

## Can Natural Gas Market Liberalization be Compatible with Energy Security and Climate Change Concerns?

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Natural gas market liberalisation has a long history; over the past 30 years it has been introduced in North America, UK, Continental Europe, and many other markets around the world. The aim of liberalisation is to promote efficiency and lower prices for consumers by introducing competition into markets which have traditionally been monopolised either nationally or regionally. Liberalisation of gas markets is usually accompanied by liberalisation of electricity markets as gas is usually an important fuel for power generation. Liberalisation of both markets results in a move from long term to shorter term – including spot – contracts, and a move from regulated or (in the case of gas) oil-linked prices to spot prices which are formed at trading hubs. The best known trading hubs are Henry Hub in the US, NBP in the UK and TTF in the Netherlands, although there are many other gas hubs operating in both North America and Continental Europe. Market liberalisation requires the separation of networks from supply. In some cases the two functions can remain as separate subsidiaries in the same company, but in many countries gas companies have been required (or have chosen) to demerge and sell these assets leading to the creation of independent gas transmission (and distribution) companies operating a regulated business.

**Fig. 1 Stages of Liberalisation of Gas Markets**

STEP 9	↑	Indices Derived for long Term Contracts
STEP 8		Liquid Forward Curve Develops
STEP 7		Futures Exchange Created
STEP 6	<b>STEPS 1-9 ARE (AT LEAST)</b>	Entry of Non-Physical Players
STEP 5	<b>A TEN-YEAR PROCESS</b>	OTC-Brokered
STEP 4		Balancing Rules and Standardised Trading
STEP 3		Price Discovery and Disclosure
STEP 2		Bilateral Trades
STEP 1		Third Party Access to Pipelines and Regasification Terminals

Source: OIES

Liberalisation of gas markets involves a number of steps which are shown in Fig. 1. The steps do not necessarily have to be taken in this order although until the first three are achieved it will not be possible to progress further. Few countries have achieved all 9 steps but, for those which have

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done so, the process has required about a decade (and can take longer). Not included in Fig. 1, but crucial to the process, is the development of regulation and government policy to ensure the progress of liberalisation. Countries can take many years to achieve even the first step and some have never achieved it because, despite the fact that they may have created legislation and regulation for third party access, this has never been enforced.

## **Compatibility with Security of Supply**

One of the biggest objections to liberalisation is concern as to whether it prevents the signing of long-term contracts which have traditionally underpinned the development of international gas and particularly LNG projects. The reasoning behind this is that in order to finance new projects, bankers will require long term (20 years plus) contracts from credit-worthy buyers before they are willing to loan funds. But buyers – uncertain as to how many customers they will be successful in obtaining or retaining and therefore how much gas they will need – may not be able to sign such contracts.

The evidence that such obstacles have prevented new long-term contracts from being signed is not conclusive. New contracts have been signed but with different contractual conditions. Contract length has shortened somewhat so that it is unusual to find contracts in excess of 20 years. Volume commitments have fallen so that it is unusual to find buyers willing to take more than 3mt of LNG, and contracts for 1mt and below are becoming common. Short term contracts – of one year and up to five years, or for a certain number of LNG cargos – are becoming common, at least for projects which are already in operation. In a major contractual departure, LNG Canada took FID in October 2018 without any sale and purchase contracts; the LNG will be added to the existing sales portfolios of the equity partners.

For small buyers, the development of a market where increasing numbers of LNG cargos will be available on a spot or short-term basis, security of supply – meaning the need for a long-term contract – has become less important. The existence of traded hubs means that volume risk has also reduced – those with too much or too little gas can sell or buy at the hub to balance their demand requirements. This means that risk has switched from supply uncertainty to price uncertainty i.e. that buyers are confident of being able to secure pipeline gas or a cargo of LNG but uncertain about the price they will need to pay. In countries with an established hub price, the main question becomes whether buyers and sellers agree a price for a specific day, or an average of days, weeks or months. For countries where there is no established hub, the main question is whether the price should be the traditional oil-linked indicator (JCC), or an established hub (in Europe or North America) or a spot indicator such as JKM, or a mix of these prices – a so-called ‘hybrid price’ – and how that price should evolve as market conditions change. The main risk for buyers is that the price may be too high for the market into which the gas is being sold. The main risk for sellers is that the price may be too low to cover their project costs, and therefore they may not recover their investments.

A different security issue is that of ensuring diversification of supplies. Liberalisation dictates that customers buy the cheapest gas, irrespective of its origin. Gas can always be sold at the hub, so access to the market cannot be denied as long as suppliers are willing to accept the hub price. Therefore, in a liberalised market the origin of gas supply cannot be controlled for security reasons. The European Union has had a policy in place for many years to diversify its gas supplies away from Russia for both political and security reasons. However, in the post-2014 period, dependence on Russian gas increased substantially, partly because of problems with other supply sources (principally the Netherlands), but mainly because Russia is the most competitive source of gas. This has resulted in LNG imports into Europe not increasing as expected because European hub prices have been significantly below those of Asia (and other LNG importing regions) and therefore suppliers have preferred to send their cargos to more profitable destinations. In particular this accounts for the fact that very little US LNG – expected by many to assist European diversification away from Russian gas – has been landed in Europe since exports began in 2016. Thus liberalisation may promote lowest cost solutions for gas supplies<sup>1</sup>, but it may also result in supply concentration that may be considered incompatible with security of supply.

## **Compatibility with Climate Change Concerns**

Gas and LNG companies often make the proposition that their supplies can help governments meet their COP21 carbon reduction targets and that gas can become a transition, or even a destination, fuel for a low carbon economy. The potential problem for this proposition is that although gas has a lower carbon content than either oil or coal, its carbon content (and potentially any fugitive emissions of methane from its value chain) means that its contribution to climate-related emissions is still significant. Most energy modelling studies show that, by the 2030s in Europe and the 2040s in most other regions, unless gas can be decarbonised, COP21 targets will require it to be progressively phased out of energy balances.

The impact of gas market liberalisation on greenhouse gas emissions and the longevity of gas in national and global energy balances is uncertain. Part of the answer will depend on the extent to which liberalisation promotes the use of lower or zero carbon energy sources. But as mentioned above, liberalisation is principally about promoting efficiency, it is not intended to promote one type of energy source over another for carbon/climate-related reasons. Combining liberalisation of energy markets with carbon instruments such as regulation of emissions, and carbon prices or taxes, can achieve both the goals of efficiency and emission reductions. However, this will not necessarily promote natural gas, it is more likely to promote renewable (solar and wind) energy where these become more competitive sources of energy (especially electricity) supply than gas.

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<sup>1</sup> This is not the same as saying that gas prices will always lower in liberalised markets; only that prices will be lower than if markets had remained unliberalised.

## Conclusions

My answer to the questions that form the title of this article are that:

- natural gas market liberalization can certainly be compatible with security of supply, but the focus of concern is shifting from supply or volume security, to price security;
- in relation to climate change concerns, gas market liberalisation is not likely to have any major impact *per se* but, combined with other measures – such as carbon taxation or pricing – it may have a beneficial effect.

### Writer's Profile

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Professor Jonathan Stern is a Distinguished Research Fellow and founder of the Natural Gas Research Programme at the Oxford Institute for Energy Studies (OIES). He holds professorships at the University of Dundee and Imperial College, London; and fellowships at the Energy Delta Institute and the Institute of Energy Economics, Japan.