

Could rigs to reefs contribute to the UK's net zero target?

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This article considers whether using decommissioned oil and gas rigs as artificial reefs could contribute to the oil & gas industry's efforts to help the UK meet its net zero target. It assesses the legal and practical obstacles, and discusses the likelihood of the UK and EU allowing the creation of such reefs in the North Sea.

Decommissioning requirements

Decommissioning of an offshore installation (such as an oil and gas platform or pipeline and related cables) is required at the end of its operational life. This is a legal requirement under the Petroleum Act 1998 with some limited exceptions which require a permit. The Department for Business, Energy and Industrial Strategy (BEIS) has published guidance on the regulatory requirements for decommissioning offshore oil and gas installations and pipelines ([BEIS: Oil and gas: decommissioning of offshore installations and pipelines](#)) (BEIS Guidance). For more information, see [Practice note, Decommissioning of offshore installations: What decommissioning is and when it is needed](#).

Several hundred oil and gas platforms are due to be decommissioned over the next three decades in the North Sea. Fluctuating oil prices and the shift towards renewable energy have reduced the commercial viability of many North Sea rigs, presenting a decommissioning challenge of significant costs and potential environmental impact. The UK is set to become the largest decommissioning market globally, with an estimated \$26 billion to be spent by 2030 on removing redundant oil and gas rigs.

What is the carbon impact?

The UK currently removes offshore infrastructure at a rate of 70,000 to 100,000 tonnes a year. This has a significant carbon impact. The standard decommissioning process for oil and gas rigs involves plugging the well(s), removing the entire substructure to shore and returning the surrounding area to its natural condition. To clear the seabed, operators must remove drill cuttings, cables and pipelines, which requires the use of diesel-fuelled tugs and barges. During the decommissioning process, vast amounts of

CO₂ emissions are emitted from the heavy machinery. Further CO₂ emissions are released when the oil rig is brought to shore and scrapped or recycled which often takes place in less-developed countries.

Studies show the complete removal of oil rigs causes significant environmental damage. As the structure has been in place for decades, marine life has formed around it. The complete removal of the rig destroys this pre-existing marine life which has become part of the eco-system. In some circumstances the oil rigs, when submerged, act as artificial reefs. They can provide a hard substrate for aquatic life that produce larvae and spores which are spread by currents. Fish populations are subsequently improved in the area near the rig which, in turn, attracts predators higher up in the food chain.

Converting oil rigs to reefs has already been carried out in California and the Gulf of Mexico with some success. In California, a rigs to reef decommissioning strategy is permissible under the California Marine Resources Legacy Act (Assembly Bill AB 2503) after an environmental impact assessment and subject to a long term plan to monitor and manage the submerged artificial reef. The platform operator is obliged to fund the state's oversight of decommissioning and retains liability for any environmental damage caused by leakage.

The approach taken on long term liability in the Gulf of Mexico states of Texas and Louisiana is different. Although a rigs to reef programme is funded by contributions from oil and gas operators, and the operator is required to donate approximately half of its cost savings from implementing a rigs to reef decommissioning strategy, a fund is created and the state assumes liability for the reef going forward and is responsible for ongoing maintenance costs.

There is recent evidence to suggest that a rigs to reef decommissioning strategy could be replicated in the North Sea. If implemented it would maintain thriving marine life, reduce CO₂ emissions and lower decommissioning costs.

This calls for alternative decommissioning strategies to be considered.

Obstacles to a rigs to reef decommissioning strategy

Unfortunately, the public perception of leaving rigs in situ at sea, largely influenced by the Brent Spar incident, is negative.

In 1995, Shell planned to submerge the Brent Spar oil platform in the North Sea following a thorough investigation of the safest options for its disposal. The British government supported Shell's decision and independent oceanographers, scientists and environmentalists were of the opinion that sinking the platform would have negligible environmental impacts on marine life. Despite these views the event attracted global political and activist intervention, with Greenpeace leading the opposition. Greenpeace occupied the platform for two weeks in what appeared to be a stand-off and Shell, facing a potential boycott of its petrol stations in Germany, decided to dispose of the platform on shore. For more information, see [Practice note, Decommissioning of offshore installations: Case study: the Brent Spar](#).

Three years later, [OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations](#) (Decision 98/3) was passed, implementing a general ban on leaving oil rigs at sea. The consensus is that the Brent Spar incident led to the implementation of this decision.

Under the Petroleum Act 1998 and BEIS Guidance there is a wide-ranging consultation process for decommissioning programmes and an obligation under section 29(3) of the Petroleum Act for statutory consultation with representatives of parties affected by the plan including the fishing industry. As a result, there is ample opportunity to test public opinion and for objections to be raised. For more information, see [Practice note, Decommissioning of offshore installations: Petroleum Act 1998 decommissioning requirements for oil and gas](#).

What is the legal position?

The legal position relating to decommissioning of offshore installations in the UK is determined by several international treaties to which the UK is signatory and by the regime set out in the Petroleum Act 1998 and the BEIS Guidance.

Under the [UN Convention on the Law of the Sea 1982](#) (UNCLOS), the UK is required to ensure the removal of abandoned or unused offshore installations in its territorial sea and exclusive economic zone to ensure the safety of navigation. Offshore installations cannot be dumped and "dumping" includes any deliberate disposal of a platform or other man-made structure at sea (*Article 1(5)(a)*). Dumping is only allowed with the express prior approval of the relevant coastal state. UNCLOS also imposes a duty on states to prevent, reduce and control pollution of the marine environment and set up standards and recommended procedures to address pollution. The International Maritime Organization (IMO), as the global authority for setting standards for the safety, security and environmental performance of international shipping, has issued one of the international standards referred to in UNCLOS – IMO "Guidelines and Standards for the Removal of Offshore Installations and Structures". These in turn require coastal states to ensure that disused installations are removed in whole or part where there is no reasonable justification for allowing an installation to remain on the seabed. Any decision to allow the installation to remain must be based on a case-by-case evaluation including scientific evidence which looks at the potential effect on the marine environment.

The UK is also a contracting party and signatory to the [Convention for the Protection of the Marine Environment of the North-East Atlantic 1992](#) (OSPAR Convention), the mechanism by which 15 governments agree to cooperate to protect the marine environment of the north-east Atlantic Ocean. The OSPAR Convention and its provisions have been implemented into UK law and are reflected in the BEIS Guidelines. As such, the OSPAR Convention applies to activity in the North Sea. Under the OSPAR Convention, leaving the whole or part of a disused offshore installation in place does not count as dumping if the operation takes place in accordance with any relevant provisions of OSPAR or other international law.

Decision 98/3 is the key pronouncement of the OSPAR contracting parties on dealing with redundant installations and has been criticised for being very restrictive. It provides that dumping of disused offshore installations at sea is prohibited with a limited number of exceptions. These recognise that it may be difficult to entirely remove large steel jacket footings and concrete installations which can be left on a case-by-case basis. The Decision requires that:

- All topsides must be returned to shore.
- All steel structures with a jacket weight less than 10,000 tonnes must be completely removed for recycling or final disposal on land.

- All installations put in place after 9 February 1999 (when Decision 98/3 came into force) must be completely removed.

There are potential exemptions for:

- Steel constructions weighing more than 10,000 tonnes installed before 9 February 1999 where the footing may remain in place.
- Gravity based concrete installations, floating concrete installations, and any concrete anchor-base installed before 9 February 1999.
- Other disused offshore installations when it is possible to demonstrate exceptional and unforeseen circumstances resulting from structural damage, deterioration or similar difficulties.

A derogation can only be used, and a permit issued, after a comparative assessment of the options for disposal on a case-by-case basis. There must be a significant reason why the option of leaving part of an installation in place is preferable to disposal on land before the permit can be granted.

Although Decision 98/3 contains the above derogations, they are rarely used by operators when carrying out decommissioning because of the negative public view of leaving rigs in place.

If a contracting party wants to use one of these derogations, it must conduct a comparative assessment of disposal options in accordance with Annex 2 to consider the impact of leaving the rig on the marine environment and other "legitimate uses of the sea". Evidence must be submitted as to why an alternative disposal method is preferable to reuse, recycling and land disposal. The contracting party must also consult with the other contracting parties and the results of the assessment must be shared with them in accordance with Annex 3 of Decision 98/3.

Decision 98/3, with its exhaustive list of derogations, does not actively promote a rigs to reef programme unlike legislation in the United States. Although Decision 98/3 limits the possibility of converting rigs to reefs in the North Sea, the scientific evidence suggests that there may be a net benefit of reefing rigs.

Decision 98/3 is reflected in the BEIS Guidance which provides for a presumption in favour of reuse, recycling or final disposal of rigs on land rather than at sea. The BEIS Guidance also, adhering to Decision 98/3, imposes a requirement to prove there are significant reasons why disposal at sea is preferable to disposal on shore. (Para 1.12).

OSPAR was aware of the uncertainty and lack of clarity created by Decision 98/3 as to whether oil rigs could be converted to artificial reefs and so issued

its "Guidelines on Artificial Reefs in relation to Living Marine Resources" (OSPAR Guidelines) in 1999, which were updated in 2012.

The OSPAR Guidelines do not, however, assist the position for a rigs to reef programme. They included two statements, which studies have suggested, are unhelpful:

- *"No materials should be used for the construction of artificial reefs which constitute wastes or other matter whose disposal at sea is otherwise prohibited"*.
- *"Modules for artificial reefs are generally built on land unless they consist solely of natural materials placed in an unmodified form"*.

The requirement that a rigs to reef programme can only be commissioned using "natural materials" restricts materials than can be reefed to those that have been unused and excludes pre-existing infrastructure. Fortunately, the updated OSPAR Guidelines replaced "natural materials" with the term "inert materials" which are defined as those which do not cause pollution through leaching, physical or chemical weathering and/or biological activity. The use of "inert materials" could provide a basis to promote a rigs to reef programme in the North Sea.

Another question mark raised by the 2012 OSPAR Guidelines is whether an offshore rig could be said to be a structure to which the guidelines applied as they were intended to "address those structures specifically built for protecting, regenerating, concentrating and/or increasing the production of living marine resources, whether for fisheries or nature conservation". As offshore oil rigs were not specifically built to protect living marine life, it is difficult to see how a rigs to reef programme would satisfy this test.

Unlike Decision 98/3, the OSPAR Guidelines are not enforceable by law.

It is worth noting how other international conventions, to which the UK is a signatory, address disposal of offshore installations which suggests some scope for change.

The primary objective of the [Convention on Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972](#) (London Convention) is to prevent the pollution of the marine environment by the dumping of wastes and other matter. From a rigs to reef standpoint, the London Convention clarified that artificial reefs are not considered dumping as long as the placement along the seabed is not for disposal or contrary to the aims of the London Convention. It may be possible for the London Convention to allow the creation of domestic rigs to reef policies, as the

relevant coastal state can grant permits for dumping of "other wastes or matters". This suggests that if the purpose of dumping is not for disposal but for the creation of an artificial reef, it will not breach the London Convention so long as the coastal state issues the necessary permit.

The [London Protocol](#) of 1996 retained the exception in the London Convention that artificial reefs are not considered dumping as long as the placement along the seabed is not "disposal". The London Protocol will eventually replace the London Convention.

The London Protocol includes deliberate disposal of platforms and other man-made structures as dumping as well as "abandonment or toppling at site of platforms or other man-made structures at sea for the sole purpose of deliberate disposal", but has a similar permit process providing certain conditions are met. The applicant must consider a hierarchy of waste management options which have an increasing impact on the environment. Starting with the method with least impact and in ascending order these are:

- Reuse.
- Recycling.
- Destruction of hazardous constituents.
- Treatment to reduce or remove hazardous constituents.
- Disposal by land, air or sea.

The [United Nations Environment Programme](#) also acknowledges the use of artificial reefs.

What does the future hold?

In March 2019, the Scottish Affairs Committee in a Parliamentary debate on the inquiry into UK oil and gas, *The future of the oil and gas industry*, considered the best way to decommission oil rigs while minimising harm to the environment and a rigs to reef programme. This was following the Scottish Wildlife Trust's written evidence to the inquiry which suggested that the current OSPAR Convention and Decision 98/3 do not allow for all decommissioning options to be considered and called for a cost-benefit analysis to consider all options for decommissioning including leaving rigs in place.

The Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) was tasked to lead discussions with NGOs, industry and environmental groups to establish a common evidence base to allow an agreed solution to be found on rigs to reef. However, to date, OPRED has not released any findings on the rigs to reef study.

Decision 98/3 under review

In January 2019, the UK government initiated a formal consultation procedure under the OSPAR Convention (in accordance with Decision 98/3) to consider an application by Shell to decommission four oil platforms in the Brent field of the North Sea. As part of the plan, Shell sought permission to leave in place the supporting structure of the steel jacket platform, Brent Alpha, and the concrete gravity-based structures for the Bravo, Charlie and Delta installations. Although Shell had considered the potential re-use of the platforms for CO₂ storage and wind farms, none of the options proved to be technically feasible because of the age of the installations and their distance from shore. The government supported the application and indicated that it intended to issue a derogation permit. As required by Decision 98/3, it then consulted with the other OSPAR contracting parties about Shell's application.

Germany and the Netherlands submitted a formal objection on the grounds that Shell had not given sufficient consideration to removal of the structures and it was unacceptable to leave in place 11,000 tonnes of residue crude oil in the platforms which represented an environmental hazard and a danger to navigation. As the objections could not be resolved by consultation, a special meeting of the OSPAR contracting parties was held on 18 October 2019. At the meeting, Germany expressed concerns about Shell's comparative assessment methodology. The meeting concluded that the current derogations in place are complicated and need to be considered on a case-by-case basis when undertaking comparative assessments. The British government stated that it would consider all views and have further discussion before taking a decision on whether to issue the permit for a derogation.

Although the UK government is required to consider the views and conclusions of the consultative meeting, these do not prevent it from granting a permit to Shell should it be inclined to do so.

Following the OSPAR meeting and report of its conclusions, the UK government has not yet announced whether it will proceed with Shell's permit.

Conclusion

Over 20 years have elapsed since Decision 98/3 and its application remains unclear. The decision on how the Brent field is decommissioned is likely to set an important precedent for decommissioning of other platforms in the North Sea. Germany has indicated that it does not regard the regulatory framework under

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Decision 98/3 as fit for purpose and has proposed developing guidance on how to undertake the comparative assessment of decommissioning options under Annex 2 of Decision 98/3.

Meanwhile, hundreds of rigs are coming to the end of their operational life and it is not clear whether a rigs

to reef programme with significant cost saving benefits and potential environmental advantages is acceptable.

The government's target of achieving net zero greenhouse gas emissions by 2050 may require some rethinking of conventional wisdom when it comes to the decommissioning of oil and gas rigs.

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