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PGC D's first Committee session was held on the morning of June 6.

● **Programme Committee D LNG**

Chairman: Chawki M. Rahal, Sonatrach, Algeria
Vice-Chair: Seiichi Uchino, Tokyo Gas, Japan
Secretary: Mohammed Taleb, Sonatrach, Algeria

SG D.1 The standardisation of LNG qualities

Leader: Robert Klein Nagelvoort, Shell Global Solutions International B.V., The Netherlands

SG D.2 Safety and technology developments in LNG terminals and vessels

Leader: Bruno Øystein Larsen, Leif Höegh & Co. AS, Norway

SG D.3 The future of the LNG spot market

Leader: Boyoung Kim, Korea Gas Corporation, South Korea

During WGC 2006, PGC D organised two Committee sessions and three expert fora. The oral reports of the three Study Groups were given and the results of PGC D's work in terms of meeting the objectives of the Triennial Work Programme for 2003-2006 are summarised in *Table 1*, while *Table 2* shows the contribution of each PGC D topic or session to IGU's three Strategic Guidelines for 2003-2006:

- Gas as the fuel of choice preceding a sustainable energy system;
- Technology, industry efficiency and customer focus; and
- The industry's role as a responsible corporate citizen.

RIGHT
Table 2.

PGC D: CONTRIBUTION TO STRATEGIC GUIDELINES FOR 2003-2006				
Topic, session or expert forum	Technology, industry efficiency and customer focus	Gas as the fuel of choice preceding a sustainable energy system	The industry's role as a responsible corporate citizen	Remarks
PGC D report	Yes	Yes		To be improved
Topic of SG D.1	Yes	Yes	Yes	To be continued
Topic of SG D.2	Yes	Yes	Yes	
Topic of SG D.3	Yes			
Session n°1	Yes	Yes	Yes	Many interests
Session n°2	Yes	Yes	Yes	
Expert forum n°1	Yes	Yes	Yes	Many interests
Expert forum n°2	Yes	Yes	Yes	
Expert forum n°3	Yes	Yes	Yes	

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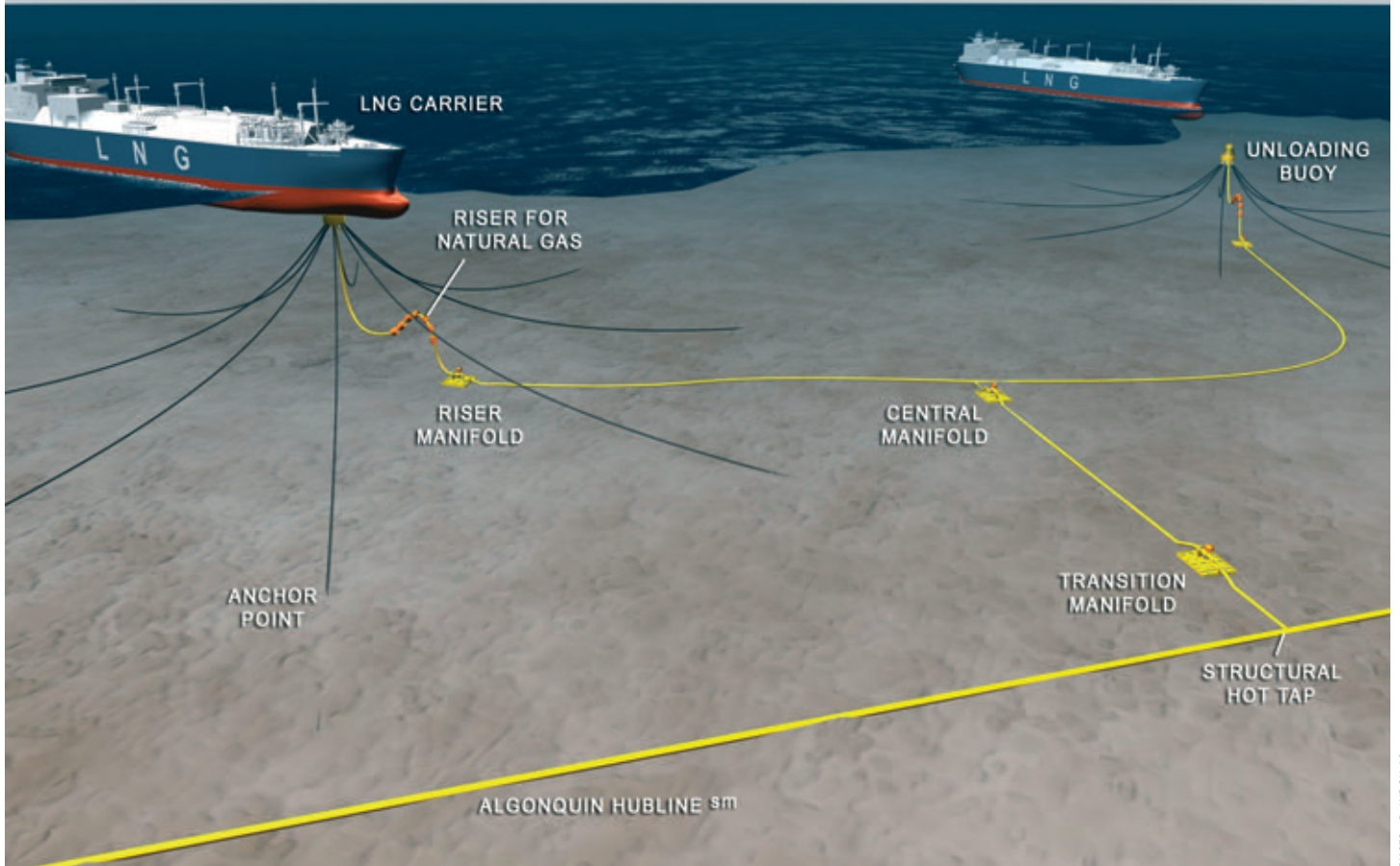


PHOTO: © INOOK AS

This is an artist view of the Neptune LNG receiving terminal which Höegh LNG is developing together with Suez LNG North America.

The terminal will be located in Massachusetts Bay offshore Boston in the United States and will compliment the existing onshore receiving terminal in Boston operated by Suez. The Deep Water Port licence applied for is scheduled to be approved by the end of 2006. Höegh LNG has ordered 3 ships for the Neptune projects. The first ship will be delivered forth quarter 2009, which is the start-up date for the project.

Höegh LNG – finding the better way



HÖEGH LNG

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Presentation of TWP 2006-2009

It is a custom of World Gas Conferences that the final working session is dedicated to a presentation of the Triennial Work Programme (TWP) for the forthcoming Triennium.

Thus on the afternoon of Friday, June 9, Ernesto López Anadón and Roberto Brandt, respectively the incoming IGU President and Coordination Committee Chairman, together with the incoming Chairs of the Working Committees, Programme Committees and Task Forces, introduced the TWP for 2006-2009. The IGU Secretary General, Peter Storm, as well as the incoming Vice Chairman and the Secretary of the Coordination Committee, Ho Sook Wah and Andrés Kidd, also participated in the presentation, which was followed by a question and answer session with the audience.

Mr Lopez Anadón opened the session by extending his congratulations to the Dutch Presidency on the positive outcome of the 23rd World Gas Conference. He went on to explain that the organisation of the 2006-2009 Triennium was well under way, both as regards the technical programme and the 24th World Gas Conference in Buenos Aires, set for October 5-9, 2009.

He was followed by Mr Brandt who introduced the incoming Chairs of the Committees and Task Forces. Apart from the nine standing Committees that IGU has defined to cover specific areas of the natural gas industry, there are two Task Forces for the 2006-2009 Triennium. The Task Force on Research and Development continues the work of its predecessor during the Dutch Triennium, while a new Task Force on Gas Market Integration will tackle this issue of growing international concern

and interest, and which is specifically identified in the Strategic Guidelines for 2006-2009.

Mr Brandt explained the strategic nature of the work to be conducted, which can be inferred from the slogan chosen for the Triennium "The Global Energy Challenge: Reviewing the Strategies for Natural Gas". He also described the reasoning and criteria behind the definition of the Strategic Guidelines on which the 2006-2009 TWP was built.

The Global Energy Challenge: Reviewing the Strategies for Natural Gas towards 2030

The focus here will be on: global energy needs, tendencies and prices; the supply and demand of natural gas; competitiveness and cooperation vs. alternative energy sources; regulatory trends; environmental/climate policy regimes; and new technologies and uses for natural gas.

Contribution of the Natural Gas Industry, in terms of Security of Supply, Safety and Environment

The focus here will be on: gas sourcing; flexibility; infrastructure; safety; and environmental concerns.

Regional Gas Market Integration, as a Key Driver for Sustainable Economic Growth

The focus here will be on: contracts and trading; international treaties; regulation; and financing mechanisms.

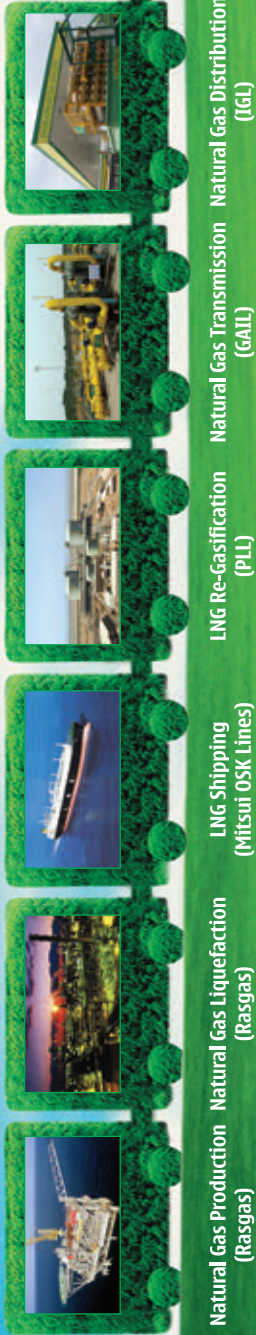
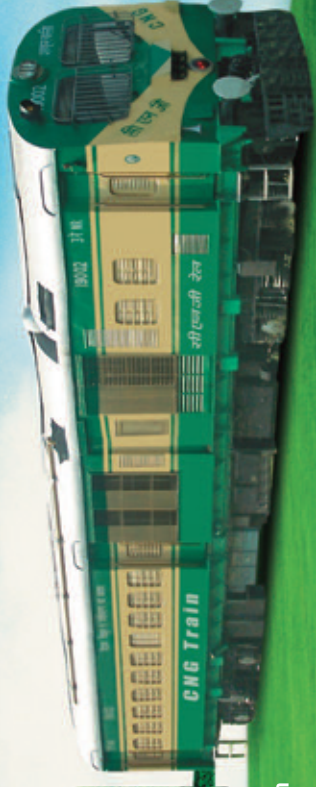
Mr Brandt concluded by explaining that the final version of the 2006-2009 TWP will be presented for approval to the IGU Council during its meeting in Lima, Peru, in October.

The floor was then given to the Chairs of the Committees and Task Forces, who each gave a brief summary of the scope and purpose of their work, and the presentation wound up with a question and answer session.

Please see the next section of this magazine for more detailed information about the new TWP including a full list of Study Groups and topics.



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Gazprom

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Acquisition of 72.663% stake
in OAO Sibneft

Financial Advisor
December 2005 Russia



TNK-BP

Non disclosable
Sale of Saratovneftegaz

Financial Advisor
December 2005 Russia



E.ON AG/E.ON Ruhrgas

€690 million
Acquisition of
Caledonia Oil & Gas

Financial Advisor
November 2005 UK

A Passion to Perform.

Deutsche Bank



THE NEW IGU TRIENNium

Argentina might be new to the Presidency but the country's delegates have a long history of participation in IGU Committee work, experience that was invaluable in developing the new Strategic Guidelines and Work Programme. This section starts with an article by the President and the Chairman of the Coordination Committee, who explain the thinking behind the framework for the 2006-2009 Triennium. Then they participate in a question and answer session and we round off with a breakdown of the Work Programme by Committee, Study Group and Task Force.

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DAVID J. O'REILLY
CHAIRMAN & CEO
CHEVRON CORPORATION



Energy will be one of the defining issues of this century. One thing is clear: the era of easy oil is over. What we all do next will determine how well we meet the energy needs of the entire world in this century and beyond.

Demand is soaring like never before. As populations grow and economies take off, millions in the developing world are enjoying the benefits of a lifestyle that requires increasing amounts of energy. In fact, some say that in 20 years the world will consume 40% more oil than it does today. At the same time, many of the world's oil and gas fields are maturing. And new energy discoveries are mainly occurring in places where resources are difficult to extract, physically, economically and even politically. When growing demand meets tighter supplies, the result is more competition for the same resources.

We can wait until a crisis forces us to do something. Or we can commit to working together, and start by asking the tough questions: How do we meet the energy needs of the developing world and those of industrialized nations? What role will renewables and alternative energies play? What is the best way to protect our environment? How do we accelerate our conservation efforts? Whatever actions we take, we must look not just to next year, but to the next 50 years.

At Chevron, we believe that innovation, collaboration and conservation are the cornerstones on which to build this new world. We cannot do this alone. Corporations, governments and every citizen of this planet must be part of the solution as surely as they are part of the problem. We call upon scientists and educators, politicians and policy-makers, environmentalists, leaders of industry and each one of you to be part of reshaping the next era of energy.

Dave

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The Global Energy Challenge: Reviewing the Strategies for Natural Gas

By Ernesto López Anadón and Roberto Brandt

The Argentine Triennium begins in the landmark year of IGU's 75th anniversary, a suitable vantage point from which to look at the challenges and prospects of the world gas industry.

Natural gas has evolved dramatically, from the "nuisance only fit to be flared" of the early days to its present role as a key source in the global energy balance, in terms of competitiveness, operational alternatives and contribution to sustainable development.

The gas industry is still in its growth stage, and the dynamics of geopolitical and economic developments across the world pose both a



Natural gas has evolved dramatically, from the "nuisance only fit to be flared" of the early days to its present role as a key source in the global energy balance.

challenge and a responsibility of defining the optimal role for natural gas in the future global energy mix.

In this context, IGU has an important part in promoting gas market integration as a means to facilitate economic growth, social development and sustainability. Furthermore, its objectives of fostering a healthy business environment within the industry, and a constructive dialogue with governments and regulators, are well in line with this role.

It is therefore crucial that IGU continues to strive in reaching for its Vision to be the most influential, effective and independent non-profit organisation, while serving as the spokesman for the gas industry worldwide.

● Objectives

In line with its Mission, during the 2006-2009 Triennium IGU will continue to increase its value to the membership, promoting the exchange of knowledge and information, and providing solid and concrete reference tools for decision-makers.

It is the purpose of IGU to contribute to a clearer insight on the key energy and natural gas industry challenges, and the alternative ways to tackle them, while highlighting those issues which require greater attention from representative stakeholders.

Although it is expected that energy-related issues will face changes during the next decades, the course of the natural gas industry in the medium and long term will greatly depend on the short-term decisions to be taken in the sector, and it is IGU's objective to play a very strong role in this process. Furthermore, it will take an active stance to address supply-related concerns such as those related to gas reserves and exploration, infrastructure, international gas contracts and regulation, and geopolitical aspects of security of supply.

IGU will continue to promote the development and application of best practices and new

technologies designed to optimise the economics of the entire gas chain, while emphasising sound environmental performance, safety and reliability. In the same way, and inspired by the principles of sustainability, IGU encourages the rational and responsible use of gas as a non-renewable energy source, scouting actively for the best practices, and establishing reliable parameters of utilisation.

Finally, IGU will continue to expand and diversify, increasing its membership both in the regional and corporate arenas.

● The Strategic Guidelines for the 2006-2009 Triennium

IGU is focusing its objectives and activities within three timeframes:

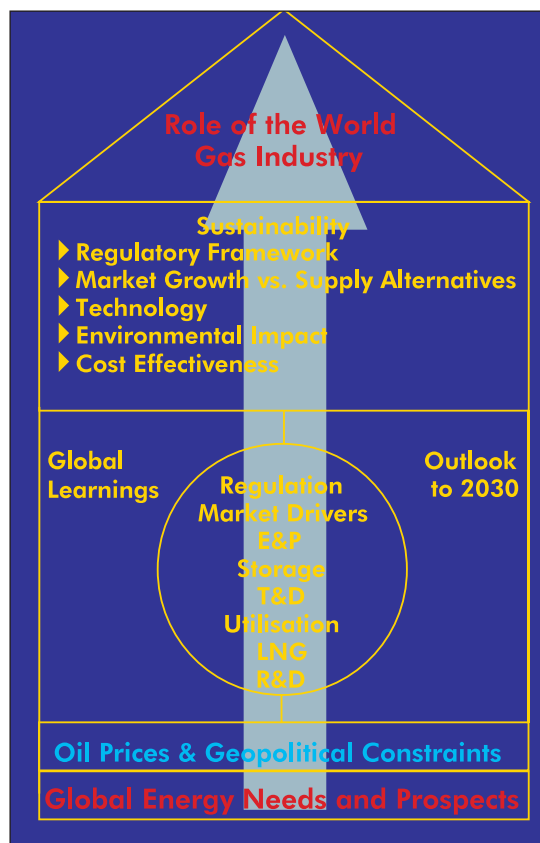
- The short term, where little can be done on infrastructure, but a lot can be accomplished at a policy level;
- The medium term, where new technologies and planned system expansion are considered; and
- The longer term, where major energy-domination shifts are likely, and where IGU's policy recommendations should have more relevant impact.

These three timeframes underlie the 2006-2009 Triennial Work Programme (TWP), which is based on a retrospective/prospective analysis of the world gas industry's experiences and challenges, and will include the development of a collective outlook to 2030, as shown in *Figure 1*.

The 2006-2009 TWP is based on the following Strategic Guidelines:

- 1** The Global Energy Challenge: Reviewing the Strategies for Natural Gas towards 2030;
- 2** Contribution of the Natural Gas Industry, in terms of Security of Supply, Safety and Environment; and
- 3** Regional Gas Market Integration, as a Key Driver for Sustainable Economic Growth.

These Strategic Guidelines are briefly described below.



LEFT
Figure 1.

The Global Energy Challenge: Reviewing the Strategies for Natural Gas towards 2030

The recent developments in the global energy scenario lead the diverse players involved in natural gas around the world to pose and answer a basic strategic question: where is the gas sector placed and in which direction should it evolve?

This is critically important, considering the magnitude and long-term nature of the gas chain investments, for which reason decision-makers need to maximise market intelligence in order to become more effective.

IGU must work on the favourable perception of the winning transition fuel, overcoming with sound examples and arguments the questions related to supply sources and geopolitical risks, sizeable and flexible international transport systems, and distribution.



A prospective analysis of the key drivers for the next 25 years will be developed on the following issues:

- World energy needs, tendencies and prices;
- Supply and demand of natural gas: exploration and production, infrastructure, trade (LNG and pipelines) and market segments;
- Global security of supply concerns;
- Frame-breaking markets;
- Competitiveness against and cooperation with alternative energy sources, and “de-linking” of gas prices from oil references;
- Regulatory trends;
- Environmental and climate policy regimes;
- New technologies; and
- Development of new uses for natural gas.

The 2030 natural gas industry outlook study will aim to become a key reference for policy and corporate decision-makers. Simultaneously, it will help integrate IGU’s Working and Programme Committees, by building on the complementary insights of the different industry segments, and contributing to ensure the overall consistency of the 2006-2009 deliverables.

Contribution of the Natural Gas Industry, in terms of Security of Supply, Safety and Environment

Although there are different views on future energy requirements, there is little debate that the related industries face the need to service an increasing market demand, and – in addition to being competitive – have to demonstrate that the sourcing is reliable, safe and environmentally sound.

While the first Strategic Guideline addresses, among other topics, the global framework in which such challenges may have to be faced, the short-term intricacies of supply will be analysed from a more technical and operational perspective.

Building on what has been developed in earlier programmes, particularly during the very productive Dutch Triennium (2003-2006), IGU will tackle these issues along the entire supply chain,

including the human resources and training aspects, of increasing significance for the medium and long-term horizons.

On exploration and production, the TWP will aim to deliver a realistic estimate of reserves on a regional basis, and identify economic, technological and political challenges for their development. Difficult reservoirs and unconventional gas sources (methane hydrates, coal-bed gas and aquifer gas) will also be investigated, given their increasing significance for the assessment of the world gas resource base. In addition, the work programme will cover some environmental issues related to natural gas production which are high on the current agenda of the upstream gas business, such as sustainable development in Arctic conditions or CO₂ sequestration.

The ongoing evaluation of underground storage will be continued, with the purpose of providing a practical picture of how these facilities can effectively serve the gas chain in terms of supply flexibility and feedstock of reserves for the world’s largest markets. New technologies will also be addressed.

Further downstream, transmission and distribution infrastructure expansion and maintenance will continue to be studied, with a strong emphasis on safety, environmental implications and the development of new technologies.

The dramatic growth of LNG opens a whole new perspective on global supply, leading to the need to engage key issues related to its role in the reliable provision of natural gas. These comprise gas quality and standards, safety and reliability in liquefaction plants and terminals, new technologies (including off-shore and remote plants), contractual issues and new trading practices, among others.

It should be stressed that safety and the policy of zero-tolerance for accidents rank very highly on IGU’s agenda, and will continue to be engaged throughout the entire gas chain.



The new TWP was presented during a special session on the last day of WGC2006. Each Committee and Task Force Chairman addressed delegates and the picture shows Dr Vladimir Onderka, Chairman of WOC 2, at the podium.

At the utilisation level, IGU will continue to study and highlight key sectoral and regional gas market developments, and will pursue the elaboration of representative efficiency indicators.

Finally, it should be noted that these studies will be conducted under a “sustainability umbrella” encompassing the whole chain, from gas field to burner tip, and considering environmental issues related to sustainability, such as emissions, energy efficiency and clean development mechanisms. IGU will also focus on compatibility and cooperation with the development of renewables.

Regional Gas Market Integration, as a Key Driver for Sustainable Economic Growth

During the 2003-2006 Triennium, the Dutch Presidency rightly pointed to the role of the gas industry as a responsible corporate citizen.

Governments throughout the world, either on their own initiative, driven by public opinion, or by

following a particular trend – as occurred with the drive towards liberalisation – are changing the structure and rules of the energy and gas businesses, with diverse final outcomes.

Moreover, entire regions – with Europe as the main exponent – have realised the importance of harmonising these rules, although the process is proving to be far from simple.

Large natural gas projects often involve many countries and require appropriate investment and operational conditions. Solid public and private partnerships, guarantees and international contractual agreements are therefore of paramount importance in helping to solve major regional energy issues.

Finally, the clear trend towards more import dependence in the natural gas market, and the related exploration abroad, the remoteness of supply sources, transit and transmission agreements, and complex geopolitical, social



and security issues, strongly suggest that IGU, as spokesman of the global gas industry, should take further steps to promote regional market integration in the gas sector. Recognising this as a driver to sustainable social and economic development, IGU will support a healthy investment and business climate, and high-quality dialogue between governmental and corporate players.

For this purpose, IGU's 2006-2009 TWP will also address how to encourage regional energy and gas integration ventures through balanced international treaties, regulation and financing mechanisms.

● **Cooperation with other international energy organisations**

IGU will continue to work closely with other international energy organisations such as the World Petroleum Council (WPC), the World Energy Council (WEC), the LNG Conferences (of which IGU is a major sponsor), the World Forum on Energy Regulation, the International Energy Agency (IEA) and several regional entities.

Following the inclusion of the new IGRC (recently renamed IGU Gas Research Conference), IGU plans to increase the perception of all players along the gas chain about the need for ongoing research, particularly in the areas related to the

environment, rational and efficient use of natural gas, and safety. To this end, and aiming to increase its organisational efficiency, IGU will encourage a positive interaction with the working groups of the Coordination Committee (CC).

In a similar manner, the insertion of the new IGM (IGU Gas Marketing) will help develop favourable synergies with the CC, in issues related to the marketing of natural gas.

● **Conclusion**

The world is undergoing rapid changes, and neither the global energy scenario nor the gas industry is immune. Although these changes can be exciting and laden with potential, they can also be the cause of uncertainty and hesitation.

It is in this context that IGU will act as a beacon, generating valuable tools for medium- and long-term decision-making. IGU must continue to strengthen its role as spokesman for the world gas industry and to increase its contribution to the development of future energy markets, while reinforcing the synergies among its members and generating conditions for continuous improvement and competitiveness.

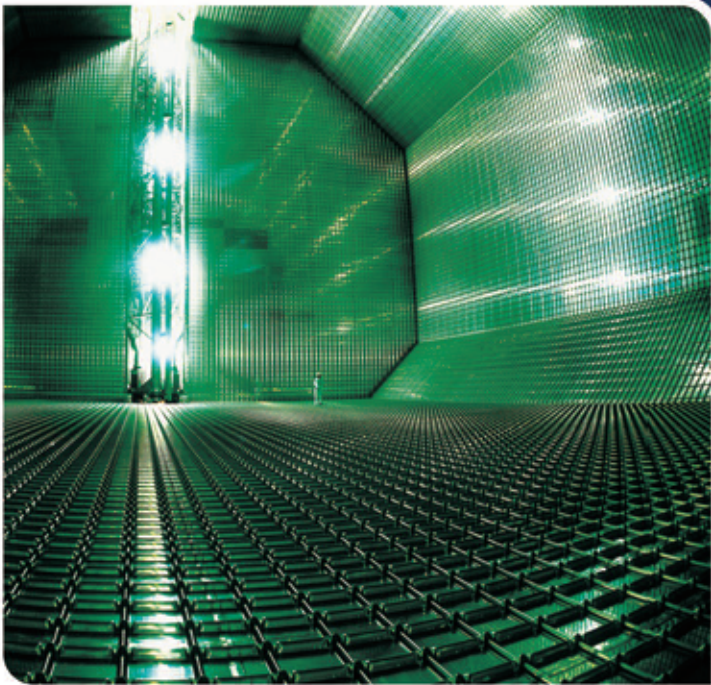
IGU has the resources, especially regarding the human potential distributed around the world, to increase the value of the gas industry for the international community. For this reason, the 2006-2009 TWP will focus on "Reviewing the Strategies for Natural Gas", as a means to enhance the industry's significant contribution to economic growth, social development and sustainability. Indeed, this will be the theme for the 24th World Gas Conference in October 2009 in Buenos Aires, which will end the Triennium. This will be the first WGC in the Southern Hemisphere, a fact that provides a clear indication of the increasingly global nature of the gas industry.

Ernesto López Anadón is the President of IGU and Roberto Brandt is the Chairman of the Coordination Committee.



The Argentine Triennium will culminate with the 24th WGC in Buenos Aires.

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Argentina Assumes the Presidency

Mark Blacklock interviews Ernesto López Anadón

IGU's new President, Ernesto López Anadón (**ELA**), sees dialogue as being at the core of his and his colleagues' mission. He wants to enhance dialogue between governments and the private sector, between producers and consumers, and between those with short-term and those with long-term perspectives. He talked to the editor of the IGU Magazine (**MB**).

MB: For the first time in the history of IGU the Presidency is now held by a South American country, what perspective does Argentina bring to the role?

ELA: Argentina has a well developed gas industry. It started many decades ago and has been evolving continuously until today. We can now say that we have a very modern and mature industry that not only produces, transports and distributes gas inside the country, but also exports and imports it.

We are also surrounded by countries in different stages of evolution of their own gas industries. Brazil, for example, is making enormous efforts in enhancing the use of gas for the industrial and transportation sectors. Bolivia, Peru and Venezuela are trying to monetise their gas reserves. Chile is trying to secure its gas supply sources.

This means that the region, sooner or later, will have to focus on solving the present disruptions in cross-border transactions.

Precisely, one of the key issues that we want to tackle during our Triennium will be how to contribute to the success of cross-border transactions as a way to secure sustainable regional economic growth.

Of course we agree that IGU has to continue promoting the use of gas, but nowadays a new challenge is emerging for our Union, and that is to promote free trade and transmission among



The new President, Ernesto López Anadón, takes the IGU globe.

countries as a way of contributing to the required security of supply.

MB: Peru has just joined IGU and the October 2006 Council meeting is being hosted in Lima, how do you see IGU membership – both Charter and Associate – developing during the 2006-2009 Triennium?

ELA: We believe that we have an important task in adding Charter and Associate Members to IGU, and hope to continue the successful trend experienced during the Japanese and Dutch Triennia. In that respect, and as achieved recently with Peru, we will devote a special effort to the incorporation of new Latin American countries to the membership.

MB: Could you explain the thinking behind establishing the Strategic Guidelines for 2006-2009?

ELA: The gas industry has evolved dramatically during the past decades. Gas experienced many changes from an associated product of oil, flared in most cases, to the fuel of choice it represents nowadays.

In the early days of our industry, due to the need to monetise stranded reserves or to stop flared gas due to regulations, the industry in general and IGU in particular developed an intense campaign to promote the use of gas.

The results of this campaign are well known: today gas is the preferred fuel, seen as the bridging fuel towards other renewable sources of energy (such as hydrogen), environmentally friendly and efficient in the use of energy. It is abundant, clean and flexible.

Consequently, natural gas is emerging as the most important and dynamic source of energy, given its advantages over other fuel sources. Deregulation and the move towards clean fuels have created an enormous market for natural gas across the globe.

Gas also has been strongly affected by politics, due to the fact that in large regions the share of gas in the total energy basket has reached a significant proportion. As a consequence, political forces try to make gas for consumers as cheap as possible through the regulation of most segments of the gas business.

We also have to take into consideration the large mismatches between demand and supply, which imply an increased importance of cross-

border trade. Therefore, we believe that IGU has the challenge and the responsibility of answering these questions while defining future outcomes for gas and its role in the global energy mix.

In that respect, we will perform a prospective analysis towards the year 2030, and assess the contribution of our industry in terms of environment, safety and security of supply, while emphasising the need for a rational and efficient use of gas and promoting regional gas market integration as a key driver for sustainable economic growth.

MB: In closing, would you like to say a few words about the Triennial Work Programme before we discuss this with the Coordination Committee Chairman?

ELA: The leadership of the Committees and Task Forces is in place (see *Table 1*) and we have a very enthusiastic and qualified team. Membership is building up and we look forward to a successful programme.

CHAIRS AND VICE-CHAIRS OF WORKING COMMITTEES (WOC), PROGRAMME COMMITTEES (PGC) AND TASK FORCES (TF)

LEFT
Table 1

Committee	Chair	Vice-Chair
WOC 1 Exploration and Production	Dr Vladimir S. Yakushev, Russia	Mr Boumediene Belkacem, Algeria
WOC 2 Storage	Dr Vladimir Onderka, Czech Republic	Mrs Hélène Giouse, France
WOC 3 Transmission	Mr Helge Wolf, Germany	Mr Eric Dam, The Netherlands
WOC 4 Distribution	Mr Jeremy Bending, UK	Mr Alessandro Soresina, Italy
WOC 5 Utilisation	Mr Jean Schweitzer, Denmark	Mr Tatsuo Kume, Japan
PGC A Sustainable Development	Mr Knut Barland, Norway	Mr Juan Puertas, Spain
PGC B Strategy, Economics and Regulation	Mr Pedro Moraleda, Spain	Dr Colin D. Lyle, UK
PGC C Gas in Developing Countries	Dr Mohd. Farid b. Mohd. Amin, Malaysia	Mr Antonio Luiz Fernandez dos Santos, Brazil
PGC D LNG Issues	Mr Seiichi Uchino, Japan	Mr Alaa Abujbara, Qatar
TF Research and Development	Mr Marc Florette, France	Mr Mel Ydreos, Canada
TF Gas Market Integration	Mr Jorge Doumanian, Argentina	Mr Dietmar Spohn, Germany

Intergraph Power Industry Geospatial Solution in Action

E.ON Bayern AG, headquartered in Regensburg, Germany is one of the largest regional power service companies in the country, supplying customers over an area of 54,000 square kilometres with electricity and gas. E.ON was formed in 2001 from the merger of four regional supply companies – and as a result had been running a total of six legacy geographical information (GIS) systems.

While 50% of E.ON Bayern's GIS systems operated similarly, each required separate administration and maintenance – and each of the formerly independent companies had been handling the recording and documentation of information differently.

Going forward, the company has two objectives for its GIS technology environment: to cut software operating and maintenance costs and to create a single, uniform database for the entire organisation, according to E.ON Bayern's Technical Director Hermann Wagenhäuser (historically the organisation has spent around €200 million per annum on technology upgrades and maintenance). Importantly, a unified GIS environment should ensure that consistent, quality information on E.ON Bayern's medium and low voltage network is shared across the company. This will benefit both E.ON users as well as construction and other external contractors needing to know the location of power supply cables.

E.ON Bayern carried out a successful pilot using Intergraph's G/Net Electric Geospatial Resource Management (GRM) system at two of its customer

centres before the roll out of G/Net Electric across the company. Intergraph has customised the software and is also responsible for migrating E.ON Bayern's comprehensive database.

Intergraph is developing a number of system interfaces for the new, integrated environment. This will include an interface to SAP PM. This module will contain all the information needed for maintenance-related network objects, while G/Net will support data protection for network topology information. The merger of the Intergraph GIS and SAP PM software environments ensures a fully up-to-date, future-proof information database that will benefit both business and technical users. G/Electric will also be linked to network calculation programs.

The scale of the project is considerable. G/Net Electric has been developed for large and medium companies and can be run on over 1,250 workstations. Around 220 users can access geospatial information of any kind simultaneously: in the case of E.ON Bayern 660 are also using G/Net Electric's Internet browser, mobile access facility.

Importantly, G/Net's data model describes the objects (assets) such as cables or distribution cables that are saved in its (Oracle) database – and can be expanded to accommodate customer-specific fields. Another key benefit is G/Net Electric's standard configuration, which displays all the key electricity network operator workflows.

E.ON Bayern profile

E.ON Bayern AG was created five years ago as a result of the merger of four regional power suppliers – Energieversorgung Oberfranken, Isar-Amperwerke, OBAG and Uberlandwerk Unterfranken: it has almost 3,600 employees and a turnover of around €2.6 billion. The company supplies some two million customers over an area of 54,000 square kilometres with 29 billion kWh of electricity. E.ON Bayern runs 19 customer centres and one service centre.

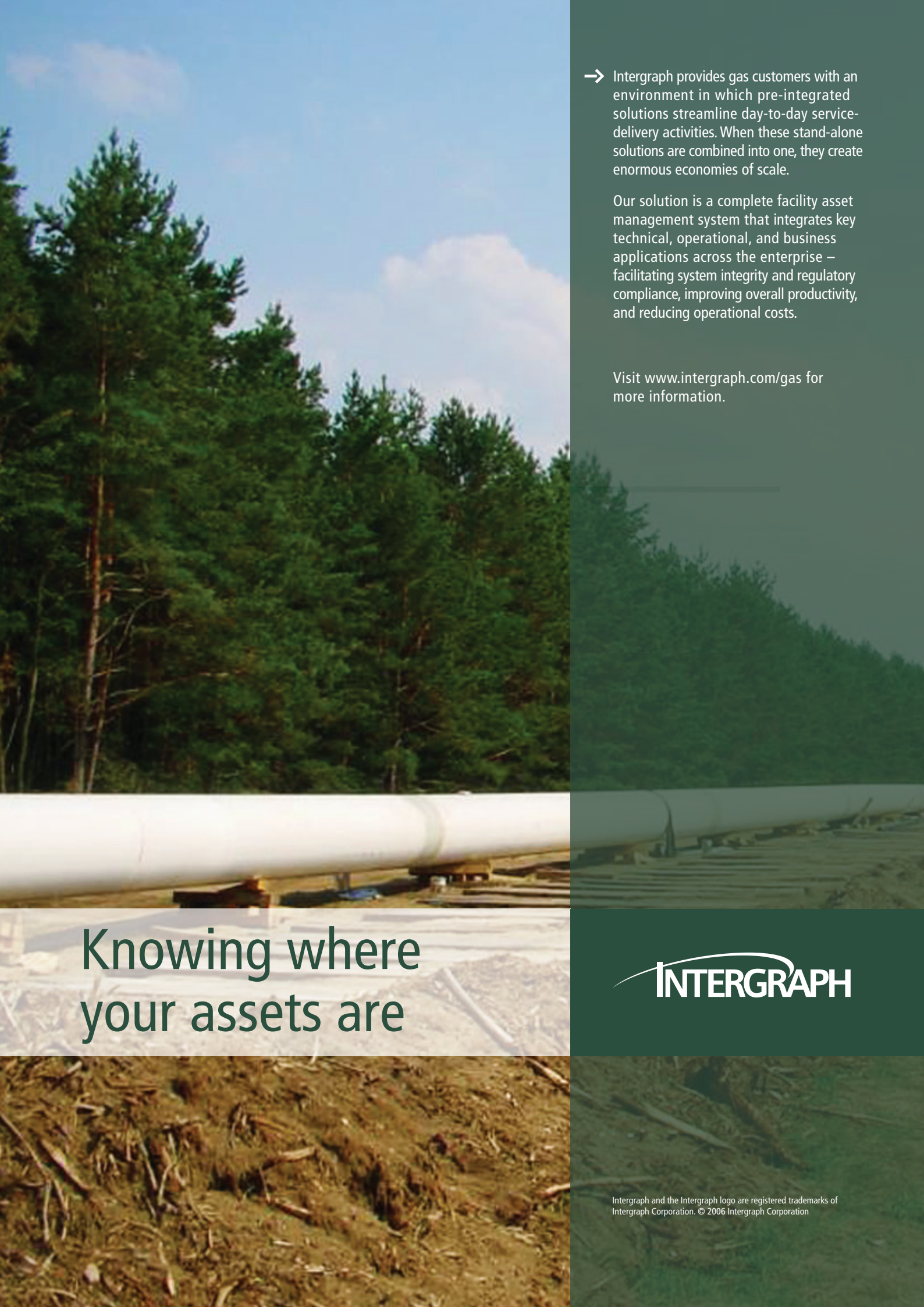
Intergraph profile

Intergraph is a leading software and services provider for the Spatial Information Management (SIM)

industry – enabling its customers to manage and visualise complex data in a comprehensible, practical manner using components such as digital maps to make better and faster operational decisions. Power and other companies and governments in over 60 countries rely on Intergraph's technology and services, which have been supporting both private and public sector organisations for 35 years.

www.intergraph.com

G/Net is a ready-to-use, customisable solution which can be used to display information spatially in order to optimise core operational processes for both large and medium network operators.



→ Intergraph provides gas customers with an environment in which pre-integrated solutions streamline day-to-day service-delivery activities. When these stand-alone solutions are combined into one, they create enormous economies of scale.

Our solution is a complete facility asset management system that integrates key technical, operational, and business applications across the enterprise – facilitating system integrity and regulatory compliance, improving overall productivity, and reducing operational costs.

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The Triennial Work Programme 2006-2009

Mark Blacklock interviews Roberto Brandt

Roberto Brandt (**RB**) has blended continuity and innovation in developing the Triennial Work Programme (TWP) for 2006-2009, which he hopes will maximise value to IGU members and produce worthwhile reference tools for the industry. Brandt is the CEO of Metrogas SA in Buenos Aires and the new Chairman of IGU's Coordination Committee.

Brandt is taking over the baton from Bert Panman and will be building on the work of his Dutch colleagues who led the 2003-2006 Triennium. About half of the study topics are continuing with work initiated during 2003-2006 or in previous Triennia and the other half are new. He envisages a total Committee and



Roberto Brandt (ABOVE LEFT) is the new CC Chairman, while the new CC Secretary is Andrés Kidd (ABOVE RIGHT).

Study Group membership, including delegates, alternates and corresponding members, of 500+. The Committees will normally meet twice a year and the new CC Secretary is Andrés Kidd.

MB: How have the Strategic Guidelines been translated in terms of the TWP?

RB: The Strategic Guidelines provide the overall conceptual framework for the TWP, which intends to cover both strategic and operational issues considered of relevance for the world gas industry.

The 2006-2009 TWP will be developed by nine Working and Programme Committees, complemented by two specific Task Forces, and has been subdivided into 27 key topics (see *Table 2*).

In terms of the liaison between the Strategic Guidelines and the work of the technical



STUDY GROUPS AND TOPICS

Committee	Study Group	Topic
WOC 1	SG 1.1	Remaining conventional world gas resources and technological challenges for their development.
WOC 1	SG 1.2	Difficult reservoirs and unconventional natural gas resources.
WOC 2	SG 2.1	UGS database.
WOC 2	SG 2.2	UGS technology improvements.
WOC 2	SG 2.3	Intelligent UGS (iUGS).
WOC 3	SG 3.1	Impact of regulation on gas transmission, safety and security of supply.
WOC 3	SG 3.2	Review of new technologies in pipeline and construction monitoring.
WOC 3	SG 3.3	Contribution of gas transmission to climate protection and sustainable development.
WOC 4	SG 4.1	Review of asset management strategies and practices.
WOC 4	SG 4.3	Development of best practices for the prevention of third party interference damage to distribution assets.
WOC 5	SG 5.1	Industrial utilisation: distributed energy and other specific issues (fuel switching, technical research, regulatory aspects, H ₂). Efficiency indicators.
WOC 5	SG 5.2	Domestic and commercial utilisation: distributed energy and other specific issues (new appliances, home fuelling, air cooling, combination with renewables, tariff/regulation). Efficiency indicators.
WOC 5	SG 5.3	Natural Gas Vehicles (NGVs): continuation of current project.
PGC A	SG A.1	Evolution, expansion and promotion of IGU's Guiding Principles on Sustainable Development and Climate Change.
PGC A	SG A.2	Gas industry response to climate change: studies on the reduction of greenhouse gases will include cooperation between Algeria and Nigeria to reduce gas flaring and new generation plants in Norway. Other studies will be added.
PGC B	SG B.1	Supply and demand to 2030.*
PGC B	SG B.2	Gas price formation and trends.*
PGC B	SG B.3	Regulation and future industry structure.
PGC C	SG C.1	Developing gas markets in South West and Central Asia: India, Pakistan, Iran, Turkmenistan and Azerbaijan.
PGC C	SG C.2	Developing gas markets in South America.
PGC C	SG C.3	Developing gas markets in south-eastern Europe.
PGC D	SG D.1	LNG quality and inter-changeability.
PGC D	SG D.2	LNG contract clauses for more flexible global LNG markets.
PGC D	SG D.3	Remote and offshore LNG facilities.
TF R&D	Objective 1	Role and structure of R&D within the gas industry.
TF R&D	Objective 2	Focal point of IGRC.
TF GMI	Objective 1	Harmonising the structures of the energy and gas business for regional integration.
TF GMI	Objective 2	Governmental and corporate players, partners for success.

* Study Group outputs will be used as partial inputs for a 2030 Natural Gas Industry Outlook study, which will be coordinated by PGC B (and the CC Chairmanship) with support from all other Committees.



Committees, firstly the implementation of Strategic Guideline 1 (The Global Energy Challenge: Reviewing the Strategies for Natural Gas towards 2030) will be led to a great extent by Programme Committee B (Strategy, Economics and Regulation), supported by all Committees and in close contact with the Presidency. Strategic Guideline 2 (Contribution of the Natural Gas Industry, in terms of Security of Supply, Safety and Environment) will involve virtually all Working and Programme Committees. Finally, Strategic Guideline 3 (Regional Gas Market Integration, as a Key Driver for Sustainable Economic Growth) will be developed by a newly created Task Force.

MB: What do you see as the key challenges for the 2006-2009 TWP?

RB: The key challenges for the 2006-2009 TWP will be: a) to adopt a realistic approach and identify genuinely relevant market drivers for the 2030 natural gas industry outlook study; b) to adequately convey the importance our industry assigns to reliability, safety and the environment; c) to tackle regional gas market integration issues and case studies without becoming too influenced by existing political constraints; d) to help promote the rational and efficient use of gas; and e) to stimulate the development of new technologies, all along the gas chain.

From an implementation viewpoint, it will be essential to coordinate the tasks of the different Committees, in order to obtain high quality and consistent deliverables.

MB: Joint Committee meetings were trialled during the last Triennium, will you be continuing them?

RB: Demand-driven and project-oriented joint Committee meetings are an excellent idea and

will help us in our aim of promoting horizontal cooperation between the Committees. We are also creating a forum for the Committee Secretaries to share their experiences.

MB: How do you see the Collaboration Portal developing?

RB: The Collaboration Portal is a very useful tool introduced during the Dutch Triennium, which we have now integrated into IGU's website (www.igu.org). It allows the sharing of updated information and heavy files within the Committees, while facilitating an "on-line follow-up" of progress on the TWP by IGU's membership.

IGU's Webmaster plays a critical role in providing homogeneity to the Portal's contents and technical support to its users.

MB: In conclusion, can you say a few words about cooperation with other energy organisations?

RB: IGU will continue its productive exchange with other international organisations, such as WPC, WEC, IEA, the LNG Conferences, the World Forum on Energy Regulation, the International Association for Natural Gas Vehicles (IANGV) and several environmental entities.

In addition, two gas-related organisations have recently been included within the auspices of IGU: the International Gas Research Conference (IGRC) and Intergas Marketing (IGM). They have been renamed IGU Research Conference and IGU Gas Marketing, respectively, with their acronyms remaining unaltered. The next IGRC will take place in Paris in October 2008 and its findings will make an important contribution to the R&D sessions of the 24th World Gas Conference in 2009.

It takes more than a pipeline to connect energy with people.

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Ecopetrol, leader in natural gas

- Offshore exploration
- Investment for increased production: Cusiana and La Guajira
- Venezuela and Panamá export projects
- Promotes vehicular natural gas and industrial sector growth
- Colombia's daily natural gas consumption: 659 GBTUD (193,4 GWH)



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Company Profile



4Gas is the only independent LNG terminal company with a global reach. It has a presence in the UK, mainland Europe, North America and Asia. In 1998 Petroplus of The Netherlands established an LNG group to develop the Dragon LNG import facility in Wales. This group named 4Gas is now a separate company, fully dedicated to LNG.

4Gas has strong financial backing through its majority shareholders Carlyle and Riverstone groups, two of the USA's leading private equity groups investing globally with combined assets/resources of \$40 billion.

▶ **Dragon LNG, United Kingdom**

The Dragon LNG import terminal is in construction at Milford Haven. It will commence operation in 2007 with an initial capacity of 6 bcm/year. The 4Gas team developed the project from inception in 1999 and was joined in 2004 by BG and Petronas as customers and shareholders. Dragon LNG will be able to supply approximately 7% of all anticipated natural gas deliveries in the UK.

▶ **Rotterdam, The Netherlands**

The LionGas terminal is located in the Port of Rotterdam at the optimal site for marine access and construction costs. LionGas offers efficient, low-cost market access. In June 2006, 4Gas received approval of



Construction of the Dragon LNG terminal.

its Environmental Impact Assessment and began the final stages of environmental permit preparation with a final permit due by October 2006. Construction can commence during 2007 giving a start-up during 2010. The first phase of construction is for a 9 bcm/year facility with an ultimate capacity of up to 18 bcm/year.

The Government of The Netherlands has policy objectives to establish LNG imports and The Netherlands as Europe's trading hub. Strong gas infrastructure linking to Germany, France and Belgium combined with a highly intensive gas economy makes Rotterdam Europe's premier destination for LNG.

▶ **Nova Scotia, Canada**

4Gas is developing an LNG import terminal at Goldboro near Halifax. Environmental permits are scheduled to be issued by October 2006. Goldboro offers the following strategic advantages:

- ▶ Access to both the highly attractive north-east US markets and the growing Canadian demand on the Atlantic Coast;
- ▶ Significant savings in shipping distances and logistic over US Gulf Coast terminals; and
- ▶ Close proximity to the existing Maritimes and Northeast pipeline which takes Sable Island gas south to the US.

▶ **Hong Kong**

4Gas has set up an office in Hong Kong to accommodate its growing presence and marketing activities in Asia and to coordinate its efforts for expansion in the Asian region with its growing need for LNG imports.

▶ **Strategy**

The primary strategy of 4Gas is to develop large-scale traditional LNG import facilities in multiple markets. 4Gas is working in a number of European and international locations at present to secure positions that meet the criteria of suppliers and the needs of local gas markets.

FEATURES

This issue's feature section contains the first part of a survey of the gas industry in South America, which focuses on Peru, an article looking at the impact of the dispute between Russia and Ukraine on European gas policy, and reports on Cheniere Energy, one of IGU's new Associate Members, Holdigaz, which is the gas company serving IGU's place of registration, and the forthcoming LNG-15 conference in Barcelona, Spain. We round up with a description of the publications and documents available from IGU and the events calendar.

SUEZ

Smart Gas Strategy, Preferred Gas Partner

The activities of SUEZ cover the entire gas supply chain. The wide scope of its operations means that companies such as Distrigas, Fabricom, Fluxys, SUEZ Energy International, Tractebel Engineering, are able to provide tailor-made solutions to meet the numerous challenges of any project in either the private or public sector.



SUEZ starts with one advantage over most other global energy companies: it is involved in both gas and electricity supply and distribution; and it can also provide a range of other value-added services such as consultancy, engineering, management and maintenance. As far as natural gas is concerned, SUEZ operates in almost all parts of the gas supply chain: supply contracts, gas processing and transportation, gas storage, gas marketing, gas trading (wholesale and retail) and LNG activities. The SUEZ Group operates a unified business model that integrates electricity and gas operations around central portfolio management.

To summarise, it is **SUEZ's** unique combination of skills and expertise across the full spectrum of the natural gas and electricity business, and its proven ability to harness these in an effective and efficient business model, which has been the driving force behind the company's success even in today's difficult energy markets. If you want to capitalise on this experience, don't hesitate to contact us.



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South American Survey – Focus on Peru

By Adrian Giddings

With Argentina assuming the Presidency and Peru becoming the latest country to be represented in IGU, the IGU Magazine is publishing a survey of the gas industry in South America. Divided into two parts over consecutive issues, it starts with Peru where Charter Member, Perúpetro, is hosting the October 2006 Council meeting.

From the cradle of the Inca Empire, the Tawantinsuyu, with its capital in Cuzco, through the Spanish conquest led by Francisco Pizarro to the founding of Lima, the seat of the largest Spanish Viceroyalty in Latin America, Peru is blessed with a rich history, a wealth of archaeological treasures and a remarkable cultural heritage.

The country boasts the third largest extent of tropical rainforests in the world, after its neighbour Brazil and the Democratic Republic of Congo. These forests are some of the richest in the world not only in terms of their biodiversity but also for their natural resources including gas. Indeed, the development of natural gas will help Peru sustain strong economic growth. GDP grew 5.1% in 2004 and 6.3% in 2005. It will also help reduce the reliance on energy imports, the country having become a net oil importer in 1992.

● Early gas development

The first gas field to be commercially developed in Peru was Aguaytía in the province of Ucayali, which came onstream in 1998 producing natural gas, natural gas liquids and feeding an electricity generating plant. Aguaytía had originally been discovered in 1961 by Mobil, but its exploitation foundered on the cost of getting the gas from a remote jungle area to market. The key to the



Peru has a remarkable cultural heritage.

economic viability of the current project, operated by a consortium led by Dallas, Texas-based Maple, is processing the gas on site.

Since the initial award of the concession for the gas field in 1993, \$280 million has been invested in the Aguaytía Gas & Power Project, building an infrastructure that includes:

- a natural gas processing facility with a capacity of 70 million cubic feet (1.96 mcm) per day;
- over 300 kilometres of natural gas and natural gas liquid pipelines;
- a 3600 bpd natural gas liquid fractionation, storage, and distribution facility;
- a 160 MW simple-cycle power plant; and
- 392 kilometres of electricity transmission line with associated substation facilities.

Peru's oil industry also has a number of gas injection projects and in the early 2000s the annual consumption of these combined with Aguaytía averaged around 400 mcm. Then Camisea came onstream heralding the start of a new era for the Peruvian gas sector. Consumption for 2005, which included the first full year of Camisea production, surged to 1.6 bcm.

● **Camisea promises energy independence**

In a special ceremony on August 5, 2004, Peru's then President Alejandro Toledo symbolically opened the valve allowing the first natural gas from the Camisea field to flow to customers in Lima and Callao. Initial supplies went to industrial customers including a CCGT installation at Etevensa's Ventanilla electricity generating plant. The first domestic connections were made in March 2005.

Camisea is the most ambitious energy project in Peru's history. Royal Dutch/Shell began exploring blocks along the Camisea River in the south-east Peruvian Amazon in the 1980s, but left the area in 1998 after years of disagreements with successive Peruvian governments over the development contract.

Consisting of several natural gas fields principally in Block 88, Camisea's proven reserves



Peru's then President Alejandro Toledo turns on the gas from the Camisea.

are 11.2 tcf (313 bcm) of gas with estimated proven and probable reserves of 13 tcf (364 bcm) of gas. If the proven reserves in Block 56 (Pagoreni) are added, there is a total of 16.3 tcf (456 bcm), together with 600 million barrels of natural gas liquids. The Camisea reserves are 10 times greater than all other natural gas reserves in Peru.

In 2000 the government of the day awarded two licences in respect of the Camisea project. The first, to an upstream consortium led by Argentina's Pluspetrol, was for the development of the field. The second licence, to a downstream consortium led by Tecgas (also of Argentina) was for the development of two pipelines (one for natural gas and the other for natural gas liquids), and for a plant to process condensates for the export market.



Camisea is the most ambitious energy project in Peru's history.

The Camisea field is situated in the remote Urubamba Valley, an area of unique biodiversity and home to thousands of indigenous people. Because of this, multilateral organisations such as the Inter-American Development Bank (IDB) and the Andean Corporation for Investment, key funding sources of the pipeline project, monitor environmental and other conditions for the financing.

From its early stages of development, the project has combined erosion control and re-vegetation initiatives with measures to prevent migration and colonisation. Moreover, in an attempt to minimise environmental impact, the first 200 kilometres of the 730-kilometre pipeline from the field to Lima were constructed with a diameter of 32 inches (81.3 cm). Though initially offering far more capacity than required, this will remove the need for additional pipelaying in the ecologically sensitive area of the Urubamba Valley when production is expanded to serve Peru LNG in 2009.

However, all has not been plain sailing and controversy has dogged the project throughout. There have been concerns for the fate of the indigenous people of the area, some of whom still live in isolation from the modern world, and also concerns over the inevitable environmental damage that occurs with a project of this scale.

Four major liquid gas spills from the pipeline in its first 15 months of operation have prompted

an emergency review by a joint technical commission from Peru's Ministry of Energy and Mines and the country's energy regulator, the Organismo Supervisor de la Inversión en Energía (OSINERG).

The main problems have been produced by soils instability as the most challenging sections of the route are characterised by steep slopes and unstable ground. Currently Teggas is working to solve these unexpected problems to ensure no further environmental damage occurs.

Mindful of the adverse effects that can be caused to both nature and local populations, Hunt Oil (a US company that is also a partner in the initial upstream and downstream consortia) is leading the development of Phase II of the Camisea project, Peru LNG. This involves the construction of a gas liquefaction plant and export terminal at Pampa Melchorita on the Pacific coast, 169 kilometres south of Lima. Initially, LNG will be exported to Mexico and the United States. The site has been chosen for its natural characteristics, distance from existing communities and low impact on cultural heritage. Construction calls for a single-train LNG plant with a capacity of 4.4 million tonnes per year, marine export facilities, an ocean breakwater and a pipeline (approximately 408 kilometres in length) connecting to the Camisea-Lima line to deliver feed gas to the site. Peru LNG is expected to come onstream in 2009.

Ultimately, the Camisea project is expected to boost Peru's GDP by 1.3% annually for 20 to 40 years, attract over \$3 billion in FDI, create thousands of jobs, generate \$10 billion in government revenues and turn Peru into a net energy exporter. The Peruvian people will also save over \$4 billion in energy costs over a 30-year period, and the marginal costs of power generation will be reduced by about 30%.

● **Developing natural gas vehicles in Peru**

Like some other South American countries, notably Argentina and Brazil, Peru has seen the economic and environmental advantages of converting petrol

We are working for the energy development of Peru



In a world that needs more energy and less emissions, natural gas is one of the cleanest fuels that exist. Experts predict that for the year 2020, natural gas will satisfy 25% of the world-wide energy demand.

In TgP we transport natural gas through a pipeline that crosses 732 kilometers from Camisea, in the rainforest of Cuzco, to the coast of Peru, bringing the source of energy of the future to the present of all Peruvians.

and diesel powered vehicles to run on clean burning natural gas. The Peruvian government has declared that the use of natural gas vehicles (NGVs) is in Peru's national interest.

Although there is a shortage of vehicle conversion facilities in the country, a policy designed to encourage motorists to switch to natural gas by extending loans has been met with enthusiasm. Currently there are 21 registered conversion workshops and, by the end of June 2006, 1340 NGV cars had been converted. By use of an electronic chip attached to the vehicle during the conversion process, these loans will be discounted according to the amount of gas purchased at filling stations. Additionally, use of natural gas as a fuel attracts a 50% saving at the pump. The first NGV refuelling station in Peru opened in the San Luis district of Lima in October 2005, and there are plans to have a further 10 by the end of this year serving 2500 NGVs.

In the public transport sector, companies in the Lima area have 20 projects in various stages of completion to purchase replacement CNG bus fleets.

Meanwhile, the railway company Ferrocarril Central Andino has converted a diesel locomotive

to run on CNG which travels on the world's second highest railway (after China's recently completed Qinghai-Tibet line) and plans to convert the rest of its fleet.

With ample domestic supplies of gas, the future of NGVs in Peru looks bright, as highlighted by the inaugural ExpoGNV 2006 which was held in Lima in July.

● Future

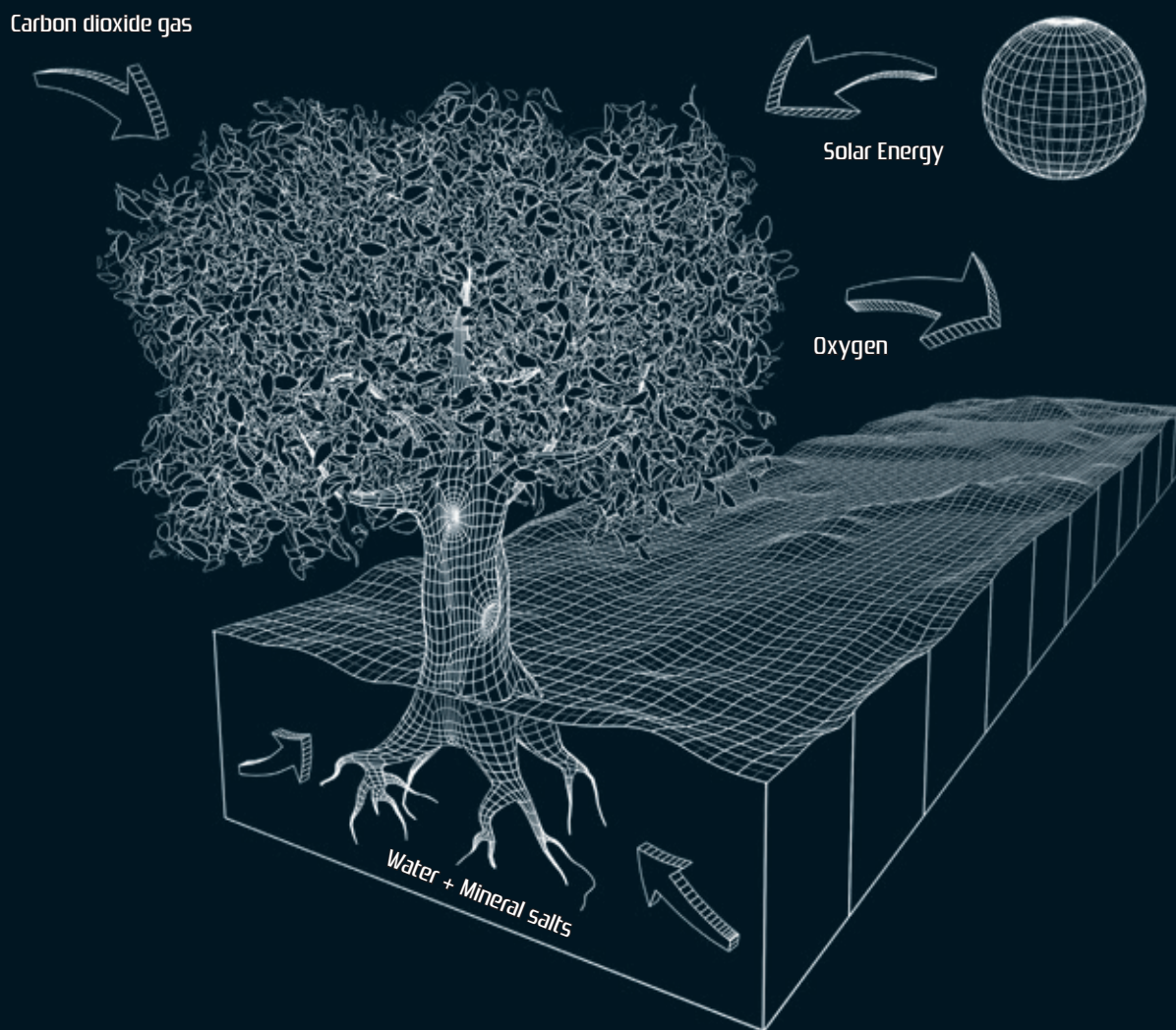
Peruvians elected a new President in June and the challenge facing Alan Garcia will be to sustain the country's rapid economic growth while improving public services. The gas sector is clearly making a vital contribution to the economy and the start of LNG exports will help develop closer energy ties among the countries of Latin America. It will be interesting to see whether pipeline exports can be developed in the longer term. However, it will be important to balance the economic benefits with the need to protect one of the most ecologically important regions of the world.

Adrian Giddings is a Contributing Editor at International Systems and Communications.



Ferrocarril Central Andino converted its first diesel locomotive to run on CNG in June 2005.

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