

Recovery and reallocation of disused structures for the extraction of oil in the Mediterranean Sea and their reconversion in tourist-hospitality structures

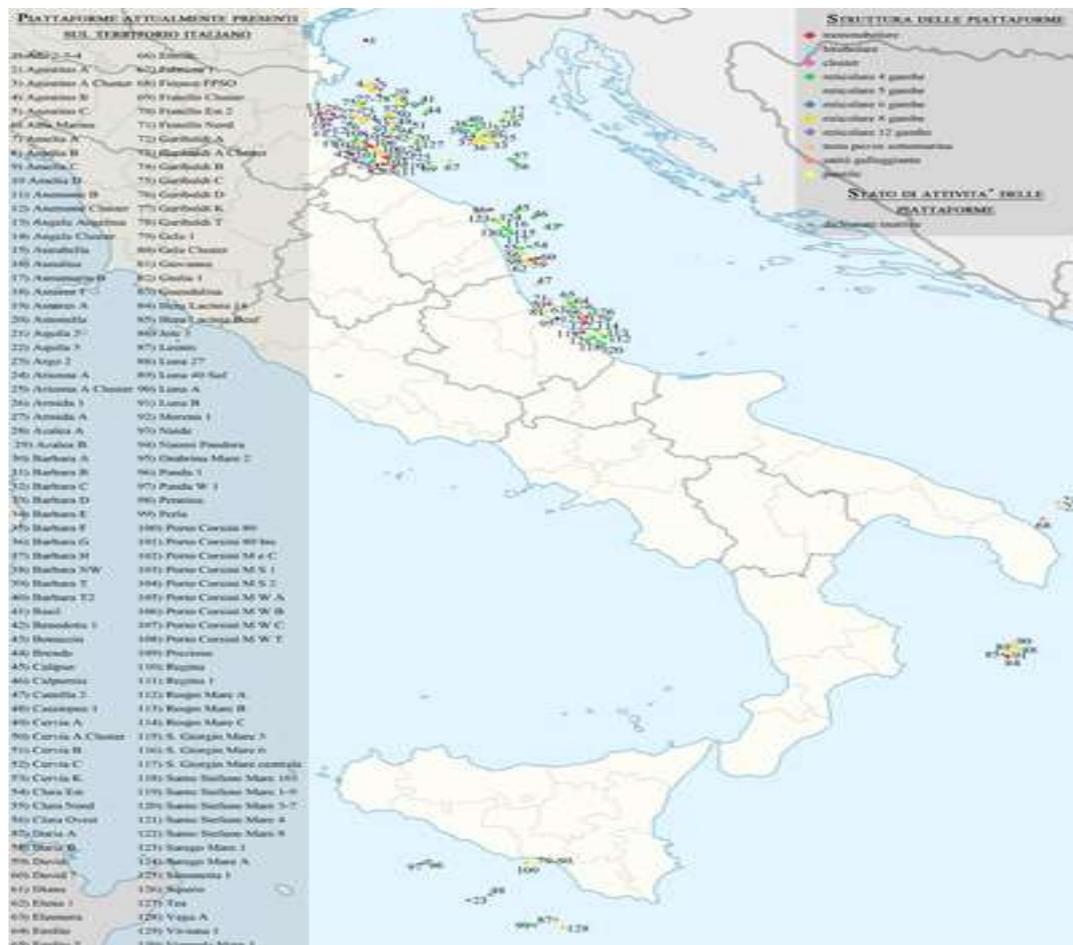
by: Valentina Goletto

Tutor: Paolo Mellano

Co- tutor: Roberto Giordano

The starting point for the development of this thesis is an analysis of offshore oil rigs currently present in Italian waters. Like giant metal "icebergs", these platforms emerge from the water extracting oil from the seabed and constituting an invaluable source of wealth over the entire period of their activity. However, eventually the time comes when these platforms must "retire" and the problem of their dismantling becomes obvious; especially if this is to be carried out in complete respect of the environment that surrounds them. The law stipulates that when the concession expires, it is obligatory to reclaim the site and dismantle the decommissioned structure of the platform, even if this is an extremely complex and costly operation.

Chapter I deals with the most significant aspects of the Italian marine environment which has a wide variety of conditions, for example the depth of the seabed. This is also reflected in the types of extraction platform employed. For this reason a brief overview has been provided which, with the help of a planimetry, illustrates the territorial framework of all plants currently in service. It also specifies the type of structure and whether the rigs are active or not.



Census and localization of the main rigs present in Italian seas

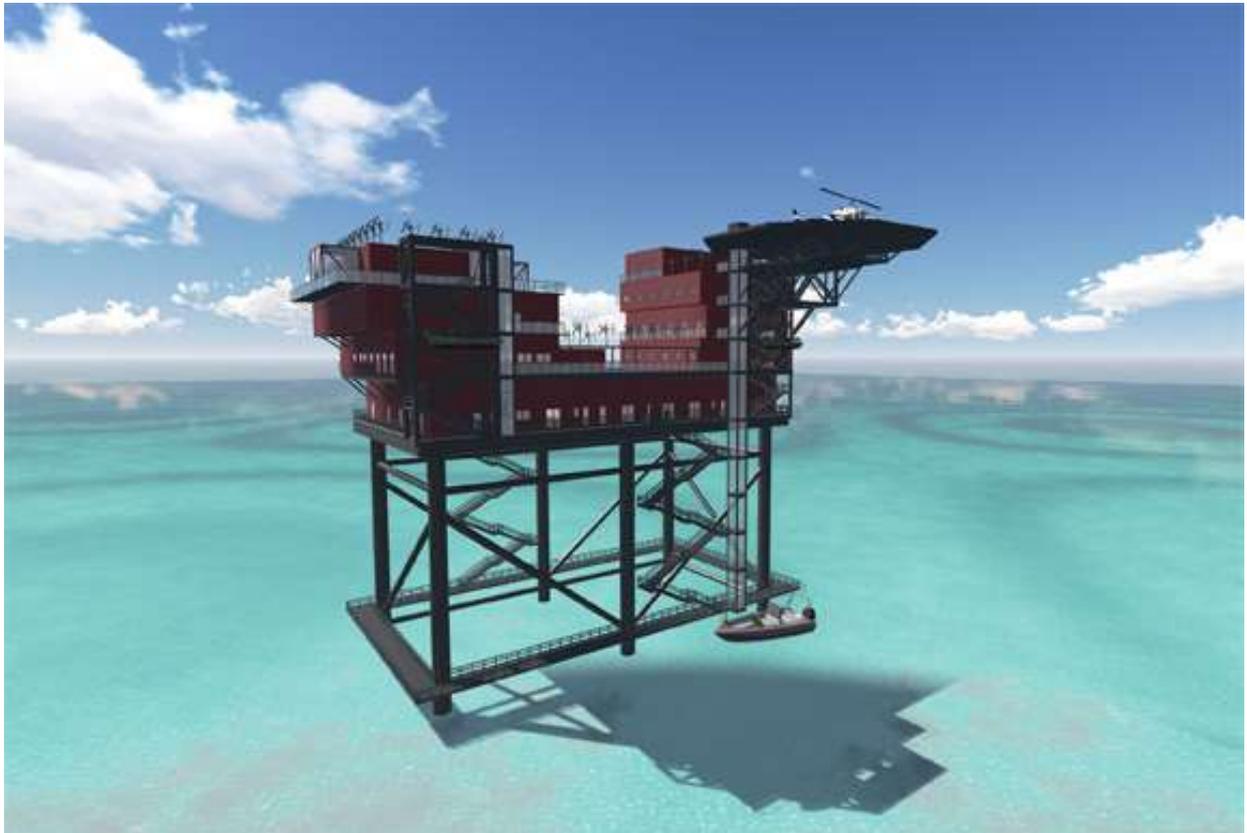
The legal requirements are also examined with particular reference to the laws currently in force which regulate development by dividing the territory into appropriate areas. Moreover the geological issues are discussed including the changes in the seafloor since the inception of oil extraction. There is also a brief description of offshore rigs. They are divided into two major categories: fixed and mobile structures. They in turn are divided into subcategories depending on the prevailing conditions in the area. Finally we turn our attention to the life cycle of the rig and in particular to the decommissioning phase. In fact this is most significant phase it is necessary to justify and explain the reason for a recovery project.

In chapter II, after an initial description of the phenomenon of subsidence and thereafter the problems it generates, especially in the area of the Adriatic sea, where most of the rigs are located, the focus shifts to the materials used. A profile of the composition and characteristics of the different types of steel used is included and subsequently a graphical comparison is provided in order to understand which materials can be maintained and possibly re-used and which ones need to be decommissioned, because they are harmful if used in contact with skin or food.



Summary diagram of the main materials used

In chapter III, after explaining the reasons for such a project and especially what the prerequisites are, a typical platform is described in detail in order to illustrate the layout of the main areas and how they are organized. At this point it was possible to determine the functions, categories of use and consequently the size of the different environments. Before illustrating the architectural and technological project (related by numerous tables to better specify the concept), a reflection on eco-strategies is provided, in order to obtain the approval of European Ecolabel which is considered an added value to an intervention of this type.



Overall view of the rig after the interventions of recovery and reallocation

The aim of this thesis is not only to describe the offshore structures in our seas, but to understand their potential and their critical aspects. This is essential so as to design a winning strategy of redevelopment and integration in the marine habitat, without creating upheaval and in full respect of nature.

For further information, please contact:
Valentina Goletto, e-mail: vale.goletto@gmail.com