

## FOCUS ON DECOMMISSIONING

# Sharp jump in the price estimate for UKCS dismantling

Costs need to be curbed if there is any hope of executing the scopes required by current legislation and regulations, warns energy engineering consultancy Xodus. **Jeremy Cresswell reports**

The overall estimate for decommissioning oil & gas production infrastructure has risen sharply in recent years, the very latest pointing to a median gross figure of around £58billion.

Up until a few years ago, the estimated decommissioning cost for UK assets was £35-40billion; this year the estimate increased to £41-46billion.

But energy engineering consultancy Xodus warns that its latest analysis of the figures by the Oil & Gas Authority (OGA), Department of Energy and Climate Change (DECC) and Genesis Oil & Gas Consultants shows that real costs could be closer to £45-70billion, with £58billion being the median estimate.

However, the engineering house argues in fresh analysis that "this is a natural position to be in, given the relatively immature stage of the decommissioning industry of UKCS oil & gas infrastructure as a whole, and is seen across many industries and project types".

Xodus is clear that decommissioning costs need to be brought under control if there is any hope of executing the scopes required by current legislation and regulations.

In September, analysts at Wood MacKenzie warned that the current oil price slump could lead to the shutting down of 140 UK offshore fields over the next five years as operators accelerate plans for decommissioning amid drastic cost cutting and poor pricing outlook.

WoodMac said then that the decommissioning of the fields could go ahead even if oil prices return to \$85 per barrel; even a partial recovery to around \$70 a barrel would leave 50 fields facing early abandonment, the Edinburgh-based firm warned.

In its analysis, Xodus cites the UK nuclear industry where decom provisions have had to grow by over 50% in the last six years, though it stands back from suggesting that the offshore decom market could overheat unless tightly managed.

"This is due to more analysis of the major technical challenges ahead and a better understanding of the likely costs based on decommissioning carried out thus far," says the Xodus study, which was authored by consulting engineer Caroline Laurenson.

Prior to joining Xodus in 2011 she was part of the Shell team that defined the concept selection for decommissioning the Brent Alpha, Bravo and Charlie

platforms and was the lead process engineer for the Brent Alpha platform front-end engineering and design study (FEED).

She argues in the study that decommissioning costs are hard to predict, partly due to the fact that not many projects have been executed.

According to Oil & Gas UK, about £4billion has been spent on decommissioning assets that have ceased production on the UK Continental Shelf since 1990.

That is thought not to be a useful guide to the future as "project scopes are unlikely to be directly comparable with one another".

It is noted that, for the last five years, OGUK has been collating data from industry on the magnitude of the decommissioning challenge.

"Operators are asked to supply information of their expected work-scopes and costs for the next 10 years. It is expected that nearly £17billion will be spent on decommissioning in the next decade," says the Xodus study.

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"While such information is publicly available, at this stage of the decommissioning industry's development it may be premature to take such data at face value without appropriate scrutiny.

"The data covers 10 years of activity and therefore may capture mostly the early project activity and will not show expenditure for projects that carry on after the 10 years.

"The data supplied is also at varying levels of accuracy and are therefore not always comparable. In fact only 5% of the projects in the survey were reported as Class 1 or 2, therefore the majority are based on very early project planning information and, as such, there is still a high degree of uncertainty in the information presented in the OGUK Decommissioning Insight Report."

Xodus continues by saying that the increase in proportional well P&A (plugging & abandonment) spend from 44% to 46% in OGUK's analysis may be explained by the shift in strategies for assets with a high number of wells to execute their abandonment work as

early as possible as it is well known now that this well activity is a long and time consuming process, with each well taking an average of 30 days at current norms.

"There is a definite increase in wells activity seen in the data, particularly in the Central North Sea.

"The data shows well abandonment costs can vary between £3million and £10million per well on average, with those at the lower end of the range located on platform structures.

"For subsea wells there is significant variation in potential costs with some outliers predicted at £45million per well."

Xodus reports that there "looks to be a slight upward trend in the cost of wells activities", but that this is "not likely to be a trend which continues to be seen" with industry focus on abandonment technology improvements and delivering activities as efficiently managed campaigns.

"Review of the historical data for structure removal shows that there has been some change in the average cost metrics," says Xodus.

"The reduction on the topsides removal costs could be explained by the efficiency drive in the industry to reduce facility running costs and prepare for future decommissioning during an assets late life."

However, Xodus' decommissioning lead also points out that there is not a reliable trend across the data due to the high variability in these costs especially in the removal of substructures in the



## Average structure removal cost

Removal Cost (£/tonne)		2013	2014	2015
CNS, NNS & WOS	Topside	4100	2900	3300
	Substructure	4300	4300	4800
SNS & Irish Sea	Topside	3600	4000	4600
	Substructure	5700	4500	4400

North, Central and West of Shetland areas; and that it "would be reasonable" to assume that similar costs will be seen for the foreseeable future.

With oil prices in the basement since Q4 2014 and no clear sign in sight of a let-up on market pressures, the UK industry is battling to become a lot more efficient than pre-crash. And yet, despite the significant drop in oil prices, the full impact of the slump has yet to be felt on decommissioning costs.

"This apparent hysteresis and lag in

response to reduce costs can be explained in a number of ways," argues Xodus, adding: "What can be seen is a change in activity levels, or more precisely a change in visible activity levels.

"Oil companies have had to make improvements on a multitude of fronts in order to remain competitive.

"The Oil & Gas UK Insight shows that some operators now see the reality of the asset retirement and are making proper plans for decommissioning

## Decommissioning cost influences

Cost Decrease	Cost Increase
Early integrated planning (inc. contingency plans for unknowns)	Delay and management of decommissioning as a separate project
Good definition of scope and potential unknowns based on industry learnings	Poor definition and understanding of scope
Mature competitive supply chain	Limited supply chain capacity
Collaboration across supply chain and operators [e.g. sharing of vessels, project experts]	Isolated project execution
New technology	Delay in initiating research and product development/testing
Marginal gains in repetitive tasks (e.g. Well P&A)	Not incorporating learning from previous tasks or not managing sequence of activities to capitalise on repetition
Good fabric maintenance and asset stewardship	Poor maintenance resulting in increased OPEX and additional remedial work to make asset safe for removal
Increase of structure and equipment re-use/re-sale	Sub-optimal waste management reducing value of materials
Capital available to fund decommissioning according to optimum timing strategy	Insufficient capital to fund decommissioning – delaying project and extending running and maintenance costs
Relaxation of regulatory requirements [i.e. OSPAR derogations to leave in situ]	Increase in regulatory requirements
Engaged stakeholders	Insufficient stakeholder management



Caroline Laurenson of Xodus

along with more robust cost estimates, while others in the face of the low oil price and restricted cash flow are looking for ways to extend field life and delay decommissioning expenditure.

"There will still be some operators and assets who see decommissioning costs as a future concern."

Laurenson is concerned that the actual decommissioning costs could be "slightly more" than predicted by OGUK.

The data gap in unknown/unaccounted for costs could increase real costs borne by industry as a whole by as much as 50%.

However, in the report, she states: "This will be balanced out partially by the improvements in project delivery and technology and potentially also a softening in the legislation around leaving structures in situ."

The last point comes as a surprise to Energy as it is the Oslo & Paris Convention (OSPAR) that is driving the insistence regarding the removal of all but concrete gravity base structures. NGOs like Greenpeace and Friends of the Earth that were the prime catalysts to

OSPAR will doubtless be uncompromising.

The Xodus report continues: "It will be important for the industry to show that reducing costs has been a focus as in reality the final bill is likely to be similar if a little more than the numbers quoted today."

"The public and stakeholders may see it as merely standing still and not ap-

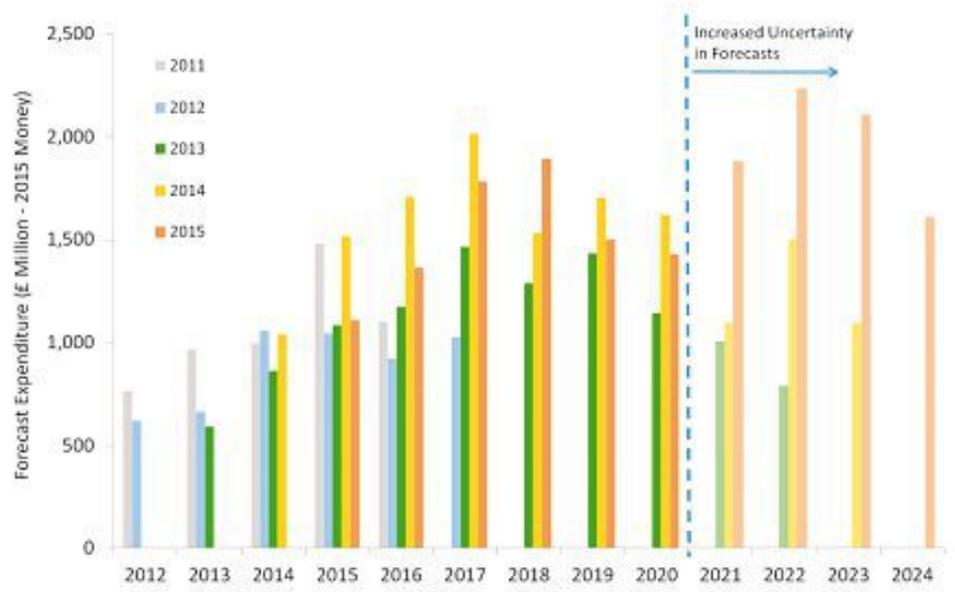
**"If there should be a limited availability of services such as waste processing this could result in cost inflation"**

preciate cost reduction measures if they are not quantifiable.

"The issue highlighted here is not so much that the cost of decommissioning could increase, but that the overall estimates were not accurate in the first place."

The report's author acknowledges that it is hard to predict how the cost metrics will change, this is because they are a composite of many different input

**UKCS forecast decommissioning expenditure**



Source: Oil & Gas UK

factors and there is a great deal of uncertainty and variation in the numbers depending on asset type/location/etc.

"Current methods of collating industry data tend to focus on today's estimates and there is no standard mechanism to collate actual industry metrics as yet."

"The projections presented in this note are based on analysis for future project cost estimates, which have an inherent uncertainty due to the level of immaturity and definition of these scopes."

"However, due to the industry focus on improving the execution of decommissioning activities is it reasonable to assume a moderate improvement in the metrics, with the most potential for improvement in the delivery of well abandonment."

"Therefore there should be a downward trend in individual elements of the cost but this may not translate to the overall decommissioning cost reducing due to the potential for unaccounted for and/or underestimated costs."

Xodus gives some credit to efforts made to date, acknowledging that the industry is getting better at defining and executing the physical tasks. But Laurenson warns that there are areas of the cost breakdown that need further attention.

Examples given include that facility running/owner costs and operator project management are often underestimated and yet contribute at least 20% to the overall costs. One common misconception is that production platform operating expenditure will reduce significantly upon CoP (ceasing of production).

It is pointed out that future costs will be directly influenced by the level of decommissioning activity and less so by the oil price; although a continued low oil price will bring forward more commissioning activity.

Xodus is concerned about this: "As an industry this will be difficult to manage, not from a supply chain perspective but due to the lack of availability of cash flow from the operators and also the government."

"Traditionally, higher oil prices have resulted in higher project costs, while there is currently a surplus of vessels and lower fuel costs giving benefit to decommissioning projects being executed today."

"This may not be true for decommissioning activities in the future as costs will become driven by supply chain maturity and demand."

"If there should be a limited availability of services such as waste processing

this could result in cost inflation."

It is emphasised too that a decommissioning project has quite different drivers to a field development project.

"There is no saleable commodity but this is partly balanced by a relative lack of time pressure, which gives more flexibility to negotiate contracts and balance out fluctuations in demand."

"Decommissioning costs need to be curbed if there is any hope of executing the scopes required by current legislation and regulations."

"Activity will need to be managed by area so that peaks in activity do not drive up costs due to demand exceeding supply and advantage taken to collaborate and negotiate campaigns of work."

"It is likely that the government will take a more active interest in the costs and how the execution of decommissioning activities are managed to realise this."



Infrastructure from the Indefatigable field in the southern North Sea arrives in port for cutting up