



## Economic Analysis of Innovative Approaches to Marginal Field Development

### Authors

[Yeghenee Nna Kue \(EPNL\)](#) | [Oyinkepreye David Orodu \(China University of Geoscience\)](#)

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[Abstract](#)

This paper focus on economic analysis and evaluation on possible development concepts of a small offshore field with recoverable reserve of 45million bbl, situated in shallow water depth of about 100m, and remote from existing or scheduled installation thereby rendering it not feasible as a candidate for satellite development. Short listed concepts considered innovative were evaluated in other to choose the option that maximized NPV. They were scaled through other profitability criteria based on results obtained from using cash flow economic simulation tools. The analysis showed that not all non conventional approaches are suitable for marginal field development.

These concepts are considered innovative because they seek to integrate a combination of concepts anchored on proven technology while adapting it to produce fields that cannot be produced using conventional techniques because of their low marginal return. In the cause of this study, Jack-Up Production Platform on a Concrete Sub-sea Storage tank when used as a development concept had the greatest return on investment. In the future, the adoption of such systems will make possible the development of

marginal fields discovered, but could not be developed due to their perceived low marginal return.

## Introduction

The integrated applications of innovative approaches facilitated by emerging technologies have aided the development of small oilfields hitherto considered uneconomic, not only technically feasible, but economically attractive. Once a field is discovered; the next stage is evaluating its potentials in terms of recoverable reserves and what development options are possible in terms of drilling, production, and facilities. The shift from conventional approaches has been found to significantly drive down development cost per barrel to justify the exploitation of marginal fields<sup>1</sup>.

For a reserve that is considered to be marginal, even when it is obvious that a non-conventional approach would drive down development cost, the choice of a particular concept or approach for field development is anchored on a detailed economic analysis. Economic analysis is therefore an integral part of every field development process whether it is a giant or marginal field as it is the pivot on which several other decisions revolve. Economic performance indicators of a prospective project drawn from a detailed economic analysis are oftentimes the deciding factor in determining whether or not a project will be undertaken.

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