CHAPTER 11

Regulating the Reuse and Repurposing of Oil and Gas Installations in the Context of Decommissioning: Creating Incentives and Enabling Energy System Integration

Catherine Banet[*]

§11.01 INTRODUCTION

This chapter deals with the reuse and repurposing of oil and gas installations in the context of decommissioning. Reuse and repurposing is of increasing relevance in many decommissioning projects, although it may only be realised in a limited number of cases. This new focus is motivated by a series of factors. The first factor is decommissioning optimisation, where actors aim to ensure cost-efficiency. Reducing decommissioning costs does not only benefit licensees and owners, but also the society as a whole, as it reduces pressure on taxpayers. A second factor is the efficient management of energy projects by prolonging the lifetime of former oil and gas assets that can serve new purposes such as renewable energy generation or carbon capture and storage (CCS) projects. Reusing existing assets can also help reduce local opposition, as new projects often involve the development of new infrastructure, which encounters 'nimby' (that is, not-in-my-back-yard) opposition from the neighbouring population. However, even the reuse of installations could meet local opposition, as was experienced in the Netherlands, where most reuse of depleted oil and gas reservoirs for the

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purpose of carbon sequestration is expected to take place offshore because of opposition to onshore reuse projects by the population.[1] Reusing oil or gas pipelines for transporting new gases is better accepted. A third factor is the opportunity to create synergies between sectors, both offshore and onshore. Offshore, reusing existing oil and gas infrastructures can enable maritime synergies across sectors and provide infrastructure for the blue economy. Onshore, it can support a rapid decarbonisation of various industries, buildings, transport and the economy in general. The current initiatives around sector integration and sector coupling envisage the reuse of existing assets for new purposes such as hydrogen, carbon dioxide or biogas transport.

In that sense, decommissioning represents both a challenge and an opportunity. It is a challenge in terms of safe, cost-efficient decommissioning, involving existing and new actors, with different capacities and interests. It can also represent an opportunity, not least in the current context of decarbonisation and fair energy transition, which can contribute to better 'resource management' at different levels of the value chain.

Although reuse and repurposing may bring valuable contribution to different policy objectives and industrial processes, it appears that it is not an obvious objective of decommissioning regulation. With the ambition to identify needs and advance solutions, this chapter sets out to identify the existing legal and regulatory incentives for ensuring reuse and repurposing, to assess whether those incentives are sufficient, and, if not, to make improvement proposals.

This chapter starts with a short review of the current practice and prospects for reuse and repurposing of decommissioned oil and gas installations (§11.02). It continues with an analysis of the place given to reuse in decommissioning legislation and how the decommissioning legal framework could provide better incentives for reuse (§11.03). Then, the chapter looks at what are or should be the central considerations when deciding on reuse or repurposing (§11.04). It ends with a reflection on what should be the central terms of a reuse decision, including for liability transfer between old and new owners (§11.05). The chapter finishes with a summary of the recommendations made (§11.06).

§11.02 CURRENT PRACTICE AND PROSPECTS FOR REUSE AND REPURPOSING IN RELATION TO DECOMMISSIONING

[A] Hierarchy Principles: Prolong, Reuse, Repurpose, Recycle and Dispose

Within waste management legislation, a waste hierarchy has been established, giving the priority order to follow: prevention, reuse, re-cycling, recovery and, as the least preferred option, disposal (which includes disposal in landfill sites and incineration

1. Despite available onshore storage capacity in depleted gas fields or saline aquifers, public opposition to onshore storage of carbon dioxide in the Netherlands has blocked such initiatives. Local opposition has been reinforced by a series of earthquakes in the area of the gas Groningen field. *See* Martha M. Roggenkamp, The Netherlands, Chapter 26 of this book.

without energy recovery).[2] Looking at the practice so far in terms of decommissioning of oil and gas assets, a relatively similar approach can be identified. Such similarity is logical, since oil and gas assets which cannot be reused or recycled will need to be disposed according to waste legislation. The circular economy model promoted in current legislative initiatives can also help streamlining approaches around those hierarchy principles in different sectors, including in decommissioning legislation.[3]

In the context of oil and gas installations subject to decommissioning, the following hierarchy can be identified: prolong, reuse, repurpose, recycle and dispose.

- *The prolongation* of the lifetime of the installations will entail that the installations continue to be used for the same purpose and under the same licence. Some maintenance work may be necessary.
- *Reuse* entails the reuse of the existing installations, fully or in part, with the same purpose, with or without relocation, but under a different licence or part of the project. Partial reuse of installation concerns primarily topsides (that is, the 'upper half' of an oil or gas platform) and flexible platforms that can be reused in another context, but still with the same purpose. Substructures are often designed for specific environments which can minimise interchangeability with other locations. Large structures can be redeployed at another location, but it is costly, and in practice, it is mostly the smaller equipment which is subject to reuse.[4]
- *Repurposing* relies also on reuse of installations, but this time for a different purpose than the original one. For example, oil and gas infrastructure can be reused in relation to carbon capture and storage (CCS), hydrogen production and transport, geothermal production, grid balancing and power-to-X (P2X)/Power-to-Gas (P2G)/Gas-to-Wire.
- *Recycling* of fixed petroleum installations is strictly regulated in most oil and gas producing regions. The primary material used in petroleum installations, in particular the base structure, is steel, which is largely recyclable after being scrapped. Due to an expected global oversupply on the rig market in relation to decommissioning of mature provinces, it is foreseen that there will be a strong push in favour of the recycling of the oldest rigs. Environmental and socially responsible recycling of oil and gas installations has also been an issue. Whilst the recycling of fixed installations occurs under strict regulations, concerns have been raised in relation to the recycling of floating structures,

2. In the legislation of the European Union (EU), the waste hierarchy is enshrined in the Waste Framework Directive: Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance) OJ L312, 22 November 2008, pp. 3–30.
3. Decom North Sea, Zero Waste Scotland and ABB, *Offshore Oil and Gas Decommissioning – Platform Removal Methods, Inventory Characterisation and Re-use Solutions* (2015), https://library.e.abb.com/public/d689c2f70f0c447586610ac566c9aa7e/ABB-Offshore-Oil-and-Gas-Decommissioning-2015.pdf (accessed 26 March 2020).
4. *Can North Sea installations be recycled, or decommissioned sustainably?*, The Guardian (1 December 2014), https://www.theguardian.com/sustainable-business/2014/dec/01/north-sea-installation-recycle-sustainable-reuse-oil-gas (accessed 26 March 2020).

which classify as vessels, and which may end up in South Asian countries for dismantlement under less strict regulation.[5]

– *Disposal* will apply to any material which cannot be recycled.

The hierarchy described above entails that the alternatives should be assessed in the priority order indicated, meaning first prolong, then reuse, and, as a last resort, disposal. This hierarchy is already well enshrined in the waste legislation but should appear more clearly in the assessment of decommissioning plans in national legislation and serve as a benchmark.

[B] Current Practice and Prospects

Hereafter are listed some examples of current and prospective reuse and repurposing projects.

[1] Reuse of Depleted Oil and Gas Reservoirs

At the end of the development of the oil and gas fields, depleted reservoirs can be used for storage of carbon dioxide (CO_2) and other gases, such as natural gas.

Depleted oil and gas reservoirs have been identified as suitable for geological storage of CO_2 for a long time, with the first CO_2 injection for storage operations taking place on the Norwegian Continental Shelf (NCS) at the Sleipner gas field in 1996. There are also recent experiences with onshore CO_2 storage projects in Canada and the USA.[6] The suitability of the reservoirs for CO_2 storage will need to be assessed to decide on the potential for reuse, but, due to monitoring by previous operators, a large amount of data is usually already available. In Norway, the Norwegian Petroleum Directorate has elaborated a 'CO_2 Atlas',[7] which intends to identify safe and effective areas for long-term storage of CO_2. Likewise, the UK and Dutch governments have mapped potential for reuse of depleted oil and gas assets, including reservoirs, in relation to

5. In the context of the North Sea, the NGO Shipbreaking Platform advocates for the use of green recycling capacity already existing in the region, instead of sending the decommissioning assets outside the region. It also argues that enhancing the recycling of offshore structures and ships in Europe would furthermore contribute to maintaining workplaces which could otherwise be affected by decommissioning and a downturn in the sector. NGO shipbreaking Platform, *Recycling Outlook – Decommissioning of North Sea Floating Oil and Gas Units* (2019), https://www.shipbreakingplatform.org/wp-content/uploads/2019/09/Shipbreaking-OG-Report.pdf (accessed 26 March 2020).
6. At the Quest CCS facility, near Edmonton in Alberta (Canada), and at the Aliso Canyon, in California, USA. Other depleted reservoirs onshore have been identified as suitable for CO_2 storage, but have faced local opposition like in the Netherlands. *See* report of current CO_2 storage in Zero Emissions Platform (ZEP), *CO2 Storage Safety in the North Sea: Implications of the CO2 Storage Directive* (2019), https://zeroemissionsplatform.eu/wp-content/uploads/ZEP-report-CO2-Storage-Safety-in-the-North-Sea-Nov-2019.pdf (accessed 26 March 2020).
7. Norwegian Petroleum Directorate, *CO2 Atlas*, https://www.npd.no/en/facts/publications/co2-atlases/co2-atlas-for-the-norwegian-continental-shelf/ (accessed 26 March 2020).

carbon capture use and storage (CCUS) projects.[8] Under EU law, Directive 2009/31/EC (hereinafter 'CCS Directive') provides for harmonised rules for the identification of suitable reservoirs for permanent CO_2 storage,[9] as well as for the monitoring of the CO_2 reservoir, including Monitoring, Measuring and Verification (MMV).

Depleted oil and gas reservoirs can also be used for the underground storage of other gases, and in particular natural gas, for the purpose of temporarily storing them before their consumption or as strategic reserves. In the United States, most existing natural gas storage is in depleted natural gas reservoirs or depleted crude oil reservoirs, which are located close to consumption points.[10] By reusing existing reservoirs, the projects benefit from existing wells, gathering systems and pipeline connections, and will, therefore, reduce the cost of converting a depleted reservoir into a storage facility. Underground storage of natural gas can also be motivated by reasons of establishing strategic reserves to be used in case of security of supply shortage.

A difference to be noted between the reuse for CO_2 storage and for natural gas is the possibility to reuse, or not as the case may be, the gas injected. This will be dependent both on technical/geological suitability of the operations and on legislation. For example, the storage of natural gas in depleted reservoirs is often temporary, whilst the storage of CO_2 is, under the CCS Directive, meant to be permanent.[11]

[2] Reuse of Wells

There are different types of oil and gas wells, which both can bring hydrocarbons to the surface, but can also be used to inject water or gas to increase the pressure in the reservoir for the purpose of enhanced production. They are usually topped by a dry or wet 'Christmas tree', which is too specific to be reused, but can be replaced to suit a reuse project. Under decommissioning requirements, well pugging will often be the first task to be performed, to seal the reservoir and avoid any spill. The window for reuse of such installations will, therefore, be tight.[12] Production wells can be reused and repurposed on-site for injection of other gases, such as CO_2 or natural gas, into

8. UK Department for Business, Energy & Industrial Strategy, *Re-use of oil and gas assets for carbon capture usage and storage projects* (July 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819901/reuse-oil-gas-assets-ccus-projects.pdf (accessed 26 March 2020). EBN, *Netherlands Masterplan for Decommissioning and Re-use* (2016), https://www.ebn.nl/wp-content/uploads/2016/12/EBN-Masterplan-for-decommissioning.pdf (accessed 26 March 2020).
9. Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 (Text with EEA relevance) OJ L 140, 5.6.2009, pp. 114–135 [hereinafter 'Directive 2009/31/EC'].
10. James G. Speight, *Natural Gas – A Basic Handbook* (2nd ed. Elsevier 2019) s. 5.4.1.
11. Directive 2009/31/EC, Art. 1.2.
12. IEAGHG, *Re-use of Oil & Gas Facilities for CO2 Transport and Storage*, 2018/06 (July 2018) 25, http://documents.ieaghg.org/index.php/s/YKm6B7zikUpPgGA/download?path=%2F2018%2FTechnical%20Reports&files=2018-06%20Re-Use%20of%20Oil%20%26%20Gas%20Facilities%20for%20CO2%20Transport%20And%20Storage.pdf (accessed 26 March 2020).

depleted reservoirs for the purpose of storage.[13] A precondition for such reuse would be that the well is situated at the right location in the field and that the safety standards are met.

[3] Reuse of Pipelines

Oil and gas pipelines can be reused and repurposed for transporting or storing gases such as CO_2, hydrogen, biogases and ammonia.

The technical feasibility of the reuse of pipelines for transporting CO_2, in either the gaseous or dense phase, has been investigated in a series of European projects[14] and is proposed by authorities in the UK[15] and in the Netherlands,[16] for CCS and CCUS purposes. However, not all offshore infrastructure is suitable for reuse. Only pipelines and producing wells with sufficient specifications can be repurposed to handle pure CO_2.[17] Most of the pipelines assessed for reuse for CO_2 transportation are trunk pipelines, that is, large pipelines transporting oil and gas from offshore facilities to mainland. Similarly, several gas DSOs have assessed the feasibility of reusing gas pipelines for transporting hydrogen and biogas, either as a blend or as pure hydrogen pipeline.[18]

Although there are economic advantages in reusing existing pipelines, it may not be the most cost-effective alternative for transporting new gases. Some European projects in the North Sea have, therefore, increasingly integrated shipping as a

13. *Id.*
14. The Acorn project is proposing to reuse trunk pipelines leaving the St Fergus gas terminal for CO_2 transportation to the Captain sandstone storage formation. (Acorn project website, https://actacorn.eu/, accessed 26 March 2020). The HyNet North West project is a CCUS project in North West England based on capturing CO_2 from industrial sources (phase 1) and the production of hydrogen from natural gas (phase 2). The project aims to reuse existing infrastructure that connects the Ayr terminal to Liverpool Bay gas fields: (HyNet project website, https://hynet.co.uk/ (accessed 26 March 2020).
15. At policy level, UK: The Government, in its *CCUS Deployment Pathway: An Action Plan,* recognised this opportunity, and the role that reuse could play in supporting government and industry to meet its CCUS ambitions. At project level, reuse of offshore oil and gas infrastructure is proposed in a number of UK CCUS projects and was an integral part of the previously proposed Peterhead CCS project in North East Scotland. In addition, the Oil and Gas Authority (OGA) is undertaking a project to explore the potential for a more integrated offshore energy sector, which includes scoping the options for reuse of infrastructure for CCUS: *see* OGA, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819901/reuse-oil-gas-assets-ccus-projects.pdf (accessed 26 March 2020).
16. Reuse is also currently being considered in CCUS developments in the Netherlands. The opportunity for reuse to drive down costs of CCUS projects has also been recognised internationally. The Porthos Project in the Netherlands is considering reuse of existing oil and gas assets as part of their proposals. Alongside this, EBN, the State-owned oil and gas organisation in the Netherlands, recently published a report, *Netherlands masterplan for decommissioning and re-use*, highlighting reuse as an opportunity in the coming years (*supra*, n. 8).
17. IOGP, *The Potential for CCS and CCU in Europe, Report to the Thirty Second Meeting of the European Gas Regulatory Forum, 5–6 June 2019*, 20 https://ec.europa.eu/info/sites/info/files/iogp_-_report_-_ccs_ccu.pdf (accessed 26 March 2020).
18. In the UK, the conversion of gas grid to hydrogen has been analysed for Leeds, Manchester and Liverpool. Those projects have been developed notably under the H21-programme https://www.h21.green/ (accessed 26 March 2020).

transport option instead of pipelines, due to economic motivations and flexibility concerns.[19]

[4] Reuse of Offshore Platforms

Offshore platforms, either fixed or floating, can be reused or repurposed, both on-site or at another site.

If left in place after the end of petroleum activities, the platform can serve as an artificial reef, without much need for adaptation besides cleaning up any hazardous substances and unnecessary appliances.[20] The platforms can also be repurposed for new uses, including: injection of carbon dioxide into depleted oil and gas fields;[21] conversion of platform substructures for supporting energy generation/conversion facility for offshore wind platforms;[22] wave power generation, floating solar panels, geothermal energy production (with pipes in seabed), power-to-gas/hydrogen production;[23] or ammonia production. All the latter applications are energy related and can contribute to ensuring better coupling and energy system integration offshore, as already envisioned in a series of projects.

The platforms, left in place or moved, can also be repurposed to serve as aquaculture hubs and for fishing activities.[24] Beyond energy- and sea-related activities,

19. The Northern Lights project, which is part of the Norwegian full-scale CCS project, includes capture of CO_2 from industrial capture sources in the Oslo-fjord region (cement and waste-to-energy) and shipping of liquid CO_2 from these industrial capture sites to an onshore terminal on the Norwegian west coast. From there, the liquified CO_2 will be transported by pipeline (built for that purpose) to an offshore storage location subsea in the North Sea, for permanent storage: *see* https://northernlightsccs.com/ (accessed 26 March 2020)
20. Several US States have developed artificial reefs programmes, often called 'Rigs to Reefs program', such as in Louisiana, California and Texas.
21. Based on stakeholder consultation conducted by the UK government, they concluded that, whilst in some cases there may be an advantage to re-using platforms as part of the transport and storage infrastructure for a CCUS project, this is likely only to be the case in some specific circumstances: *see* OGA, *supra* n. 15.
22. Among recent projects, the Norwegian company DNO plans converting the Ketch and Schooner platforms into support and accommodation facilities for workers at wind projects.
23. The CEPONG research projects looked at repurposing an FPSO to be a power hub with CCS: S Roussanaly et al., *Offshore power generation with carbon capture and storage to decarbonise mainland electricity and offshore oil and gas installations: A techno-economic analysis*, 233–234 Applied Energy 478–494 (2019), https://www.sciencedirect.com/science/article/abs/pii/S0306261918315745 (accessed 26 March 2020). The Hyper research project looked at reuse of an existing natural gas pipeline for hydrogen transport. *See* https://www.sintef.no/globalassets/project/hyper/presentations-day-1/day1_1140_ishimoto_value-chain-analysis-of-liquefied-hydrogen-ammonia-and-pipeline_iae_rev1.pdf (accessed 26 March 2020).
24. In the United States, the growth in fishing activity from oil and gas platforms led the US Congress in 1984 to approve the National Fishing Enhancement Act, which created the basis for establishment of a National Artificial Reef Plan and the establishment of a reef permitting system.

the platforms can be used as meteorological centres/weather stations, research centres, but also as housing,[25] hotel and diving resorts, for food production,[26] and even as prisons.

The topsides of platforms are easier to reuse for the same purpose. They can be transported to new sites for the development of new oil and gas projects.

[5] Reuse of Other Installations

Other installations that can be reused and repurposed are storage sites (for example, for the storage of other gases) and surface installations (for example, for the production of geothermal energy or hydrogen generation). Appliances connected to, and essential for the functioning of, the installations can be part of the reuse project, but may not be repurposed (for example, subsea facilities or umbilicals to platforms).[27]

§11.03 LEGAL REGIMES TO ENCOURAGE REUSE AND RE-PURPOSING

This section analyses which place is given to reuse and repurposing in decommissioning legislation at international and national levels, and how the decommissioning legal framework could provide better incentives to promote reuse and repurposing.

[A] The Place of Reuse under International Law on Decommissioning

The international regulation on offshore decommissioning favours complete removal of fixed installations, and only as an exception allows partial removal or the reuse/repurposing, if duly substantiated. Multilateral treaties do not provide procedural rules for assessing the pros or cons of reuse compared to full or partial removal. Some non-binding procedural rules are defined by the International Maritime Organisation (IMO) in the form of Guidelines. Regional Treaties, like OSPAR,[28] envisage reuse under strict conditions. This means that international law is recognising the role of

25. To mention an example of innovative project, a researcher (M. Thammalla) at the United School of Architecture in Auckland, New Zealand, designed a project for the repurposing of semi-submersible oil rigs for housing part of the population which are used to living in low-lying areas, but which have been displaced by climate change. As referred to in ArchDaily, *A Country Of Converted Oil Rigs: Is This How To Save The Maldives?* (23 May 2015), https://www.archdaily.com/634314/a-country-of-converted-oil-rigs-is-this-how-to-save-the-maldives (accessed 26 March 2020).
26. The consultancy Concept Design Marine (CDM) proposes repurposing decommissioned offshore oil and gas structures where food production units – both, aquatic and non-aquatic cultures – can be grown. The offshore unit must previously be stripped of all hazardous materials. The patented SeaFarm project includes the production: 1. in leg/jacket area of fish, oysters or other aquatic cultures; on the deck box area of mushrooms, insects, poultry; and on the deck area of non-pollinated vegetables inside greenhouses, using vertical farming technique. *See* CDM, *Offshore Decommissioning and Beyond – Reuse Case* (2017).
27. IEAGHG Technical Report, *Re-Use of Oil & Gas Facilities for CO2 Transport and Storage* (2018) 21.
28. Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris) 22 September 1992 (in force 25 March 1998), 2354 U.N.T.S. 67 [hereinafter 'OSPAR Convention'].

reuse but is following a relatively restrictive approach. It allows reuse under certain conditions, but does not envisage strong incentives favouring it. Stronger incentives may come from national legislation. This restrictive approach towards reuse may contrast with an international law of the sea regime which is otherwise 'user-friendly' in terms of exploitation of natural resources by the coastal States. This can be explained by the general objective of protecting the marine environment against pollution from removal operations.[29] Under those international regimes, the different types of installations will be subject to different decommissioning regimes or, like pipelines and cables, may not explicitly be covered. Those international rules are analysed in the following paragraphs, focusing on offshore. The focus on offshore is explained by a lack of international rules concerning decommissioning of onshore oil and gas installations.[30]

The 1958 Geneva Convention on the Continental Shelf[31] and the 1982 UN Convention on the Law of the Sea (UNCLOS)[32] require the removal of 'abandoned or disused' artificial islands, installations and structures as the preferable option. The 1958 Geneva Convention required the entire removal, whilst the wording of UNCLOS solely refers to removal and therefore opens for partial removal.[33] Those Conventions do not define requirements as to removal conditions and refer to the need to rely on 'accepted international standards established by the competent international organizations' when performing removal operations.[34] The Conventions do not cover the question of assessment criteria for deciding on reuse versus removal.

Further guidance is provided in the IMO Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone ('IMO Guidelines').[35] The IMO Guidelines have the same

29. *See* Rachael Davidson and Nick Walker, 'Environmental, Health and Safety: Issues and Regulation', Ch. 10 of this book.
30. For a review of international rules on decommissioning, *see* Alexandra Wawryk, 'International Regulation of Decommissioning,' Ch. 2 of this book.
31. United Nations Convention on the Continental Shelf (Geneva), 29 April 1958, (in force 10 June 1964), 499 U.N.T.S. 311. Art. 5.5 ('Any installations which are abandoned or disused must be entirely removed.')
32. United Nations Convention on the Law of the Sea (Montego Bay), 10 December 1982 (in force 16 November 1994) 1833 U.N.T.S. 397, 21 I.L.M. 1261 (1982) [hereinafter UNCLOS]. Art. 60.3 (within the EEZ) ('Any installations or structures which are abandoned or disused shall be removed…') and Art. 80 ('Article 60 applies mutatis mutandis to artificial islands, installations and structures on the continental shelf.')
33. *See* Alexandra Wawryk, *supra* n. 30. *See also*: Catherine Redgwell, 'International Regulation of Energy Activities', in Martha M. Roggenkamp and others (eds), *Energy Law in Europe. National, EU and International Regulation* (Oxford University Press, 2007) 65; Seline Trevisanut, 'Decommissioning of Offshore Installations: a Fragmented and Ineffective International Regulatory Framework', in Catherine Banet (ed.), *The Law of the Seabed. Access, Uses and Protection of Seabed Resources* (Brill 2020) 434-434; Martha M. Roggenkamp, 'Re-using (Nearly) Depleted Oil and Gas Fields in the North Sea for CO2 Storage: Seizing or Missing a Window of Opportunity?', in Banet (ed.), *Id.*, at 458.
34. UNCLOS, Art. 60.3 (in the EEZ) and Art. 80 (on the Continental Shelf).
35. Assembly of the International Maritime Organisation, *1989 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone*, Res A.672 (16), 16th Assembly Session, 19 October 1989 [hereinafter 'IMO Guidelines'], Annex.

point of departure, which is the obligation to remove abandoned or disused installations and structures ('General removal obligation', para. 1.1), with complete removal being mandated for installations located in shallow waters (paras 3.1 and 3.2). If the installations are left fully or partially in place, the coastal State having jurisdiction over the installation or structure should ensure that the guidelines and standards set therein are followed. The IMO must be notified about a decision of non-removal or partial removal (para. 1.3). Repurposing is explicitly envisaged under the IMO Guidelines (para.1.2, para. 3.4(1)), and the IMO Guidelines require a case-by-case evaluation before a decision to allow the installation to stay in place is taken (para. 2.1). Although the IMO Guidelines are not binding, they provide a valuable list of assessment criteria which can help decide between reuse and removal. According to the Guidelines, the decision to leave partly or wholly the installation, structure or parts thereof in place should be based on an evaluation of: safety of surface or subsurface navigation or other sea uses; the rate of deterioration of the material; the risk of structural movement; the present and possible future effects on the marine environment, including living resources; the costs, technical feasibility, and risks of injury associated with removal; and, not least, the possibility of reusing the installation (paragraph 2.1). There is also reference to 'determination of a new use or other reasonable justification for in-situ disposal'.

Similarly, taking the example of the North-East Atlantic, the OSPAR Convention requires that fixed production platforms in the region must be removed. Annex III to the OSPAR Convention, which deals with the prevention and elimination of pollution from offshore sources, defines an absolute prohibition on any dumping of wastes or other matter from offshore installations.[36] Dumping does not include situations where a matter is placed for a different purpose than its mere disposal,[37] or if the disused offshore installation or pipeline is left wholly or partly in place in accordance with the provisions of the OSPAR Convention or any relevant international law. Indeed, the OSPAR Convention provides for one exception to the dumping prohibition of disused offshore installations and pipelines, that is, when a permit has been issued by the competent authority of the relevant Contracting Party, which acts on a case-by-case basis.[38] This system of prohibition and exemption based on permitting is reiterated and given more detail in Decision 98/3 for the Disposal of Disused Offshore Installation by the OSPAR Convention of July 1998.[39] The approach defined thereby establishes, as pointed out by other authors, 'a presumption in favour of an obligation to remove a disused structure'.[40] OSPAR Decision 98/3 lays down guidelines for the different disposal alternatives for various types of offshore installations. The Decision starts by affirming that the disposal of offshore installations should be governed by the precautionary principle, which takes account of potential effects on the environment. It also recognises that 'reuse, recycling or final disposal on land will generally be the

36. OSPAR Convention, Art. 3.1, Annex III.
37. *Id*. Art. 1(g)(ii).
38. *Id*. Art. 5.1, Annex III.
39. 1998 OSPAR Decision 98/3 On The Disposal Of Disused Offshore Installations (Sintra, Portugal) 22–23 July 1998, http://www.ospar.org/documents?d=32703 (accessed 27 January 2020).
40. Trevisanut, *supra* n. 33, at 451.

preferred option for the decommissioning of offshore installations in the maritime area'.[41] Next, the Decision defines a prohibition against dumping and leaving wholly or partly in place disused offshore installations within the maritime area.[42] In addition, OSPAR provides some guidance as regards the reuse for developing artificial reefs. The 2012 OSPAR Guidelines on Artificial Reefs in relation to Living Marine Resources provides that no materials should be used for the construction of artificial reefs which constitute waste or other matter whose disposal at sea is otherwise prohibited.[43]

[B] The Place of Reuse in National Law on Decommissioning

National law on decommissioning both operationalises and completes the international legal framework, which remains general in content on the issue of reuse. The question this section investigates is to know which place is given to reuse in national law on decommissioning, and, if they exist, which incentives are proposed.

Taking the example of North Sea countries, it appears that reuse is often addressed for the first time when the draft decommissioning plan is elaborated, which leaves a relatively tight window of opportunity to find reuse or repurposing options, if not already envisaged by the licensees and the owners.

In Norway, the licensees will officially assess the different alternatives for the future operation of the installations when they prepare the decommissioning plan. The licensees shall submit a decommissioning plan to the Ministry of Petroleum and Energy (MPE) before a production licence expires or is surrendered,[44] or the use of the facility is terminated permanently.[45] The decommission plan must be submitted at the earliest five years, but at the latest two years prior to the time when the use of a facility is expected to be terminated permanently.[46] In addition, the licensee must notify the MPE if the use of the facility is expected to terminate permanently before the expiry of the license.[47] The disposal part of the decommissioning plan shall contain an assessment of the different alternatives that are available, like continued production or shutdown, but also the use of the installations for other purposes. The fact that the decommissioning plan must be prepared and submitted during the mentioned time period has the objective of promoting a holistic approach and of not excluding any solutions, including reuse. The response to the mandatory public consultation of both the draft impact assessment programme and the disposal decision also gives opportunities to third parties to give input in terms of possible new uses or repurposing. Finally, the MPE can, in its decision on disposal, set specific conditions in relation to reuse options in a more discretionary manner.[48]

41. OSPAR Decision 98/3, Chapeau.
42. *Id.* ¶ 2.
43. OSPAR Guidelines on Artificial Reefs in relation to Living Marine Resources, para. 13.
44. Petroleum Act (Norway), s. 3.3.
45. *Id.* s. 4.3.
46. *Id.* s. 5-1.
47. *Id.* s. 5-2.
48. Catherine Banet, 'Norway', Ch. 28 of this book.

In the Netherlands, the timeline is even shorter between the submission of a removal plan to the competent authority and the actual cessation of production, since the operator has to submit the plan for approval to the Ministry of Economic Affairs and Climate eight weeks prior to the planned removal date for offshore installations. For onshore installations, a removal plan needs to be submitted within one year after production has ceased.[49] Those short deadlines suggest that the opportunities for reuse of the installations have to be assessed before any removal plan is submitted to the authorities. The weakness of such a late submission could be that the assessment of reuse alternative is only between the hands of the operator and that public authorities may not have sufficient time to suggest reuse alternatives, including in coordination with other actors.

In the UK, the Petroleum Act 1998 also requires the submission for approval of a decommissioning programme, based on a request from the authorities. The Secretary of State will serve a notice requiring the submission of a detailed decommissioning programme relative to an offshore installation[50] or submarine pipeline.[51] The abandonment programme produced in response to the Section 29 notice may be rejected or approved and, if approved, this may be subject to modifications or conditions.[52] The decommissioning programme must, among other things, demonstrate that the potential for reuse has been examined and discussed with the Oil and Gas Authority (OGA), who would give the Department for Business, Energy and Industrial Strategy (and more specifically, within the Department, the Offshore Petroleum Regulator for the Environment and Decommissioning – OPRED) a view on the reuse option.[53]

However, the countries around the North Sea may provide the most advanced example in terms of reuse provisions in decommissioning legislation. Many national legislative acts do not contain detailed provisions to ensure that reuse alternatives are assessed as part of the decommissioning obligations. Although North Sea countries may give the impression of good practice, the examples of Norway, the Netherlands and the UK briefly reviewed above show that the legislation does not yet contain detailed enough provisions, and so incentives, to consider reuse at an early stage and in sufficient time to consult widely to develop innovative reuse and repurposing projects.

The timing aspect is crucial to assess and realise reuse projects, with pending risks of missing reuse opportunities and pieces of infrastructure becoming stranded assets. Such risks have already been identified by international organisations and national governments.[54] The timeframe between the moment petroleum installations is

49. Martha M. Roggenkamp, 'The Netherlands', Ch. 26 of this book.
50. Petroleum Act 1998 (UK), s. 44.
51. *Id.* ss 26 and 45.
52. John Paterson, 'United Kingdom', Ch. 33 of this book.
53. BEIS, *Guidance Notes: Decommissioning of Offshore Oil and Gas Installations and Pipelines*, (November 2018), para. 6.6, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/760560/Decom_Guidance_Notes_November_2018.pdf [hereinafter 'BEIS, Guidance Notes'] (accessed 26 March 2020).
54. World Energy Council, *Energy Infrastructure – Affordability Enabler or Decarbonisation Constraint?*, Innovation Insights Brief (2019) 13–15. At national level, *see*: UK House of Commons Committee of Public Accounts, *Public cost of decommissioning oil and gas infrastructure*, 89th

considered for decommissioning and the time when reuse alternatives are being discussed and validated must not be too short but can also not be too long. Realising reuse projects will require mobilising technical competence – sometimes based on research and innovation, realising the financing of the projects and getting the necessary permits for the reuse project. A too short timeframe will not allow those processes to be secured. It is, therefore, not easy to ensure that the timing of end of lifetime petroleum projects and transfer of assets coincides with the realisation of new big infrastructure projects such as CCS or offshore wind hubs. Some oil and gas facilities that have a potential for reuse may be decommissioned in the next coming years before CCS projects can take over, for example. It has been estimated that there should not be a period longer than roughly ten years between the decommissioning of a natural gas platform and its recommissioning for CCS.[55] This type of project is subject to mainly financial and permitting constraints (assuming technological solutions for CCS projects are already available), which may further delay the process.

This timing aspect raises a series of legal and financial questions which need to be solved in order to enable reuse as part of the decommissioning process. For example, one could consider developing legal and financial incentives to support the keeping of assets that could serve CCS, wind or hydrogen projects based on reuse. This would require not only obliging licensees and owners to leave installations in place and monitor them until reuse but also providing for the financial compensation for doing it. Different technologies exist to maintain facilities in place, awaiting possible reuse. For example, as part of the Frostpipe pipeline system on the Norwegian continental shelf, the Frøy lien was filled with seawater and thereby put in a suspended state.[56] Continuous monitoring and maintaining facilities whilst awaiting reuse costs money, and a form of compensation can be envisaged, either from public funds or from the future owners. A fund system for reuse may even be established. One could also envisage a temporary decommissioning of the disused facilities that do not preclude their later reuse. Such a solution would probably need to be backed up under current international law rules, in particular if it becomes more common. Suspending assets for a period of ten years has been notably proposed by the UK government in order to allow CCUS to develop and enable the transfer of assets. In the event that a suspended asset has not been transferred to, for example, a CCUS project, within the indicated timeframe, it is proposed that the normal decommissioning regime applies.[57]

Those challenges, but also recent proposals for change made by governments and stakeholders, demonstrate that there is a need for a more coordinated and holistic approach to reuse as part of the decommissioning legislation and policy.

Report of SESSION 2017–2019, 20 March 2019; PBL Netherlands Environmental Assessment Agency, *The future of the North Sea. The North Sea in 2030 and 2050: a scenario study* (2018), https://www.pbl.nl/sites/default/files/downloads/pbl-2018-the-future-of-the-north-sea-3193.pdf (accessed 26 March 2020); Norsk Oljemuseum, *Oil and Gas Fields in Norway – Industrial Heritage Plan* (2016) 242, https://www.norskolje.museum.no/wp-content/uploads/2016/02/3467_5d1078cee8a64731bc1cf2bb04005f0e.pdf (accessed 26 March 2020).

55. PBL Netherlands Environmental Assessment Agency, *supra* n. 54.
56. Norsk Oljemuseum, *supra* n. 54.
57. BEIS, Guidance Notes, *supra* n. 53.

[C] The Need for a National Strategy on Reuse: Planning Reuse and Energy System Integration in Connection with Decommissioning

Several governments have started mapping oil and gas infrastructures that have reuse potential for notably CCUS, offshore wind and hydrogen projects. The Netherlands and the UK have both published assessment reports and national strategies.[58]

Planning both decommissioning and reuse at national level, at least, is necessary to ensure a minimum of coordination between different processes. Although those processes are different, they interact not only when discussing removal versus the transfer of assets but also when planning future clean energy systems based on increased sector coupling and sector integration.[59] As such, a national strategy on reuse can contribute actively to a broader effort on energy system integration, seizing some windows of opportunities across sectors and energy vectors. Within the North Sea, future offshore energy systems could integrate power-to-gas for hydrogen production based on wind/solar energy or decarbonised natural gas production based on reforming and using CCS technologies. The identification of low carbon energy hub projects could serve as catalysts. Associated with industrial policy, such a national reuse strategy could also contribute to a fair energy transition, ensuring workplaces for workers whose employment is at risk due to decommissioning of oil and gas assets.

As part of this reuse strategy, planning processes could be better integrated among sectors, both onshore and offshore. Onshore, the system operators responsible for grid planning will need to search for synergies and economies of scale with reuse projects. Offshore, public entities responsible for maritime planning and the elaboration of maritime zone management could better integrate reuse of petroleum assets and developing a new offshore energy system as part of their assessment. To do so, the reuse perspective needs to be clearly mentioned as an assessment criteria, not only in the decommissioning legislation but also in the energy planning legislation.

[D] A Meeting Platform for Actors Interested in Reuse

Developing a holistic vision for reuse and energy system integration needs supervision by public authorities, but also input from stakeholders and even the public. To ensure a broad consultation of actors early in the processes, and preferably before the decommissioning plan is submitted for approval to public authorities, a dedicated structure like a platform or a hub could help identify synergies and develop reuse projects. It could stimulate innovative solutions by ensuring greater disclosure of information about 'stranded asset risks'. This would enable taking decisions on reuse earlier and, by doing so, enable former and future asset owners to plan. Representation of the public and/or local inhabitants could be ensured, as an important way of getting input by affected population and avoiding future local opposition. Such platforms

58. BEIS, *supra* n. 8.
59. Generally, on sector coupling and sector integration, *see* International Renewable Energy Agency (IRENA), https://www.irena.org/energytransition/Power-Sector-Transformation/Sector-Coupling (accessed 26 March 2020)

could be supported by financial schemes and public–private partnership, and the development of standard agreements for the resulting projects.

Examples of cooperation platforms/hubs for actors on decommissioning already exist in Europe, such as Decom North Sea (DNS), which is a not for profit organisation,[60] or NexStep, which is a national platform for decommissioning piloted by the Dutch government.[61]

[E] The Need for a Regional Strategy on Decommissioning and Reuse

Finally, regional coordination is necessary to plan efficiently decommissioning activities in connection with large-scale reuse projects based on energy system integration. Some key regional clusters could be established.

Such arenas for regional cooperation already exist. For example, North Sea countries have established relevant arenas for cooperation through: the North Seas Energy Cooperation, 'North Sea Declaration – Regional coordination on offshore energy', of 6 June 2016;[62] and the North Sea countries' Offshore Grid Initiative of the European network organisations (ENTSOE). Some concrete projects of cooperation envisaged among North Sea countries in the field of low carbon energy system integration include: large-scale infrastructure such as wind farm sites, energy hub islands, interconnections with mains power cables and natural gas and oil pipelines and, possibly, new pipelines for transporting hydrogen to land or storing CO_2 beneath the North Sea.[63] North Sea countries will face a high number of decommissioning projects in the decades to come.

Such coordination initiatives for decommissioning and reuse can find support in regional spatial planning for infrastructure projects.

If not already anticipated in terms of project partners, States may be obliged by international and regional law to consult neighbouring countries. Those consultations could also be an opportunity to find collaboration and synergies around decommissioning and reuse projects. The OSPAR Convention foresees mandatory consultation before exemption is given to complete removal project. The Espoo Convention sets out the obligations of Parties to carry out an environmental impact assessment (EIA) of

60. Decom North Sea is a multi-regional membership organisation which aims to enhance knowledge transfer and facilitate collaboration across the oil and gas decommissioning sector: *see* https://decomnorthsea.com/ (accessed 26 March 2020)
61. NexStep, *National Platform for Re-use and Decommissioning*, https://www.nexstep.nl/ (accessed 26 March 2020).
62. Political Declaration on energy cooperation between North Seas Countries, signed on 6 June 2016, https://ec.europa.eu/commission/presscorner/detail/en/IP_16_2029 (accessed 26 March 2020). To implement this Declaration, the parties published, among others, a Scoping Paper on 'North Seas Energy Clusters' in 2017 https://ec.europa.eu/energy/sites/ener/files/documents/energy_cluster_paper_-_final_with_date.pdf (accessed 26 March 2020).
63. PBL Netherlands Environmental Assessment Agency, *supra* n. 54, at 12.

certain activities at an early stage of planning.[64] It addresses in particular the transboundary effects of certain activities through an EIA procedure. Spatial planning in the North Sea is also regulated at the European level through Directive 2014/89/EU on a framework for maritime spatial planning.[65]

Legislative initiatives for a reinforced coordination of energy project developments may be expected as part of the European Green Deal Strategy. The European Commission has announced the adoption of an offshore wind strategy and the revision of the legislation of maritime spatial planning.[66] The EU legislation on trans-European energy infrastructures will also be relevant.[67]

Cooperation in developing joint projects can also be reflected in the National Energy and Climate Plans required under the Regulation on Governance of the Energy Union,[68] and is already envisaged.[69] It can also be covered by one of the cooperation mechanisms under the Renewable Energy Directive.[70]

As argued by the Dutch government in its strategy for the North Sea: 'If we are to develop an efficient, more environmentally friendly energy infrastructure in the North Sea, countries need to coordinate their spatial planning and their national energy transition goals at an early stage in the development process'.[71]

64. Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, Finland), 25 February 1991, (in force 10 September 1997), 1989 U.N.T.S. 309, 30 ILM 800 (1991) [hereinafter 'Espoo Convention'].
65. Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning, OJ L 257, 28.8.2014, pp. 135–145.
66. *The European Green Deal*, Communication from the European Commission, COM(2019) 640 final, 11.12.2019, https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf (accessed 26 March 2020).
67. Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009 (Text with EEA relevance), OJ L 115, 25.4.2013, pp. 39–75.
68. Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (Text with EEA relevance), PE/55/2018/REV/1, OJ L 328, 21.12.2018, pp. 1–77.
69. The participating countries to the North Seas Energy Cooperation are preparing a common chapter on the cooperation of offshore wind within the North Seas Energy Cooperation to be included in the National Energy and Climate Plans of the North Seas countries, as indicated in the *Joint Statement on the deliverables of the energy cooperation between the North Seas Countries*, (2019), https://kefm.dk/media/12744/joint-statement-on-the-deliverables-of-the-energy-cooperation-between-the-north-seas-countries.pdf (accessed 26 March 2020).
70. Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (Text with EEA relevance), PE/48/2018/REV/1, OJ L 328, 21.12.2018, pp. 82–209.
71. PBL Netherlands Environmental Assessment Agency, *supra* n. 54, at 12.

§11.04 MAKING THE REUSE DECISION: ASSESSMENT CRITERIA AND LEGAL PROCESSES

This section investigates what the central considerations public authorities and companies usually base their decision on when deciding whether or not to reuse oil and gas installations, as part of a decommissioning process. There is no identified experience with a legislative framework or regulation, which provides guidance on the list of central considerations that could be examined. However, some modelling tools have been elaborated and will be reviewed below.

When referring to the 'reuse decision' in the present section, reference is made to the process which results in deciding on the reuse and repurposing (the making of the decision), and not to a legally binding decision to allow for reuse. The question of the need for a reuse decision as a separate legal act is addressed in §11.05[A] below.

[A] Central Considerations

Both the licensees/owners and the public authorities will need to make a decision on the opportunity to reuse oil and gas installations which are to be decommissioned. This decision is generally taken when the decommissioning plan is put forward and assessed. Among the central elements usually considered are:

- Technical feasibility of the reuse project

  For the reuse of depleted oil and gas reservoirs, the porosity and permeability of the formation will need to be assessed. [72] This will require data collection and monitoring. For the reuse of pipelines, for example, for the purpose of CO_2 or hydrogen transport, a full pipeline integrity and life extension study will be required.[73] Material suitability of the pipelines will also be key factors. In addition to material properties, the location[74] and size of the installations to be reused will be important criteria. Larger infrastructure is likely to be more valuable for reuse due to the higher costs associated with any replacement or new construction. Age and general conditions of the assets, which may have stayed in place for decades in harsh environments, can reduce prospects of reuse. Not fulfilling minimum safety and quality standards

72. The porosity of the formation determines the amount of natural gas that it may hold, while the permeability of the formation determines the rate at which natural gas flows through the formation, which in turn determines the rate of injection and withdrawal of working gas: James G. Speight Ph.D., D.Sc., in '*Natural Gas*' (2nd ed 2019) s. 5.4.1.
73. IEAGHG, *supra* n. 12, at 21.
74. The location of any infrastructure will be key to decide on the reuse project. For example, in the case of CCUS projects, the UK government stated that 'assets that are close to both viable carbon dioxide storage sites and to mainland sources of carbon dioxide may be more attractive for reuse, and those that are far away may be of little use. Alongside this, the location of wells within a reservoir will likely be a key criterion in evaluating their reuse potential'. *See* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819901/reuse-oil-gas-assets-ccus-projects.pdf (accessed 26 March 2020).

can expose both former and new owners and licensees to liability for environmental damages or personal injury.

– Economic considerations

Keeping the costs of decommissioning low can be a strong motivation for considering reuse. Reuse may help existing and future owners bring capital cost savings, reducing the costs of decommissioning on the one hand and the costs of acquisition of new assets on the other hand. The new project should be an economically viable project in total, and, to be an attractive solution, the savings will need to make a significant contribution to the costs of decommissioning and of the new project.[75] In practice, only few reuse projects will be deemed economically viable, and projects may at the end be developed on the basis of new infrastructure.[76] Therefore, only a small number of existing assets are expected to be chosen for reuse in CCS/CCUS or wind or hydrogen projects. How to find a fair price for the remaining asset to be reused may also be challenging for the first projects.

– Legal framework for reuse

The reuse project will need to be based on a clear legal framework, and the legal feasibility of the project may be taken into consideration when assessing the decommissioning plan for the oil and gas assets. The clarity of the transfer of assets and of decommissioning liability will also be important factors in making the reuse decision.[77]

Decisions on the reuse of oil and gas facilities can only be based on a case-by-case approach, due to the specificities of each installation and the prospects for reuse. There is consequently no 'one solution fit it all'. However, this chapter argues that some common guidance in the form of a list of public assessment criteria and some prioritisation principles could help standardise current practice and identify the key factors that authorities will take into account for accepting or rejecting the reuse solution. For example, the priority criteria applied by public authorities could be made clearer and the reliance on some hierarchy principles made more apparent in the regulatory or legislative framework. In the UK, the decommissioning regulation already refers to the obligation to consider how the principles of the waste hierarchy will be met.[78] Such clarification in terms of waste hierarchy could be supported by references to circular economy policy objectives, as recently adopted in several countries.

75. Maxine Perella, *Can North Sea installations be recycled, or decommissioned sustainably?*, The Guardian, (2 December 2014), https://www.theguardian.com/sustainable-business/2014/dec/01/north-sea-installation-recycle-sustainable-reuse-oil-gas (accessed 26 March 2020). The UK government has argued that reuse will be economically important for some CCUS projects: *see* BEIS, *Re-Use of Oil and Gas Assets for Carbon Capture Usage and Storage Projects, Consultation* (July 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819901/reuse-oil-gas-assets-ccus-projects.pdf (accessed 26 March 2020).
76. *See* the Northern Lights project in Norway, *supra* n. 19.
77. *See* §10.05, below.
78. BEIS Guidance Notes, *supra* n. 53, at ¶ 6.6. Zero Waste Scotland (ZWS) is also working with a number of stakeholders to explore how circular economy principles can be applied in this field.

Such a common guidance framework can help improve transparency and efficiency in decision-making. This could also reduce the risks of seeing the public authority in charge rejecting the proposed plan or setting additional conditions which could jeopardise the reuse project. If the oil and gas assets are identified as possible assets for reuse in the national plan referred to above (§11.03[B]), licensees and owners can also anticipate and work early on reuse projects.

It is not deemed necessary to set additional impact assessment requirement for reuse at this stage. Most national legislation already requires that an impact assessment is performed and a public consultation is conducted as part of the decommissioning obligations and decommissioning plan elaboration. In addition, the reuse project will need to get a permit under a new regulatory regime (for example, a CO_2 storage or transport permit under CCS legislation; a license for an offshore wind generation plant; or a license for a sub-station), all of which require the performance of an impact assessment as part of the permitting procedure. The national reuse plans proposed above will also most probably fall under the obligation to perform a strategic impact assessment.

[B] Modelling Tools to Enable the Reuse Decision

Several organisations and consultancies have worked on modelling tools to support authorities and companies to reach a decision on the reuse potential of oil and gas facilities. They propose a decision support tool or 'a decision matrix' which can support actors and authorities, also in connection with decommissioning platforms as referred to above (§11.03[D]). Decom North Sea (DNS) has been working on a reuse guide for oil and gas operators.[79] Consultant firm Lumina has elaborated a multi-attribute analysis tool to assess the prospects for reuse based on over 100 variables, ranged according to eight categories of criteria/impact (existing asset, location, regulations, liabilities, environment, societal, conversion operation and new asset).[80] California has also been used as an example of good practice for its 'rigs to reefs' programme, which obtained broad support among all stakeholders, including oil and gas companies and environmental non-governmental organisations (NGOs). In 2010, the California State House passed law AB 2503 enabling the partial removal solution for reuse as reefs.[81]

79. Decom North Sea, Zero Waste Scotland, ABB Consulting, *Offshore Oil and Gas Decommissioning Platform Removal Methods, Inventory Characterisation and Re-use Solutions Report and Recommendations* (2015).
80. *See* Lumina case study, *From Controversy to Consensus: California's Offshore Oil Platforms*, Lumina, https://lumina.com/case-studies/energy-and-power/a-win-win-solution-for-californias-offshore-oil-rigs/ (accessed 26 March 2020). *See also* M. Henrion, B. Berstain and S. Swamy, *A Multi-Attribute Decision Analysis for Decommissioning Offshore Oil and Gas Platforms*, 11(4) Integrated Environmental Assessment and Management 594–609 (2015).
81. *Id.*

§11.05 LEGAL REGIME FOR REUSE AND REPURPOSING: THE TERMS OF THE REUSE DECISION

[A] On the Need for an Administrative Reuse Decision

To start with, one can raise the question of whether there is a need for having a specific administrative decision allowing for reuse. In practice, the decision to enable reuse is usually not embodied in a formal decision. However, there are a series of arguments in favour of having such a decision. For offshore installations, the IMO has already formulated such recommendations. The IMO Guidelines recommend that the coastal State with jurisdiction over the installation or structure provides for 'a specific official authorization identifying the conditions under which an installation or structure, or parts therefore, will be allowed to remain on the sea-bed'.[82] The IMO Guidelines also recommend that the coastal State has in place a clear legal framework ensuring clarity concerning, on the one hand, the ownership of the installations and structures which remain in place (including transfer of ownership), and, on the other hand, the responsibility for maintenance and the financial ability of the owner to assume liability for future damages.[83] Indeed, having such an administrative decision on reuse could provide a clearer legal framework and better foresee the new legal situation created by the transfer of assets through the reuse project. It will bring legal certainty to actors involved in the transfer of assets and could further incentivise reuse solutions. Legal certainty can be better achieved through legislative provisions, and the legal basis for a reuse decision could be inserted in the national legislation on decommissioning. If not enshrined in law, the terms and conditions of the reuse may be left to contractual arrangements between parties, with most probably different solutions. The development of standardised agreements on reuse could also help promote best practice and ensure a common framework for licensees and owners.

[B] Terms of the Reuse Decision

Whether they will be in a separate administrative decision on reuse or in contractual arrangements between parties, the terms of the reuse projects need to be defined. Among the essential terms and conditions that need to be determined are: the transfer of ownership in the assets (subject to a purchase or lease agreement); the transition from a petroleum exploitation license to another license for the reuse project; the type of liability regime for the reused assets in case of damage or injury; the transfer of decommissioning liability from former to new licensees/owners; and the completion of international consultation and approval processes, if so needed.

Other legal frameworks may be triggered by a reuse decision. One specific alternative in the reuse project which can raise competition law issues is the situation where the licensee/owner of the oil and gas facility is itself conducting the reuse

82. IMO Guidelines, *supra* n. 35, at ¶ 2.4.
83. *Id.* at ¶ 3.11.

project. If the facility in question is qualified as an essential facility under both the former and the new use, it may constrain access to the facility for other parties. The licensee/owner may also benefit from competitive advantages by reusing its own assets. Depending on the type of reuse project, public authorities may be interested in ensuring competition for access to the new facility through the application of competition law. The public authorities will also be attentive as to the financial support that a reuse project may receive and would be keen to avoid any overlap between pre-existing tax incentives for decommissioning and financial incentives for reuse projects.

[C] General Liability for the Reused Assets

For both former and new owners, it will be important to clarify the liability regime applicable to the assets reused. As mentioned previously, reused facilities may have faced harsh weather conditions, in particular if located offshore, and their material suitability will need to be assessed carefully.[84] Weaknesses in structure, corrosion or porosity can jeopardise reuse projects, but may also cause damage to the environment and human beings. Therefore, the liability regime for damage and injury for reused assets must be clearly established. Reference can be added to safety and quality standards.

[D] Liability for Final Decommissioning

Another liability regime which will need attention is that for final decommissioning, when the reused infrastructure meets its ultimate 'end of life'. Many national petroleum laws provide for a system of secondary liability of former licensees in relation to decommissioning. This means that, if a license or participating interests in a license have been transferred during the licence period, the assignor (seller, previous licensee) is still liable on a secondary basis towards the State and the other licensees for financial obligations arising from the disposal.[85] If the buyer fails to meet its decommissioning obligations, the seller will be held liable for the costs related to the implementation of the disposal decision (this could apply to both production licenses and infrastructure licenses).

If this regime of secondary liability for former licensees in relation to decommission is also applied to reuse and repurposing of installations, the seller/previous licensee may decide not to engage in the reuse project, as the uncertainty and risks of additional decommissioning costs are too high. As a result, the assets may be

84. DR. techn.Olav Olsen, *Markedsrapport NPD fjerning* (2018), https://www.npd.no/globalassets/1-npd/publikasjoner/rapporter/markedsrapport.pdf (accessed 26 March 2020).

85. For example, such a second liability regime is defined in the Norwegian Petroleum Activities Act, s. 5-3 ¶ 3. Similarly, in the UK, in the event that the current owner is not capable of meeting their decommissioning obligations, the Secretary of State can call upon previous owners and operators to decommission the infrastructure. *See* John Paterson, United Kingdom, Ch. 33 of this book.

decommissioned rather than sold for reuse, and the opportunity has passed. To solve this problem, national governments have made proposals for amendments to their legislation. In 2019, the UK government proposed to introduce a discretionary power for the Secretary of State to remove the decommissioning liability from previous oil and gas asset owners under Part 4 of the Petroleum Act 1998, if assets are transferred to CCUS projects. As noted by the government, the purpose is not to diminish the decommissioning obligations, since the new owners will be held liable for final decommissioning. The intention is to create incentives in developing reuse projects. This power would only be exercised in situations in which the total liability the UK government may face is no greater than the total liability prior to the transfer of the asset(s) to the CCUS project. Additional requirements would also be put in place to ensure the overall risk is being appropriately managed. Through his or her discretionary power, the Secretary of State could designate that an offshore installation or submarine pipeline is eligible for 'Change of Control Relief'. The consequence would be that once a particular 'Trigger Event' has occurred in respect of the offshore installation or submarine pipeline, the Secretary of State will no longer be able to impose a decommissioning liability on any person solely because they had an interest in that asset during the period in which it was used for oil- and gas-related purposes.[86]

The Dutch government has also made proposals intended to incentivise reuse projects and clarify the transfer of liability for final decommissioning. In the Spring of 2019, the Ministry of Economic Affairs and Climate put forward a draft proposal to amend the Mining Act, proposing that the Minister may decide to temporarily exempt the operator of a mining project of its removal obligation in order to facilitate reuse of the installation.[87]

Consistency is also needed across sectoral legislation for former and new uses. The legislation under which the reuse projects will be operating will also provide a liability regime for final decommissioning and, in most cases, a system of financial security. In case of reuse of installations, there may be a situation of overlap between the two liability regimes for decommissioning. For example, under the CCS Directive, operators of a CO_2 storage facility are required to provide significant financial securities prior to operations to cover normal decommissioning obligations and ongoing monitoring operations. This results in the establishment of financial security for decommissioning, as well as for unlikely events of leakage and non-conformance monitoring.[88] In case of overlap of liability between the former use regime and the new use regime, owners/operators may face a too high burden to invest in such projects.

86. BEIS, *supra* n. 8, at ¶¶ 25, 26, 34. In its proposal, the UK government has identified three events or activities which could constitute the 'Trigger Event' for these purposes: The point at which ownership of the asset is transferred from the previous owners and operators to the CCUS project; the point at which the associated CCUS project secures a permit from the OGA, or relevant authority, for offshore carbon dioxide storage; and the point at which the new CCUS project first injects carbon dioxide into any associated geological storage site.
87. *See* Martha M. Roggenkamp, The Netherlands, Ch. 26 of this book, §26.04[C][3].
88. *See also* recommendations made by ZEP, *supra* n. 6.

§11.06 CONCLUSIONS

Reviewing policies and law for enabling reuse and repurposing of oil and gas installations is a highly necessary and strategic step for countries with maturing petroleum provinces and facing the energy transition. Promoting reuse and repurposing should not undermine the established decommissioning regime, which is often a complex architecture of check and balances. At the same time, the legislation must provide sufficient incentives to enable reuse projects.

Along this chapter, a series of recommendations for improvement have been formulated. For further enabling the reuse of oil and gas installations as part of decommissioning processes, it is suggested that Governments should:

- better enshrine the waste hierarchy principles in their decommissioning legislation, with reference to circular economy principles;
- develop a consistent and holistic approach. Governments should elaborate national strategies on decommissioning and reuse, in close interaction with the development of low carbon energy systems;
- ensure that energy system integration which includes reuse of oil and gas installations, is planned at national and regional levels;
- establish meeting platforms for actors interested in decommissioning and reuse projects;
- develop guidance in the form of a list of public assessment criteria for assessment of reuse solutions to be used as part of the draft of the decommissioning plan;
- provide for financial incentives or compensation to keep in place installations that can be reused. A fund system for reuse may even be established. One could also envisage temporary decommissioning of the disused facilities that do not preclude their later reuse;
- consider the need for a separate administrative reuse decision;
- define in law, or through standard agreements, the mandatory terms that a reuse decision or agreement should cover; and
- provide incentives for reuse by amending the liability regime for final decommissioning of oil and gas facilities, in particular the secondary liability regime applicable to former licensees.