



Gas pricing reform in India: will it transform the gas landscape?

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In November 2014, India implemented an unprecedented reform of domestic gas pricing. Under the reform, India's gas price (formerly controlled by the government at \$4.20/MMBtu) became linked to a volume-weighted average of world gas prices – US Henry Hub, UK NBP, Alberta Gas Reference price, and the Russian domestic gas price. The price is to be reset every six months, based on a twelve month trailing average with a lag of one quarter.

Nearly a year on, India's gas sector (particularly upstream exploration), has failed to revive following a four-year period of decline. Rather than an anticipated rise in domestic prices (upon which upstream companies had based capital expenditure plans in an environment of rising costs) from the previously controlled levels, prices have been falling (down to \$4.66/MMBtu between 1 April and 30 June, in comparison with \$5.05/MMBtu for the preceding two quarters). While this is partially due to the global price downturn, it is also due to the benchmarks in the formula – such as the low Russian domestic gas price (amidst falling demand in the Russian economy) and Henry Hub/ Alberta prices (in an environment of plentiful supply) – which were arguably selected on the basis of their dampening impact on the price level rather than reflecting any sort of opportunity cost-based price formation mechanism for India.

One way in which the authorities are seeking to incentivize upstream explorers despite the low price is to allow a premium on the price for deep water areas, but the details of this have yet to be finalized. Furthermore, a policy consultation over whether the current profit-based fiscal regime for

exploration should be replaced with a revenue-based regime has yet to be completed.

The lack of a clear price signal has made it difficult to make a confident and accurate assessment of India's market potential. This has led to diverging forecasts of demand for 2030 – ranging from roughly 100 bcm (EIA) to 400 bcm (government estimates) – and uncertainty over whether India – with its economic growth expected to overtake China's this year – is the global gas market's new 'wildcard'.

India's gas market

India experienced a brief renaissance in its upstream gas sector in the 2000s after the discovery of offshore KG-D6 gas by Reliance Industries Limited. Production began in 2009, briefly overtaking NOC production by 2010. But by 2013, this had fallen to a third of the original targets. Total production fell from a peak of 50 bcm in 2010 to just over 30 bcm in 2014 (as against a target of around 48 bcm in India's Twelfth Five Year Plan), and has thus far failed to recover. Along with investment uncertainty, there is ambiguity over India's resource potential, as 50 per cent of its sedimentary basin is classified as 'poorly explored' – most of this being offshore.

The inevitable shortage of domestic gas implies a greater need for LNG imports. However, demand-side constraints have prevented the expansion of gas in the economy. The most significant of these is India's 'Gas Utilisation Policy' under which the government rations gas. This has led to a two-tiered structure of demand, where domestic gas is first released in order of priority to fertilizers, power, and city gas

for households and transportation (accounting for over 70 per cent of consumption); the remainder being released to a second tier comprising refineries, petrochemicals, merchant/ captive power plants, and city gas for commerce and industry. Some tier one consumers use imported LNG at lower prices (obtained by pooling it with domestic gas) as domestic supply is insufficient to meet demand, while tier two consumers are able to purchase LNG at import prices. In July 2014, city gas for households and transportation was moved to the top of the priority order.

Demand has therefore been determined until recently by fertilizers, where low-priced gas is used to manufacture roughly 22 million tonnes (Mt) of urea each year. A further 8 Mt is imported on the international market (roughly 6 Mt spot and 2 Mt on long-term contracts). Urea retails at around half of its cost price, and in 2013 a total subsidy of around \$6 billion was provided for fertilizers. An impediment to gas price reform is therefore the impact of higher prices on fertilizers, and by extension, on agriculture.

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These dynamics have created an incongruity in India's gas market, where there are two 'moving parts' – one has prices and quantities set by the government, and another utilizes gas at import prices. There is also some overlap, complicating attempts to assess these as separate markets. The potential for the reform to transform India's gas landscape is contingent upon whether it can reverse the decline in production and

incentivize new investments upstream, and whether consuming sectors can absorb gas at higher prices.

Impact of reform

A review of existing reserves shows that at current or marginally higher price levels the reform is unlikely to reverse the recent decline in domestic production before 2020. Any production increase would have to come from NOCs rather than the private sector in the absence of a new ‘giant’ discovery similar to KG-D6, as NOCs hold the largest proportion of India’s gas reserves (of 1.4 tcm) as well as Exploration Licences (ONGC alone holds just over 50 per cent). Whilst a proportion of ONGC’s marginal and offshore fields (3–5 bcm/year) can reportedly be brought into production by 2016 at prices of \$6–7.15/MMBtu, higher prices of \$10.72–12.63/MMBtu are reportedly required to commercialize the larger deep water fields. Existing studies on production costs and breakeven prices suggest that gas prices of at least \$8/MMBtu are needed to develop roughly 30 Tcf of reserves, implying that the price level would have to rise substantially for the reform to have any sort of impact on existing and new production and exploration.

This leads to the question of how much high-priced gas could be realistically absorbed in the main consuming sectors. For fertilizers, one proposed solution has been to utilize the revenues that will accrue from royalty (around 10 per cent) and corporate income tax (around 34 per cent) on production valued at the higher gas price to finance the inevitable increase in fertilizer subsidies. An analysis of the cost of urea at different gas prices, when compared with government revenues (from royalty and taxes) based on 2014 gas production targets, suggests that the total subsidy bill could potentially be offset at prices

of \$9–11 per MMBtu (‘Gas Pricing Reform in India: Implications for the Indian Gas Landscape’, OIES Paper NG96). However, this is contingent upon private sector production targets, unless there is an equivalent increase in NOC production. A longer-term solution to the sustainable ‘management’ of the subsidy bill would involve a reorientation towards long-term contracted fertilizer imports. Any increase in the gas price would nevertheless reduce the net cost of the subsidy on urea through increases in tax and royalty receipts on producing gas fields, as these rise faster with the gas price than the subsidy.

In the power sector, where there is an estimated 14–24 Gigawatts of idle or suboptimal gas-fired capacity, higher prices would have a negative impact due to the absence of carbon pricing or equivalent incentive mechanisms encouraging the use of gas (to displace coal). An analysis of the cost of electricity at different gas prices reveals that gas is uncompetitive with domestic or imported coal at prices of between \$5.20–6.20/MMBtu (at electricity prices of between 3–4 rupees per kWh on a variable cost basis for existing plant) under the current merit order dispatch system. Moreover, the heterogeneity of regulations on third-party access often prevents gas at higher prices from being sold to price-inelastic consumers. A goal of universal electrification by 2019 suggests that coal is unlikely to be discouraged, implying a limited role for gas in power.

The outlook for city gas is relatively more optimistic, especially since city gas for households and transportation recently displaced fertilizers in the Gas Utilisation Policy, implying that it now has the first right to domestic gas. The improved price competitiveness of city gas against diesel and LPG (on the back of recent petroleum product pricing reforms), along with the fact that city gas distribution entities are

able to pass through upstream price increases, implies that investments in the expansion of city gas infrastructure should be forthcoming. However, there is uncertainty over how much gas this sector can realistically absorb in the next few years until infrastructure is built and pipeline use regulations are implemented.

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There is, theoretically, significant potential for LNG imports to bridge shortages. The fall in spot prices to \$7–7.50/MMBtu implies marginally higher market potential for LNG imports in power and fertilizers – in March 2015, the government approved the pooling of domestic and import prices for supply to these sectors. At around the same time, India began negotiating a 10 per cent cut in its long-term contracted imports from Qatar, intending to substitute this with lower spot-priced imports. The market created through price pooling is, however, short term. In the longer term, the city gas sector appears to hold the greatest opportunity for expansion, although this will depend on the pace of infrastructure development. Recent analyst reports suggest that the sector grew at 21 per cent in the period 2010–14. Specifically, urban air quality is of growing public concern, reflected in conversions to gas of public transportation fleets in several cities; this could provide the necessary push to expand gas use in transportation.

Longer-term challenges

The domestic gas pricing reform is unlikely to transform India’s gas landscape in the short term and the focus will continue to be on price level, unless there is a reorientation of policy towards a longer-term goal for the role



of gas in the Indian economy, relative to coal and oil. Three main conclusions can be drawn in this regard.

India lacks a clear roadmap for reform, and for gas in the economy relative to other energy sources. For instance: to make gas competitive with coal for environmental reasons, to replace other fuels for fiscal reasons, or to retain a proportion of gas as backup for renewables. This is different from the approach towards 'energy (supply) security' that has been pursued by governments – signifying the race to obtain adequate energy supplies to support economic growth.

India lacks a price formation mechanism which in some way reflects the dynamics of the Indian market. For instance: in China's reform process, gas prices have been determined by the fuels they are replacing in the domestic economy – fuel oil, LPG, and LNG imports. Similarly in India, the main substitute to domestic gas in fertilizers is imported LNG; in power it is coal; and in city gas it is LPG and

imported LNG. In January 2015, an industry representation recommended linking the 'premium' on domestic gas prices to a discounted average of fuel oil, unsubsidized LPG, naphtha, and distillates in the domestic market.

The most likely outcome going forward is a continuation of the present system, potentially incorporating some elements of a market-based price formation mechanism. However, implicit price controls need to be recognized in order for any effective progress to be made. For instance: the calculation of a premium to the domestic price needs to recognize the capital constraints of the NOCs (whose capital outlays are influenced by their financing of subsidies). The problem with a continuation of the status quo, however, is that in the absence of a longer-term vision it fails to resolve the uncertainty that has deterred the development of the gas sector. 'Gas price pooling' could end up compounding the problem, as low prices are unlikely to incentivize new production, which could potentially lead to higher-priced LNG

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imports becoming the main source of incremental gas. This could create further disincentives to reform, as governments prefer to retain control over the domestic price in order to moderate the impact of higher-priced incremental LNG imports.

As was the case with the recent completion of petroleum product price reforms in parallel with the low international oil price, gas price reform should be easier to carry out in a low 'global' gas price environment. The current situation, however, could represent a missed opportunity, implying further difficulty in progressing with reforms in the event that LNG prices begin to rise. Without much more significant market-related reform (potentially involving much higher prices), gas is unlikely to become a significant source of energy for India.