Discussion Paper. Offshore Installations and Decommissioning in the North Sea: Do we need a More Flexible Model for Decommissioning of Offshore Installations in the North Sea?

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1. Context and Objective

Next year, it has been 20 years since the OSPAR Contracting Parties agreed upon Decision 98/3 and thereby laid the foundations for the current regulatory framework for the management and decommissioning of offshore installations in the region. The OSPAR Offshore Industry Committee (OIC) has decided to perform a 'wider review' of Decision 98/3 in 2018[1]. With this paper, we present a 'green perspective' on the management and decommissioning of offshore installations in the North Sea as input into the debate surrounding this review. The paper forms input into North Sea Future's first international green NGO - science dialogue meeting on September 26th, 2017.

The paper raises some common concerns and flags some challenges and opportunities without necessarily representing the views of each of the individuals that have contributed. Its contents have been framed by interviews with 12 Danish green NGOs[2], with the purpose of mapping the contemporary agenda for marine environmental issues and offshore structures, and by subsequent discussions in North Sea Futures' NGO Task Force[3], an informal stakeholder forum established with the purpose to receive input from leading Danish green NGO's. Of the interviewed NGO's, 75% recognised that a more flexible decommissioning practice could have positive environmental effects. Some NGOs expressed concern that opening up current regulations on decommissioning of offshore structures, could lead to oil and gas companies not following through on their commitments to cap and remove rigs once they are decommissioned. All working on the topic stated that more knowledge is needed.

Comments on a draft version of this paper have also been received from Greenpeace UK, the KIMO Secretariat, The North Sea Foundation, the Scottish Wildlife Trust and WWF UK. To the extent that these comments could be incorporated into the paper, without making it inconsistent, we have done so. However, the paper does ***not*** reflect the opinions of all those, who commented.

North Sea Futures is an independent, not-for-profit company and network organisation, founded in 2017. Our work is funded by independent sources.

We envision that a future resilient North Sea is based on more intelligent design and management of offshore structures and smarter funding mechanisms for ecosystem restoration and sustainable use of its resources.

Our mission is to

- Stimulate and contribute to a well-informed debate of the potential nature and environmental benefits that could be achieved by taking a more flexible approach to the management, reuse and decommissioning of offshore structures;
- Inspire innovation in the offshore energy sector that helps to make the best possible use of natural resources in line with the principles of a circular economy and maximizes ecosystem services provided by offshore structures;
- Develop and demonstrate a next best practise in decommissioning (and general management) of offshore energy installations that maximizes ecosystem and wider societal benefits;
- Establish an independent fund or other organisational structure to ensure that a more flexible approach to decommissioning of offshore structures would generate maximum benefits for the environment and society in general.

2. Upcoming challenges to the current regulatory framework around offshore installations

In the course of the last two decades, much has changed in the North Sea and the wider OSPAR region: the energy transition and increased focus on 'Blue Growth' are leading to an unprecedented industrialisation of our seas. This industrialisation calls for intensive transnational collaboration and an integral approach to ensuring safety at sea, sustainable use of marine resources (incl. space) and protection and restoration of valuable marine habitats and species. In this context, North Sea Futures perceive a need to explicitly include in OSPAR 98/3 the possibility for leaving clean, ecologically valuable parts of offshore installations in situ, in specific cases where this option can be proven to be the best option for the marine ecosystem and/or the environment in general. Preferably, such a clarification should be accompanied by an evaluation of the adequacy and consistency of the wider national and international regulatory framework surrounding decommissioning of offshore installations in terms of maximizing environmental benefits.

The basis for the current regulatory framework relating to offshore installations - OSPAR Decision 98/3 (see Background brief for further details) - was agreed upon in 1998, in the wake of the Brent Spar conflict. Since then, the regulation of placement and management of all offshore installations has been centred on individual permits provided for one specific activity within a designated area for a limited amount of time. When installations are no longer needed for their original purpose, the most common and preferred option is that disused installations are taken to shore for "reuse, recycling and final disposal on land" (Preamble OSPAR Decision 98/3). Though we greatly value the effectiveness of OSPAR Decision 98/3 in putting an end to the dumping of all kinds of waste in the North Sea and adjacent waters, and in clearly placing the liability for cleaning up with the polluters, we also recognize a number of developments and new insights, which increasingly challenge the efficiency and relevance of the current regulatory framework in terms of maximizing environmental benefits from offshore installations and decommissioning of these.

- ***Blue growth and the energy transition lead to an unprecedented industrialisation of the North Sea and a dramatic growth in the number of offshore installations.*** The cumulative effects of design, placement, management and decommissioning of offshore installations are poorly understood and hardly taken into account in current regulations. There is a **need to develop new ways to consider the full lifecycle and the potential (positive and negative) cumulative ecological effects of clusters of offshore installations from the very start:** how can individual and groups of installations be designed, placed, managed and decommissioned so they make efficient use of space and resources and jointly support ecosystem services and increase resilience of the North Sea ecosystem during their entire life-time (eco-design or bio-optimisation)? And how can they best feed into a circular economy, once they are no longer needed for their original purpose?
- ***With the change in types of offshore installations following from the energy transition, different types of potential environmental impacts become increasingly important compared to the current focus on chemical pollution.*** For oil and gas installations, pollution risks are a key environmental risk, especially during operations and after use in relation to plugged and abandoned wells and contaminated seabed areas. For renewable energy installations, however, chemical pollution is a minor, local issue, while seabed disturbance, under-water noise and the effects of adding and removing large amounts of hard substrate are likely to have a much larger impact on marine ecosystems. **We need to develop a new coherent set of criteria and EIA procedures for evaluating the effects of decommissioning of offshore installations that also considers the loss of ecosystem services provided by an offshore installation such as the provision of reef habitat, additional biomass production and protection from fishing.** Environmental Impact Assessments (EIAs) relating to placement and decommissioning of offshore installations currently tend to focus on chemical emissions (pollution), seabed disturbance, noise

and other negative impacts in relation to the pre-construction baseline environment. They do not consider the role of such installations in maintaining biodiversity, biomass production or general resilience of the wider ecosystem through the provision of hard substrate and areas where certain human activities, especially trawling, are limited or entirely excluded. Nor is there a demand for an assessment of the ecological value of an installation that is to be decommissioned and the environmental impact of loosing versus maintaining this value in current procedures for decommissioning proposals (e.g. OSPAR 98/3's *"Framework for the assessment of proposals for the disposal at sea of disused offshore installations" (Annex 2))*.

- ***Research and monitoring of the ecological impacts of offshore installations, artificial reefs and ship wrecks have shown that man-made structures develop into new reef-ecosystems over time, which may in some cases contribute significantly to biodiversity and biomass production.*** In particular, highly complex structures, such as steel jackets of oil and gas installations and scouring protection from various types of installations, seem to form an interesting basis for biodiverse ecosystems[4]. Meanwhile, natural reefs and reef-dependent species are continuously under pressure and almost every square meter of seabed in the North Sea is being over-trawled at least once every four years and most of it more than once each year[5]. Hence, the role of offshore installations in biodiversity conservation and sustainable development should be further understood, before we can decide which decommissioning option will actually benefit the marine ecosystem most. A recent Policy Brief from 32 European marine science organisations, which concluded that *"The current regulatory regime has been in place for nearly 20 years, but a scientific rationale or evidence base to support it does not exist"*, supports this [6]. Elsewhere in the world, clean, disused offshore installations are being reused as reefs with positive effects and in the North Sea region, research is being done to explore how new installations (offshore wind farms) could be designed to have a positive impact on marine ecosystems[7]. On that basis, **North Sea Futures propose that more room and flexibility is created for experiments and pilot studies, which explore potential repurposing or reuse of clean, ecologically valuable parts of existing installations and design of new installations in such a way that we maximize their positive contribution to ecosystem services.** Only then we can build a proper evidence base and ensure that we do not actually destroy valuable ecosystems, which may turn out to play an important role as stepping-stones and refuge for key species that are already under pressure.
- ***Societal costs of the decommissioning task are very large and there is increasing concern about actual funding-ability of companies owning offshore installations and about long-term liability.*** It is estimated that some €50 billion or more will have to be spent on the removal of offshore oil and gas structures across the North Sea in the coming 30 to 40 years, and in the longer term, some €200k-500k per MW of installed offshore wind.[8] 60-85% of the costs will have to be covered by the state/ taxpayers through tax breaks, direct participation of the state as a shareholder and renewable energy subsidies. At the same time, there is increasing concern about the ability of current and future owners (companies) to actually pay for these costs and about the realism of assuming that private companies can effectively be held liable for potential negative impacts that may occur over a period of say 200 years. In order to reduce societal costs of decommissioning, **there is a need to evaluate payment-structures and long-term liabilities**, learning from e.g. arrangements around decommissioned nuclear power plants, landfills or even life cycle producer responsibility for consumer products.

3. Framework conditions for a next best practise

It is our desire to achieve the most environmentally beneficial results from offshore installations decommissioning activities. ***North Sea Futures is under the impression that in some cases, this cannot be achieved through the current OSPAR 98/3 derogation criteria and therefore calls for an explicit reference to environmental or ecosystem considerations as a primary motivation for deviating from the default option of full removal to shore.*** In our view, decommissioning regulations should explicitly provide room and describe procedures for leaving clean, ecologically valuable parts of offshore installations in situ to continue providing ecosystem services as artificial reefs, in cases where this option can be proven to be the best option for the marine ecosystem and/or the environment in general.

We recommend that any review and evaluation of current decommissioning regulations - at national or regional levels - should carefully consider the perspective of the energy transition and associated industrialisation of our seas, improve clarity on decommissioning regulations for offshore renewable energy installations and be guided by the following principles:

1. **Preferred decommissioning practises should first and foremost benefit the marine environment and the safety** of onshore and offshore personnel and future users of the sea and minimize the risk that society gets lumbered with the costs of cleaning up after profitable activities of private companies.
2. **Respect for the polluter pays principle and hence of full removal to shore as being the default option**, recognizing the reality of changing ownership of offshore installations, long-term liabilities versus lifetimes of private companies and learning from experiences with management of long-term liabilities from other sectors. It is important that responsibilities and liabilities are clearly and separately specified for all material associated with an offshore installation (incl. all parts of an installation and any material or drill cutting piles situated on the surrounding seabed) and for plugged and abandoned wells. **If clean material from offshore installations is left offshore for environmental or other societal purposes, it is important that liability for this material is transferred to an organisation with a societal purpose and guaranteed lifetime that corresponds with the period of time in which the material could cause damage**. Transfer of liabilities should be accompanied by financial compensation.
3. **Respect for the precautionary principle**, building on the current state of knowledge about the role of offshore installations in the wider marine ecosystem and the cumulative effects of installation, management and decommissioning of offshore installations. Additional research and policy-efforts are needed to improve our understanding of cumulative and wider ecosystem effects and to be able to take apply this understanding to decisions related to individual installations.
4. **Decommissioning decisions should be made on the basis of solid science and case-by-case assessments.** Regulations should leave room for alternative decommissioning options, where this could help reduce negative environmental impacts of the decommissioning process itself (e.g. energy use/carbon footprint, dispersal of pollutants or damage to valuable coastal or terrestrial ecosystems) and contribute to the conservation and protection of valuable marine ecosystems and species and add to the sustainability of the North Sea.
5. **The framework (set of criteria) for assessing the environmental impacts of various decommissioning options needs to include a thorough assessment of natural capital stocks and ecosystem service flows and transparency about potential trade-offs between different environmental parameters.** All decommissioning proposals should include both an

'ecological value analysis', identifying and assessing the role the installation plays as an artificial reef and what ecological impacts it may have to remove that reef, and a comparative carbon footprint assessment. In assessing potentials for reuse and repurposing of (parts of) installations, a comparison should be made with environmental impacts associated with the use of alternative (virgin) materials. A revised framework for assessing the environmental impacts of decommissioning options might also help improve decisions around placement, design and operations of new installations (e.g. renewables).

6. **Facilitation of design, materials and governance models for new installations that contribute to a positive impact on ecosystem services (eco-design) and considers the full life cycle, planning for potential co-use, reuse, repurposing and up-cycling already in the initial stages of the project**. The placement of an installation is the activity with the first and often the largest negative impact on the marine ecosystem. The better use we can make of installations and material that have already been placed in the marine environment, the less negative impact per (economic) service provided. Co-use and reuse can be taken into account already in the design and placement phase. For example, foundation and scouring protection could be developed to facilitate restoration of sea grass meadows, oysters, mussels, lobsters and other valuable species, creating new opportunities for sustainable fishing, while the blades of wind turbines could be made from new materials, which may be recycled without loss of quality.
7. **Reduction of decommissioning costs should not in itself form an incentive to leave material from disused offshore installations offshore.** The purpose of leaving material from offshore installations offshore should be either reuse for another economic purpose or to protect vulnerable key habitats and species, restore active habitats and ecosystem services, and enhance the ecological connectivity in the North Sea. Material that is taken to shore should be optimally reused and/or recycled in line with circular economy principles.
8. **Reallocation of saved costs into a North Sea Environment Fund or similar programme aimed at conservation and restoration of valuable marine ecosystems and innovative approaches to sustainable use of marine ecosystem services.** That way, societal and environmental benefits of a new and more flexible decommissioning regime could be multiplied. Lessons learned from similar funds and re-purposing programmes, such as Rigs-to-Reef programmes in the US, could inspire governance.
9. **If chemically contaminated materials, incl. drill cutting piles, are left in situ, they should be protected from disturbance by trawling and monitored in order to evaluate long-term effects on the marine ecosystem.** Earmarked funds and an organisation whose lifetime corresponds with the period of time in which damage might occur should guarantee long-term liability.
10. When material from offshore installations is left offshore, **the 500m safety zone should be maintained in order to guarantee ecological value and the safety** of all users of the sea.
11. **Transparent, knowledge-based decision making procedures** with active and transparent stakeholder involvement. As part of such procedures, comparative cost analyses of different decommissioning options should be made available as part of public consultations.
12. **A clear distinction between Marine Protected Areas (vulnerable, natural habitat) and protected areas with man-made habitats that have turned out to provide important ecosystem services.** The protection of man-made habitats should not take place at the cost of proper protection of vulnerable, natural habitats, but preferably be supportive to this, e.g. by enhancing connectivity between natural reefs and increasing the number and areas of refuge from fishing activities.

Endnotes

1 *At this stage, it is not quite clear what exactly is the scope of this review. The Offshore Industry Committee (OIC) has initiated a so-called Intersessional Correspondence Group (ICG) to coordinate this work. In the Summary Record of the 2017 OSPAR Commission meeting, the OIC Chair clarifies that its "proposal was only looking to review and not amend Decision 98/3;" and "In conclusion, OSPAR requested OIC to focus on technical aspects whilst undertaking the review of Decision 98/3 and noted the views expressed by Contracting Parties." (Summary Record – OSPAR 2017, §7.10 and 7.11)*
2 *The following organisations have been interviewed: Dancore/EUCC (Coastal & Marine Union), Danmarks Naturfredningsforening (DN), Dansk Ornitologisk Forening (DOF)/BirdLife International, Det Økologiske Råd, Foreningen Skånsomt Kystfiskeri (LIFE- Low Impact Fisheries of Europe), Friluftsrådet, Greenpeace DK, KIMO (Kommunernes Internationale Miljøorganisation), Levende Hav, NOAH, Vedvarende Energi, and WWF Verdensnaturfonden.*
3 *The following individuals have contributed to the Task Force discussions: Knud Flensted from BirdLife Denmark (Dansk Ornitologisk Forening), Henning Mørk Jørgensen from The Danish Society for Nature Conservation (Danmarks Naturfredningsforening), Ryan Metcalfe from Local Authorities International Environmental Organisation (KIMO Denmark) and Peter Blanner and Thomas Kirk Sørensen from WWF Denmark.*
4 *Coolen, J.W.P. 2017. North Sea Reefs. Benthic biodiversity of artificial and rocky reefs in the Southern North Sea. pp. 138-39.*
5 *https://www.eea.europa.eu/data-and-maps/figures/bottom-trawl-fishing-intensity-in*
6 *European Marine Board Policy Brief (N° 3, April 2017), "Decommissioning of offshore man-made installations: Taking an ecosystem approach". http://marineboard.eu/publication/decommissioning-offshore-man-made-installations-taking-ecosystem-approach-policy-brief*
7 *Bureau Waardenburg, Wageningen Marine Research, Deltares & TU Delft: "Eco-friendly design of scour protection: potential enhancement of ecological functioning in offshore wind farms" http://www.wur.nl/nl/Publicatie-details.htm?publicationId=publication-way-353135363039*
8 *http://www.windpowermonthly.com/article/1349270/decommissioning-stay-go*