

# On the LNG Market: Actors, Development, Potential and Challenges

BY FREDJ JAWADI AND PHILIPPE ROZIN

## Capsule

This note recalls the principles and actors of LNG market. It also discusses the potential of LNG market as well as its several challenges.

## Abstract

*This note analyses the LNG Market while recalling its actors, rules and the main steps related to its development. We also discuss the main perspectives of LNG market in terms of ecological transition and therefore a more clean energy environment; even it is still an on-going project that requires more attention given the heterogeneous positions of governments and policymakers. Finally, we discuss the challenges with LNG Market and its development in the future.*

## 1. The development of LNG Market

What does Liquefied Natural Gas (LNG) Market refer to and what are its main principles, actors and rules?

LNG is a natural gas that has been transformed into a liquid form, which requires a heavy industrial process to transform it from a gaseous state (its initial state when extracted) to a liquid state. To this end, the gas should be heated to a temperature of between  $-161^{\circ}\text{C}$  and  $-163^{\circ}\text{C}$ . Once in this liquid state, LNG is 600 times less voluminous than when it is in its gaseous state, which is an important natural advantage in particular to facilitate its transport by ship to consuming countries.

In 2021, the global LNG market size was estimated at USD 109.48 billion, but this market is expected to grow up at an annual rate of 8.1% from 2022 to 2030. This dynamics of LNG market is explained by the fact that LNG Global demand has doubled over the past decade. LNG is hence expected to play an increasing role in meeting global natural gas demand. Accordingly, the long-term outlook for natural gas is the most favorable among fossil fuels. As for the supply side, Qatar, the United States of America, Russia, Australia, and Malaysia are the main producers as they provide around three quarters of global supply in 2021.

As for the actors of this market, it is important to recall that after oil and coal, natural gas is the third largest source of primary energy in the world, accounting for 24.7% of primary energy consumption. The consumption of this commodity is often of domestic origin. Indeed, in 2021, 69.8% of global natural gas demand came from domestic production and the remaining 30.2% was supplied by cross-border pipelines (in gaseous form) or by seaborne trade (as liquefied natural gas, LNG).

The gas economy is a pipeline economy and less global than oil market. Pipeline flows accounted for

57.7% of international trade, and the remaining 42.3% was supplied in the form of LNG (BP, 2022). Even, a new trend is emerging. In fact, since the 1990s, global LNG trade has grown faster than domestic gas production and pipeline supply. Accordingly, internationally traded LNG now accounts for 12.8% of global natural gas supply (BP, 2022). This growth of LNG market was supported by Global demand for LNG that has doubled over the past decade. Interestingly, this growth has been driven by significant cost reductions along the supply chain. The most decisive factor is probably the increase in LNG tanker capacity. In addition, the strong demand for natural gas due to the arrival of new players on the market has played a decisive role. Finally, it is worth noting that LNG has proven surprisingly resilient. Indeed, while global primary energy demand fell by 4.5% in 2020, the largest decline since 1945, LNG demand increased by 0.6% in the same year (BP, 2021). In 2021, global LNG trade grew by 5.6% (BP, 2022).

## 2. The perspective of LNG market in term of ecological transition

Obviously, the expectations from LNG markets are being high in particular in terms of dealing with more clean energy, which gives more credit to the growth prospects for petroleum liquefied gas that are very promising. Indeed, according to the latest IEA report, almost one hundred billion cubic meters of new LNG supply capacity will come on stream between 2018 and 2023. Both mature and fast-growing emerging markets have contributed strongly to this growth. In particular, China is expected to be the main driver of natural gas demand growth in the near future. This is due in part to the continued growth in energy consumption coupled with strong political support to reduce the pervasive air pollution in China's major cities. As the second largest importer of LNG, China's LNG supply structure remains a complement to domestic production and pipeline imports of conventional hydrocarbons. That is, the objectives of the 13<sup>th</sup> Five-Year Plan (2016-20) aim to adjust the country's energy mix. The desire to decarbonize its economy has increased the demand for natural gas and accelerated infrastructure development.

However, in relation to LNG, policies and rules vary from one country to another in Asia. The Japanese market, for example, is particularly liberalized. It comprises more than 200 players operating in different market segments. Trade is very intense, despite the serious dependence on LNG imports and limited domestic pipeline interconnections. Korea has a lower share of

**Fredj Jawadi** is a Professor of Finance and Econometrics at the IAE Lille University School of Management and can be reached at fredj.jawadi@univ-lille.fr

**Philippe Rozin** is an Associate Professor of Finance and Commodities at the IAE Lille University School of Management

natural gas in the energy mix and a fairly early market opening. The incumbent KOGAS imports nearly 90% of LNG demand in the wholesale sector and is the only wholesale supplier of gas to large consumers and city gas companies.

### 3. The challenges with LNG Market

Despite this bright outlook, the LNG market faces challenges in the face of price volatility and uncertainty. First, at the capacity level, it is clear that commercially viable liquefaction projects with a proven impact on carbon emissions are still limited. Underinvestment is indeed a major challenge for this energy source. There is also price volatility in a context of massive supply uncertainty, even if demand remains strong. Accordingly, the market is facing challenges actually: it is experiencing bear months when LNG demand is generally low; most Russian gas is still in circulation and LNG demand in China is down significantly. This can yield more uncertainty about what will happen next.

Second, noteworthy is the geopolitical concentration of producers. North America is the big source of new LNG production and there are not many others. The concentration of LNG production areas is an inherent constraint to its production. In the short and probably medium term, the United States will easily consolidate its position as the largest LNG exporter, as the trend of increasing domestic supply and rising prices in Europe and Asia will encourage operators to seek outlets for their gas abroad. For example, the \$10 billion Golden Pass LNG project in Texas, with export capacity of approximately 18 million tons per year, and the Plaquemines LNG project, which could produce approximately 24 Mtpa, will start up in 2025. At the other end of the geographic spectrum, Qatar intends to increase its LNG export capacity to 126 million tons per year by 2027,

up from 77 million tons currently. Russian volumes, meanwhile, depend mainly on the success of the Arctic LNG 2 project, the on-going war in Ukraine and the series of sanctions against Russia that have caused delays in the commissioning of trains 2 and 3. In Africa, Mozambique will see its first LNG production at the end of 2022 thanks to the Coral South LNG project, currently under development. The project is expected to supply about 150 million cubic feet per day (MMcfd) of gas.

Third, Russia, the United States and Qatar hold about 70% of the world's approved and as yet unproduced LNG resources. LNG is on a roll. The deepening global energy crisis is fueling the need for investment in new LNG infrastructure. This is estimated to be \$42 billion per year by 2024, according to a study by Rystad Energy.

That is, it should be noted that several governments are moving quickly to make a major energy transition away from fossil fuels. This is resulting in accelerated investment in low-carbon energy infrastructure. Thus, this upward effect on investment could be misleading. Russia's war in Ukraine is stimulating new LNG projects, but these would be mainly driven by a short-term increase in natural gas demand in Europe and Asia. So, while global gas demand is expected to increase by 12.5% by 2030, from about 4 trillion cubic meters (Tcm) to about 4.5 Tcm, gas demand in the US is expected to remain relatively flat through 2030. This demand would be offset, thanks to strong economic growth and pro-gas policies, by demand from Asia and the Pacific will increase (by 30%, from about 900 billion cubic meters (Bcm) to about 1.16 Tcm by 2030). The US will account for 30% of cumulative gas demand in 2030, while Asia-Pacific will account for 25%. So, different challenges do exist for LNG market.