

Presenting IGU's New Associate Members

In the last issue of the IGU Magazine we looked at the new Charter Members and now it is the turn of the six new Associate Members.

● **BG Group**

BG Group is an integrated natural gas business based in the UK with operations in more than 25 countries across five continents and a global workforce of over 6,000 employees. The Group's core countries of operation are Australia, Brazil, Egypt, India, Kazakhstan, Trinidad and Tobago, Tunisia, the UK and the USA, and it operates across the gas chain: exploration and production; LNG; transmission and distribution; and power generation.



Exploration and production

The E&P segment accounts for around half of BG Group's profits. The broad portfolio of business interests includes E&P in the Santos Basin offshore Brazil. The Group is investing in unconventional resources such as shale gas development in partnership with EXCO Resources in the USA, and CBM to LNG in the Queensland Curtis project in Australia. It is also one of the largest operators in the UK North Sea.

LNG

BG Group's LNG business has been built around a portfolio of flexible LNG supplies that can be deployed globally. The Group has liquefaction capacity in Trinidad and Tobago and Egypt, and holds capacity at regasification terminals on both sides of the Atlantic and in both the northern and southern hemispheres. It also operates one of the largest privately owned shipping fleets in the LNG industry.

Transmission and distribution

BG Group's transmission and distribution activities are focused on fast-growing markets, developing both markets and infrastructure for the delivery of gas.

Power generation

BG Group owns and operates gas-fired power generation plants.

IGU membership

BG Group sees IGU Associate Membership as an opportunity to build business networks and maintain the company's profile amongst industry peers. In the current Triennium the Group has representatives on six Committees (WOCs 1 and 4 and PGCs 1, 2, 3 and 4) and all three Task Forces, sharing industry best practice with national members and industry peers. BG Group was a co-sponsor of IGU's gas event during COP15 in Copenhagen and is looking forward to participating in WGC2012.



BG Group has operations in more than 25 countries and a global workforce of over 6,000. (OPPOSITE) The North Everest natural gas platform in the North Sea and (ABOVE) a coal-bed methane operation in Australia.

Business model and principles

BG Group is an integrated and internationally diverse energy company that is positioned to deliver rates of growth that are a multiple of the industry average. Its business model is founded on developing an in-depth knowledge of selected markets with sustainable growth or supply restructuring potential. Once these markets have been identified, options are developed to supply them with competitively priced resources from a growing portfolio.

BG Group is committed to operating to the highest standards of ethical conduct, and safety is the top priority. The Group wants its employees to have the opportunity to realise their full potential, and seeks to make a positive contribution to economic, social and environmental development on a sustainable basis.

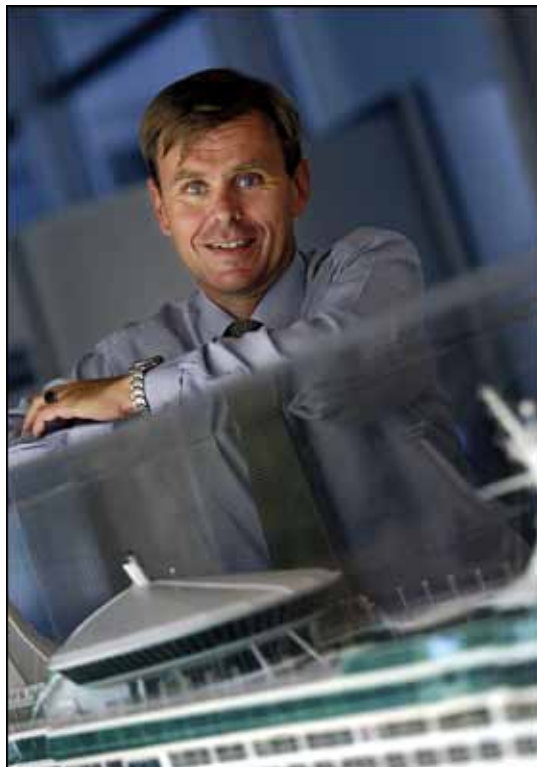
More information is available at www.bg-group.com.

● DNV

With the objective of safeguarding life, property and the environment, Det Norske Veritas (DNV) helps business and society to manage risks on the basis of the company's independence and integrity. DNV serves a range of industries with special focus on the energy and maritime sectors.

Established in 1864, DNV has a global presence with a network of 300 offices in 100 countries, and is headquartered in Oslo, Norway. As a knowledge-based company, DNV's prime assets are the creativity, knowledge and expertise of its 9,000 employees.

DNV is a global provider of services for managing risk, helping customers to safely and responsibly improve their business performance. As companies today are operating in an increasingly complex and demanding risk environment, DNV's core competence is to identify, assess and advise on how to effectively manage risk, and to



Tor E. Svensen, President of DNV: LNG as a fuel for ships is commercially viable and will address important environmental concerns.

identify improvement opportunities. Our technology expertise and deep industry knowledge, combined with our risk management approach, have been used to manage the risks in high-profile projects around the world.

LNG – the solution in Emission Control Areas

Heavy fuel oil is not an option for future shipping within Emission Control Areas (ECAs). Alternatives have to be introduced. A DNV report concludes that LNG is the obvious alternative to satisfy future ECA requirements, particularly for short-sea shipping.

ECAs have already been established in the Baltic Sea and the North Sea, and will be enforced along the North American coastlines. Other areas, such as the Mediterranean Sea, are expected to follow in the near future. The emission reduction requirements applicable within the ECAs will grad-

ually be stepped up. The fuel sulphur content of any ship in an ECA after 2015 cannot exceed 0.1% or the exhaust gas must be purified to an equivalent level. And after 2016 NO_x emissions from new-buildings must be reduced by approximately 75%.

The EU has already introduced 0.1% sulphur as a maximum level for a ship's fuel when in ports and on inland waterways.

"There are at least three ways of solving these challenges," says Tor E. Svensen, the President of DNV. "Low sulphur fuel can be used. Scrubbers can be installed to remove the sulphur. Or the operator can switch to LNG."

He continues, "LNG represents no technical obstacles. Economically, it is better than the alternatives and it is an environmental winner, so why wait?" he asks. "We can move faster if we want to, and there are economic opportunities for those shipowners that dare to be among the frontrunners."

First class society with LNG rules

DNV was the first class society to introduce rules for LNG-fuelled ships back in 2001. Ahead of this and in every year since, DNV has invested heavily in research and development work to ensure further improvements. Over these same years, 20 LNG-fuelled ships – all classed by DNV – have been delivered and are operating today. The practical experience achieved from these vessels has been invaluable.

Says Svensen: "DNV is struggling to understand why the shipping industry is not moving faster and why shipowners are not seeing the opportunities. LNG as a fuel for ships is commercially viable and will address important environmental concerns."

He emphasises that the whole shipping industry has to play an active role to achieve the improvements that LNG represents. As ECAs have already been introduced in large parts of Europe and the EU, governments must be frontrunners. In particular, it is important that publicly owned ships are run on LNG. Present obstacles, like the lack of

bunkering stations for LNG, will have to be overcome and finally, LNG fuel has to become more easily available at a fair market price.

ECA survival kit

Many operators will most probably face tough times when the new emission reduction requirements come into force in the ECAs. Svensen advises operators to start preparing now to get on the front foot when the upcoming 2015 and 2016 legislation become reality. "Compliance will become a ticket to trade in ECAs," he says.

On the front foot

The emission reduction requirements will have severe implications for shipowners and charterers as well as for entire supply chains within the ECAs. Many possible actions can be taken, but the consequence of choosing a sub-optimal strategy may be costly. However, there are opportunities for smart navigation within the ECA regime. DNV advises operators to start preparing now to turn the upcoming 2015 and 2016 legislation into business benefits.

When seeking cost-effective emission reduction measures, operators should consider every technical, regulatory and operational requirement. Access to DNV's repository of maritime expertise and a range of services is included in the survival kit.

Greener shipping in the Baltic Sea

The environmental situation in the Baltic Sea has grown drastically worse in the past few years and unless something is done soon, the damage may be irreversible. DNV has released a report on how shipowners can contribute to turn the situation around. "Based on our Baltic report, LNG is the obvious answer to this challenge," says Svensen.

High equipment installation costs and a lack of LNG distribution infrastructure are currently the main hurdles for an LNG breakthrough. Thus, shipowners have been hesitant to switch their vessels to LNG propulsion. An LNG-fuelled ship

requires specially built or modified engines, as well as a sophisticated system of special fuel tanks, a vaporiser and double insulated piping. While these measures will pay off over time, the initial investment is quite a significant sum. In addition, there is no reliable infrastructure for the distribution of LNG to the fleet.

"At the moment, LNG is caught in a 'chicken and egg' situation: shipowners are not going to invest in expensive equipment until an LNG fuel supply infrastructure is in place... which will only happen if there is a large enough fleet of LNG-fuelled vessels to create the demand. So who makes the first move?" asks Svensen.

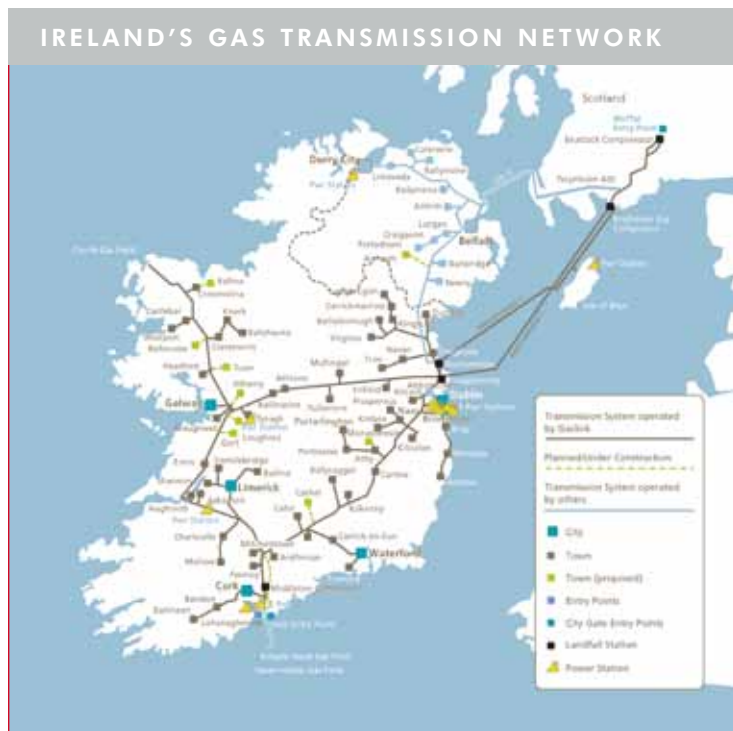
In its Baltic report DNV is suggesting that role lies partly with the governments. They can encourage establishment of an LNG bunkering infrastructure and they can require LNG fuel for state-owned or contracted shipping. This is an opportunity to not only become more environmentally friendly, but also to be in the forefront of technology that may in turn be exported to other regions.

"As a class society, DNV will try to actively influence the whole shipping industry. And we will certainly continue to invest in technology and expertise to support the conversion to LNG fuel. The 20 ships to DNV class running on LNG confirm our involvement so far and trust me – we will assist shipowners in developing business cases for LNG in the years to come," concludes Svensen.

More information is available at www.dnv.com.

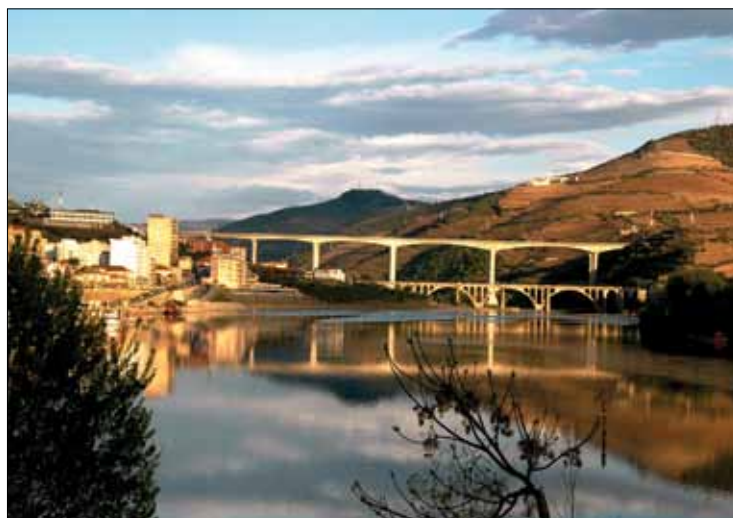
● Gaslink

Gaslink is Ireland's licensed gas transmission and distribution network system operator. The company operates, designs and maintains the natural gas network (see Figure 1 over), and is required to carry out this function in a safe, efficient and reliable manner. It also facilitates new market entrants in both the wholesale and retail markets, developing all arrangements for new entry points and large connections to the network.



ABOVE
Figure 1.

Gaslink is an independent subsidiary of Bord Gáis Éireann (BGÉ) with independent decision-making rights with respect to the assets necessary to operate, maintain and develop the Irish natural gas network. Gaslink achieves this through



Dourogás Group serves the region to the north of the River Douro in Portugal.

a maintenance contract with Bord Gáis Networks (BGN).

Gaslink was incorporated in October 2007 in compliance with the unbundling requirements of the EU Gas Directive 2003/55/EC. On July 4, 2008, Gaslink became responsible for the operation, maintenance and development of Ireland's natural gas transmission and distribution network. The company does not own the natural gas network nor is it responsible for its financial performance.

More information is available at www.gaslink.ie.

● Sonorgás

Sonorgás is part of the Dourogás Group, headed by Dourogás, SGPS, S.A., which owns the three companies:

- Dourogás Propano, S.A.;
- Gold Energy, S.A.; and
- Sonorgás, S.A..

The group's origins are in Vila Real (northern Portugal), where a company called Dourogás – Company for the Production and Distribution of Gas S.A. was formed on June 17, 1994. The company had as its primary objective, "the production of propane-air, its marketing and distribution, and the distribution of other combustible gases, ensuring full use of the gas networks with the eventual aim of introducing natural gas, as well as other activities related to the primary objective". The company started work on July 1, 1994, with the distribution of propane throughout the region to the north of the River Douro.

As stated above, it has always been a goal to work with natural gas. The distribution of natural gas in Portugal is by a public concession, and, as soon as Portuguese law allowed, Dourogás prepared an application to be a distributor in all the municipalities it was eligible to apply for. The application was made in 2003 and on July 17, 2004 concessions were granted for the municipalities of Mirandela, Macedo de Cavaleiros, Peso da Régua, Arcos de Valdevez, Ponte da Barca,



Some links make a perfect chain when you put them together

UNION FENOSA GAS is involved in every stage of the liquefied natural gas chain

UNION FENOSA GAS controls every part of the gas process. Being involved in the whole process, enables it to offer a high quality integrated service that enhances the supply guarantee.

UNION FENOSA GAS has consolidated itself as a trustworthy partner in the development of important infrastructures, due to its investment capacity, fulfillment of commitments and its prospects of growth.



LIQUEFACTION



MARITIME TRANSPORT



REGASIFICATION



COMMERCIALIZATION



DISTRIBUTION



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Gaslink, offering open access to the Irish Natural Gas Network

Gaslink is the Independent System Operator in Ireland who develops, operates and maintains a Transmission and Distribution network of 12,800km. Gaslink transports gas for Shippers active in all Irish market segments from Power Generation and Industrial and Commercial to Residential customers. Gaslink offers open and competitive access to the network.

For further information please contact
Gaslink on: + 353 (0)21 5006100
email: info@gaslink.ie
www.gaslink.ie



Póvoa de Lanhoso and Santa Marta de Penaguião. These municipalities are in the districts of Porto, Braga, Viana do Castelo, Vila Real and Bragança, which are all north of the River Douro.

The project model chosen involves trucking LNG to satellite regasification plants (known as autonomous units) from which the municipalities are served by a local pipeline network. After construction schedules had been agreed and budgeted, work began in 2005 based on principles of public service to:

- Safely distribute high-quality gas;
- Offer customers competitive prices compared with other energy sources;
- Develop the natural gas market;
- Promote a new energy source and a “culture of natural gas”;
- Contribute to the development of the areas covered by the concessions, and consequently improve the quality of life of their inhabitants;
- Encourage the introduction of new technologies and support the development of the gas industry; and
- Coordinate the construction of gas networks with other urban infrastructures.

Following an investment of more than €25 million, five autonomous units are in full operation supplying seven municipalities.



The Sonorgás satellite regasification plant in Póvoa de Lanhoso.

Market liberalisation

As a result of the liberalisation of the gas market in Portugal, Dourogás had to make the split between natural gas and propane gas, including all the activity under the distribution licences that operate with regulated tariffs. In 2008, Dourogás was divided and adopted the name Sonorgás – Sociedade de Gás do Norte S.A. for the marketing of natural gas in the regulated market.

Sonorgás today

Currently Sonorgás distributes natural gas to more than 10,000 customers, a number that is expected to increase significantly by the end of 2010. In terms of the volume of gas, Sonorgás sold about 7 mcm in 2009 and expects this to have increased some 15% by the end of this year.

An application has been submitted to the General Directorate of Energy to distribute natural gas to another 26 centres of consumption which are not yet served by natural gas networks.

Sonorgás seeks to become a biomethane pioneer in Portugal by building biomethane plants with a production capacity of 2 mcm/year by 2012 and 4 mcm/year by 2020.

Reasons for joining IGU

IGU brings together gas associations, companies and professionals from around the world and aims to promote the natural gas industry. Sonorgás intends to contribute to the goals of IGU, share the latest information related to the gas industry and learn from the experiences of other companies.

More information is available at www.sonorgas.pt.

● **Spetsneftegaz**

Set up in 1991, Spetsneftegaz Scientific and Production Association (NPO) Joint Stock Company is the main operator responsible for in-line inspection and technical supervision of Gazprom's trunk pipelines. Continuous development of new

in-line inspection technologies and equipment has played a key role in increasing the safety and reliability of Gazprom's transmission operations, and more than 156,000 kilometres of gas pipeline have been inspected by the company.

Spetsneftegaz created the first Russian high-resolution magnetic flux leakage (MFL), transverse field inspection (TFI) and electromagnetic acoustic transducer (EMAT) in-line inspection tools and has steadily improved their efficiency. These tools enable Spetsneftegaz to perform in-line inspection of trunk pipelines to identify and pinpoint all types of defects, including tiny stress corrosion cracks.

More information is available at www.spetsneftegaz.ru.

● **Vopak LNG**

Royal Vopak is the world's largest independent tank storage service provider and has a history going back almost four centuries. Whether it's liquid or gaseous chemicals, oil products, petrochemicals, biofuels, vegetable oils or LNG, the company offers complete storage and transshipment solutions at 80 terminals in 31 countries, covering and connecting the world's major shipping lanes.

Vopak LNG is the company's project organisation responsible for developing, co-owning and operating LNG terminals. Vopak LNG is not involved in buying or selling LNG, a business model which gives comfort to customers that their product is handled in a non-discriminatory manner. Terminals are currently planned or under construction in France, Germany and The Netherlands.

Gate terminal in Rotterdam is being developed in partnership with Gasunie, Dong Energy, E.ON Ruhrgas, Essent and OMV. Expected to open in the second half of 2011, it will have an initial capacity of 12 bcm/year and three 180,000 m³ storage tanks, with scope to increase capacity to 16 bcm/year and four storage tanks.



Spetsneftegaz has developed a range of inspection equipment.

Studies are being carried out for additional LNG terminals in France, Germany and a second location in The Netherlands.

At Fos-sur-Mer in southern France Vopak has teamed up with Shell to develop Fos Faster with a planned capacity of 8 bcm/year and two storage tanks.

At Rostock in Germany Vopak, Gasunie and Verbundnetz Gas are evaluating an LNG terminal with an annual capacity of 2-5 bcm.

At Eemshaven in the north of The Netherlands, Vopak and its partners Essent and Gasunie are evaluating an LNG terminal with a planned capacity of 10 bcm/year.

More information is available at www.vopaklng.com.



Vopak LNG is a partner in the Gate LNG terminal in Rotterdam.

Innovative regas vessels for Höegh LNG

By Roald L. Nord, Rune Karlsen and Marthe Therese Møller Solaas

Höegh LNG's GDF SUEZ CAPE ANN has recently completed a regasification trial in Massachusetts Bay, joining its sister ship GDF SUEZ NEPTUNE. The two innovative Shuttle & Regas Vessels (SRVs) were ordered at Samsung Heavy Industries in 2006 and are operated by Höegh LNG and owned jointly with Mitsui O.S.K. Lines, Ltd. The vessels are on long term charter to GDF SUEZ, for the Neptune Deep Water Port in Massachusetts Bay.

The SRVs are purpose-built to meet the stringent environmental requirements in Massachusetts Bay and they feature a state of the art regasification plant. In order to meet such requirements for protection of the marine environment in Massachusetts Bay, the regas plant is of "closed loop" design, using a water/glycol circuit as an intermediate loop heated by steam from dedicated boilers on the vessel. The total regasification capacity is 750 mmscf/day, with redundancy and flexibility included in the design.

The regasification boilers are gas fired and equipped with low NO_x burners. The boilers are optimized for its sole purpose of providing heat to the regasification units and have a total steam capacity of 200 tons/hour.

The SRV's are equipped with Dual Fuel Diesel Electric machinery for propulsion and generation of electrical power to the regasification plant. The engines will be fuelled by LNG boil-off in normal operation, which in itself give favourable figures for emission.

Further reduction in emissions is achieved by SCR units (Selective Catalytic Reduction) treating the

exhaust from engines and boilers during regas operation. The resulting NO_x emission from the generators is less than 0.2 g/kWh far below the IMO requirement of about 13 g/kWh. The NO_x emission from the regasification boilers is below 5 ppm.

On site during the regas operation there is no intake, nor discharge of engine cooling water. The ballast tanks are used for recirculation of large quantities of cooling water, avoiding emission to sea. Additionally, by meeting DNV's Comfort class low levels of noise and vibrations are ensured, which is a benefit for both the marine life and the personnel onboard. Also the visual impact from shore is basically eliminated by locating the Neptune Deep Water Port below the horizon, out of sight and out of main ship traffic lanes.

Since the SRV's will discharge regasified LNG directly into the hub line in Massachusetts Bay, gas metering as well as safety valves for pipeline integrity protection has been installed onboard the vessel.

The SRVs have obtained the DNV Clean Notation and Green Passport, certifying the environmental features incorporated in the construction and operation of the vessels.

A number of other vendors have been involved in achieving the unique design of Höegh LNG's SRVs. The combination of the vessels' features represents state of the art technology and the environmentally friendly solutions applied add value to the LNG industry. The SRVs successfully integrates floating regasification into the LNG value chain.



GDF SUEZ CAPE ANN seen here during her sea trials offshore Korea.



GDF SUEZ NEPTUNE arriving at Boston, USA to begin trials.



HÖEGH LNG



production and liquefaction
OFFERING THE COMPLETE OFFSHORE LNG VALUE CHAIN
transportation
regasification
market access



FPSO



Snøhvit



FSRU

- A highly skilled organization with a wide range of competence gained through LNG operation since 1973
- Merging competence, innovation and technology development
- The company operates a fleet of seven LNG carriers, including two Shuttle and Regasification Vessels (SRV)
- A fully integrated company with in-house fleet management

WWW.HOEGHLNG.COM

Iran-Pakistan Pipeline Agreement Signed

By Timothy Boon von Ochssée
and Nadeem Shahryar

In June, Iran and Pakistan signed a deal to link their gas networks in a move which puts Iran on the road to becoming a net gas exporter, and could be the first stage of the long-projected Iran-Pakistan-India (IPI) pipeline. This regional gas market integration (GMI) project was one of the case studies considered by a special Task Force in the last Triennium and reported in the IGU Magazine. Here the authors of that case study give readers the background and an update on the latest developments.

● Introduction

This paper is a review of GMI issues facing the IPI pipeline project. With the second largest fossil fuel reserves in the world and rising demand for gas in nearby markets, geopolitics permitting, Iran could become an influential gas supplier to various regional and global markets. Iran is located such that it can benefit from pipeline gas export diversi-

fication to its neighbouring countries as well as from supplying LNG to more distant markets in Asia and the Western hemisphere.

The pipeline romance between Iran and Pakistan has lasted almost two decades. The project first appeared on the drawing board during the early 1990s. It started as an Iran-Pakistan (IP) pipe “dream” and became an Iran-Pakistan-India nightmare when Iran insisted on including India as a recipient of gas after the two countries abandoned their efforts to find a direct Iran-India offshore route for a gas pipeline. In 2007, India succumbed to geopolitical forces and opted out of the pipeline gas import option, much to the dismay of Iran which found itself back at square one again, contemplating an IP pipeline. The cost of this delay is huge in economic terms, resulting in painfully slow development of the South Pars gas field for Iran and an era of severe energy shortage for Pakistan.

Pakistan by itself is a sufficiently large market with growth potential to enable the project to be commercially viable, and Pakistan has agreed to Iran’s desire to include India at a later point in time. Whereas Iran and Pakistan have fairly well developed gas transmission and distribution networks, India is in a relatively embryonic phase of gas market development; however, importing gas is a new reality for both Pakistan and India. Thus important challenges are, respectively, the greenfield development of new gas transport infrastructure for India, and the augmentation of the existing gas transmission and distribution system to bring imported gas to consumers for Pakistan. Despite the enormous resource potential in Iran, and the demand potential in these regional gas markets, the IPI pipeline project is bedevilled not only by a number of geopolitical obstacles, but also by economic and energy pricing issues.

This paper will focus on the main challenges or “bottlenecks” facing GMI between Iran, Pakistan and India, with an emphasis on the geopolitical



Sheikh Nadeem Shahryar (LEFT) and Timothy Boon von Ochssée (RIGHT).

dimension. Section 2 is a background overview of Iran's resource base and its export plans. Section 3 reviews the need for and potential of gas in Pakistan and India as well as recent progress in the IP pipeline project talks. Section 4 will present an overview of the geopolitical complexities in the region.

● Iran's resource base and gas export plans

Iran holds the second largest conventional natural gas reserves in the world – an estimated 29.61 tcm or some 15.8% of the world's total. A favourable feature of Iran's gas deposits is that around 62% are located in non-associated gas fields and have not been developed, meaning that the country has vast potential for future gas development. According to the latest BP Statistical Review of World Energy, in 2009 Iran produced 131.2 bcm of gas, exported 5.67 bcm (mainly to Turkey) and imported 6.17 bcm (mainly from Turkmenistan). Iran has imported gas from Turkmenistan since 1997 via the Korphej-Kurt Kui pipeline and a new pipeline from the Dauletebad field opened in December 2009.

Significant gas exports from Iran have failed to materialise over the last few decades due to a combination of conflicting policy priorities in Iranian energy policy, domestic gas needs and US sanctions.¹ Iran's prioritisation of gas resource use is as follows: 1) domestic use of gas, including power generation; 2) gas used for oil lifting; 3) gas-based industries including petrochemical and gas-to-liquids projects for internal use and export; and 4) gas export by pipelines and in the form of LNG. Those in favour of gas exports by pipeline and LNG argue that Iran could utilise less than 40% of its reserves for gas injection and domestic consumption purposes over the next 25 years. Iran

seeks to become a regional gas transit hub for Caspian gas to Iraq, Syria and the United Arab Emirates.² In this regard, some type of "neighbourhood policy" could achieve much in harmonising Iran's gas policies towards surrounding countries. This pertains not only to energy relations with key potential customers and their regulators in neighbouring countries such as India and Pakistan, but also to Central Asian gas exporters such as Kazakhstan and Turkmenistan, as far as supply integration and transit are concerned.

One of the National Iranian Oil Company's (NIOC) priorities, next to achieving domestic goals, is to become a major gas exporter to various regional markets in a way akin to Qatar.³ During the years following the discovery of the North Field structure in 1971, both Iran and Qatar tried to come up with projects to export gas to Pakistan and India using the pipeline gas option. Except for a small overland portion through the UAE, the tentative route of the proposed Qatar-Pakistan pipeline followed an offshore route, coming ashore near the port of Gwadar on the Makran coast in the province of Baluchistan in Pakistan. Having allocated a certain amount of gas to potential buyers, Qatar imposed a time limit on the interested parties for deciding whether or not to go ahead. Islamabad was concerned about certain aspects of the project, causing a delay that ultimately led to

2 "Korphej-kurt kui pipeline; New pipeline to carry Turkmen gas to Iran", *Islami Davet* (Islamidavet.com November 12, 2009) retrieved on March 15, 2010.

3 Though Iran does not yet appear to have developed a coherent gas export strategy, it is aware of the external environment in the interregional gas market, and the level of development of important interregional players such as Russia and Qatar, with Iranian oil officials concerned about "established competition" from Algeria, Russia and Qatar. According to one Iranian official: "[W]e can't compete with Qatar. We look for markets where Qatar is not able to get easy access, India and Pakistan, for example, where we have land access and the Qataris would need deepwater pipes in the Indian Ocean and the Oman Sea." (Marcel, V. [2005], *Oil Titans: National Oil Companies in the Middle East*, London: Royal Institute of International Affairs, p. 166).

1 The problem in this respect has always been a conflict of interest and strategies within the Iranian energy establishment, where Iran's Oil Ministry and the Majlis Energy Committee have traditionally disagreed over the best use of Iran's gas resources.

Qatar's abandonment of the project as the time limit expired.⁴

A number of different export options are available to Iran. Firstly, it may begin supplying gas-short and energy-intensive markets within the Gulf region. Rapid urban developments in the UAE and industrial gas demand in, for instance, Oman as well as markets in Bahrain and Kuwait offer regional gas export possibilities. Secondly, Iran could export gas to various European markets, though this remains speculative at the time of writing.

Iran's LNG projects remain in the design phase due to US-led sanctions and an unattractive upstream investment climate for Western energy firms, amongst other factors. For example, Shell and Repsol were supposed to commit to Iran's Persian LNG project but withdrew in May 2007. China, which maintains important economic and trade ties with Iran, has been more assertive, with Chinese energy firms angling for upstream investment and development projects. In that spirit, in March 2009, China National Offshore Oil Corporation (CNOOC) and NIOC signed a contract for the development of Iran's North Pars gas field. The IPI pipeline itself is Iran's main pipeline gas export possibility to the East.

● The emerging gas markets of Pakistan and India and the IPI project

Pakistan and India offer interesting gas demand growth prospects for gas-exporting countries, particularly those in the Gulf region. Due to insufficient indigenous gas reserves, both markets face an increasing gas supply gap over the coming years to sustain their rate of industrial development and the needs of their huge populations.

Gas demand in Pakistan and India

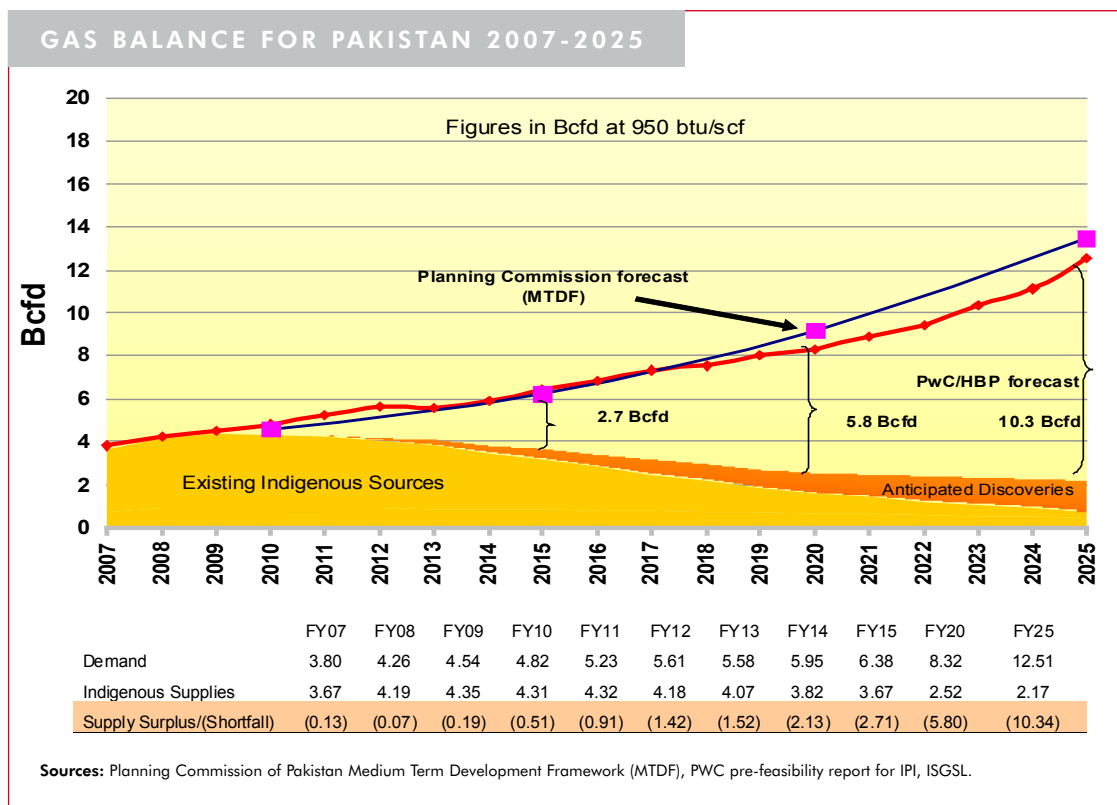
Iran and Pakistan signed a Memorandum of Understanding (MOU) in the middle of 2005 to go

ahead with the project. Subsequently, delegates from Iran, Pakistan and India (the latter's delegates participated until India withdrew in 2007) met to iron out problems and negotiate a Gas Sales and Purchase Agreement (GSPA). In 2009, Iran and Pakistan proceeded with preliminary discussions on supplies, mainly focusing on the pricing formula, agreeing to review pricing terms one year before gas deliveries were to commence, leaving the door open to India to join later on. The Iran-Pakistan GSPA Effective Date Confirmation Letter was finally signed in June 2010 and as far as contractual pricing terms are concerned, Pakistan has accepted Iran's oil parity terms. It is estimated that the project will take five years to complete.

For Iran, Pakistan is an interesting new market where gas accounts for slightly more than half of primary energy consumption. For Pakistan, the need for gas imports is driven by un-met demand with a projected supply gap of some 15.5 bcm/year as soon as 2013 and 103 bcm/year by 2025 (see Figure 1). Pakistan, which did not take up the pipeline project offered by Qatar, is now suffering from severe energy shortages causing massive job cuts due to industrial shutdowns, low agricultural production due to a lack of power to provide irrigation from water wells and general unrest in its populace because of extended electricity black-outs in urban and rural areas. One direct cause of the current economic slump and political discontent in Pakistan is the mismanagement of energy projects by policymakers in the successive governments. Geopolitical forces originating both east and west of its borders add their weight to Pakistan's problems.

The gas supply gap is expected to be filled partially by imports under the Mashal project, which proposes stationing a floating storage and regasification vessel in Karachi while a permanent LNG terminal is constructed for 2013 completion. This project is being coordinated by the majority state-owned Sui Southern Gas Company (SSGC). A separate LNG terminal is planned by the private

4 Shahryar, N., "Energy Exhaustion Syndrome", Lahore, *The Daily Nation*, Money Plus, August 25, 2008, pp. 9-11.



LEFT
Figure 1.

sector, also in Karachi. If the Iran-Pakistan pipeline is to fill the rest of the gap it will have to make its way through the thick smoke of geopolitics that engulfs the region. Much in this regard revolves around how matters relating to the flow of energy from the Caspian Sea region and Central Asia are resolved to the satisfaction of stakeholders in the region.

Historically Iran has seen India as an important gas export market with high demand potential. Indeed, India's gas consumption has seen strong growth of some 8% per annum between 2000 and 2009, which is in line with growth rates in other emerging economies such as China. However, India's reservations about joining the IPI project are not just political (see below) but also economic. Pakistan is ostensibly able to afford Iran's oil parity terms. However, in India imported gas is expected to be initially used mostly for power generation where electricity prices are historically

tied to coal, which accounts for half of India's primary energy requirements while gas represents some 10%. Hence India would need to see Iran's gas compete with coal primarily in the power generation sector. In addition, as a result of its civil nuclear deal with the US, India is looking to employ a greater amount of nuclear energy in its energy mix.

In December 2007, Iran and Pakistan agreed the GSPA, which included a provision to add India at a later stage. Pakistan has also stated that it would be able to buy the gas volumes allocated to India in the GSPA in case India is unable to join the project. All parties agreed in the initial stages on the gas volumes and Iran also allocated certain blocks from the South Pars field. With the passage of time, Iran kept changing its stance on the allocation of blocks, citing its difficulties and delays in negotiations related to the IPI pipeline, which caused further overall project delays. Iran

Customised Ultrasonic Meter Diagnostics Employing Fingerprint Monitoring

Ultrasonic meters provide a range of diagnostic indicators that give information about metering accuracy and can be used to warn before potential problems like contamination, blockages or liquids affect the measurement. These diagnostic functionalities are one of the great advantages of ultrasonic meters. Using them can save the user from losing money through metering errors or through unnecessary maintenance.

Application specific conditions as well as flow velocity dependent influences must be differentiated from actual obstacles for measurement accuracy. The ultrasonic meter operation can be analysed with diagnostic indicators like profile factor, turbulence or AGC-level with minimal technical knowledge about ultrasonic meters.

Regular collection of diagnostic data helps to see trends, for example, a slowly building contamination on top of the transducers. However, data collection in a metering station costs additional time and money. Some of the crucial indicators for changes in the line depend on the velocity of the gas flow. Profile factor and turbulence for example may change greatly, as the flow profile in the line changes with higher velocities, while AGC and SNR highly depend on the application specific situation. Every application, therefore, has a characteristic fingerprint of diagnostic values over the range of flow velocities, which

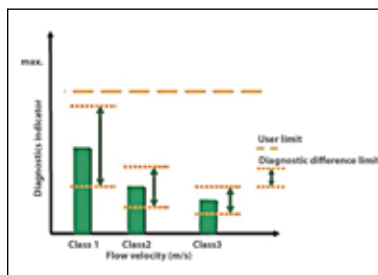


Figure 1: Principles for monitoring the diagnostic indicators

has to be taken into account when the current operation of the meter is evaluated.

While it needs a careful adjustment of limits to a specific application when fixed limits are used for monitoring, the FLOWSIC600 now goes beyond the limitations of fixed thresholds. SICK provides an “out-of-the-box-solution” that utilises the diagnostic options of ultrasonic transducers and path layout without asking for an expert when warning limits are set up. New algorithms in the firmware enable the user to profit from the long term experience of flow experts: The Diagnostics Comparison algorithm with “fingerprints” automatically adapts both to application specific and velocity dependent aspects of the diagnostics.

Hence, the “fingerprint” based new technology does not warn the user when fixed user limits are exceeded but when the diagnostic indicators have deviated significantly from their reference values, exceeding a diagnostic comparison limit (see Figure 1). The FLOWSIC600 collects

diagnostic values in five velocity classes covering the operating range of the ultrasonic meter. The characteristic fingerprint of the application is automatically recognised and stored in the meter when it is commissioned and when the meter operates under field conditions for the first time. This initial fingerprint serves as a reference, when it comes to comparing the diagnostics as they should be, to the actual current state of the meter. During the ongoing operation, the diagnostic fingerprint of the meter is monitored for relevant changes – if one of the indicators departs significantly from its reference value, a warning is given to the user (see Figure 2). A diagnostics comparison report gives the user more detail on which diagnostic indicator has changed (see Figure 3).

To optimally profit from the range of diagnostic options in an ultrasonic meter, the user no longer needs the help of an expert. SICK has made the multitude of diagnostic information understandable and helpful for the non-expert. And beyond, we have implemented the knowledge of our flow experts into the meter’s integrated comparison of diagnostic data.

Diagnostics fingerprint: an easy and fully automated accuracy check. Use the ultrasonic gas flow meter FLOWSIC600, and you can stop worrying about measurement accuracy.



Figure 2: Yellow indicates a warning on the diagnostic comparison limits

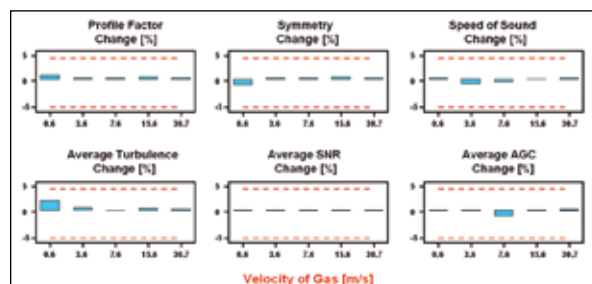


Figure 3: Diagnostic Comparison Report (section)



Green means stop.

Stop worrying about accuracy – FLOWSIC 600.

Yes, that's right. Because green means everything is fine. FLOWSIC 600 now continuously monitors all diagnostics and transmits traffic control signals to the head office. You'll never actually see a red light – because yellow comes first, allowing you to implement precautionary measures. Thus you won't lose a single dollar of gas. And you'll see green the most: thanks to the highly reliable, proven direct 4-path chordal configuration of the FLOWSIC 600. It's a SICK.

www.flowsic600.com



Mohammad Naim Sharafat, then Managing Director of Inter State Gas Systems, a joint venture of Pakistan's SSGC and SNGP (LEFT) and Iran's Deputy Oil Minister Javad Ouyi (RIGHT) at the signing ceremony for the Iran-Pakistan GSPA in Tehran on June 13.

now maintains that it would guarantee the supply of gas for the duration of the contract. Having no valid alternative pipeline gas import options, Pakistan signed the IP GSPA Effective Date Confirmation Letter on June 13, 2010 with Iran,

although some fine print in the agreement favours the seller more than the buyer.

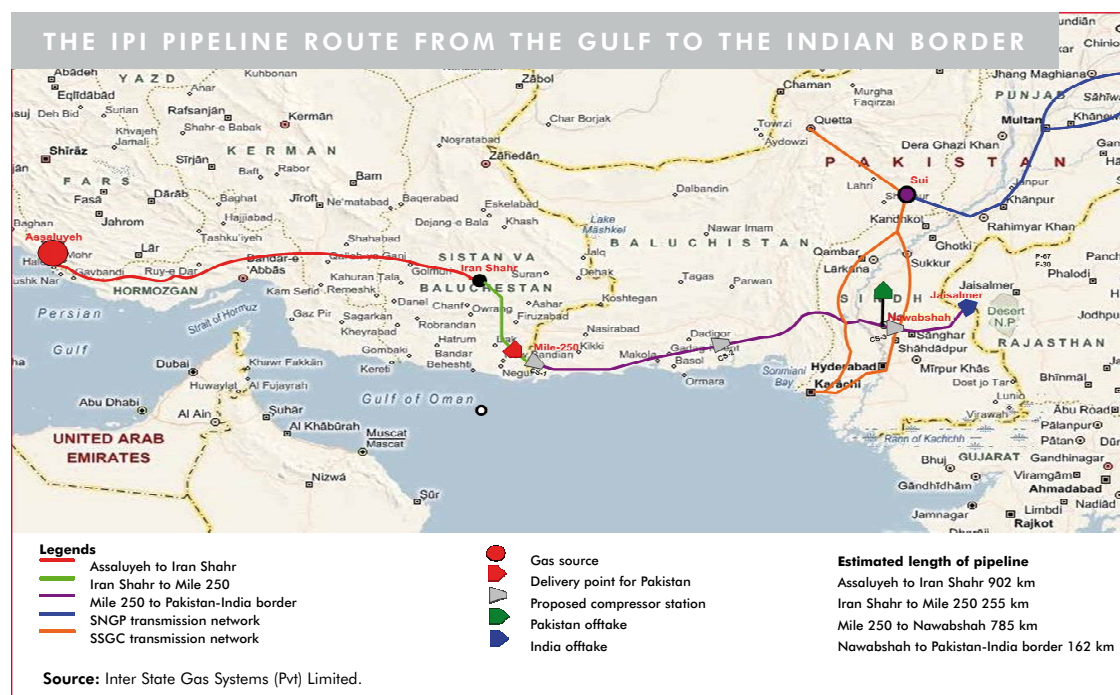
● The geopolitical dimension

The lack of progress in the IPI case is by and large linked to various geopolitical forces which exert external pressure on all parties involved. Besides the tenuous relationship between India and Pakistan, the US also plays an important role in the background as far as these two countries' relations with Iran are concerned. The pipeline itself is not so technically challenging, with a length of around 2,400 kilometres (see Figure 2).

Relations between India and Pakistan

Historically, Pakistan and India have been bitterly opposed enemies in sub-continental Asia ever since their independence, clashing militarily in 1947, 1965 and 1971. In 1984, skirmishes occurred between both countries at the Siachen Glacier (turning it into the highest battleground in the world, at more than 6,000 metres above sea level) and more recently at Kargil in July 1999.

RIGHT
Figure 2.



During the 1990s, both countries began a nuclear arms race. While they appeared to be improving relations during more recent years, the 2008 Mumbai terrorist attacks in India caused fresh tensions to rise to the fore again. Issues such as Kashmir, ethno-religious tensions and disputes over river water rights,⁵ to name a few, play an important role in India-Pakistan relations.

Pakistan refuses to accept India's hegemonic attitude towards its neighbours and distrusts Indian intentions in the region. It is suspicious of Indian intentions in general and of India's desire to exert influence in Afghanistan in particular. Meanwhile Pakistan itself is highly unstable, its territorial integrity, institutions and cohesion effectively undermined by the war in Afghanistan, amongst other factors. India's foreign policy towards Pakistan and vice versa has in the last six decades vacillated between apprehension, at best, to outright hostility.

Though Pakistan has always been open to a pipeline running over its territory to India, the idea never sat well with India, fearing dependence on its arch enemy for gas supply security. Indeed, Pakistan's position as a transit country for gas from Iran and even from Central Asia places it in advantageous position vis-à-vis India. This situation confronts India with a dilemma: it desires greater low cost trade with Iran and Central Asia, but must accept mutual bilateral trade as desired by Pakistan. In order to bypass Pakistan territory India financed a road linking the Iranian port of Chahbahar to Afghanistan for its trade with Afghanistan and to secure a foothold for its continued presence around the future Caspian oil and gas route to the Arabian Sea (also see section on the US below).

The extra-regional impact of the US and the IPI project

The background to US geopolitical interests and how they affect the IPI project merits some atten-

tion, because the US is able to exert pressure on prospective parties taking part in the IPI at the government level. Maintaining a strong presence in the Eurasian "middle ground"⁶ plays an important role in the US strategy of maintaining safe access to the Gulf region and diversifying oil and gas export routes in and from Eurasia. In that light, the war in Afghanistan bears witness to US geo-strategic concerns over long-term influence in the region.⁷ US policy vis-à-vis oil and gas flows has in general always been centred on the notion of opening up such (free) flows to global markets.⁸

After the British withdrawal east of Suez, the US gradually became the main external power factor in the Gulf region, working with regional powers to maintain control. Under the Shah prior to the Iranian revolution in 1979, Iran had been the most important ally of the US in the Gulf region for a period of almost 30 years. Since the revolution, Iran has been perceived as a geopolitical (and ideological) threat for the US, fundamentally altering the geopolitical landscape of the region and beyond. Regional support for the US shifted from Iran to Saudi Arabia and other Gulf countries during the 1980s and 1990s. Since 2003, Iraq has now been drawn into the US sphere of influence as well, notwithstanding Iraq's politically precarious situation, both domestically as well as in terms of its ability to play a cohesive role in the Middle East at large.

In this light, Pakistan and India are also important allies for the US in the Eurasian middle ground. Both countries remain important in the bigger geopolitical picture. For the US India could

6 The "middle ground" is a geopolitical term sometimes used to refer to a region in Eurasia bordering Turkey and the Caspian Sea to the East, the Gulf region to the South, Central Asia to the North and India to the East. Boon von Ochssée, T. A., *The Dynamics of Gas Supply Coordination in a New World*, (The Hague: CIEP: 2010).

7 Jalalzai, M., *The Pipeline War in Afghanistan*, (Lahore: Sang-e-Meel Publications: 2003).

8 CIEP, *Study EU Energy Supply Security and Geopolitics*, (The Hague: CIEP: 2004).

5 In spite of the existing Indus Water Treaty between the two countries.

play an important balancing role vis-à-vis China. Pakistan is an important linchpin in southern Eurasia, which borders Afghanistan and holds part of the geo-strategic key to maintaining a foothold in the region. Fearing that the dependence of both India and Pakistan on Iran for gas flows could undermine its alliance with these two countries and due to its opposition to Iran's nuclear ambitions and social, economic, political and religious agenda in the region, the US naturally opposes the IPI project and has attempted to discourage both Pakistan and India from taking part in it. As far as Pakistan is concerned, the US has been keen on encouraging LNG imports and has assured it of help in developing alternative energy sources, but this help has not yet materialised. In 2007, India was under pressure from the US to drop the GSPA for the IPI as a civil nuclear deal with the US was being finalised. It remains to be seen to what extent India prefers a close relationship with the US at the expense of gas trade with Iran in the longer term.

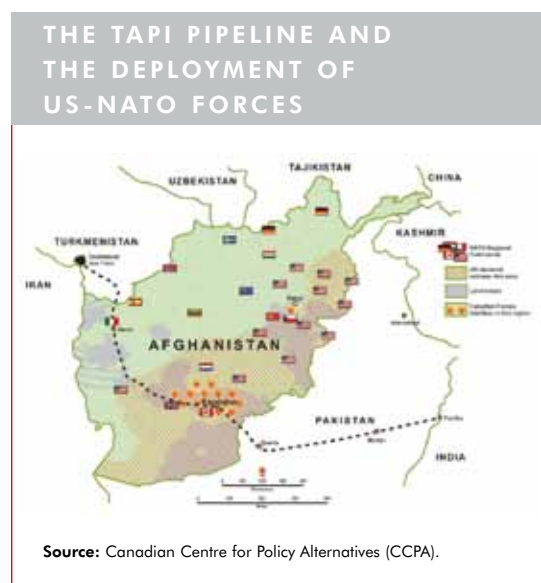
Backed by the US and the Asian Development Bank (ADB) for funding, the Turkmenistan-Afghanistan-Pakistan (TAP) pipeline deserves a special mention in this context as a potential

rival pipeline to the IPI pipeline. Pakistan and Turkmenistan signed an MOU in 1995 to bring the Daulatebad gas to Pakistan through a pipeline laid across Afghanistan. Later in 2005, the ADB funded a feasibility study for this 1,650-kilometre pipeline, having a planned capacity of 27 bcm/year. In April 2008, India also formally joined this pipeline project and it then acquired a new acronym: Turkmenistan-Afghanistan-Pakistan-India or TAPI. India signed a framework agreement along with Afghanistan and Pakistan to buy gas from Turkmenistan. The US has been an advocate of the TAPI pipeline project since the "official" removal from power of the Taliban in Afghanistan in 2001. There has been little progress on this pipeline since then, due mainly to the prevailing security situation in Afghanistan and the engagement of US-NATO forces there (see Figure 3). In this case India opted to depend on Afghanistan and Pakistan for its necessary gas supplies. Meanwhile, the buyer countries maintain serious disagreements over the pipeline route options across Afghanistan.

The TAPI pipeline could offer India and Pakistan an alternative to the IPI pipeline. Indeed, writing to the Ministry of Petroleum and Natural Gas late in 2006, for example, India's then Foreign Secretary Shyam Saran made clear "participation in the TAPI project would give us [India] leverage with Iran on the IPI project".⁹ The Qatar-Pakistan pipeline (see above) would have offered Pakistan similar leverage.

The US-led, NATO war in Afghanistan is a venture mostly centred on energy interests and on the long-run geo-strategic positioning of the US and its allies in Central Asia vis-à-vis China, India and Russia. As of this writing, the war is not going well, and the failure to achieve stability in Afghanistan seriously undermines the TAPI alternative. The establishment of a pro-Western corridor in Afghanistan for energy flows from the

RIGHT
Figure 3.



9 "Iran pipeline not easy, Delhi turns to Turkmen gas fields", *Indian Express*, May 11, 2006.



The two main Pakistani gas transmission and distribution companies are Sui Southern (SSGC) and Sui Northern (SNGP). This SNGP transmission pipeline crossing the River Indus by suspension bridge at Khairabad supplies gas to the province of Khyber Pakhtunkhwa in the north of Pakistan.

Caspian region and Central Asia to the Arabian Sea therefore remains speculative for now.¹⁰

● Conclusion

Sub-continental Asia boasts a number of growth markets for gas, most importantly India and Pakistan. The gas import options for these countries are considerable, both in terms of pipeline gas (mainly from Iran and Central Asia) and LNG. But not only geopolitical issues inhibit progress on the IPI project, economic issues are at play as well.

¹⁰ Pakistan has aided the US effort by deploying its army on the Pakistan-Afghan border, through intelligence sharing, the provision of facilities and basing rights. Naturally, the war has thus far led to regional instability, especially within Pakistan itself.

For now, Pakistan appears determined to move ahead with the project without India, and remains open to its joining later on. Given the geopolitical tensions – especially between Pakistan and India – and the politico-economic complexities of Iran's position in the region, gas market integration in southern, sub-continental Asia is a case in point when it comes to cross-border difficulties for gas flows. India faces the conundrum that Pakistan geographically holds the key to much of the potential sources of pipeline gas in both Iran and Central Asia. Even if the Iran-Pakistan pipeline goes through as planned and also considering the LNG efforts in progress, the current energy crisis, especially in the gas sector



Iran has the world's second largest gas reserves.

in Pakistan, is expected to worsen further for the next two to three years.

Iran is an important element in the equation because it is the source of potential gas supply for the project. The West's standoff with Iran over its nuclear programme and US-led sanctions make investments in Iran problematic. US-led efforts to isolate Iran stem from concerns not only over its current nuclear programme but also from Iran's unique geopolitical position in both the Middle East and Central Asia. This does not rule out foreign participation in Iran altogether, but it does squeeze Iran's access to upstream technology and capital, and thereby indirectly impacts Iran's gas export potential. Domestic demand in Iran further constrains export possibilities. Against the background of a changing geopolitical make-up in Eurasia, these difficulties highlight the considerable impact geopolitics can have on regional cross-border gas pipeline projects.

The necessity in the gas industry of long-term agreements, which rest on stability and pre-arranged commercial parameters, confronts Iran, Pakistan and India with issues they are not accustomed to dealing with. Recently, Iran and Pakistan agreed to move forward with the IPI project, with Pakistan appearing to seek reconciliation with India in an effort to proceed with fruitful bilateral

relations in general and with the IPI in particular.¹¹ It remains to be seen whether India and Pakistan can wean themselves off traditionally tense ties in the face of regional instabilities.

Timothy Boon von Ochssée has been a fellow researcher at the Clingendael International Energy Programme (CIEP) in The Netherlands since September 2008 and recently completed a PhD. His doctoral research was financed by the University of Groningen, Energy Delta Institute (EDI) and CIEP, and his dissertation The Dynamics of Gas Supply Coordination in a New World can be downloaded from the CIEP website (www.clingendael.nl/ciep/publications).

Sheikh Nadeem Shahryar is an independent consultant to the energy and petrochemical industries with more than 40 years of experience in the business. He was Head of Business Development and Senior General Manager Corporate Planning and Development at Sui Northern. He is also a member of IGU's Task Force 3 – Geopolitics and Natural Gas and can be contacted at: nadeemshahryar@gmail.com.

¹¹ "Pakistan urges India to join Iran gas network", *Financial Times*, May 19, 2010.

GAIL (India) Limited



GAIL (India) Ltd., is India's principal Natural Gas Company with activities ranging from Gas Transmission and Marketing to Processing (for fractionating LPG, Propane, SBP Solvent and Pentane); transmission of Liquefied Petroleum Gas (LPG); production and marketing of Petrochemicals like HDPE and LLDPE and leasing bandwidth in Telecommunications. The Company has extended its presence in Power, Liquefied Natural Gas (LNG) re-gasification, City Gas Distribution and Exploration & Production through equity and joint venture participations.

GAIL is one of the leading public enterprises with a consistently excellent financial track record. Turnover and Profit After Tax during the last 10 years have shown a compounded annual growth rate of 13% and 14% respectively. The Profit After Tax (PAT) during FY 2009-10 was ₹31.40 billion. The Company's turnover during FY 2009-10 was ₹249.96 billion.

GAIL owns and operates a network of over 7,800 km of natural gas high pressure trunk pipeline with a capacity to carry 157 MMSCMD of natural gas across the country.

GAIL, which is the first company in India to own and operate pipelines for LPG transmission, has a 1,900 km LPG pipeline network, 1,300 km of which connects the Western and Northern parts of India while 600 km of network is in the Southern part of the country. The LPG transmission system has a capacity to transport 3.8 MMTA of LPG.

GAIL owns and operates a gas-based integrated petrochemical plant at Pata, Uttar Pradesh with a capacity of producing 400,000 TPA of Ethylene and 410,000 TPA of Polymers i.e. HDPE and LLDPE. GAIL is setting up a 280,000 TPA Petrochemical Complex at Lepetkata, Dibrugarh, Assam at an investment of ₹54.62 billion, through a Joint Venture Brahmaputra Cracker and Polymer Limited.

GAIL was the first company to introduce City Gas Projects in India and has set up a subsidiary company "GAIL Gas Limited" to pursue city gas

distribution and CNG corridor projects. GAIL has formed eight Joint Venture companies for supplies to households, commercial users and for the transport sector in 8 cities (Delhi, Mumbai, Hyderabad, Tripura, Kanpur, Lucknow, Agra and Pune). On the global front, GAIL has established its CNG and City Gas presence in Egypt through equity participation in Fayum Gas, Shell CNG and Natgas, Egypt. It has also acquired stake in China Gas Holdings for CNG opportunities in mainland China.

Leveraging on its pipeline network, GAIL has built up a strong 12,200 km OFC network for leasing of bandwidth as a carriers' carrier. GAIL's telecom business unit – "GAILTEL" offers highly dependable bandwidth for telecom service providers across 175 locations in 10 states.

In a move towards integration along the energy chain and for sourcing supply, GAIL has entered into the area of Exploration & Production. The Company holds a participating interest in 26 oil and gas exploration blocks, of which 24 are in India and 2 blocks are in Myanmar. GAIL consortium has a participating interest in one CBM block in the country.

GAIL has set up a wholly-owned subsidiary company, GAIL Global (Singapore) Pte. Ltd. in Singapore. GAIL has formed a Joint Venture with China Gas Global Energy Holdings Limited. GAIL and China Gas are equal partners in this JV which has been registered in Bermuda. This is the first Joint Venture Company of GAIL abroad. In order to have a long term association with China Gas and also to expand business in the fast downstream Chinese gas sector, the Joint Venture (JV) will pursue opportunities in CNG, City Gas, Pipeline, CBM, LNG and E&P projects. GAIL is pursuing business opportunities in regions such as South/South-East Asia, West Asia, Russia and Central Asian Republics and African continent in the areas of exploration and production, gas transmission, CNG and city gas distribution, LNG and petrochemicals.

GECF to Develop Five-Year Strategy

By Mark Blacklock

The Gas Exporting Countries Forum (GECF) held its 10th ministerial meeting on April 19 in Oran, Algeria, and agreed to look at ways of achieving parity between oil and gas prices as part of a five-year strategy. Dr Chakib Khelil, Algeria's then Minister of Energy & Mines was the host, while ministers from Angola and Yemen attended as guests. In addition, the GECF logo was unveiled and a proposal made for a gas summit in 2011.

GECF is concerned not just about the disconnect between oil and gas prices but the fact that it has increased on the spot market. Indeed, this was one of the issues highlighted at the 24th

World Gas Conference in Buenos Aires last October, when delegates noted that Henry Hub gas was trading at about a two-thirds discount to oil on an energy equivalent basis compared to a half at the time of the 23rd WGC in June 2006. The difference is typically less on long-term contracts.

Clearly the economic downturn has played its part on the demand side, but to some extent the gas industry has been a victim of its success in expanding LNG production and exploiting unconventional gas.

"Ensuring adequate and reliable supplies of gas at prices reflecting parity with oil prices and the advantages of natural gas is a challenge," recognised delegates to the 10th ministerial meeting in their communiqué.

And even more of a challenge given that they ruled out production cuts, for GECF is keen to stress that its approach is one of cooperation



Dr Chakib Khelil, Algeria's then Minister of Energy & Mines addresses the 10th ministerial meeting.

rather than confrontation. The communiqué continued: “We encourage the model in which a gas consumer participates in upstream and gas infrastructure projects in a producer-exporter country, while a gas exporter invests in mid- and downstream networks and other gas facilities on the consumer side”.

GECF will need to look at demand-side measures such as stronger promotion of gas in a bid to increase its share of the energy market. It will also need to lobby to ensure that carbon tax regimes reflect the benefits of gas as the cleanest of the fossil fuels. To address the challenge GECF is expanding the secretariat in Doha by recruiting 13 staff to work in the office of Secretary General Leonid Bokhanovsky and the departments of administration & finance, energy & gas market analysis and statistics & gas modelling. A working group is also being set up composed of representatives of member countries that will work closely with the secretariat to develop a five-year strategy, while membership is set to increase.

“We are eager to become a member of GECF,” said Yemen’s Minister of Oil & Minerals Amir Salem Al-Aidarous at the 10th ministerial meeting, his country having joined the ranks of gas exporters in November 2009. Angola’s Minister of Petroleum, José Maria Botelho de Vasconcelos, was more circumspect given that Angola will not become a gas exporter until 2012. “We’re here to make a first contact with the organisation,” he explained.

GECF’s current members are Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Qatar, Nigeria, Russia, Trinidad & Tobago and Venezuela,



GECF Secretary General Leonid Bokhanovsky (LEFT) and Dr Chakib Khelil (RIGHT).

accounting for 43% of global gas exports. Kazakhstan, the Netherlands and Norway have observer status.

The Forum’s key meetings to date have been at the ministerial level, but in Oran delegates agreed to consider organising a summit of heads of state in 2011. They also formally adopted a logo for GECF, which was designed by staff of Algeria’s Ministry of Energy & Mines.

Progress on GECF’s work will be reviewed by the 11th ministerial meeting which is scheduled to be held in December in Doha.

Mark Blacklock is the Editor-in-Chief of International Systems & Communications Ltd.



GECF’s logo was unveiled at the 10th GECF ministerial meeting. The Forum’s website is www.gecforum.com.qa.

Angola – a New Member of the World LNG Exporters' Club

Angola is one of the world's most significant deep-water petroleum areas with over 50 major oil discoveries in the past 10 years. Since 2008 these developing fields have been capable of producing more than two million barrels per day.

Most of these discoveries have associated gas and, along with Sonangol's investments in gas exploration, Angola is placing itself to become a major player in the natural gas industry as an LNG producer coupled with domestic utilisation to benefit from the opportunities this natural resource offers.

Sonangol, the state-owned company and exclusive concession holder for liquid and gaseous hydrocarbons in Angola, has identified gas exploration as one of its strategic objectives and, therefore, made the strategic decision to conduct an exploration programme to evaluate Angola's potential in its offshore and onshore sedimentary basins.

The realisation of Sonangol's gas exploration objectives will create opportunities for further investments in other projects such as gas to power, petrochemical and other related industries to bring jobs, sustainability and social development to the people of Angola.

Sonangol and its partners are investing in the Angola LNG Project to deliver 5.2 million tonnes a year of liquefied natural gas to the

international market, starting in early 2012. This Project of national importance is the cornerstone of Angola's plan to develop its natural gas resources while promoting sustainability and growth, and will ensure the participation of companies and the national framework in natural gas industry-related activities.

In conducting its operations, Sonangol will continuously improve to achieve operational excellence and comply with petroleum and gas industry regulations and standards of health, safety and environmental best practices.

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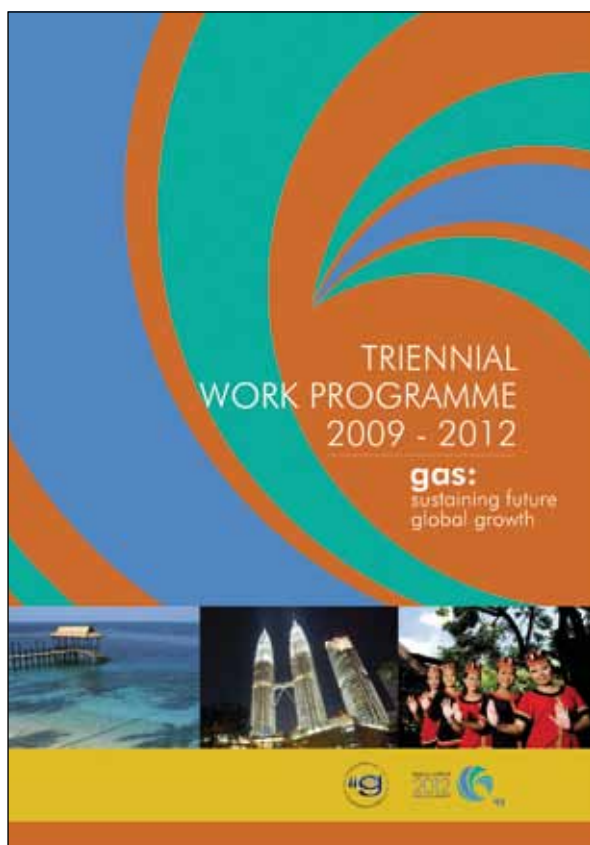
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IGU Council Meeting
Doha, Qatar

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World Shale Gas Conference &
Exhibition
Dallas-Ft Worth, USA

November 29-December 10
16th Session of the Conference of
the Parties to the UNFCCC
(COP16)
Cancún, Mexico

November 30
**2nd IEF-IGU Ministerial Gas
Forum**
Doha, Qatar

December 5
**IGU-Worldwatch Natural
Gas Symposium**
Cancún, Mexico

December 10
Eurogas General Assembly
Brussels, Belgium

2011

March 21-24
Gastech 2011 Conference &
Exhibition
Amsterdam, The Netherlands

April 5-7
IGU Executive Committee
Rio de Janeiro, Brazil

June 6-7
16th European Gas Conference
Oslo, Norway

June 10
Eurogas General Assembly
Milan, Italy

October 3-7
IGU Council Meeting
Dubrovnik, Croatia

October 18-20
4th Biennial Conference & Exhibition
of the Asia-Pacific NGV Association
Beijing, China

October 19-21
IGU Research Conference (IGRC2011)
Seoul, Korea

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Georges Liens), IAPG (Ernesto López Anadón,
27), IGU (Torstein Indrebø, 27).

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