

Turkish natural gas consumption's role in EU energy diversification: The Nabucco project's ill-considered foe, "Turkish consumption"

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Introduction and overview

Natural gas has the largest share of the energy mix of the EU member nations. Hence, natural gas supply security and diversification is a major consideration in the EU and the extreme dependence on Russian gas supply (40% of EU imports) is seen as a serious defect. Attaining a new, southern supply corridor has been one of the priorities of the EU member states to ease dependence on Russian supply and diversify routes of transport as well as supply sources. The Nabucco pipeline project is currently the only viable option to achieve the dual goal of transport route and supply diversification. This proposed corridor must inevitably pass through Turkey, which brings Turkey's own growing energy need and troubled accession relations with the EU into the forefront of consideration.

In this paper, possible scenarios surrounding the geopolitical situation in the main supply, transport, and demand centers associated with the Nabucco project are taken into consideration with a focus on the growing gas consumption demand in Turkey. An analysis is carried out to model possible scenarios of Turkish consumption and the possibilities of suppliers joining the venture and their ability to meet the supply necessary for the Nabucco pipeline. In the end, the ability of the Nabucco pipeline to establish the necessary diversification for the EU is analyzed via a comparison of scenarios in light of projections of future EU gas consumption forecasts.

Methodology, data and literature review

To analyze the effect of the suppliers of the Nabucco pipeline, a cost minimization model will be built through a linear programming approach. Possible scenarios will be compared and contrasted via a binary approach to materializing geopolitical involvement. The constraints of the model will be the capacities and costs (production and construction) of the producing countries as well as the demand of the EU and of Turkey.

A study by Dieckhoner (2010) regarding the effect of Ukrainian supply disruptions on EU energy security has been conducted using a linear programming approach. However, this analysis only focuses on the disruptions of Ukrainian supply and does not consider the internal consumption of Ukraine and the geopolitical situations surrounding the supply in the linear program. Such models have been used in the electricity markets and the results have been transferable to natural gas markets as confirmed by Gabriel and Smeers (2005). The ability of the proposed model to allow for an explanation of the effects of Nabucco on EU consumption through variable costs permits for the analysis to be made without an assumption on future natural gas prices. Hence, one of the main contributions of this study will be the ability to analyze the interaction of the main players in the Nabucco project when faced with the constraints of geopolitics, technical costs, and Turkish consumption.

Another important contribution of this paper will be the capability to ascertain the feasibility of the Nabucco pipeline to provide an alternative to appease future EU consumption. The study will

reveal the many constraints facing the Nabucco project and focus on the rarely considered implications of Turkish consumption on the success of EU natural gas supply diversification. The feasibility of the project will be reconsidered in the light of various scenarios previously left out of analyses that focus on bare financials and costs.

The forecasts of Turkish natural gas consumption used in this study will be obtained from the investors in the Nabucco pipeline and academic institutions within Turkey. These same sources will also be used for the cost estimates of building such a pipeline. Furthermore, the gas reserves of possible suppliers and their production capabilities will be obtained through the EIA and BP Statistical Review. Finally, the geopolitical scenarios will be compared with the future consumption of the EU member nations as forecasted by the IEA.

Results and conclusion

The results are expected to reveal the major impact of the growing consumption of Turkey on the ability of the Nabucco pipeline to realize EU's dual energy diversification ambitions. The various geopolitical considerations hint that the pipeline will not be able to meet such expectations unless an agreement is made between Turkey and the EU to transport a certain quantity of the gas to the EU. As the experience with the current agreements indicates, such agreements are difficult to withstand.

Thus, the realization of the expected gas supply security and diversification objective of the Nabucco pipeline may require that the EU accept Turkey's bid for EU membership or at least agree to a commitment to an energy charter between the two entities. Furthermore, the recent events surrounding the Arab Spring have further damaged the possibility that Turkey will agree to such commitments, with the "Turkish model" gaining traction in the newly revolutionized countries and pushing Turkey towards a leadership role in the Middle East as a bridge between the east and west.

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