

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

**STUDY ON CURRENT STATUS AND PERSPECTIVES  
FOR LNG IN THE UNECE REGION**

**EXECUTIVE SUMMARY**



**UNITED NATIONS**

**Geneva, 2013**

## Current status and perspectives for LNG in the UNECE Region

### Executive Summary

Natural gas is the energy source of the 21<sup>st</sup> century – it will be a critical component of the transformation to a sustainable energy future by virtue of both its relatively low carbon intensity and its role in enabling large-scale deployment of renewable energy. Liquefied natural gas, or LNG, is the part of the natural gas market that makes it truly global, but if it is to achieve its full potential, enabling policies that are clear, transparent and stable over the long-term are needed.

Global gas demand in 2012 was estimated at 3,300 bcm. LNG represents 10% of the total natural gas market and 32% of global gas trade, and it is growing faster than overall gas demand. At the end of 2013, the LNG industry was operating more than 90 liquefaction trains with a production capacity close to 280 million tons per year, a fleet of more than 360 LNG tankers, and nearly 100 regasification LNG terminals. LNG's upstream source and downstream market flexibility and costs (when competitive) enhance its contribution to gas' role in the future energy mix:

- Regasification terminals enable downstream markets to access competing suppliers. In addition, regasification terminals add substantial gas storage capacity to the whole gas system. As a consequence, security of supply is enhanced.
- LNG access is not constrained by pipeline availability or gas transit disputes, and LNG buyers do not need to commit to long-term, high volume gas contracts. Spot and short-term transactions represent 30% of total LNG trade.
- A possible constraint is access terms for liquefaction and regasification terminals. Open access to LNG terminals enhances market structure and competitiveness. Because LNG can be diverted or re-exported as market conditions change, it is an important feature of globalizing gas markets, especially if a global LNG pricing pattern was to emerge.
- Given the size and cost of its infrastructure, LNG is ideal for small, isolated markets or markets that require negotiating leverage with a supplier.

LNG has certain drawbacks. Natural gas prices and shipping rates are volatile and can have an immediate and significant impact on short-term LNG contracts. As with pipeline gas, oil-indexation in LNG contracts is under pressure. LNG's competitiveness with pipeline gas and with alternative primary fuels therefore can shift quickly. Capital costs for fully integrated projects have been rising, especially at the liquefaction stage, so LNG costs (and hence prices) are not expected to drop in the near future though the number of supply sources continues growing.

The LNG market is adapting to a number of factors that have fundamentally shifted the supply and demand balance for LNG:

- The surge in supply of unconventional gas such as shale gas has altered the expected patterns of LNG trade, notably with expected imports to the US becoming exports from the US.
- The Fukushima nuclear accident has underpinned strong growth in gas-fired power generation in countries that changed their nuclear policies following the accident.
- New Asian buyers are buying increasing volumes of LNG. There is also high uncertainty about future European energy requirements, given the state of the economy and the need to support growing generation from intermittent renewables.
- LNG is used increasingly as a fuel for ships and heavy-duty vehicles which is driving gas demand and reducing carbon emissions.
- The Arab Spring affected the LNG trade balance of the Middle East and North Africa.

For each of these factors there are uncertainties about the duration and the depth of the effect.

## Emerging Market Issues

The most significant developments in the LNG markets relate to its flexibility, whether in contracting, technology, or marketing.

- The progressive disappearance of destination clauses is giving new life to LNG terminals. The terminals deliver gas to the local distribution grids but they can also load methane onto tankers to trade LNG. Terminals can also support transfer of cargoes for re-export before off-loading and from ice-breakers to classic methane carriers.
- Most LNG is converted to gas and compressed into long distance pipelines. However, it can also be delivered directly to customer sites by truck when demand levels do not justify building pipelines or when construction lead-times are too long to meet growing gas demand.
- As witnessed in the US with the surge in shale gas production, developing bi-directional projects by adding liquefaction capability to regasification terminals reduces construction costs and timelines compared with development of greenfield liquefaction projects.
- Broad deployment of Floating Storage and Regasification Units could significantly reduce costs and timelines while avoiding many of the siting constraints faced by traditional units. Similarly, Floating Liquefied Natural Gas facilities are relatively small scale, can be deployed quickly, and can be used to access gas resources that would otherwise not be developed.

## LNG Policy Challenges

The impact of LNG on security and diversification of supply, flexibility, liquidity, prices, and competition and market integration can be significant. Countries that have opted for regulated access to terminals have had better results in terms of third party-access to LNG terminals, but terminals with negotiated long-term contracts have more stability and predictability in rate of returns, which in attracts investment. Fulfilling long term commitments can be achieved either through stable regulation or through contracts.

LNG trade has had an impeccable safety record over its 50 year history through the commitment of the industry to its best practices. Regulations have typically emerged as a complement to the industry initiatives. The differences that do exist in LNG specifications, liquefaction plants, receiving facilities, local operating procedures, LNG tankers designs, and so forth have not been a barrier for the development of global LNG trade, though there are opportunities for improvement.

The industry needs to anticipate challenges that are inherent in a rapidly growing business. LNG quality issues concern sulphur and mercury content, as well as calorific values. Gas interchangeability is the ability to substitute one gaseous fuel for another in a combustion application without materially changing operational safety, efficiency, performance or materially increasing air pollutant emissions. The world is split into three areas where different specifications predominate:

- the Asian market with rich gas requirement (high calorific value, high Wobbe number),
- the Atlantic Basin with preference for leaner gas, and
- the European Union harmonising specifications among its member states to accept a range of lean and rich LNG.

Full harmonization of traded LNG quality is unlikely, but some degree of harmonization of LNG specifications is needed to ensure it is acceptable at all LNG terminals and by a majority of end users (especially for combined cycle gas turbines).

There is a huge body of knowledge on operational issues regarding LNG that must be normalised and disseminated if LNG is to become a truly global industry. Players throughout the LNG chain, including regulators, should be encouraged to standardize and exchange information. Such efforts would improve compatibility and efficiencies and maintain safety levels throughout the industry.