Chapter 4

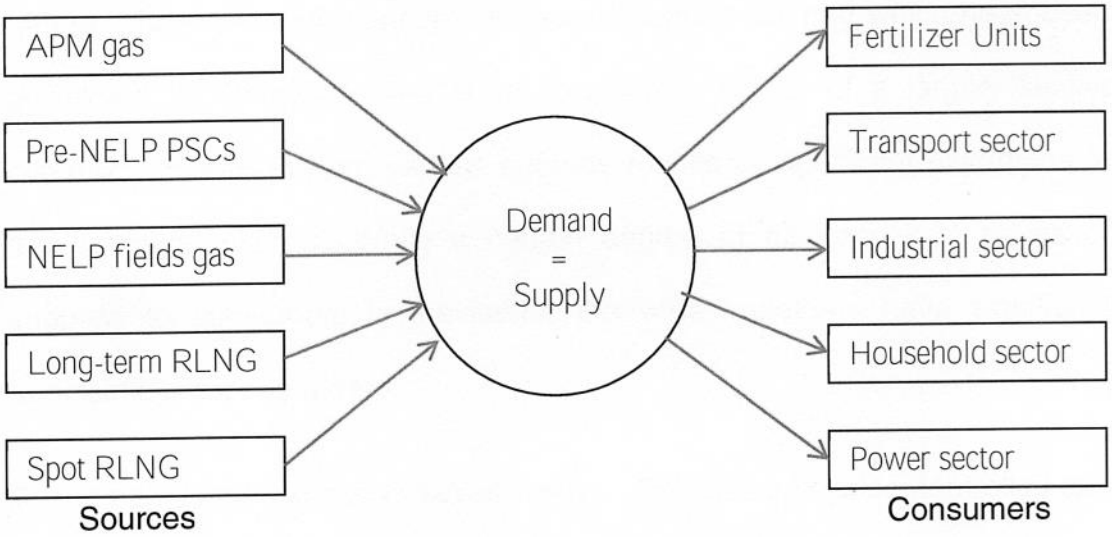
Mechanisms for pooling of natural gas prices

Natural gas resources are widely and plentifully distributed around the globe. It is estimated that a significant amount of natural gas remains to be discovered. Natural gas has emerged as the most preferred fuel due to its inherent environmentally benign nature, greater efficiency and cost effectiveness. The demand of natural gas has sharply increased in the last two decades at the global level. With the advent of liquefaction and regasification facilities, trading of LNG has become a widespread practice and has given rise to the possibilities of pooling of domestic and imported gas.

In India natural gas was first discovered off the west coast in 1970s, and today, it constitutes 10% of India's total energy consumption. Over the last decade it has gained importance as a source of energy and its share is slated to increase to about 25% of the total energy basket by 2025-2030.

The demand for natural gas in India is far exceeding the domestic output. It is most likely that the incremental requirement of natural gas in India in coming years is going to be significantly greater than the increments to domestic output which may be reasonably expected. Therefore, the import component of total domestic consumption would be steadily going up.

The possible sources of pooling of natural gas have been discussed in section 1.2 of chapter 1 earlier. Consumers of natural gas are listed in Table 1.1 and 1.2, and pricing of gas from different sources is summarized in section 1.3 of chapter 1. Sources and consumers are shown pictorially below:



The aggregator who operates the pool has to take gas from some or all of the sources shown above and has to supply gas to consumers, either at differential prices or at a common price. Pooled price charged from a consumer would depend on the basket of gas sources used to meet his requirements of gas in accordance with the formula

$$\text{Gas price} = \sum w_i P_i$$

Where w_i is the proportion of a particular source and P_i is the corresponding price. It is administratively simplest to go for pooling of all sources and to charge a common price from all consumers, but the actual mode of pooling depends on a number of considerations and may be quite different. The exact

modalities of pooling can be worked out once the need for pooling is recognized and it is decided in principle to go for pooling of natural gas prices.

4.1: Indian Experience of Pooling of RLNG

The natural gas pricing scenario in India is complex and heterogeneous in nature. There are wide varieties of gas price in the country which have been discussed in Chapter I. The large variation in prices of a largely similar commodity supplied from various sources results in significant distortions in the end use markets. While a certain degree of differences in prices of supplies to consumers is inevitable, the wide variations have significant ramifications for customers.

The impact is manifested in several ways. Producers of price controlled gas have little incentive to optimize production profile and costs. At the consumer end, wide divergence in prices make certain consumers uncompetitive vis-à-vis others within the same industry. Artificially controlled and uneven price signals also distort price benchmarks for introducing new supplies, thus making sourcing and investment decisions more difficult and contentious. All of these have very significant impact for the economy, which is severely hampered on account of the constrained access to energy sources.

The first implementation of price pooling in India was done in July 2007, when Petronet LNG Ltd (PLL) signed a 2nd term contract with Ras Gas, Qatar for supply of 1.25 MMTPA LNG from July 2007 to September 2009 to meet the requirement of Ratnagiri Gas & Power Project (erstwhile Dabhol Power plant) in Maharashtra at a higher price than the earlier long term contract for 5 MMTPA which had been signed for 25 years.

In order to make the price of RLNG uniform & affordable, EGoM decided on 11th January 2007 for pooling of prices of 2nd term contract (1.25 MMTPA) with LNG being imported through the 1st term contract. MoPNG, GoI, accordingly issued a policy directive on 6th March 2007 in compliance with the decision of EGoM. As per the directive, the gas prices being charged on supply of RLNG procured under long term contracts should be on a non-discriminatory basis and uniform pooled prices should be charged from all the existing and new consumers. Uniform pooled prices are being declared by PLL based on the weighted (in the ratio of 5:1.25) average price of 1st and 2nd term contracts.

Pursuant to implementation, some of the old RLNG customers challenged the pooling decision in Gujarat High Court. A Division Bench of Gujarat High Court has upheld Government of India's decision by a 2-1 split verdict. Some customers have further filed an appeal in the Supreme Court of India and presently the matter is sub-judice, although government orders have not been stayed by the Supreme Court.

4.2: Implementation of Price Pooling in Agra Ferozabad Region (Taj Trapezium Zone):

Supreme Court of India, in a Public Interest Litigation filed by M.C. Mehta in 1984, issued directions to supply natural gas to polluting industries in the Taj Trapezium zone. To implement this order, GoI initially allocated 0.6 MMSCMD of APM natural gas, which was later increased to 1.1 MMSCMD.

GAIL built local distribution networks in Agra and Ferozabad cities for supply of gas to small scale industries and 347 contracts were signed with

downstream customers in Agra-Ferozabad region for supplying 1.1 MMSCMD APM natural gas. Further, the additional demand of around 0.2 MMSCMD in the region is presently being met through fall-back RLNG contracts and spot LNG contracts.

The UP Pollution Control Board had identified around 629 industries for supply of natural gas in TTZ. However, due to limited APM allocation and huge price difference with respect to RLNG, all the units could not be converted to Natural Gas. Competition with industries having APM allocation makes use of RLNG/spot RLNG unaffordable in the market. However, as any other fuel is not permitted for use in the region by statute, the growth prospects of the largest glass/ bangles industry in Asia are diminishing.

Further, PNGRB has authorized GAIL Gas Limited for implementation of CGD project in TTZ (except Agra and Mathura cities) spanning 10000 Sq. Kms covering Mahamayanagar, Bharatpur, Fatehpur-Sikri, Vrindawan, Gowardhan etc. The estimated gas demand in TTZ, based on preliminary survey, is around 3.5 MMSCMD[46]. It is of crucial importance to provide a level playing field to industry by making gas available at the same price to all industry consumers in the region.

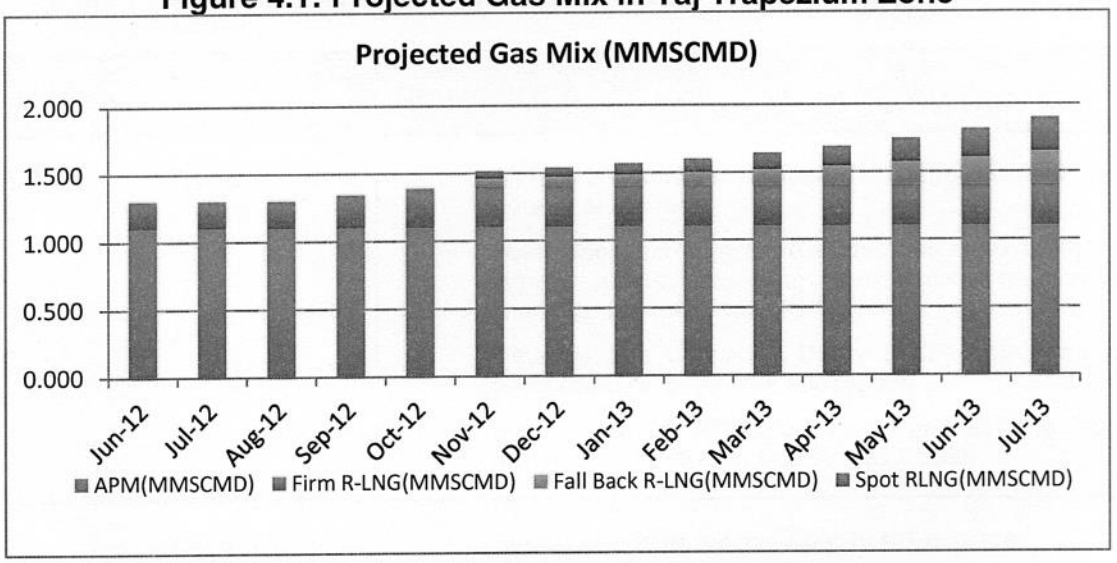
With the above objective in mind, GAIL Gas[47] has proposed a uniform price based on a pool pricing mechanism covering all supplies of gas including APM, Firm/ Fall-back RLNG[48] and spot RLNG. The proposed price pooling

[46] Information provided by Marketing Department, GAIL (India) Limited
[47] GAIL Gas is a subsidiary of GAIL (India) Ltd. Which is looking after gas supply in TTZ region
[48] Firm RLNG refers to allocations made by gas suppliers to consumers out of long term contracted RLNG sources. Fall-back RLNG refers to left over quantities of RLNG that become available from time to time due to failure of some consumers to lift their allocated quantities.

would also help to curb internal trading of APM gas by industries having APM allocation. Adequate availability of natural gas on the basis of pooled price shall also be useful in settlement of Court Cases related to the demand of APM/ RLNG gas by the customers.

The gas supply augmentation in the region (based on current sourcing portfolio) after implementation of above policy are shown in Figure 4.1. This proposal has been approved by Government of India, but has been challenged in court by existing customers.

Figure 4.1: Projected Gas Mix in Taj Trapezium Zone



Source: GAIL (India) Ltd.

4.3 Mercados Report on Price pooling

At the instance of GAIL (India) Ltd., a study on Common Pool Price Mechanism for Natural Gas was conducted by M/s Mercados EMI Pvt. Ltd and a report was submitted in January 2010. The study considered pooling on the basis of costs of various sources of gas to arrive at a weighted average pool price; or on the basis of prices based on demand and supply, typically through bid processes. Cost based pools were further sub-divided into (1)

General pools wherein all producers, traders, and consumers could participate; and (2) Sectoral pools which were for identified sectors like power and fertilizers only.

The report considered four types of Cost based General Pools, two types of Cost Based Sectoral Pools; and a Bid Based pool. A description of these seven types of pools as given by Mercados is shown below in Table 4.1, 4.2 and 4.3 respectively, which are adapted from the report[49] submitted by the consultant.

Table 4.1: Cost Based General Pool options

Pool Option	Description
Option 1 - Comprehensive Compulsory-With Spot LNG	• All gas in country – domestic and imported – is pooled by a pool operator • Pool operator aggregates demand and determines supply needs, including short term requirements. Nominee procures spot RLNG • Detailed Gas utilisation Policy (GUP) and consequent rules determine volume allocations • Pool operator schedules gas demand and supply, undertakes balancing and settles trades
Option 2- Comprehensive Compulsory-Without Spot RLNG	• Same as above, except spot RLNG excluded
Option 3- Facilitated Pool Arrangement- Without PSC Gas and Spot RLNG	• Voluntary arrangements , instead of compulsory • PSC gas and RLNG out of ambit to enable "market discovery" of prices • Essentially a PSU pool
Option 4- Facilitated Pool Arrangement- Without Spot RLNG	• Same as above, except for PSC gas included in pool based on mutual agreement

[49] Mercados Energy Markets International Pvt. Ltd.(January 2010), *Study on Common Pool Price Mechanism for Natural Gas in the country*, New Delhi, India

Table 4.2: Cost Based Sectoral Pool options

Pool Option	Description
Option 1 – Individual Pool	• Specific and separate pool for power and fertiliser industries • Demand to be identified by designated Pool Operator for the short and medium term • Domestic gas allocations to be made as per Gas Utilisation Policy • Incremental requirements to be contracted by Pool Operator/nominee from various available sources, including LNG • For power key decision would be on whether to: – Only the demand from long term bid based or price regulated contracts OR – Include all power sector demand
Option 2- Combined Pool	• Same as above, except that Power and Fertiliser operate in a combined pool

Table 4.3: Bid Based Pool

Pool Option	Description
Bid Based Pool	• Can co-exist with long term contracts or any Cost Based Pool • The gas producers and traders will indicate the volume to be pooled into the pool on a daily basis, customers will indicate the requirement of gas on daily basis. • The pool/auction platform will discover the price of gas on daily basis. • The clearing house will settle all the financial transaction between the gas producers, gas traders, transmission pipeline company and the gas customers. • Volumes in case of bid based pool are not high (generally in the range of ~10-15% of the total volume of gas) • Spot LNG, Government of India share of profit gas and leftover PSC gas which is not contracted (if any) can become part of this pool. • Commodity and financial transaction will be monitored and controlled by an independent pool operator or platform like in the case of power sector. • It is consistent with economic policy of the country to move towards market determined prices for natural gas in the country

While maintaining that gas price pooling (either based on cost pooling or bid based pooling) is desirable for all the sectors consuming gas in order to bring in price stability at individual consumer level, the consultant recommended that Power and Fertilizer should be chosen for cost based individual sectoral pooling first, being the most vulnerable sectors.

It was also recommended that the policy formulated in this regard should notify GAIL as the pool operator. However the pool operation would have to be done on an arms-length basis with suitable functional separation within the organization. The design of the pool should be undertaken on the basis of minimization of structures, costs and complexities.

The report pointed out that the benefits of cost pooling are not necessarily restricted to the power and fertilizer sectors only. However central pooling in the other sectors on the lines proposed is more complex on account of the large number of consumers with small volumes, since this would militate against the objective of keeping the pool administration set up and costs to a minimum. For the other sectors such as sponge iron, petrochemicals, CGD and other small customers pooling can be done at the gas supplier's level. This is being done in markets such as Italy and France where mostly the supply is based on contracts and the gas supply company pools the gas from various sources and supplies it at a common price to all the end consumers.

The report did not recommend pooling of transportation costs since this distorts the basic economic price signals derived from the location of the customer vis a vis the resource. However, the development of a robust gas transportation system across the country based on a policy or legislative

mandate was recommended. In the initial years when the utilization is low on such pipelines, the policy framework should place limits on the pipeline charges. Deficits if any can be made good through mechanisms like Access Deficit Charges (ADC) as prevalent in the telecommunications sector.

After analyzing various facets of such a system, the consultant did not find that bid based pooling can be implemented in the country with the existing infrastructure. What was recommended was the creation of a roadmap for migration to competitive wholesale markets for gas, which would typically be through bid based pools, and feature a large number of independent shippers. It is important to note that such mechanisms could coexist with cost based gas pools and also long term contracts for gas supply. This would result in the emergence of a vibrant gas market that could attract new gas suppliers willing to supply for various contract tenures, and would provide a strong signal for emergence of gas trading hubs at key dispatch/ aggregation points in the country.

4.4 Report of the Inter-Ministerial Committee on Policy for pooling of Natural Gas Prices.

An inter-ministerial committee was constituted to formulate a policy for pooling of Natural Gas and to devise pooling operating guidelines. The committee submitted its report[50] in August 2011. The committee did not recommend pooling mechanism for natural gas at overall level, nor did it recommend a price pooling on sectoral basis, except where it may be found to be best workable option.

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[50] Planning Commission, Government of India (August 2011), *Report of the Inter-Ministerial Committee on Policy for Pooling of Natural Gas Prices and Pool Operating Guidelines*

The committee recommended preferential allotment on a scheme of priority as the basis for allocating the scarce resource - namely, domestically produced natural gas in this case - across users. Fertilizer and power sectors have been given top priority for domestic gas. But, it was recognized that even they will have to consume some amount of RLNG.

For "Price Discovery", the committee felt that the process should reflect opportunity costs, adequacy of incentives for exploration and production (E&P) and fairness to the consumer. It recommended a procedure for arriving at an inferred price by taking the average of 12-month trailing Henry Hub price on the one hand and 12 – month trailing producer net back price (excluding shipping & liquefaction computed on a normative basis) derived from the Japan Korea Marker (JKM) price or equivalent Asian LNG price for Persian/Arab Gulf sources of supply. On the basis of this inferred price, the Government should then set a premium or a discount, depending on extant conditions on what the perception is with regard to it being: (a) adequate for attracting investment in the E&P and (b) not excessive for the consumer.

The report also recommended substitution of diesel and petrol for transportation and LPG for cooking:

> *There is enormous scope for further use of natural gas in automotive vehicles and as cooking fuel. Conversion of vehicles, especially that in the public transport system, from diesel to natural gas not only involves direct economic savings to the user (even at RLNG prices), but also creates beneficial externalities in the form of lower pollution levels. The replacement of LPG use in the larger urban areas with piped gas is also desirable, both in terms of comparative economics and also keeping in view the large subsidy outgo that LPG use presently entails.*