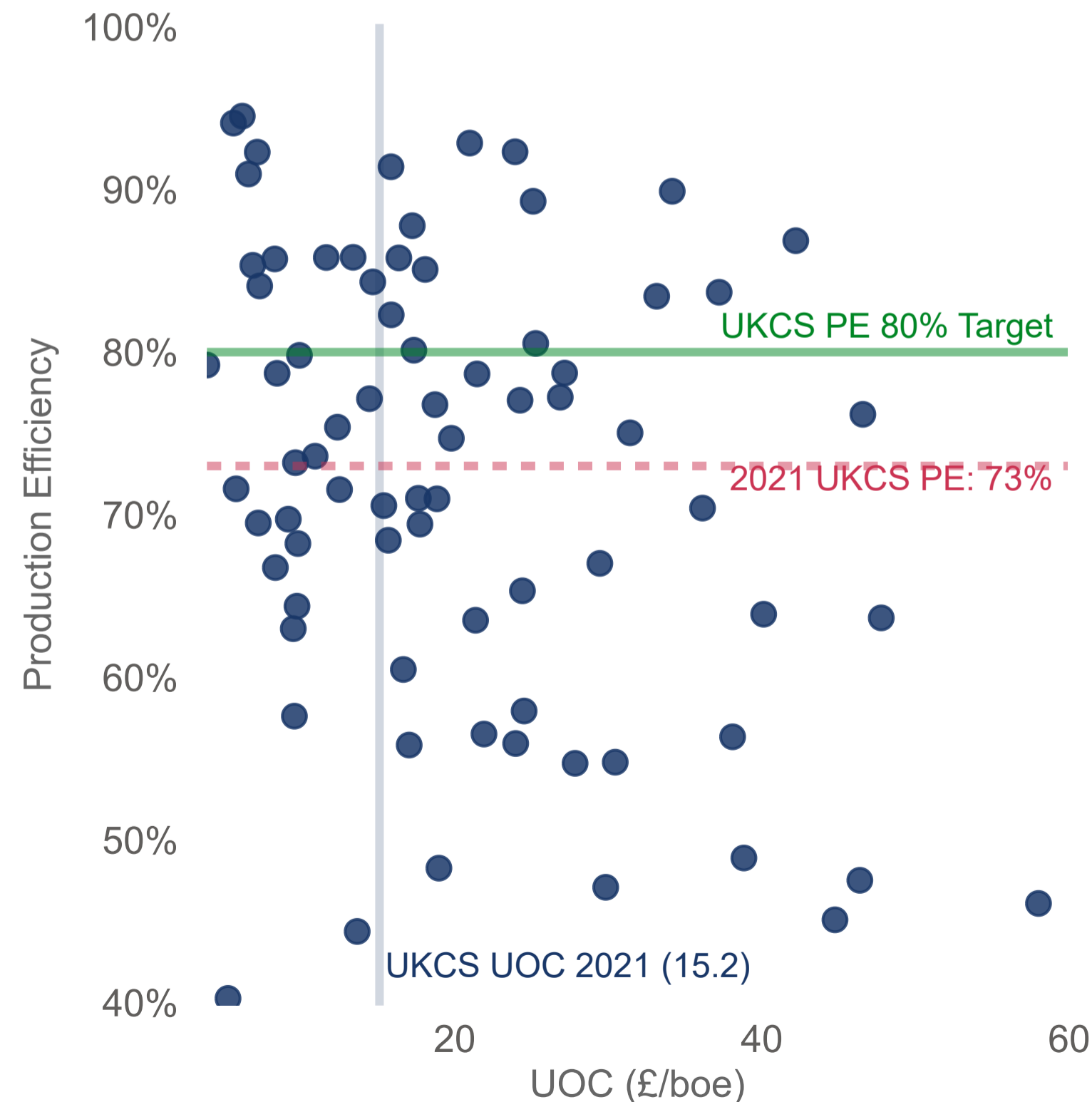
Production Efficiency (PE) dropped to 73% from the UKCS target of 80% in 2021. The FPS shutdown contributed significantly to this decline. For a full analysis of UKCS PE, please read the 2022 PE report found on the [NSTA website](#).

Fewer than 33% of hubs achieved 80% PE. Hubs with PE higher than 80% had a lower average UOC (£12.7/boe) than those with PE below 80% (£14.3/boe).

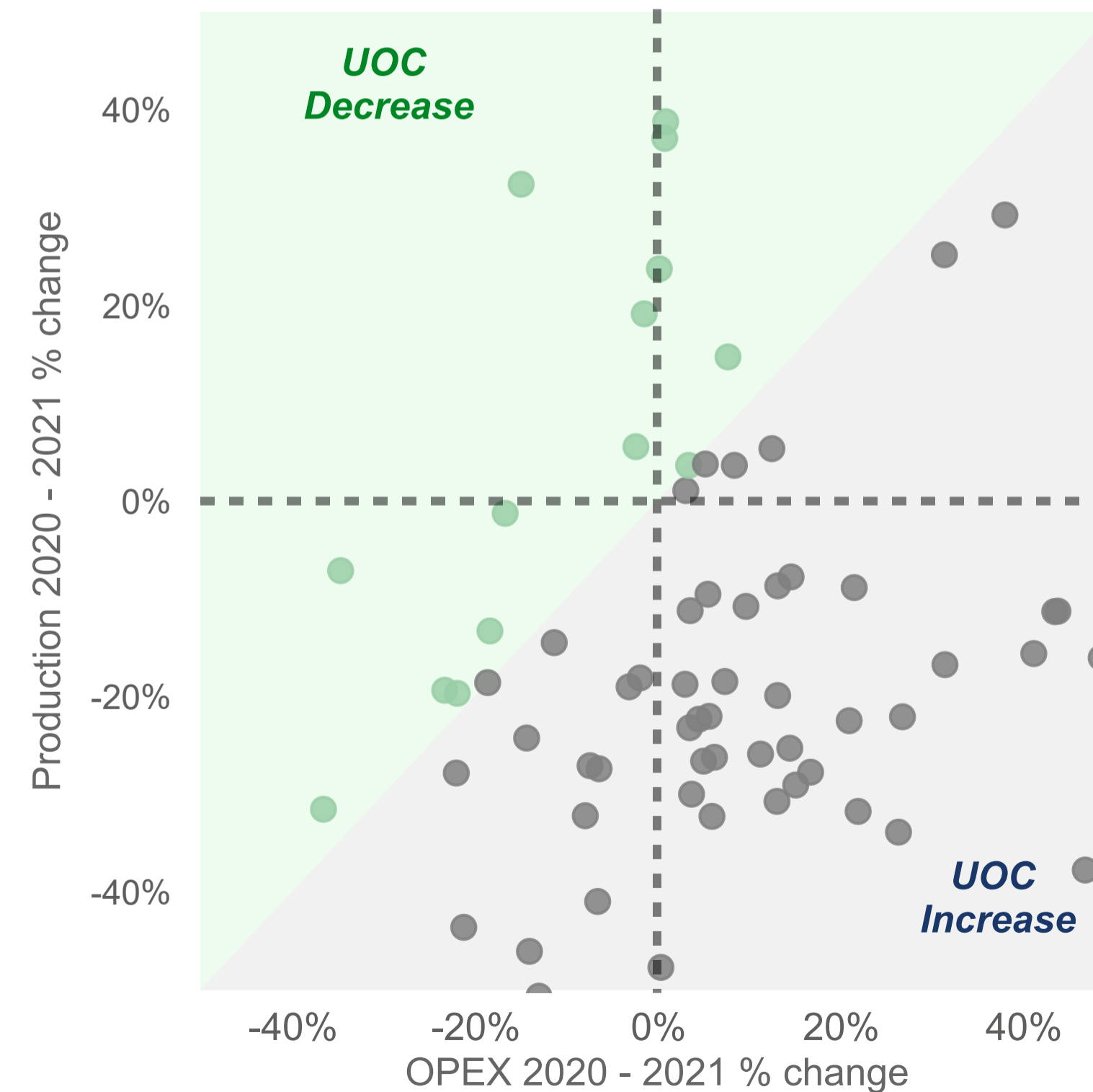
A cross-plot of the OPEX change and production change as a percentage indicates that most hubs recorded a UOC increase due to higher OPEX and lower production

Hub Name Operator

UOC vs production efficiency



OPEX + production % change



Select Filter

CNS

NNS & WoS

SNS & IS

Reset Filters

Unit operating cost and CO₂ emissions

NNS & WoS remains the highest emitting region



21
Mean facility carbon intensity (kgCO₂/boe)



0.19
Mean carbon intensity change 2020 - 2021 (kgCO₂/boe)

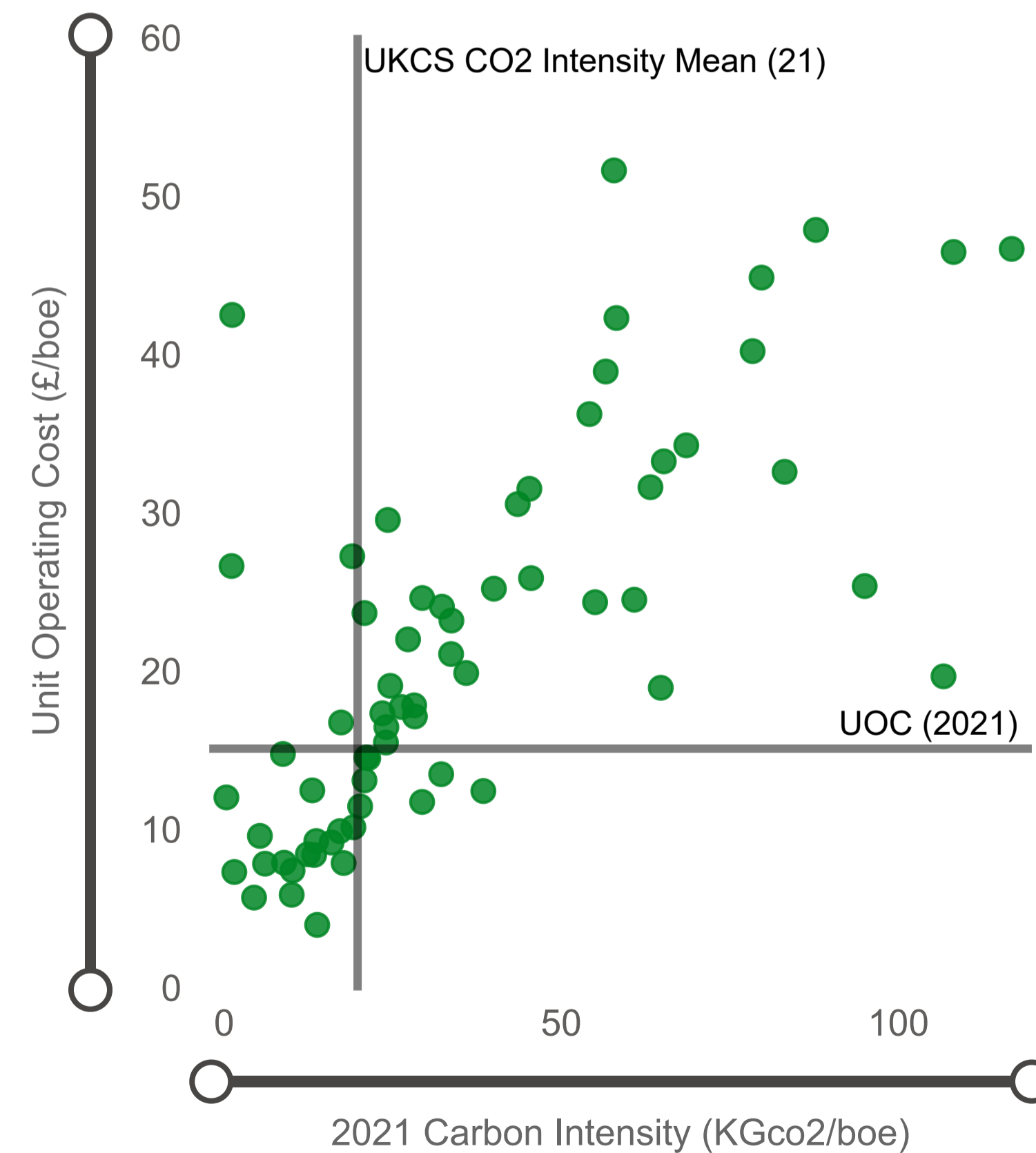
Emissions and UOC

Comparing emissions intensity with UOC shows there is a positive correlation between the carbon intensity of facilities and higher UOC. This relationship is not evident when plotting direct CO₂ emissions versus UOC. However, a small number of hubs with low production have been emitting more than 400,000 tonnes of CO₂ per year.

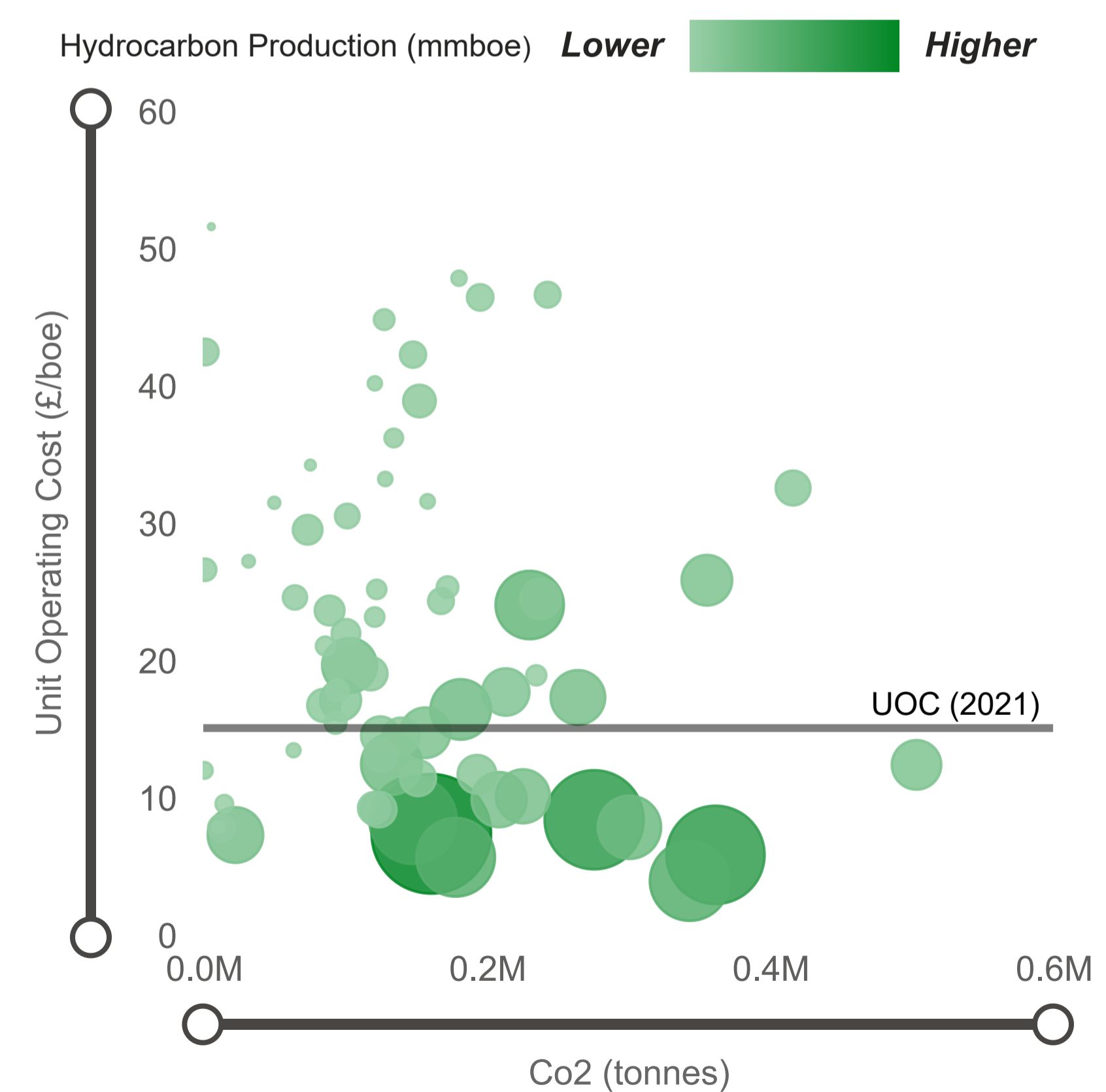
For more insight into UKCS emissions, please refer to the 2021 UKCS Emissions Monitoring Report. An updated version is due to be published in the second half of 2022.

**CO₂ Emissions data source: UK 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 by hubs



CO₂ emissions & UOC by hubs



Select Filter

CNS

NNS & WoS

SNS & IS

Reset Filters

ETS OPEX Analysis

EU & UK Carbon prices look set to continue rising

The UK Emissions Trading Scheme (UK ETS) replaced the EU ETS in January 2021, with market auctions and futures trading beginning in May 2021.

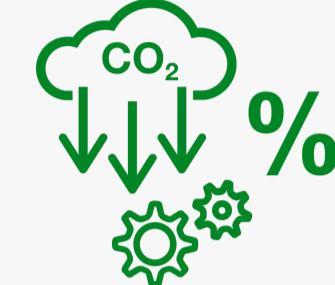
One important outcome has been a carbon price spread between the UK and EU. The main driver behind the change (red line vs grey) is the number of participants in the market. The UK has fewer than the EU, which means there is less liquidity in the UK market. However, the scheme is relatively young and still developing.

ETS payments account for 5.2% of total OPEX spent. The NNS & WoS regions have the highest average share of total OPEX, however, the distribution varies widely owing to the different types and ages of installations between the NNS and WoS.

Carbon prices for large platforms accounted for 8.1% of total OPEX in 2021, the highest average for all types of installation. Carbon prices had a similar level of impact on FPSOs, small platforms and tiebacks.

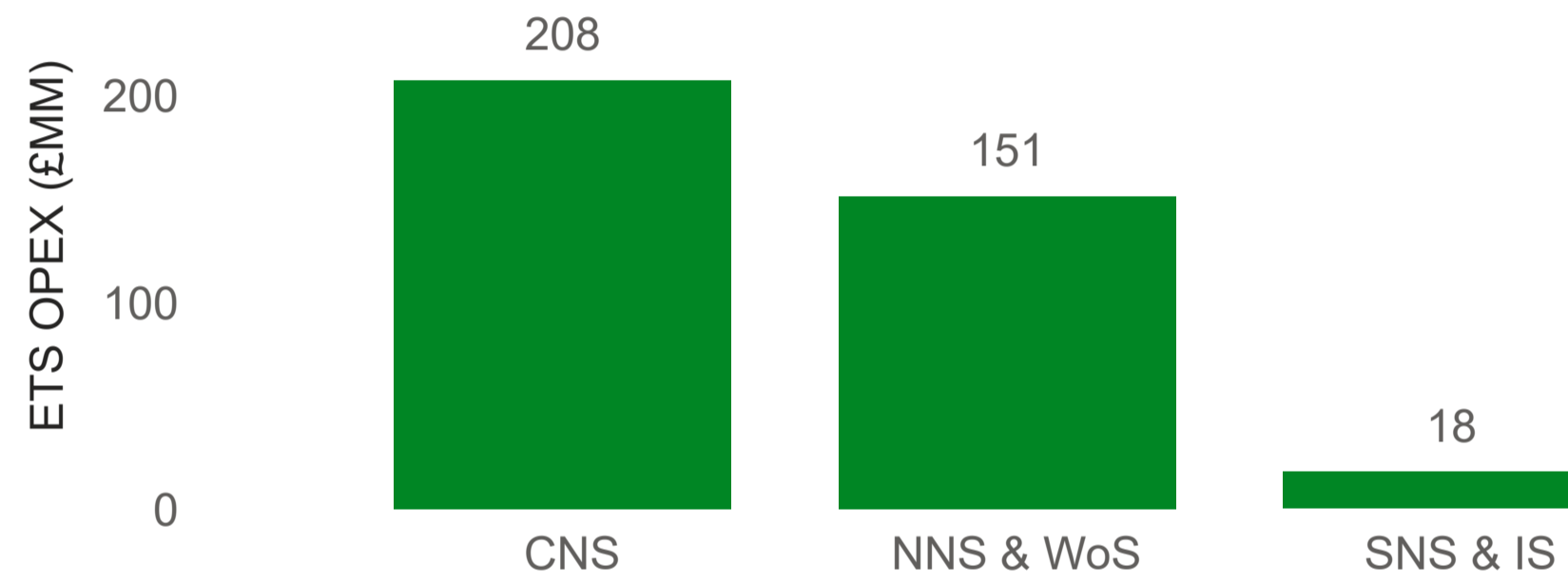


377
Total OPEX contribution to ETS (£MM)



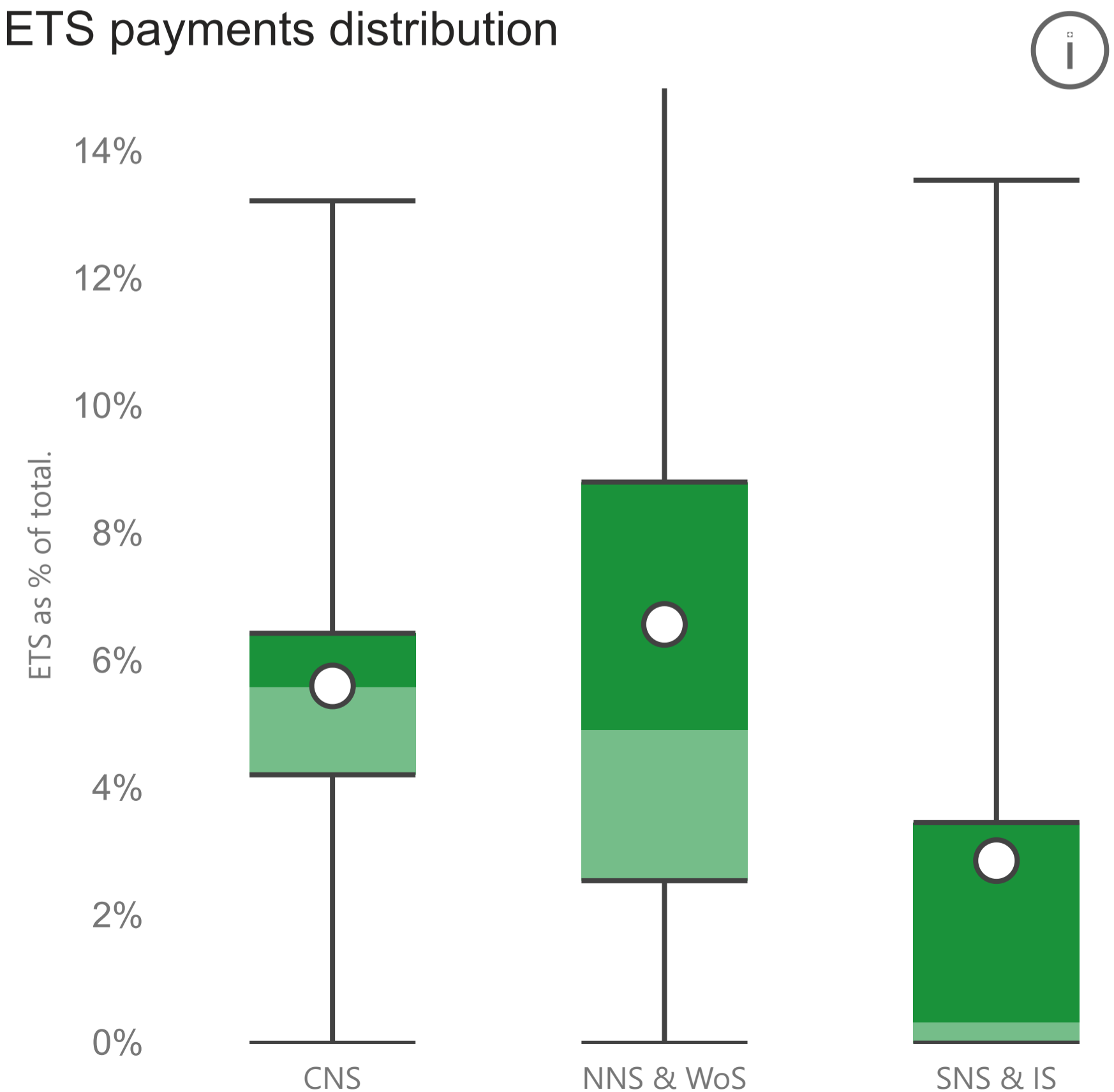
5.2%
2021 ETS Payments as a percentage of total OPEX

Total ETS spend by region



Region Infrastructure **Select a parameter**

ETS payments distribution



EU ETS and UK ETS carbon futures price trend

