

IMPROVEMENT IN THE SYSTEMATICS OF OIL AND GAS AUCTION, MAKING ECONOMICALLY VIABLE ONSHORE SMALL FIELDS AND INCREASING GAS TRANSPORT CAPACITY IN BRAZIL

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Overview

Brazil has a prominent position among countries that have technically recoverable shale gas reserves. With an estimated reserve of 6.4 Tm³, the country is in 10th place, having its main onshore reserves in the Paraná, Recôncavo, Parnaíba, Parecis and São Francisco basins. The production of unconventional gas or shale gas, the most common nomenclature for gas reserves in shales, requires a more robust extraction technology and it is necessary to create an induced permeability that allows the removal of hydrocarbon from the source rock. In this form, production techniques such as fracking - injection of large volumes of water mixed with sand and carcinogenic chemicals - are used to technically make production feasible. The challenges are enormous, since Brazil is a country of continental dimensions and has only 45,000 km in a gas pipeline network. Of these, only 9,500 km are used to transport natural gas, the other 35,500 km being used for the distribution of hydrocarbons. For the past 10 years, the Brazilian Government has been trying to boost and encourage research and development projects in order to produce more studies on sedimentary basins, to gather information on geophysical and environmental data to attract public and private companies to the shale gas sector in Brazil.

Methods

Small oil and gas fields with potential for production were surveyed. As well as information on the existing gas transport and distribution network. Brazil has a few kilometers of gas pipelines distributed throughout its territory, which makes it difficult to better take advantage of the production of natural gas. The commercialization of the production fields is carried out through concessions, where the Brazilian government, through bidding processes, offers the right to explore the area. Some oil and gas fields could become economically viable if the form of contracting was optimized. Currently, companies interested in exploring and producing oil and gas fields offer a value in subscription bonuses and propose a Minimum Exploratory Program, that is, they undertake to perform certain activities, such as seismic surveys, drilling of exploratory wells, among others, in that area. The company that submits the most advantageous proposal receives the right to explore that area. However, auctions are already widely used for the sale of various commodities in Brazil and in the world. It is interesting to use them to negotiate onshore oil and gas fields, in order to make the production of shale gas economically viable. I propose a sequential auction with a systematics in which the winning participant is the one who offers the lowest bid across the field. To increase competition, the auction will be divided into two stages, the first being a clock followed by a closed stage of the first price. In sequence, gas pipelines will be auctioned, following the same systematics, with the purpose of allowing the outflow of the field that was auctioned.

Results

The use of sequential auction to enable mainly shale gas fields in Brazil, tends to present satisfactory results. Shale gas fields need unconventional extraction, which makes production more expensive. Optimizing the negotiation of the field can result in a greater benefit for the concessionaire company. Using sequential auctions to auction the field first and then the gas pipelines will increase the country's transport and distribution capacity and facilitate natural gas trade.

Conclusions

The sequential auctions show good results, as they provide the participant with the chance to bid on items of interest. The certainty that the gas pipelines will be auctioned next, makes the participants offer generous bids. Because

they know that they will be able to sell the production. The use of a systematic for the auction containing two stages shows positive results. Making participants more competitive in the clock stage and presenting consistent bids. With the first stage working on price disclosure, participants can bid more concisely in the closed stage.

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