

## Between a Rock and a Hard Place: Egypt's New Natural Gas Supply Policy

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1. The decision by the Egyptian government to commit to the long-term domestic supply of natural gas while allowing immediate imports of LNG and the rapid adjustment of domestic prices to reflect the cost of supply to the industry, signals a potentially significant shift in Egypt's energy policy. The move has been decried by some as a sign of panic on the part of a government beset by economic and political pressures from many sides. Others have hailed it as the most effective way to address the incontrovertible fact that not only does natural gas production no longer meet domestic demand and export commitments, but the high cost of subsidizing energy products has also impacted the state budget to an extent that is no longer bearable.

2. Notwithstanding the success story of Egypt's natural gas industry, it has been clear for some time that its production potential was unlikely to keep up with rapidly growing demand fed by massive subsidies.<sup>1</sup> But Egypt is not an isolated case within MENA, and we have already pointed to countries that have developed a similar syndrome. Despite being well-endowed with natural gas, these countries have been struggling to supply their domestic markets, in some cases moving back to oil products to generate power (as in Saudi Arabia) or filling the gap with pipeline gas and/or LNG imports (as in the UAE, Oman and Kuwait). However, unlike these countries, Egypt cannot afford the associated economic and opportunity costs.

3. This commentary examines in four parts the key aspects of Egypt's new natural gas supply policy. Part one describes the policy and what makes it new. Part two highlights the novel upstream features designed to secure long-term domestic supply. Part three considers the LNG import scheme and its progress so far. Part four explains the move to adjust domestic prices. We conclude by providing a preliminary assessment of the policy. Since its implementation is still unfolding, the commentary should be read as research in progress.

### The genesis of a new policy

4. Stagnant production and the unrelenting rise in domestic consumption have put tremendous pressure on Egypt's natural gas supply system. In order to bridge the growing supply gap the government has decided to adjust its energy policy mix to support LNG imports. However, since importing natural gas while still exporting it does not square with common economic sense (MEES, 15 February), the government has decided to end the controversial pipeline gas exports to Israel, set higher prices for pipeline gas deliveries to Jordan and curtail the quantities allocated for LNG export plants. As a result one of Egypt's two LNG export terminals, that at Damietta which, unlike the Iduku plant, has no dedicated gas supplies but relies on supply from the grid, is virtually sitting idle. The government has also begun to adjust heavily subsidized domestic prices in a move to contain an ever-widening fiscal deficit.

5. Cairo seems to have prioritized the import of LNG after realizing that the opportunity cost of such an option must be lower than that of substituting oil products for natural gas or dealing with power shortages which result in the economy running below capacity and frustrate legitimate social needs.

6. Furthermore, LNG imports are seen by the government as a short-to-medium term stop-gap measure until eventually more domestic natural gas supply is made available once resources far offshore are developed. Import volumes, which will depend on the needs of industry, are expected to be in the order of 5 to 7.5 bcm per year. However, soundings of well-informed professionals indicate that because of latent demand in the system, the supply gap could be double these amounts and might last much longer. In fact, the exact size of the shortage is difficult to forecast given the uncertainty about future demand growth, the inherently unpredictable rate of depletion of existing reserves and the wide range of estimates of yet-to-be discovered reserves (see Box 1).<sup>2</sup>

### Box 1: Natural Gas Reserves and Resources in Egypt

B11. According to the BP Statistical Review of World Energy, which is mainly based on official data sources, Egypt's proved reserves of natural gas amount to 2.2 tcm as of 1st January 2012. The ratio of reserves to production (R/P) is 36 years. This is a static indicator of how long the above reserves will last at current annual production rates of 61 bcm.

B12. However, according to our calculations, the past 5-year average natural gas reserve replacement ratio (RRR) for Egypt has been less than 0.5. This means that the country is no longer able to replace produced reserves. In the extreme case of no addition to reserves and production continuing to grow at the same rate as in the last decade an average of 9.2% per year - future volumes from proven reserves would last only 16 years.

B13. Depletion of reserves has reached a point that warrants drastic action both to curb demand and boost supply. The opportunities for the latter will be driven by the potential for reserve expansion. This potential is supported by the 2012 assessment conducted by the US Geological Survey (USGS), according to which technically recoverable undiscovered conventional gas resources in the Nile Delta Basin (apparently extending beyond Egypt's maritime borders) are estimated at 6.3 tcm (mean), with a range of 2.6 to 11.7 tcm.

### Securing long term domestic supply

7. While moving with urgency to address current supply issues, Egypt's policy makers have taken the long term view that only audacious upstream investment could secure long-term supply. To further exploration and development (E&D) of conventional gas, the Egyptian Gas Holding Company (EGAS) – the institutional instrument for the implementation of natural gas policies since 2001 – has offered higher-risk acreage in its latest licensing round, either deep water/deep targets or unexplored areas along the eastern maritime border (MEES, 4 June 2012). This move has been accompanied by "bold modifications" to the model production-sharing agreement supporting the bidding round. This was most likely in response to the concerns and expectations raised by the international oil companies (IOCs) during an informal roundtable discussion on "The Future of Oil &

Gas Agreements in Egypt” held prior to launching the licensing round in June 2012.

8. Among the changes to the model production-sharing agreement, two key features are most relevant to the new natural gas supply policy. The first is the priority given to the domestic market. This has in effect made irrelevant both the 2008 moratorium on further natural gas exports and the principle of equal allocation of proven natural gas reserves between the domestic market, the export market and future generations. The second is the explicit criteria for determining the price of natural gas taken from foreign contractors’ share to meet the priority requirements of the domestic market.

9. Until recently, this price was indexed to Dated Brent and bound by a floor and a ceiling with the latter reaching \$4.70/MBtu in some of the most demanding agreements.<sup>3</sup> Henceforth such a price will be determined by the expected risk-adjusted internal rate of return of upstream projects. The higher-risk and higher-cost capital expenditures required to drill the reserves currently targeted will most likely overshoot the price EGAS will have to pay. Failure to pass-through any such a price to end users would mean that EGAS will be short on its dues to contractors, causing delays to upstream projects, as is evidently the case today.

### Immediate imports of LNG

10. The LNG import scheme is one key priority of the new policy. EGAS will not get involved directly in importing and marketing natural gas. Instead, it will allow domestic industrial users to engage directly with private importers/sellers. Accordingly, the government will only act as a facilitator, providing access to transport infrastructure within a regulated framework. Setting up an independent gas regulator is already being considered.

11. As far as the scheme proper is concerned, EGAS announced in November 2012 its intention to issue approvals to qualified companies to import natural gas in the form of LNG, build a floating storage and regasification unit (FSRU), connect the facility to the national grid and market and sell the imported gas to local consumers. In addition EGAS signaled the urgent need to proceed with the scheme by announcing that approvals will be given to the earliest “first delivery date” starting from May 2013.

12. Feedback on how best to structure the venture must have helped EGAS, which was mandated in mid-December 2012 to proceed with implementation, expedite the necessary tender documents and issue an invitation to bid by mid-January 2013. It is believed, at the time of writing, that five investors have submitted bids. Citadel Capital, which was the first to confidently announce it would be involved, has indicated that it has partnered with Qatar’s QInvest to head a group of Qatari investors in a joint-venture to build and own the planned FSRU and deliver the imported gas to end-users.

13. The scheme cannot be fast tracked without timely LNG procurement. In this regard, negotiating volumes and prices with potential LNG suppliers is likely to be the critical element in success. Our soundings indicate that well before tendering for the LNG terminal, the Egyptian authorities approached Algeria and Qatar in a price discovery exercise to learn that under current energy market conditions (Dated Brent at about \$110/B) they should not expect any LNG supply to be priced below

\$9/MBtu FOB, whether on a spot or on a long-term, take-or-pay basis.

### Hiking domestic prices

14. Adjusting domestic prices to reflect the cost of supplying natural gas to industry is the other key priority element of the new policy. First in line are the energy-intensive and feedstock-conversion industries. The evolution of natural gas prices in recent years up to current adjustments is summarized in Box 2. The latest and expected natural gas prices are tentatively given in table 1. Following discussions EGAS has recently had with key stakeholders, the pricing environment is rapidly changing. According to Egypt’s State Information Service, which has referred to an as yet unpublished decree dated 21 February 2013, cement factories should expect the price they pay for natural gas to increase to \$6/MBtu. This price, and the recently revised \$6.50/MBtu for natural gas shipped via pipeline to the port of Aqaba in Jordan give some idea of the cost incurred by EGAS. As such it may be an indication of what other energy-intensive and feedstock conversion industries can expect.

**Table 1: Latest and Expected Natural Gas Prices**

(Data in the first column of the table are those appearing in a live ticker on the website of Egypt’s ministry of petroleum’s, as of mid-March 2013)

	Recent price	Likely objective	Comment
Feedstock conversion	Final-product-price indexation formulae (undisclosed)		
Energy-intensive industries	\$3.00/MBtu	Gradual but rapid increase to \$6.00/MBtu	Price to the cement ind. already at \$6/MBtu
Rest of industries	\$1.25/MBtu	Gradual but rapid increase to \$3.00/MBtu	Specific case power generation
Households	Pt20/cum <sup>(*)</sup>	Likely increase in the high-end domestic market	
<sup>(*)</sup> The Egyptian Pound (EGP) is divided into 100 piastre (Pt), or qirsh. At the time of writing Pt20/cum was about \$0.80/MBtu.			

15. The electricity sector, by far the largest user of natural gas and the most politically sensitive, has been somewhat insulated. Certainly, electricity tariffs have been allowed to rise for industry, commerce and high-end domestic consumers. However, the price increase of natural gas supplied to power generators – currently less than \$1.25/MBtu – has been muted, perhaps until a comprehensive reform of the country’s energy subsidy system is articulated. Indeed as natural gas prices feed into generation costs and electricity tariffs, any adjustment should be seen in the context of this reform, which needs to be coordinated with the not yet finalized, but seemingly imminent, IMF-backed government macro-economic program.

16. The case of the cement factories signals how fast and how far the government might proceed. At the same time the government must be wary of the socio-economic consequences of sudden price increases. Whatever the ultimate pace, passing on the average cash cost of supply of apparently \$6/MBtu to the industry should be relatively easy. It will be far more difficult to justify a price adjustment to a higher level to reflect the economic cost of supply, which should be made up of the long-run marginal cost (LRMC) plus a depletion premium. As proven

reserves become a constraint, the depletion premium will grow larger, bringing the price of natural close to that of alternative fuels, either imported oil products or imported LNG.<sup>4</sup>

### Box 2: Recent Evolution of Natural Gas Prices in Egypt

B21. Decree no. 470 dated 2004 set natural gas prices at \$0.75/MBtu uniformly for all industrial activities and the power generation sector, with a \$0.10/MBtu discount to compensate new projects incurring the cost of connecting to the natural gas grid.

B22. Decree no. 1914 dated 2 September 2007 provided for a gradual increase in the price of natural gas supplied to industry (except the textile industry) from \$1.25/MBtu to \$2.65/MBtu within three years, ie by mid-2010.

B23. Less than a year later, in the context of soaring international oil prices (up to July 2008), Decree no. 1795 dated 30 July 2008 restructured the price increases decreed above along the following lines:

- An immediate increase in gas prices from \$1.25/MBtu to \$3.00/MBtu for energy use in energy-intensive industries, defined as including steel, aluminum, copper, cement, glass, ceramics, chemicals and fertilizers;
- Maintaining the prevailing progression schedule from \$1.25/MBtu to 2.65/MBtu for the energy use of the rest of industry;
- Separate pricing for natural gas used as feedstock in the export-oriented petrochemical and fertilizer industries, along with undisclosed formulas which set natural gas price as the sum of a base price plus an element indexed to the prices of the main final products, without a price cap.

B24. By the end of 2008, the global financial crisis served as a pretext to freeze the above decree and reverse some of the increases already applied. It is not clear how prices have since evolved to the levels shown in the first column of Table 1.

### Preliminary assessment of the new policy

17. On the long-term supply side, the minimal interest shown by IOCs in the 2012 bidding round has compelled EGAS to extend it by three months until mid-February 2013 (MEES, 9 November 2012). Judging from the deliberations of the second edition of the informal roundtable discussion on “The Future of Oil & Gas Agreements in Egypt” held just one month before the extended closing date of the bidding round, the “bold modifications” of the associated model production sharing agreement have fallen short of expectations. IOCs also seized on the opportunity to add to the usual litany of complaints the new impediments resulting from the polarization of decision making, now involving both ministerial technocrats and politically empowered presidential advisors. This notwithstanding, IOCs did acknowledge the potential of Egypt’s natural gas resources and reiterated their commitment to long-term development and relationships.

18. As far as LNG imports are concerned, EGAS has so far managed to expedite the steps needed to initiate the plan. However, further progress may prove more difficult to achieve, given the current business and political environment in Egypt, which does not lend itself to a swift process. As a result, completing the LNG import terminal to free domestic gas for power generation during the summer peak of 2013 looks extremely challenging. Normally, developing an FSRU project from concept to commercial operation needs some 18 months. Securing medium to long term base-load LNG contracts at competitive prices to feed it could require an even longer lead

time, unless the successful bidders are already involved in the business of producing and selling LNG.

19. Furthermore, there is little guarantee that industrial users will accept the government’s proposals and commit to a take-or-pay obligation at market prices of over \$10/MBtu (when including freight, regasification costs and marketing margins). In the context of Egypt’s current natural gas market, shifting the supply problem to industrial users by requesting them to take charge of their own procurement could be seen as a flight from responsibility. The government should get involved further and more proactively in seeking affordable supply solutions such as using a price pooling mechanism to offset the inevitable high cost of imported LNG.

20. As far as domestic pricing is concerned, government policy appears, in the absence of transparency and informed public debate, piecemeal and inconsistent, particularly when taking into account the fact that pricing issues are not limited to natural gas. LPG, petroleum products and electricity, which are also in critical shortage, suffer similar price distortions. In this regard, gas-to-power pricing stands largely unaddressed. Without major increases in electricity tariffs, demand for power generation will not be significantly reduced and concurrently gas consumption will continue to rise unabated.

21. The government must have been - and if not, it should be - provided with a broader framework to reconcile the many objectives it seeks to achieve, including providing the upstream sector with adequate incentives for further exploration and development, supporting industry and power generation with affordable fuel options and alleviating the fiscal burden of subsidies, not to mention saving energy, preserving the environment and relieving poverty by redistributing national income. But pursuing all such objectives with pricing as the primary (and apparently only) tool would violate the rule that each policy objective needs at least one specific policy instrument. Otherwise policy makers should be realistic about their preferences and be ready to make compromises.

22. Herein lies the crux of the matter. In its attempt to correct energy market structure and distortions, the Egyptian government is caught between a rock and a hard place. On the one hand, it has come under increasing pressure to balance the need for energy prices to reflect the costs of supply against the social and economic impacts of price increases. On the other, multilateral lending agencies, prominent among them the IMF, have been pressing it for a genuine commitment to, and implementation of, reforms to reduce the country’s ever-increasing cost of subsidies. Steering the broader economic and energy policy agenda between these conflicting expectations is never going to be easy or fast.

<sup>1</sup> Hakim Darbouche and Robert Mabro, “Egypt’s Natural Gas Market: So far So Good, But where To Next?” in Bassam Fattouh and Jonathan Stern (Ed.) *Natural Gas Markets in the Middle East and North Africa*, Oxford Institute for Energy Studies, 2011.

<sup>2</sup> USGS, “Assessment of Undiscovered Conventional Oil and Gas Resources of North Africa, 2012”, Fact Sheet 2012–3147, February 2013.

<sup>3</sup> Darbouche and Mabro, *ibid*.

<sup>4</sup> Hossein Razavi, “Natural Gas Pricing in Countries of Middle East and North Africa”, *The Energy Journal*, Vol. 30, No. 3, 2009.