

# Pricing gas: evolution not revolution

The natural gas glut has forced changes in contractual pricing practices, most notably in Europe. Some elements of these modifications reflect long overdue changes that remain consistent with the principle of netback replacement value pricing. Others reflect competition between spot traded gas and Long-Term Contracts. LTCs are not about to be swept away, but they are likely to be more flexible in future. **Andrey Konoplyanik**

The most immediate challenge facing the natural gas industry is oversupply. This reflects the collision of an unprecedented collapse in demand in 2009 with new waves of supply from an expansion in LNG capacity, new conventional pipeline gas, and from unconventional gas production in North America. In the US, the collapse of domestic gas demand, combined with the simultaneous growth of domestic supply, has reduced US LNG requirements to near zero.

LNG supplies, developed on the basis of a buoyant US import market, were re-oriented towards Europe. However, demand in Europe has also fallen. The radical difference between the two markets is that, in the US, imported LNG lost market share to domestic shale gas, but, in Europe, additional volumes of imported LNG took market share from imported conventional pipeline gas.

Moreover, in the over-supplied European gas market, spot LNG currently has a clear competitive advantage over pipeline gas sold under Long-Term Gas Export Contracts in which prices are mostly linked to oil. This is because the additional LNG supplies have come mostly from new project-financed low-cost developments in the Atlantic basin and Middle East.

These projects have to pay off debt and were ready to accept quick and sharp price reductions to create cash flow and capture market share. Pipeline supplies are, by contrast, much less flexible by definition. Contract price levels, linked to oil-quotations and replacement values of other energy alternatives to gas, have been adapted regularly through the mechanism of pricing formulae, usually on a quarterly basis. However, the pricing formulae of LTGECs themselves can only be changed through bilateral agreements following negotiations between supplier and purchaser. This requires time.

In the intervening period, contract prices for pipeline gas were considerably higher than spot prices for LNG. The response from buyers was, first, to reduce their purchased volumes to the minimum contractual take-and/or-pay (TOP) obligations. Second, to require suppliers either formally to downgrade this TOP limit, or to allow them to buy below minimal TOP obligations without penalty. And, third, to review contract formulae and index them more or fully to spot quotations, or find some other means of reducing LTGEC prices to the current low level of spot prices.

The slow speed which with LTGECs have been adapted resulted in a loss of market share for pipeline suppliers

to Europe, most notably Russia's Gazprom. Whether this loss is temporary or not depends primarily on Gazprom's future actions. As Domenico Dispenza, president of industry association Eurogas, said, in November 2009, the lack of contract flexibility was a "very strong warning for the Russian gas industry. It is a call for change, in order to adapt to a market that has so profoundly shifted in its fundamentals in such a little time."

## Transition market

The current state of the European gas market can be characterized as both a crisis and a transition. A new market structure is evolving, owing to the sharp increase in new supplies. Commentators suggest that the market will rebalance, but that the "post-crisis" period will see the extension of price competition. In other words, some suggest a permanent erosion of the position of LTGECs, and a permanent loss of market share on the part of Gazprom, owing to the slow adaptation of its LTGECs in the face of heavily-discounted spot LNG prices.

Moreover, in many (mostly western-based) publications, there is growing excitement about the possibility of large-scale shale gas production in Europe. It is argued that this will prove a cheap alternative to pipeline gas for European end-users as it should be produced near to consumption centers. Domestic shale gas, in addition to continuous flows of imported LNG, will displace from the energy balances of many European states traditional, expensive, imported pipeline gas, particularly that from Europe's biggest external gas supplier Russia.

This, in turn, will produce intense competition between the producing states of traditional pipeline gas and those producing LNG. The result will be further downward pressure on gas prices, the expansion of short-term and spot trade in gas, the use of futures pricing, and the development of liquid trading hubs. This will aid the process of gas market liberalization, backed up by the EU's third energy package, and the Anglo-Saxon model of open, competitive, liquid gas markets will become established across continental Europe.

## Justified trends

This outlook has some justification, but it is by no means inevitable. Trends evident in the evolution of LTGECs are for the duration of the contract to shorten and for the oil-indexed component to diminish. There are, in principle, two different models of gas market organization: the Anglo-Saxon model, based on the development of gas-to-gas competition and liquid markets, in operation in the US and the UK, and the

## Gazprom: evolution of contract provisions and pricing mechanisms in Europe

Buyers' demands for price reviews and contract adjustments following "significant market changes"	E.ON Ruhrgas, Wingas, RWE, Botas, Eni, GdF Suez, EconGas, Gasum
Downgrading minimum TOP obligations from Gazprom's average 85%	E.ON Ruhrgas, Botas: 90% to 75%; ENI: 85% to 60% for 3 years Gazprom total 15 BCM for 3 years = 5/140-145 BCM (2010) = 3.5% of RF annual gas export volume
No penalties for violation of minimum TOP obligations	Naftogaz UA, Botas; Eni, E.ON Ruhrgas pending
Gas sales above minimum TOP obligations at current spot prices	E.ON, GdF, Eni
Adding gas-to-gas competition component into pricing formulae thus decreasing/softening oil-indexation formulae link	E.ON Ruhrgas, GdF, Eni – Gazprom = 15% based on a basket of European gas hubs; requests to Gazprom up to 40%; E.ON Ruhrgas – Statoil = 25%; Statoil average up to 30%,
Increasing flexibility of contractual provisions	Gazprom's "promotional package"
Recalculating base formulae price	Wingas
Direct price concessions	Botas
Maneuver by contract volumes within contractual time-frame + requests to cancel obligation to off-take contracted volumes within 5-year period	E.ON Ruhrgas, Eni
Stimulating measures ("packages") for purchases in excess of (downgraded) minimum TOP	
Shorter contract durations	Sonatrach
Shortening of recalculation period/interval	Possible
Shortening of reference period	Possible
Source: Andrey Konoplyanik	

continental European model, based on vertical integration and long-term contracts, which predominates in Europe and Asia.

In addition, there are three models of international gas pricing: 'cost-plus', which tends to dominate at the initial stages of market development; 'net-back replacement value' based on replacement values at the consumer-end of the market, prevalent within continental Europe and Asia since 1962; and spot pricing via commodity exchanges, such as in the US and UK, where there are competitive markets for paper as well as physical gas.

At the beginning of LTGEC, gas replacement value based on oil prices was justifiable. In the 1960s, the use of Residual Fuel Oil by industry and in electricity generation and of Light Fuel Oil by households meant that oil was in fact a gas-replacing fuel. The price of LFO is generally 10-15% higher than crude and that of RFO about 30-40% lower. So if a 60/40 LFO/RFO ratio is used, as in the original Groningen LTGEC gas pricing formulae, or 50/50, as in the most recent Russia-Ukraine LTGEC, the gas price is set at 60-80% of the value of crude oil.

However, after the oil crises of the 1970s, oil became less of a replacement fuel for gas, but oil indexation remained in the formula. RFO, in particular, is no longer a gas-replacement fuel in industry and electricity generation. Reducing the proportion of RFO in the formula pushes the value of gas towards 100% of crude oil – otherwise known as oil parity. At the same time, new alternatives to gas appeared, for example, coal and primary electricity from hydro and nuclear, and later on new renewable energy sources and even energy saving.

Adding these new ingredients to the gas pricing basket pushed the value of gas away from oil-indexation and, in the current state of the market, away from oil parity. But if, for example, the CO<sub>2</sub> emissions of individual energy sources are considered in their price, this would radically alter the whole pricing picture and the existing correlations between prices of different energy sources. The gas replacement value might even exceed oil parity thus further deviating from oil-indexation.

According to the EU Energy Sector Inquiry of 2005-2006, and taking into consideration the high inertia of contractual structures and of LTGEC pricing formula, gas price indexation within the EU is mostly oil product based. 75% of EU LTGECs' pricing formulae refer to RFO+LFO. For the major gas exporters, the ratio is even higher: 87% for Norway and 92% for both the Netherlands and Russia. In former COMECON states, which have just recently joined the EU, RFO+LFO makes up 95% of the contract price, while in Western Europe it is 80%. In the most liberalized European market, the UK, the RFO+LFO component makes up just 30% of LTGEC prices, compared with 100% in the original Groningen (1962) and Russia-Ukraine 2009 LTGEC.

In terms of duration, the minimum period of an LTGEC from the point of view of pay-back time for an upstream investment project is about 7-10 years, but the general starting point of an LTGEC is 10 years and the normal duration anywhere from 20-30 years. The average duration of new LTGEC for both pipeline gas and LNG supplied to the EU, signed in any given year, declined between 1980 and 2004 from 30 to 15 years, according to academic studies.

The general trends can be clearly identified: starting with a simple pricing formula makes sense before adjusting towards east European style contracts, then west European and finally to UK type contracts. Contract duration shortens. In more liberalized and competitive markets, the role of oil indexation declines and pricing formulae become more complex to reflect both oil's diminished role as a replacement fuel for gas and growing competition between gas and other energy sources, on the one hand, and spot gas and that sold under LTGECs, on the other.

### Evolution not revolution

Despite this evolution of contractual pricing terms, Gazprom has presented continuous statements in support of oil-indexation and oil parity. The Gas Exporting Countries Forum also approved its ministerial declaration of April 19 in favor of oil parity. Meanwhile, the inertia of contractual structures has preserved oil-indexation. This would appear to entrench oil in LTGECs pricing formulae for coming decades, despite the possibilities for contract price review clauses.

Part of the attachment to LTGECs is that their value does not lie just in contracting out pricing to a less volatile and more liquid commodity – oil – or in attaching it at a discount to competing commodities to capture market share. An LTGEC is not just a trading instrument, but an investment vehicle.

According to Alexander Medvedev, deputy CEO of Gazprom, "It is not possible to plan investments aiming at spot prices . . . Gas will not be produced unless it is sold, and the pipeline will not be built unless the gas designated for transportation is sold. This is a major principle of investing into any transportation system...". In other words, LTGECs are a project financing tool.

The reluctance to give up LTGECs is not confined to suppliers. According to Bernhard Reutersberg, ceo of Germany's E.ON Ruhrgas, "Gas purchased under LTC guarantees security of supply and gives the buyer the flexibility of make-up gas and daily nominations. On spot markets, you have no guarantee to get the gas volumes you want for a fixed price. Spot gas and LTC are two entirely different products. . . LTCs are not out of fashion. They have always been and will remain the back-bone of European gas supply."

However, this does not mean inflexibility. The most detailed description of the adjustment principles of Gazprom's contractual and pricing policy in Europe was presented by Medvedev in June. He said Gazprom recognized the changed market situation and was prepared to be flexible.

He added, "at the same time, we propose a stimulating package, which motivates the buyers to off-take gas over the minimum contractual volumes. The principle "take or pay" stays firm. In no case is there a rejection of the LTC system and pricing linked to oil-products. The

measures discussed are temporary. Gazprom plans to come back to pre-crisis conditions after the full revival of gas demand in Europe."

Further expressing Gazprom's willingness to demonstrate flexibility, but only within the framework of LTGECs, Medvedev said, "We are not indifferent to the conditions under which our gas is sold. We can not be satisfied with attempts to destroy the system of LTC based on TOP principle with oil-indexed prices. It is oil-indexation that gives both to producer and consumer predictability and reliability of planning, which finally guarantees the pay-back of investments. Prices, of course, will recover, as well as pre-crisis demand. But today's state of the market is not a reason to break a secure and effective system which provided, provides and will provide security to consumers and suppliers. The current situation does not comfort any gas producer, including the producers of LNG and shale gas."

The price difference between spot and long-term gas prices is likely to reverse at some point in the future. Many analysts predict that supply and demand in the European gas market will rebalance relatively quickly; estimates range from next year through to 2015. However, Gazprom's hope that pricing formulae will return to what was previously considered the norm is less likely as the need for greater flexibility has been proven by the current market situation.

According to Walter Boltz, Head of Austrian Energy Regulator E-Control, "Gazprom is probably a little bit more proactive than the Algerians . . . Things might develop in a way that we will not have 95%, but only 80% of long-term gas contracts sold on an oil-indexed basis. The shift away from oil-indexation is a trend that cannot be halted. . . a willingness is evolving to renegotiate the terms of long-term oil-indexed contracts with the tendency to include spot gas and coal prices into the pricing formulae."

Some changes – for example the diminished role of oil indexation – reflect long-term trends. The adjustment of pricing formulas will probably now assume a more regular character, rather than being a temporary feature of an over-supplied gas market.

Gazprom has had to adapt its pricing mechanism to protect its long-term market share. As acting prime minister in the first post-Soviet Russian government, the late Egor Gaidar, used to say, "Reforms are usually made not when there is time and money available, but when it is no longer possible to escape them."

However, that does not mean that LTGECs will be swept away in a wholesale transition to the Anglo-Saxon model. It is more likely that LTGECs will see a further reduction in the oil-indexed component and incorporate greater opportunities for speedier revisions, but they will remain a dominant feature of European and Asia gas markets for some – rather long – time to come.