

## A review of offshore decommissioning regulations in five countries – Strengths and weaknesses



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### ARTICLE INFO

#### Keywords:

Decommissioning regulations  
Offshore  
Abandonment  
Removal

### ABSTRACT

The decommissioning of offshore structures around the world will be a persisting problem in the coming decades as many structures will exceed their shelf life, or when reservoirs are no longer productive. This paper examines an overview of the global offshore decommissioning legal regime, and a summary of regulations in countries that are deemed to be more experienced in decommissioning such as the UK, Norway and USA. Two oil-producing countries in South East Asia, Malaysia and Thailand are also reviewed to identify potential gaps in decommissioning legislation for countries in its infancy in decommissioning. The differences were identified in terms of decommissioning preparation, decommissioning technical execution, additional environmental requirements and financial security framework. In conclusion, the majority of the regulations covering the technical section are similar within all countries studied. Major differences lie in two overarching philosophies of the framework – a prescriptive regime versus a goal-setting regime. Other decommissioning aspects appear to attract increasing attention, such as in expanding clarity on in situ decommissioning, residual liabilities, optimising finance related issues of decommissioning and offshore to onshore waste movement. These gaps in the existing framework can be filled by taking an evidence-based stand in developing the framework.

### 1. Introduction

The word ‘decommissioning’ is not well-defined in international and several national legislation, and can take on words like ‘abandonment’, ‘disposal’ and ‘removal’, which make up possible processes in decommissioning. It has been mentioned in the UK Petroleum Act (1998) and the 2011 Decommissioning Guidelines (Department for Business Energy and Industrial Strategy UK, 2011) that while the description ‘abandonment programme’ is referred to in the Petroleum Act, the generally accepted term is ‘decommissioning programme’.

Based on most legislation requirements investigated in this paper (Department for Business Energy and Industrial Strategy UK, 2011; Government of USA, 2014a; Petroleum Institute of Thailand (2008); Petroleum Safety Authority (Norway), 2015a; PETRONAS, 2008) and current decommissioning practices (Techera and Chandler, 2015), it appears that decommissioning is the final stage of the life cycle of an industrial facility, and is the process of closing down an industrial facility via methods, which balances the sensitive boundaries of minimising

financial costs, costs to human life and well-being and to the environment. In this paper, the industrial facility refers specifically to offshore production facilities. Offshore facilities are made up of the substructure that is secured to the seabed, a network of pipelines, and the topside structure existing above the seabed (Techera and Chandler, 2015). The decommissioning process thus entails the plugging and abandonment of wells, removal – partially or fully, of the platform and associated facilities on the platform, and clearing any “above mudline” structures or equipment from the seafloor.

Globally, there are many offshore installations which are approaching obsolescence. In the North Sea, there are 1357 offshore installations, 726 sub-sea steel installations and fixed steel installations (OSPAR Commission, 2013), of which 20% are more than 30 years old (OSPAR Commission, 2013). In South East Asian waters, such as the Gulf of Thailand and the South China Sea, there are currently 444 offshore installations that have been in service between 20 and 30 years, and another 389 that have exceeded the typical 30-year service life of such installations and are still in operation

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<https://doi.org/10.1016/j.oceaneng.2018.04.001>

Received 15 January 2017; Received in revised form 8 February 2018; Accepted 5 April 2018

Acronym list	
AELB	Malaysian Atomic Energy Licensing Board
ALARP	As-Low-As-Reasonably-Practicable
ANIFPO	Anglo North Irish Fish Producers Organisation
ASCOPE	The council on petroleum of countries belonging to ASEAN
BOEM	Bureau of Ocean Energy Management (US)
BPEO	Best Practical Environmental Option
BSEE	Bureau of Safety and Environmental Enforcement (US)
CHARM	Chemical Hazard Assessment and Risk management
COBSEA	Coordinating Body on the Seas of East Asia
DEA	Decommissioning Environmental Assessment
DEMP	Decommissioning Environmental Management Plan
DMF	Department of Mineral Fuels (Thailand)
EA	Environment Agency (UK)
EMP	Environmental Management Plan
IOC	Independent Oil Company
NDE	Non-destructive examination
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Irish Fish Producers' Organisation
NORSOK	Standards Norway
OCNS	Offshore Chemical Notification Scheme
PEP	Post Environmental Assessment
PLEM	Pipeline end manifolds
PPGUA	PETRONAS procedures and guidelines for upstream activities
PS	Production Sharing
PTT	Petroleum Authority of Thailand
RDEA	Regional Decommissioning Environmental Assessment
SFF	Scottish Fishermen's Federation
VisNed	Association of Dutch Demersal Fishers
WP&B	Work plan and budget

(Lyons, 2012). Many of them are expected to begin the decommissioning process within the next few years.

Decommissioning regulations are bounded by international and domestic regulations. There are numerous decommissioning concepts to choose from such as complete or partial removal, structure severance options, leaving behind of shell mounds and drill cuttings, yet there seem to be little clarity and/or opposing ideologies in several international regulations. First and foremost, a review of five case studies of local and international maritime legal requirements highlights some of the viability of the options of decommissioning in the respective countries which includes, for example, waste management requirements and environmental monitoring requirements for rigs-to-reefs project. This methodology also highlights best practices by other countries in which such practices could be emulated. The other gaps in the existing framework are also highlighted in order to propose a holistic framework to a complex project like offshore decommissioning.

### 1.1. Scope of paper

This paper first identifies international regulations relevant to decommissioning. Next, in order to understand how decommissioning is carried out in countries experienced in such activities, the domestic regulations of Norway, the UK and USA is looked into briefly; more information can be referred to another conference paper the authors have summarised on these three countries (Fam et al., 2017). It is also expected that some elements of the international requirements could be found in these domestic regulations. There are also countries in which their offshore industry is gaining traction in developing its decommissioning guidelines and thus, Malaysia, and Thailand are part of the case-studies. In South East Asia, only Malaysia and Thailand had accessible resources to decommissioning legislation or guidelines, hence the focus on these two countries. Newly developed guidelines may showcase an interesting, or more thorough solution to any of the problems common to all decommissioning activities.

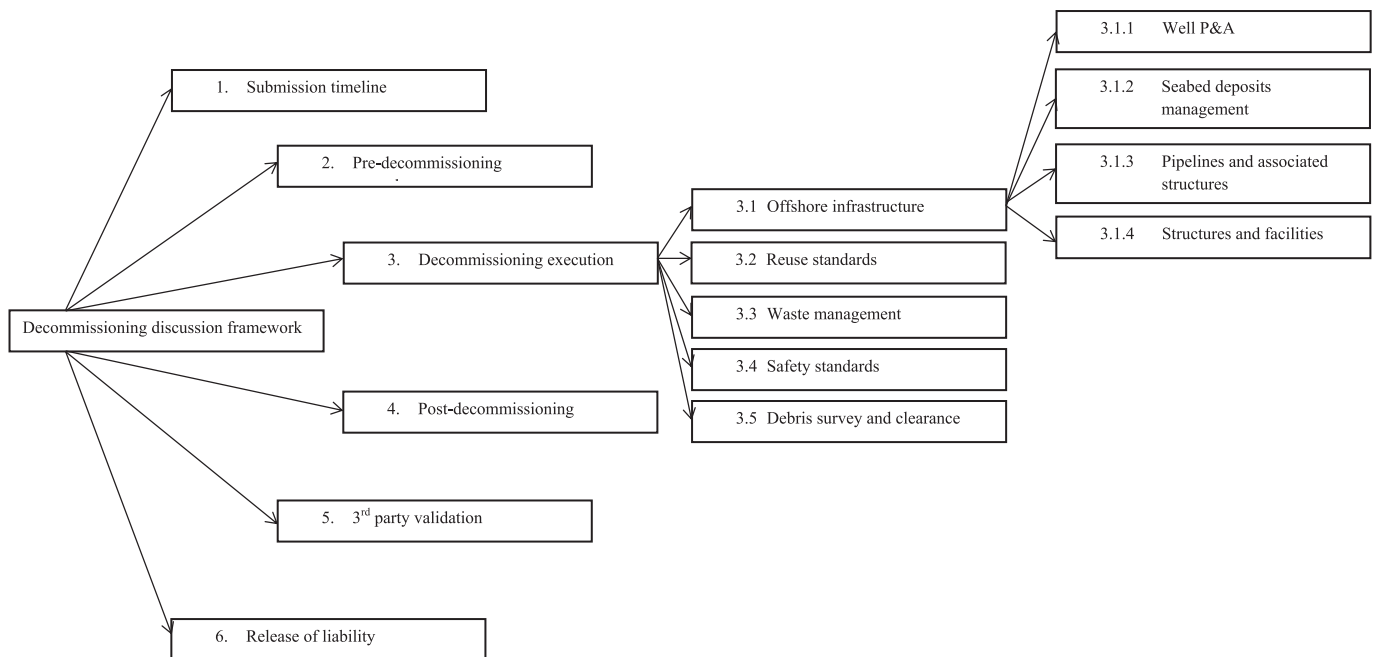


Fig. 1. Mind map of the discussion framework of decommissioning items. The structure is referenced from the Thai guidelines (Petroleum Institute of Thailand, 2008). It is noteworthy that the technical specifications in the Thai guidelines have also been referenced thoroughly from the US guidelines (Bureau of Safety and Environmental Enforcement (USA), 2016a).

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