REGULATORY ENVIRONMENT IN IRANIAN GAS MARKET

ABSTRACT

As the second natural gas holder in the world I.R. of Iran is faced complicated domestic, interregional and international gas market. Iranian gas market is in the developing phase and still regulated by state authorities. Iranian gas chain is governed by unbundled state owned companies each trying to unbundle their activities.

Iran has boosted gas infrastructure to respond its rapid natural gas consumption and foreign demands. For better functioning of such a potential gas market national and international regulations and secured investments are essential. Iran potentially will be responsible for twenty percent of global gas trade in 2025.

The next step of Iranian gas market is a liberalized market. In this way adopting to international regulatory framework and treaties is necessary. A stable regulatory regime is prerequisite but adjustment will be welcomed when necessary. There has been negotiations for foreign access to upstream infrastructure.

Recent development in giant South Pars field shows that Iranian gas authorities are determined to remove obstacle and prepared to play their expected role in gas market.

Over the next five years new rules and legislations will be in act for accelerating liberalization process in natural gas market. Iran supports both long term and spot markets and its first LNG trade is expected in 2007. Export prospects through pipeline and their regulatory challenges are explained in this paper.
TABLE OF CONTENTS

THE STUDY AND ITS OBJECTIVES
THE IRANIAN GAS MARKET
  Structural development at Iranian Gas Industry
  Iranian gas market as a part of natural gas oligopoly
WHAT IS THE POSITION OF IRANIAN GAS REGULATORY REGIME AT VALUE CHAIN ACROSS THE BOARDERS?
SECURITY OF SUPPLY IN SHORT, MID AND LONG TERM AT IRANIAN GAS MARKET
  Short term measures
  Mid term measures
  Long term measures
REGULATORY INSTRUMENTS AND ORGANISATIONS IN IRAN
RECENT DEVELOPMENTS IN IRANIAN GAS MARKET
THE FUTURE OF IRANIAN GAS EXPORT MARKET AND COMPETENCE CHALLENGES
  Gas export to Turkey
  Gas export to Europe
  Gas export to Pakistan
  Gas export to India
  Gas export to Armenia
  Gas export to Kuwait, Oman and UAE
CONCLUSION
  References
  Figures and Tables
THE STUDY AND ITS OBJECTIVES

This paper will address the trade possibilities and requirements for Iranian gas market and will analyse the regulatory decisions to be made in different time horizons. Based on the discussions and the work done in IGU, PCG B study group 1, the regulatory framework of gas market developments in Iran is projected over the next 30 years. Examples for the main areas like exports, imports, injection and internal consumption, will be provided throughout the text. The current regulatory framework and the requirements for future of Iranian gas market will be described. This paper explains the complexity of Iranian regional gas market over the next decade when many doubts on the gas contracts will change to reality. A tight regulatory framework will be needed to assure stable flow of natural gas from Iranian territory to destinations.

THE IRANIAN GAS MARKET

Iranian Natural gas market is in the market growth phase which means more supply sources and grid expansions have been developed. From the management point of view National Iranian Gas Company is still state owned.

Structural development at Iranian Gas Industry

National Iranian Gas Company (NIGC) was established as a state owned integrated gas company with the managed market which was top-end funded by the government. The next development was formation of the unbundled state owned company without passing through the second stage shown in figure 1 which describes the historical changes in managing gas markets. The next development will be upstream access for the third parties. Recently accepted to WTO, Iran is look forward to complying to international regulations to facilitate delivery of huge amount of natural gas to the large consumers with high economic growth rate or high gas consumption. Iranian gas market has not experience the second stage of model in figure 1. For future the most probable market for Iranian natural gas would be liberalized market with few players. This change will help attracting foreign investment for building proper infrastructure enabling Iran to play its perceived and historical role in international gas trade.

Iranian gas market as a part of natural gas oligopoly

Between the years 2020 and 2030 we will be witness to evolving a natural gas supply oligopoly mainly consists of Russian Federation and Middle Eastern gas holder countries but the market may not be the sellers market. Any development in international gas market will need international monetary aid this time in the hands of gas buyers. So the outcome should be a two way oligopoly which the whole gas market should enjoy if regulatory instruments be available and agreeable. Iranian gas market will go along the phenomenon because the current situation for development in Iranian gas market is the like. South Pars giant field is developing under this two way oligopoly. The next phases of development aim at LNG and GTL projects with international gas trade targets.
WHAT IS THE POSITION OF IRANIAN GAS REGULATORY REGIME AT VALUE CHAIN ACROSS THE BOARDERS?

Although the Iranian gas market is state governed but inside the energy section of the country, upstream and downstream have their own policy and regulation which are not necessarily identical and there are some oppositions in regulation, interest and policies. The authorities along gas chain are not from the same company. Upstream is managed and regulated by National Iranian Oil Company (NIOC). Midstream is running by NIGC. International trade is performed by National Iranian Gas Export Company. Recently the underground storage construction and operation has come under NIGC responsibility. NIGC has negotiated for more access or even ownership on upstream. Iran transits natural gas from Azerbaijan to Naxcyvan and could be transition country for Turkmenistan. Iranian gas may cross the Pakistani border as well. The way to exporting gas to Arabian countries is open. Via LNG shipping Iranian gas could reach India, China and other Asian gas demanders. All of these plans and activities have three major players, NIOC, NIGC and NIGEC, all of them under the supervision of Oil Ministry. Trade Negotiations are performed top-down through energy section of Iran. It is including gas pricing, operation and debates on items of contracts.

SECURITY OF SUPPLY IN SHORT, MID AND LONG TERM AT IRANIAN GAS MARKET

On the basis of overall gas policy, under the Oil Ministry, the security of supply in different time horizons will be assured as follows.

Short term measures

In short term for covering low consumption customers mainly households, the instruments for assuring gas flow are line pack, seasonal injection, interruptible sales, spot and swaps. Supply/demand balancing is necessary each year for preventing shortage of natural gas especially in cold zones. The volume of gas is adjusted mainly by reducing gas flow to power plants and industries and also enhancement projects.

Mid term measures

In the middle term the instruments are underground storage, loop lines, Flexible import and export and seasonal reinjection. The regulatory requirements for mid term are as follows. From 1996 Oil Ministry began the study on developing underground gas storage to peak shave the high gas consumption in the winter mainly come from households. At the moment foreign partners are working on three different zones and a large area in Central Iran. It could help an extra capacity of 40 millions Standard meters per day (40MMSC/D) for high consumption months. Regulations supporting the priority of export and import which will be contained in the bilateral gas sales contracts. Regulations for assuring the commitment of upstream authorities to supply NIGC in high demand seasons. Instructions for industries and power plants for using the second fuel in cold season.

Long term measures

In the long term Iranian gas has two major markets, domestic and international. The energy policy for the last 30 years has been the substitution of oil products by gas to release oil for export and gas for internal consumption including reinjection.
The fast growing energy demand in many populated areas in the world has put extra pressure on major gas holders like Iran to respond properly. Without supporting from international monetary bodies there will not be sufficient infrastructure for Iranian natural gas to be transferred abroad. The financial capability inside the country is not enough for future export targets which is expected from Iran. For large scale export and contracts an international organisation is essential to assure sound mutual commitments and adjust the price of sale gas in pipeline or LNG form.

Diversification has been an instrument for stabilizing contracted gas flow. But in future it is not acceptable to oversight the cost/benefit of alternatives for transportation of natural gas.

In long term Iran could take part in making shared infrastructure for export with other gas holders like Qatar and UAE. This will minimize the risk of investment and will help political issues mitigated.

LNG export is another way of security of supply in long term. The shipping cost of Iranian LNG to different points of the international gas market is shown in table 1. The price of one million BTU of Iranian LNG can be seen in table 2.

The most important challenge for Iranian LNG is the capital. In this way Iran is trying to make better commercial environment to absorb international funds to secure international gas trade. Also international companies and involved countries are supposed to help this environment being available.

For the security of supply any long term natural gas export project in Iran will need the following regulation:

- Regulated right of access or ownership to some part of upstream infrastructure for international companies.
- International assurance for taking natural gas on the contract basis and according to adjusted prices.
- Regulating spot markets so that gas in lower amount could cross the borders. Also coordination for LNG trade originated from Middle East.
- Regulating international shared pipelines and free access to international pipelines to assure the economic volume of gas flowing through pipelines.

REGULATORY INSTRUMENTS AND ORGANISATIONS IN IRAN

The regulating instruments has been in the hands of state, but recently international standards and treaties are penetrating Iranian gas market regulating regime. For example WTO, Energy Charter and Bilateral treaties are playing more effective role in shaping export/import contracts.

The Iranian major players in regulating gas markets are:

- State Economic Council which decides on the major national and international gas projects and also regulates the price of natural gas for domestic consumers.
- Oil Ministry is the next body and decides on supply/demand balance, reinjection policy and the share of natural gas in fossil fuels basket in Iran.
- National Iranian Oil Company which is exclusive supplier of indigenous natural gas to the Gas Company and also has the authority of trading LNG and export/import of natural gas. An affiliated company to NIOC is National Iranian Gas Export Company which is responsible for export/import affairs.
- There are affiliated financial firms who are involved in supplying international funds for implementing infrastructures.
- The next authorizing body is the Management and Planning Organization which is
headed by Vice President of Iran. It has the overall authority on energy policy making and coordination between Oil and Energy Ministries.

The five year economic development plans is initiated by this organisation which includes Natural gas plans. The acts, regulations and instructions for supporting gas industry is derived through negotiation by this organization.

The Environmental Protection Organization has the authority to impose restrictions on problematic activities in gas industry.

Regarding the regulatory regime for future gas market, Iran needs fundamental changes in regulation policies to comply with the demand pressure from EU, China, India and Eastern Asia Countries. The early investment for crossing boarders infrastructure will assure the security of supply which undoubtedly will come from a kind of oligopoly formed by Russia, Middle East and a few number of gas holders when we reach 2030. From now to that date Iran has to establish regulatory regimes in accordance with international treaties. For development targets Iran should plan for absorbing more than 120 billions US dollars from international funds by 2025. The South Pars gas field development was a good sign that showed Iran is potentially capable for gas trade.

**RECENT DEVELOPMENTS IN IRANIAN GAS MARKET**

For better functioning of natural gas market and speeding up the supplying gas to customers Oil Ministry and National Iranian Gas Company as mother company started unbundling the former fully centralized gas company. The major developments are described below.

Establishment of affiliated Provincial Gas Distribution Companies with partial authorities on sales and incomes.

Restructuring the engineering and construction activities so that new contracts like management contracts (MC) for large projects has been incorporated. This change has brought about the involvement of foreign partners is supporting Iranian gas infrastructure development.

Unbundling side activities in the whole gas chain activities.

Taking responsibility for UGS construction and operation with foreign joints

Vertical integration for gas distribution companies where all national pipelines inside a province will be operated and owned by provincial companies. The main lines and international pipelines are operated by mother company. but a company is under study to take the responsibility.

Adjustment of gas price according to the geographical situation.

Incorporating BOO, BOT, Buy Back and various methods of funding the large projects.

Assigning three phases of South pars development projects to LNG and GTL. This in turn will cause market diversification and security of supply in long term.

**THE FUTURE OF IRANIAN GAS EXPORT MARKET AND RELATED CHALLENGES**

Iran is potentially a long lasting gas exporter. There are plenty of choices for export in Asia, Europe and even Middle East. All of them need regulations for being materialized. Stable conditions in Middle East are the key issue. The same
importance is for investment. Some export plans need special arrangement to be possible. Some foreign customer require supports from international companies to start receiving natural gas while in mid term they will be able to afford their liabilities. For gas market the soon the better. When we think to the future of gas technology, to invest today will be justified. Iran has started international cooperation for development of the giant South Pars field and up to 23 phases will be developed over the next decade with a capacity of around 600 MMSCM/D.

Gas export to Turkey

Iran has a 23 year contract for exporting gas to the Turkey. It is via the pipeline and will reach 10 BCM per year in 2007. Of course Turkey has other choices for importing gas. There are some debate for price of Iranian gas and that is why there should be more rigid international regulation to assure the flow of gas toward foreign consumers.

Gas export to Europe

The largest market for Iranian pipeline gas is EU and specially western countries of EU. The major problem for exporting gas to EU is the price because the gas fields are located in south of Iran and the operation and investment cost is high compared to current gas prices in E.U. There are two routes to send gas to E.U. Via Turkey or through Armenia, Georgia and Ukraine. The length will be around 5000 kilo meters and still not economic. Regulations for tariffs and assurance for full capacity of pipeline would be necessary for future when the cost of transportation will be justified according to higher oil price or lower operation cost of gas transportation by regulation.

Gas export to Pakistan

Pakistan is the next important neighbour for Iranian gas. The main challenge has been political issues and economic conditions. International financing is necessary to enable Pakistan for taking gas from Iran. The choice of Iranian pipeline is one of the bests because the distance from the sources is acceptable. Also Iran is competing with Turkmenistan for sending gas to Pakistan although the lack of money is still the main challenge.

Gas export to India

The largest Iranian gas market after EU is India. Environmental considerations and power plants development will increase Indian gas demand drastically over the next two decade. There are few routes for exporting Iranian gas to India. Pipeline through Pakistani territory, pipeline to the Pakistani boarder then the off shore to India and the last one the deep ocean water to the India. All of these choices need international efforts to assure the safe operation of line without interruption.

Gas export to Armenia

Armenia will take small amount of gas and the major problem is the price. The market is small and the challenge will be financing the project.

Gas export to Kuwait, Oman and UAE

Iran is awaiting for final negotiation for exporting gas to Kuwait. The amount of gas could reach 30 billions cubic meters(30BCM) a year and may be from associated gas fields.
Like Kuwait UAE has some problems for developing gas fields and willing to take up to 5.2BCM per year of Iranian gas.

Oman has a shared gas field with Iran and willing for joint development of field and importing the share of Iran.

Figure 2 shows the current infrastructure of Iranian gas market.

CONCLUSION

Iranian gas market is very complicated. All kind of challenges encompass the gas trade from Iran to the other countries. The demand side has its own obstacles. From the paper we may conclude that only international regulations and agreements and also supporting from the monetary bodies can help natural gas reached to the consumers. Iran is in developing phase and shifting toward maturing phase is essential to mobilize international gas trade originating from Iran. Iranian gas market is changing to adopt to the requirements of trade. Iran is potentially responsible for 20 percent of global gas trade in 2025 and seeking for restructuring energy section including gas industry to comply with international treaties. For the Islamic Republic of Iran the domestic development of natural gas has the same magnitude as its international trade. Therefore all kind of regulation will be introduced for stabilizing gas supply to consumers. Regional stability, financial supporting and international assurance is essential for a sustainable gas market.
Models for gas infrastructure development in Iran

Figure 1 Model for gas infrastructure development in Iran

Figure 2 National Iranian gas infrastructure

Table 1 Shipping cost for the Iranian LNG from Assaloye Border
<table>
<thead>
<tr>
<th>Destination</th>
<th>Port</th>
<th>Distant (km)</th>
<th>Shipping cost (US$/MMBTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAPAN</td>
<td>Tokyo</td>
<td>10350</td>
<td>101</td>
</tr>
<tr>
<td>SOUTH KOREA</td>
<td>Inchon</td>
<td>9790</td>
<td>0.93</td>
</tr>
<tr>
<td>TAIWAN</td>
<td>Kaohsiung</td>
<td>8300</td>
<td>0.8</td>
</tr>
<tr>
<td>CHINA</td>
<td>Shanghai</td>
<td>9280</td>
<td>0.88</td>
</tr>
<tr>
<td>CHINA</td>
<td>Guangzhou</td>
<td>8160</td>
<td>0.79</td>
</tr>
<tr>
<td>INDIA</td>
<td>Dabhol</td>
<td>2020</td>
<td>0.26</td>
</tr>
<tr>
<td>INDIA</td>
<td>Chennai</td>
<td>4140</td>
<td>0.43</td>
</tr>
<tr>
<td>TURKEY</td>
<td>Marmaris Eriglisi</td>
<td>5470</td>
<td>0.55</td>
</tr>
<tr>
<td>SPAIN</td>
<td>Barcelona</td>
<td>7390</td>
<td>0.72</td>
</tr>
<tr>
<td>BELGIUM</td>
<td>Zeebrugge</td>
<td>9980</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Table 2 Iranian LNG price to some important markets

<table>
<thead>
<tr>
<th>Destination</th>
<th>Port</th>
<th>Price at destination (US$/MMBTU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>Tokyo</td>
<td>2.56</td>
</tr>
<tr>
<td>Korea</td>
<td>Inchon</td>
<td>2.48</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Kaohsiung</td>
<td>2.35</td>
</tr>
<tr>
<td>Spain</td>
<td>Barcelona</td>
<td>2.27</td>
</tr>
<tr>
<td>Belgium</td>
<td>Zeebrugge</td>
<td>2050</td>
</tr>
</tbody>
</table>
REFERENCES

BP statistical review of world energy, June 2003.
Kuwait to negotiate gas import from Iran, Iran Expert, Sep. 24 2002.
Iran signs 25 year contracts to sell gas to UAE, Iran Expert, Apr.23, 2003.
Proposed Iran to India Overland Gas Pipeline Project Overview, India Oil and Gas Conference 2002, Paul Samson, Vice President, BHP Billiton.
LNG Development from South Pars, Total Fina Elf, Meeting with NIGC, Tehran, Apr.2000.
Fourth 5 year Economic Development plan in Iran, Management and Planning Organization of Iran, 2005
NIGC Statistics and report center, Annual Report, , Abbas Pasdar. 2005