



24th World Gas Conference
ARGENTINA | 2009
5-9 October

The Global Energy Challenge:
Reviewing the Strategies
for Natural Gas

Mechanisms to Secure Capital Availability and Affordability of Future Gas Infrastructure Developments

Presented by:

Mr. Azizollah Ramazani

Deputy Oil Minister of Islamic Republic of Iran

and

Managing Director of National Iranian Gas Company

Buenos Aires - Argentina, October 2009



24th World Gas Conference
ARGENTINA | 2009
5-9 October

The Global Energy Challenge:
Reviewing the Strategies
for Natural Gas

Global gas investment needs up to 2030

- 1-Production of natural gas, will need to rise from 2.5 tcm/year in 2000 to 5.1 tcm/year in 2030*
- 2-Total investment requirements in the gas sector will reach \$3.1 trillion.*
- 3-Exploration and development spending will account for 55%, costing \$1.7 trillion.*



The Energy Sector's Access to Capital

Financial Resources :

1-Domestic Savings

2-External Finance

3-Financial Markets



1-Domestic Savings

- *Domestic savings are the main source of capital for infrastructure projects, including energy, in most countries.*
- *The share of domestic savings in gross domestic product (GDP), provides one important measure of the overall size of capital available domestically in the economy.*
- *In the Middle East ,This resource for accessing to capital doesn't play a great role.*



2-External Finance

- 1-The shortfall between investment requirements and domestic savings in some developing countries and the transition economies highlights the need to mobilize capital inflows from abroad.
- 2- Dependence on external finance brings both benefits and risks :
Benefits: Financing from abroad often reduces the cost of capital and provides longer debt maturity.
Risks: over-dependence on foreign investment flows can destabilize an economy. Overseas capital inflows can be volatile and currency depreciation can increase the debt burden of borrower countries.
3. Playing a high-profile role in the world energy market and paving the way for investing companies, Iran has proved to be familiar with the energy market rules and find itself committed to them



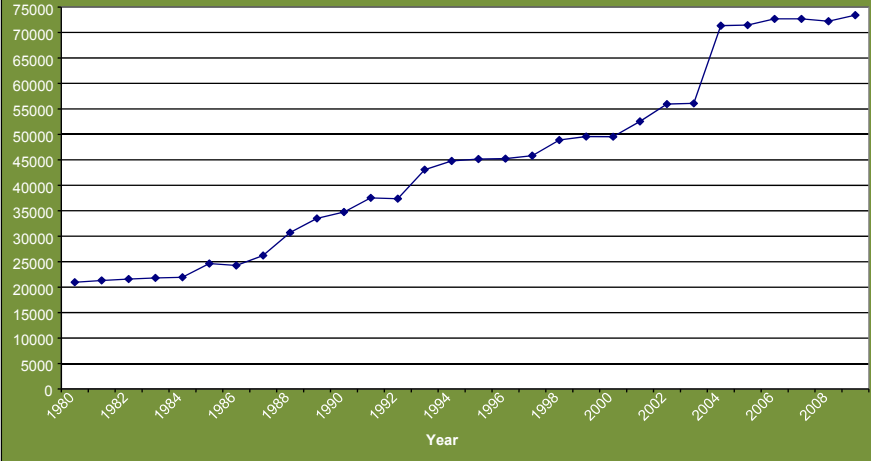
3-Financial Markets

- Access to financial resources and, consequently, the capital structure of companies are strongly affected by the stage of development of a country's financial market.
- The Middle East is in the first stages of developing financial markets and due to the global downturn, if the current world financial situation doesn't improve, the required capital for development will not be available for absorption.



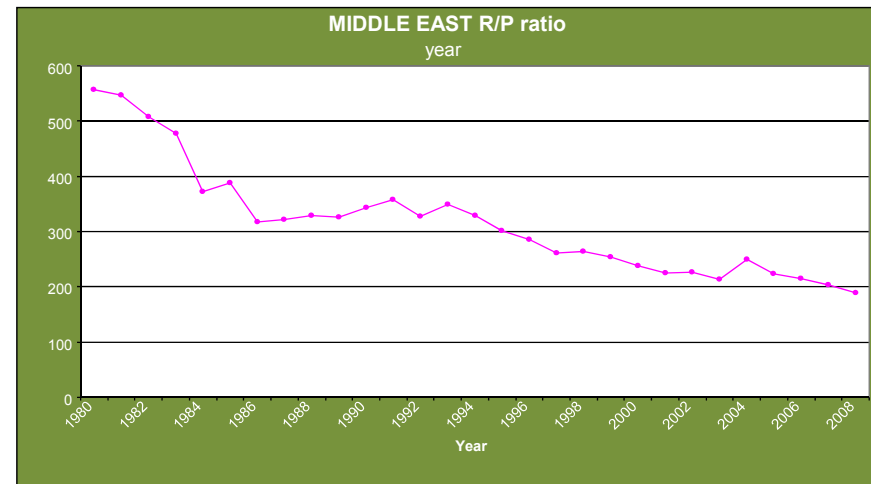
GAS RESERVES IN THE MIDDLE EAST

(billion cubic metres)



MIDDLE EAST R/P ratio

year





Investment on gas-supply infrastructure in Middle East

- *Middle east with total amount of 75.91 trillion cubic meters of natural gas, accounts for 41 percent of world reserves.*
- *Capital requirements for exploration & production will grow rapidly nearly fourfold from 1980 with slower growth in recent years, reaching \$10.6 billion a year in the last decade of the 2000-2030 period.*
- *As with oil, government budget constraints and limitations on national company borrowing mean that a growing share of this investment will have to come from private sources ,including foreign oil and gas companies given host.*
- *Pricing terms will be a major source of uncertainty for investment in the region .*

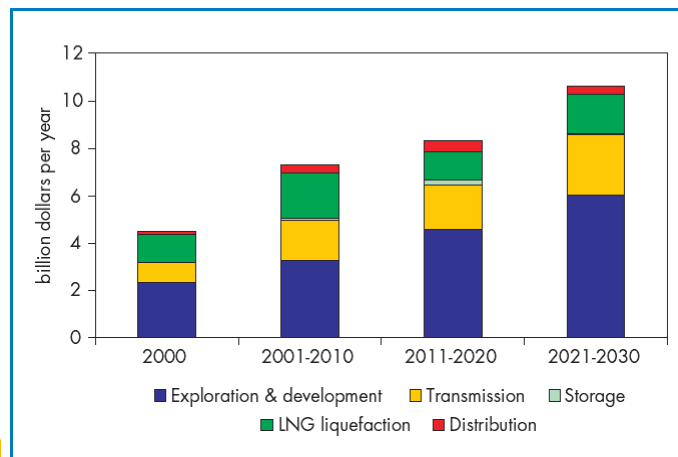


Investment on gas-supply infrastructure in Middle East (contd.)

- *Expanding gas-supply infrastructure in the Middle East will cost an estimated \$263 billion over the next three decades. This is equal to an average \$8.8 billion per year. More than half of projected investment, or \$4.7 billion a year, will be needed in the upstream sector.*
- *The Middle East has the lowest exploration and development costs for oil and gas of any major world region, with capital costs estimated at around \$7.5 per thousand cubic meters of gas produced .*



Gas industry investment outlook in the Middle East



Investment Risk and Uncertainty

- *The region has sufficient gas reserves to underpin the projected increase in production. But whether the required investment can be mobilized is highly uncertain.*
- *The nature of the investment challenge varies considerably among countries, partly because of differences in country and project risks.*
- *Continuing instability in the Middle East would jeopardize credit ratings for new projects and raise the cost of capital.*
- *In many countries, the ability of the state to finance growing capital needs for new projects will undoubtedly be constrained by budget deficits and competing demands for state financial resources.*



Investment Risk and Uncertainty (contd.)

- *Although project financing is well established in the region, international banks have shown less interest of late in extending credits to large energy projects.*
- *Regional banks have limited funds and cross-country lending remains limited. The cost of capital may have to rise to attract the necessary capital inflows from international banks in the future.*
- *Foreign direct investment will be key to the long term development of gas-supply projects in the region.*



Regional Projects

- *The most important regional gas development project is South Pars gas field in Iran.*
- *Twenty project phases have so far been awarded with a gas production capacity of over 150 Billion cubic meters per year, as well as over 960 kb/d of condensate.*
- *For most phases Iran has entered into buy-back deals with foreign companies.*
- *Phases 9&10, 15&16, 17&18 and 20&21 are exceptions which are project financed.*
- *Phases 11,12 and 13&14 are awarded for LNG production with total production capacity of 37 Mt/year.*
- *Phases two and three, involving gas production of almost 19 bcm per year, were completed on-time and on-budget in 2002 at a cost of \$2bn.*



On stream South Pars gas field phases

| Phase | Contractors | Contract type | Estimated output | Status |
|-------|---|-----------------|---|---|
| 1 | Petropars (40%), NIOC (60%) | Buy-back | 25 mmcm/d of natural gas, 40 kb/d condensate | Production started in early 2004 |
| 2,3 | Total (40%), Petronas (30%), Gasprom (30%) | Buy-back | 50 mmcm/d of natural gas, 80 kb/d condensate | Production started in 2002. All facilities handed over to NIOC. |
| 4,5 | Agip (60%), Petropars (20%), Naftiran (20%) | Buy-back | 50 mmcm/d of natural gas, 80 kb/d condensate | Production started in 2004. The two phases were fully operational by April 2005. |
| 6,7,8 | Petropars (60%), Statoil(40%) | Buy-back | 104 mmcm/d sour gas mainly for injection, 158 kb/d condensate | Production started in 2008. |
| 9,10 | OIEC, IOEC, GS | Project finance | 50 mmcm/d of natural gas, 80 kb/d of condensate | It is scheduled to fully come on stream in 2009. |



South Pars gas field under construction phases

| Phase | Contractors | Contract type | Estimated output | Status |
|-------|---|-----------------|--|--|
| 11 | CNPC | Buy-back | LNG exports, 2 trains of 5 Mt per year, 70 kb/d of condensate | Agreement signed in June 2009. |
| 12 | Petropars | Buy-back | LNG exports, 2 trains of 5.4 Mt per year, 110 kb/d of condensate | Awarded in 2005. Expected implementation time is 66 months. |
| 13,14 | NIOC (50%), Shell (25%), Repsol (25%) | Buy-back | LNG exports, 2 trains of 8.1 Mt per year, 105 kb/d of condensate | Project is in FID phase. |
| 15,16 | IOEC, ISOICO, Khatamolanbia | Project finance | 50 mmcm/d of natural gas, 80 kb/d of condensate | Project has had 30% of physical progress. |
| 17,18 | OIEC, IOEC, IDRO | Project finance | 50 mmcm/d of natural gas, 80 kb/d of condensate | Project has had 22% of physical progress. |
| 20,21 | OIEC | Project finance | 50 mmcm/d of natural gas, 80 kb/d of condensate | Awarded in May 2009. |



Islamic Republic of Iran gas fields development plan (2010-2015)

| Contract Type | Field Name | Production Capacity | Investment (\$bn) | |
|--------------------|--------------------|---------------------|-------------------|----------------|
| Buy-back | South Pars | Phase 11 | 10 Mt/y LNG | 3.8 |
| | | Phase 12 | 10.8 Mt/y LNG | 5.8 |
| | | Phases 13&14 | 16.2 Mt/y LNG | 5.75 |
| | | Phases 22,23&24 | 40 mmcm/d of NG | 4.4 |
| | North Pars | 20 Mt/y LNG | 7 | |
| | Golshan & Ferdowsi | 70 mmcm/d of NG | 5.2 | |
| Finance | South Pars | Phase 19 | 25 mmcm/d of NG | 4.9 |
| | | Phase 20 & 21 | 50 mmcm/d of NG | 5.45 |
| | | Phase 15 & 16 | 50 mmcm/d of NG | 1.2 |
| | | Phase 17 & 18 | 50 mmcm/d of NG | 2.15 |
| Internal Resources | South Pars | Phase 15 & 16 | 50 mmcm/d of NG | 1.2 |
| | | Phase 17 & 18 | 50 mmcm/d of NG | 2.15 |
| Grand total | | | | \$49 bn |



Establishment of an Organization of Gas Exporting Countries (OGEC)

- *Preventing unhealthy competitions and planning for optimized exploitation operations in case of the shared fields*
- *Reforming the natural gas pricing mechanism with respect to the market condition*
- *Ensuring cooperation and collaboration among gas producers and consumers*
- *Supplying adequate natural gas and establishing security and stability in the supply and demand market*
- *Reducing investment risks in the infrastructures of gas resources development*
- *Providing the environmental protection by the member states*



Summary

- *There is a great potential for developing Middle East gas reserves;*
- *According to R/P ratio, even with higher rates of production, gas production in the Middle East can be kept going for over 50 years;*
- *The main challenging for this development is investment;*
- *Supporting of the Organization of Gas Exporting Countries (OGEC) is highly recommended, because of its bilateral benefits for both natural gas producer and consumer countries;*



Summary

- *The main drivers for this development are demand of market, environment and nearness of reserves to future consumers like China, India & Europe;*
- *Iran as the second largest gas reserve holder in the world and first producer of natural gas in the Middle East, needs tens of billions developing new phases of South Pars gas field and other fields during next five years;*
- *Under the current policies, the Iranian gas industry considers itself bound to its international contractual commitments including natural gas export, import, and swap deals, and adhering to the rules of the game, it has been always proud of being a reliable and trustworthy partner*



24th World Gas Conference
ARGENTINA | 2009
5-9 October

The Global Energy Challenge:
Reviewing the Strategies
for Natural Gas

**Thank you for your
kind attention**