Master Thesis

M.Sc. in Environmental and Resource Management

"Decommissioning of Offshore Oil and Gas Platforms in Denmark: Technical Options, Environmental Aspects, Legal Requirements, Stakeholders, and Costs of Options"

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ABSTRACT

The oil and gas industry has brought huge benefits to the contemporary society. Therefore, the industry is constantly looking for new and unexploded petroleum reservoirs. As a result, there have been found significant reserves under the seafloor which resulted in the development of offshore installations all around the world.

At the end of their productive lives, however, it is required that these installations have got to be decommissioned for guarantying safe navigation and looking after the rights of other sea users.

Decommissioning of offshore installations compiles several complex issues on the subject of environment, safety, health, technology, legal, stakeholder, and economics aspects; it also involve the implementation of balanced and long standing solutions that would deal with constant and obvious stakeholders concerns. Consequently, the execution and regulation of offshore decommissioning is multifaceted.

The defining moment of decommissioning, at least in the North Sea, came as a consequence of the Brent Spar case in 1990s which uncovered an enormous public conflict involving environmental pressure groups, general public, shipping interests, the fishing industry, host governments, and, last but not least, Shell.

This event gave evidence that the removal and disposal of decommissioned offshore installations/pipelines could be regulated by international environmental values and standards, and that situations like this one confirms that there is always the possibility for socially boycott activities and regulations that are not accepted by the public.

All in all, it can be said that a sustainable decommissioning plan starts with the available options, followed by the identification and inclusion of the stakeholders, environmental aspects, regulations, costs of the options, and selection of the adequate balancing mechanism, next comes negotiation which leads towards narrowing the decommissioning options and finally a decommissioning plan emerges.

In the decommissioning process, sustainability should play an important role by being an usually accepted approach for dealing with decommissioning; even though, there is no "correct formula" nor uniformed criteria regarding how to design

and manage a sustainable plan for decommissioning and disposal of offshore facilities.

Nevertheless, if sustainable decommissioning is chosen as the way for dealing with the final stage of any offshore oil and gas facility, it has to be implemented in accordance with sustainability concepts; meaning that there is the necessity to strictly scrutinize and balance sustainability concepts and stakeholders interests in a holistic way in order to deduce their application to the removal and disposal of obsolete offshore installations.

The present thesis applies a theoretical framework focusing on the stakeholders and the way they influence decision-making process. Further on, the Brent Spar case is used as background, while at the same time Best Available Technology Not Entailing Excessive Cost (BATNEEC) and Best Practicable Environmental Option (BPEO) are the assessed balancing mechanisms for interconnecting all the aspects concerning the design and management of a decommissioning plan.

The thesis attempts to put some light upon decommissioning in Denmark through information gathered by interviewing experts and an extensive literature research analysis.