

MODELING EUROPE'S POSSIBILITIES TO ACHIEVE A NEW ENERGY SECURITY BY IMPORTING LIQUIFIED NATURAL GAS (LNG)¹

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OVERVIEW

Within the past decade LNG became more and more compatible to piped gas, especially through improvement of technology, new investment and economy of scale. The traditional structures in Europe, characterized by long-term treaties (take-or-pay) with big producers like Russia and Norway, are changing. Besides LNG there were two other factors which have been triggering the shift from a sellers' to a buyers' market in the last three years: the global economic downturn and the massive development of shale gas in the United States. The global oversupply with gas is, together with LNG as flexibilizing technique, responsible for the new phenomenon of competition in the European gas market, and hence for diversification-opportunities.

The important question is therefore, whether this dynamic is only a temporary one, or, if not, with which speed this dynamic of liberalization – driven by LNG – continues. The finding of an answer to this question means to be able to estimate, which diversification possibilities exist for the European Union in future. Because an end of the economic recession and a braked development of shales seem to be likely in the medium term (tough conditions in Europe), the focus of this paper shall lie on the progress of LNG. The central motivation is to identify relevant internal and external factors which affect the possibility of Europe to extend LNG-imports.

METHODS

- Desk research: literature/statistics overview and analysis of the crucial economical, political and technical developments concerning LNG (on the one hand generally **global**, on the other hand focussed on the **EU** and the biggest LNG-exporteur **Qatar**)
- Empirical research: interviews with key actors in the European energy sector
- Besides: development of an indicator for European diversification of gas supplies (referring to Shannon's - $\sum_{i=1}^n x_i * \ln(x_i)$)

This paper will examine the potential, discussing physical availability and deliverability in the mid to long term and obstacles LNG faces in the EU and in Qatar. Furthermore it examines the internal and external factors that can hinder or accelerate such a development. It contains:

- An analysis of the role of LNG in the global energy supply situation;
- A view on the Qatari LNG-industry and important shareholders;
- A specific focus on the role of LNG in European gas supplies;
- An assessment of the in-place transportation systems in Europe/the Inner-European liberalization-process
- An assessment of pipeline to LNG-competition (projects, contract durations, costs and prices)
- A glimpse at the geopolitical implications of LNG (maritime vs. continental powers)

¹ Keywords: LNG; Energy supply security (political, economical and technical), Energy sector analysis, Energy policy making, Geopolitics of global gas supply, Energy sector risk analysis, Market integration and liberalization

RESULTS AND CONCLUSION (SHORTENED)

With respect to the issues mentioned above, the following can be stated introductorily:

- LNG conquers bigger market shares. This development is also an expression of the need to have a second globalised energy carrier besides oil (environmental concerns and flexible power markets). LNG is the fastest growing energy sector. The competitiveness to pipeline and shale gas opens further opportunities for growth.
- The Qatari LNG industry is the biggest worldwide. US-firms are highly involved. A moratorium for further projects exists till 2014. The Suez Canal Authority supports LNG-Trade from the Pacific to the Atlantic Basin with fee discounts. The Qatari LNG industry is the first large-scale one (which focuses on a high range, respectively a globalised gas market).
- France, Spain and UK are the main drivers of LNG demand in Europe. 18 regasification-terminals exist with quite different characteristics. There are plans in nearly every European state to build or expand capacities. A competition between different trading hubs emerges. The modified Shannon-Index allows the creating of a typology of EU-states with three categories, differentiating the alignment of energy economics.
- EU-states with liberal legislation are the major importers of LNG with sufficient pipeline-capacities for the distribution. A coordinated European gas market (interconnectors, similar gross caloric values, etc.) is still missing.
- LNG-projects are in most cases not competitive to pipeline-projects concerning construction costs (comparable capacity). But with respect to importer prices, the ratio toppled in favor of LNG. Qatari LNG has low production-costs and a relative high gross caloric value, so that it's very attractive for European markets.
- US-firms play an important role in the development of LNG-Capacities abroad. The US government continues with its maritime strategy of the last decades. A worldwide tanker based gas trade is synonymous with the expansion of the power sphere, economically and politically. LNG is furthermore a mean for international oil companies to compensate the loss of importance in the oil sector. EU-Member-states follow their policy traditions.

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