

Challenges and Opportunities for the Development of Shale Gas in Indonesia

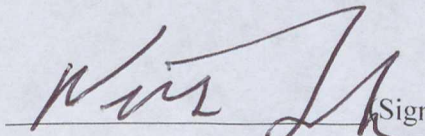
Josia Timothy Simanjuntak

Abstract

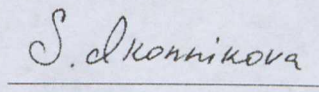
Over the past decade, the combination of horizontal drilling and hydraulic fracturing has allowed access to large volumes of shale gas that were previously uneconomical to produce. Since the success of shale gas development in the United States, countries around the world, including Indonesia, are looking for possibilities to replicate the success of U.S. in order to achieve its energy security goals. Indonesia's declining conventional gas supplies have highlighted the potential role of unconventional gas in the future energy mix. New conventional gas reserves in the country are insufficient to replace production and are becoming increasingly expensive to develop, such as those found in deep-water. However, Indonesia's shale gas industry is still at the early exploratory stages and may face many of the challenges for development of its shale gas resources.

This paper specifically analyzes the feasibility of developing shale gas project in the North Sumatra block. This block was chosen because it was the first shale gas block awarded by the Indonesian government in 2013, in which the first exploratory drilling and coring activity was conducted in 2017. The first part of the analysis discusses about the resource estimation of the North Sumatra block, in which it is estimated that there is around 73.6 TCF of total gas-in-place. This analysis is followed by sensitivity analysis which serve as a tool to determine which data is pertinent to resource estimation and therefore should be given more emphasis when conducting data gathering and analysis. From our analysis, special attention should be made to rock volume and porosity since it has the most impact towards estimated gas-in-place.

The second part of the analysis to discuss the project economics of the shale gas project in North Sumatra. The result unfortunately gave negative economic outlook marked by negative NPV and IRR given the current economic outlook and assumptions. This paper provided what would be the bare minimum gas price and drilling costs to make the project breakeven. This thesis is finally summarized by the challenges and opportunities that Indonesia might face it were to develop its shale resources.



(Signed Name)
Advisor: Dr. William L. Fisher



(Signed Name)
Advisor: Dr. Svetlana Ikonnikova