International Gas APRIL 2005

INTERNATIONAL GAS UNION

International Gas APRIL 2005

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THE BEST OF BOTH WORLDS

Energy Valley

The north of The Netherlands where a wealth of expertise on natural gas, sustainability and technical innovation is concentrated.

Energy Delta Institute

International Business School & Research Centre, a Gasunie initiative together with Gazprom and the Groninger University. For sharing knowledge, if you want to know it yourself on management level.

Trade

- Sales of 85 billion m^3 in 2004.
- Export of natural gas to Germany, Belgium, France, Italy, United Kingdom and Switzerland.
- Imports from Norway, Russia, United Kingdom and Germany.
- Supplier of gas for all sectors of the Dutch market.

Gas transport

- Almost 12,000 kilometres of main pipeline network. A Dutch-UK connection under construction.
- Transmission of natural gas in 2004 of over 90 billion m^3.
- Including an independent network operator, called Gas Tranport Services.

Gasunie Engineering & Technology

- Know how of supply processes, pipeline integrity, transport, measuring and technological application solutions.
- Expertise on the engineering, operations and maintenance aspects of the underground and above ground transport system and all related areas.
- Operating internationally.

Gasunie

BG Group

Natural gas is clean, abundant and competitively priced. That's why demand is growing. BG Group is one of the world's top performing exploration and production companies. Wherever we are, we invest. Not just in the business, but in the environments and communities we serve. From exploration to distribution, we're working with partners to connect gas to markets.

Natural gas. It's our business

International Gas APRIL 2005

The IGU Magazine

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Vision, Mission and Objectives

The International Gas Union (IGU) is a worldwide, non-profit organisation promoting the progress of the gas industry. Through its many member countries representing approximately 95% of global gas sales, IGU covers all aspects of the natural gas industry.

The Vision

Recognising that natural gas has an important part to play in satisfying the global need for an environment-friendly energy source, IGU will be the most influential, effective and independent non-profit organisation, while serving as the spokesman for the gas industry worldwide.

The Mission

IGU will actively, directly and through its members, promote the technical and economic progress of the global gas industry.

IGU will work towards improving the competitiveness of gas in the world energy markets. By promoting the development and application of new technologies and best practices, IGU will help optimise the economics of the entire gas chain, while emphasising sound environmental performance, safety and reliability.

IGU – serving as a global information clearing house – will promote transfer of technology and know-how.

In carrying out this mission, IGU will maximise value to its members and gas customers.

Objectives

In striving towards the vision and fulfilling the mission, IGU will regarding:

ECONOMY: Promote all activities within the entire gas chain, which can add to the technical and economic progress of gas;

CUSTOMERS: Encourage development of good customer services and customer relations;

TECHNOLOGY: Encourage research and development towards new and better technologies for the gas community;

SAFETY: Promote the safe production, transmission, distribution and utilisation of gas;

ENVIRONMENT: Encourage and promote development of clean technology, renewable energy applications and other activities, which will add to the environmental benefits of gas;

INTERNATIONAL GAS TRADE: Encourage international trade in gas by supporting non-discriminatory policies and sound contracting principles and practices;

LEGAL: Promote and contribute to the development of legislation concerning:

- the establishment of equitable, non-discriminatory and reasonable environmental and energy efficiency regulations, and
- efforts to establish appropriate and relevant international standards,

as well as

- the promotion of and participation in the exchange of information relating to regulatory processes;

COOPERATION: Enhance partnership with industry and manufacturers, and cooperation with governments, policy makers and international energy related organisations, and promote the exchange of information among members in order to help them in improving the efficiency and safety of gas operations.

Contents

Unless otherwise stated, the dollar ($) values given in this magazine refer to the US dollar.

Message from the President

Dear Colleagues

Climate Change and the role of natural gas

In October 2003 IGU adopted the "Guiding Principles for Sustainable Development". The gas industry aims for projects that are environmentally sound, by making choices today that work tomorrow. The agreement the International Association for Natural Gas Vehicles and IGU signed in December 2004, making IANGV the third organisation affiliated to IGU, is an example of the principle of cooperation with parties active in the gas chain and minimising environmental impact. As the technology is already available, NGVs can bring some relief to air-polluted cities in the relatively short term.

The ever increasing energy demand, in the fast growing economies in Asia as well as in traditional economies, is a formidable challenge for all parties responsible for meeting the demand. Many projects to deliver this energy in the coming 10 to 20 years are in their preliminary phase. There are few doubts that fossil fuels will play a dominant role in securing energy supplies for many years to come. Therefore the subsequent rise in CO_2 emissions will keep the abatement of carbon high on the agenda.

In December 2004 the 10th session of the Conference of the Parties (COP 10) to the UN Framework Convention on Climate Change was held in Buenos Aires. With the announced adherence of Russia to the Kyoto Protocol, the necessary momentum was reached for the Protocol to enter into force on February 16. Kyoto now covers about 60% of the CO_2 emitted worldwide.

I think the conclusions of the Intergovernmental Panel on Climate Change (IPCC) are inevitable: in the long term decarbonisation of the energy system is necessary as utilisation of fossil fuels on an increasing scale would lead to an intolerable amount of CO_2 in the atmosphere. It is quite conceivable that the need for a clean environment, enforced by public opinion and politics, will be the driving force for replacing fossil fuels by renewables, not the lack of economically retrievable fossil fuels.

This should be an incentive for further development of CO_2 sequestration, as measures aimed at lowering the carbon intensity of energy supply may prove to be inadequate in the long run. As all fossil fuels are part of the problem, it would be reasonable for their industries to join efforts in reaching a solution for this problem. In practical terms this means coal, oil and gas producers and consumers should cooperate in research and development on CO_2 capture, transportation and sequestration.

Some experience with CO_2 injection is available from enhanced oil recovery projects and from the first commercial operation to store CO_2 in order to avoid emissions in the Sleipner area, where CO_2 is injected into an aquifer beneath the Norwegian North Sea. The US FutureGen initiative is also promising. This is a pilot project to build a power plant producing electricity and hydrogen from coal with low to zero emissions. CO_2 separation and underground storage is part of this project, which should be in operation by around 2013.

But it is not only technology that has to be developed. There should also be an internationally accepted legal and regulatory framework to facilitate carbon capture and storage (CCS) as well as risk management.

In a closed workshop the day before COP 10, IGU presented the draft Vision Paper

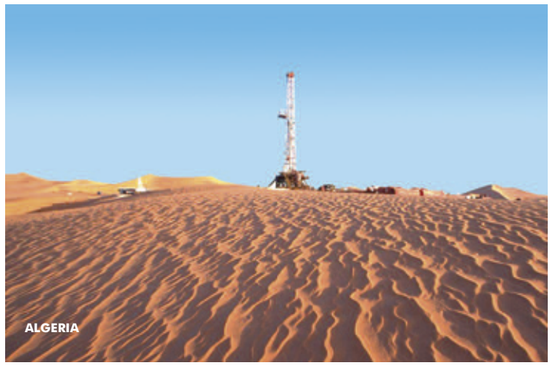
"Future role of natural gas and strategic impact for IGU", part of the Special Project on the contribution of natural gas to a future with sustainable energy. The results of this project will be presented during the World Gas Conference in 2006 and will outline possible routes for natural gas to bridge towards a sustainable energy future.

I believe that we must keep on promoting natural gas as the bridging fuel towards sustainability. Although wide application on a commercial scale is remote, timely preparation of the possibilities for CO_2 capture, transport and sequestration only makes sense.

IGU is in contact with the World Energy Council, World Petroleum Congress, World Coal Institute, International Petroleum Industry Environmental Conservation Association and International Energy Agency to try to achieve this cooperation. The gas industry, with its unique knowledge of gas storage technology, is in an excellent position to contribute. What might be seen for our industry as a threat could therefore turn into an opportunity.

George H. B. Verberg

George H. B. Verberg, President.


ALGERIA


DENMARK


KAZAKHSTAN


OMAN


QATAR

MAERSK OIL

Mærsk Olie og Gas AS (Maersk Oil) is an independent oil company in the A.P. Moller – Maersk Group.

Maersk Oil is operating oil and gas production in Denmark, Qatar and Kazakhstan of some 700,000 barrels of oil equivalent per day. In addition Maersk Oil participates in the 500,000 barrels of oil per day Berkine Basin development in Algeria.

Exploration and development activities are ongoing in Denmark, Qatar, Algeria, Oman, Turkmenistan, Brazil, Norway, Morocco, Suriname, the UK and a number of other countries.

MAERSK OIL CONTINUES TO SEEK NEW VENTURES IN PARTNERSHIP OR ALONE.

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New Gas Pipeline in the North Sea

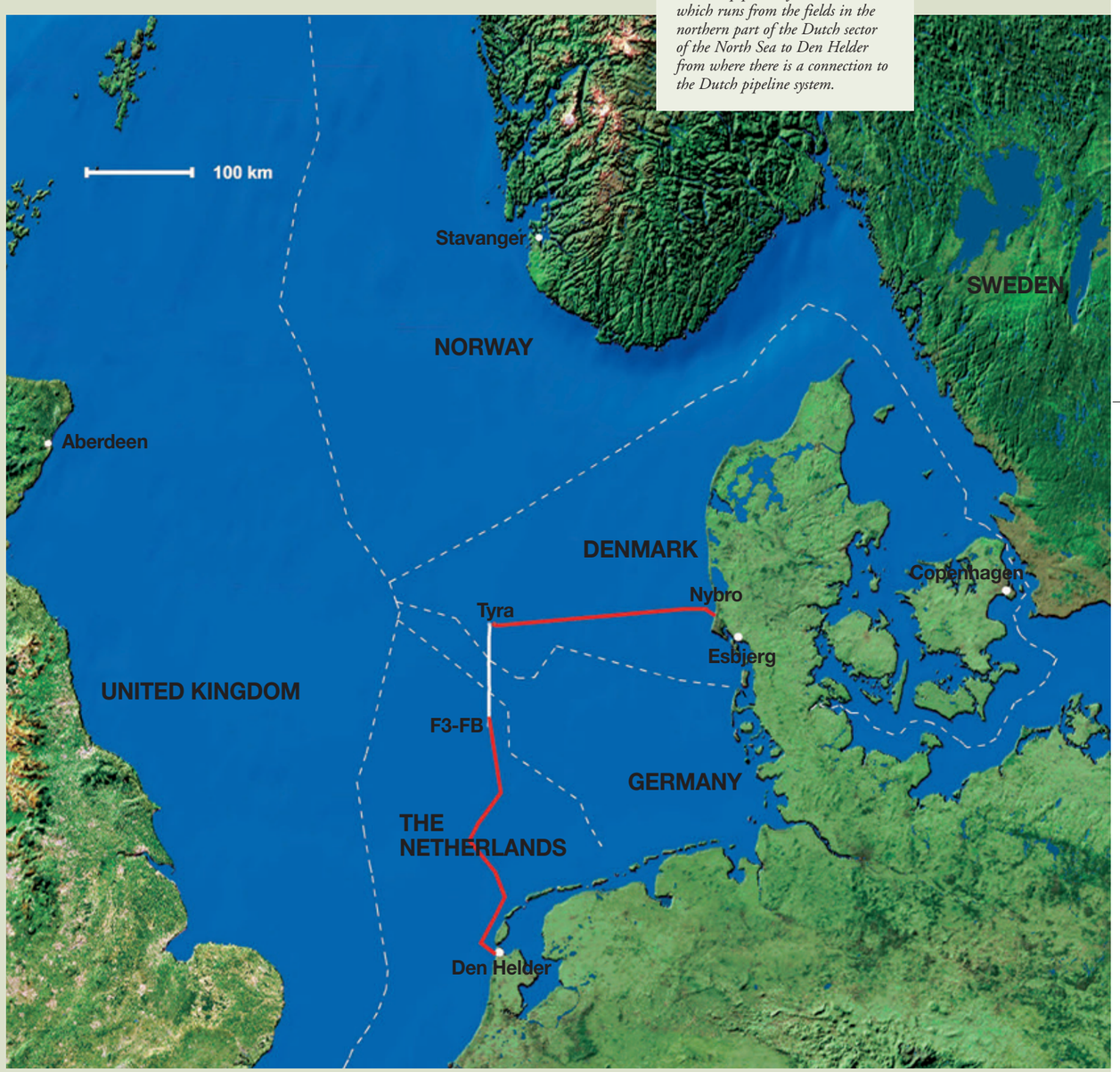
On 19 July 2004 the first gas flowed through a new 100 km long and 26 inch thick gas pipeline connecting the Tyra Field with the Dutch platform F3-FB from where the gas is delivered to Den Helder in the Netherlands. Mærsk Olie og Gas AS was responsible for the design and installation of the pipeline and for its operation and maintenance.

In 1979 the Partners in Dansk Undergrunds Consortium (DUC), A.P. Moller - Maersk, Shell and ChevronTexaco entered into the first agreements on delivery of natural gas from DUC's fields in the Danish sector of the North Sea. The agreements included delivery to the Danish State Oil and Natural Gas Company (DONG) of a total of 55 billion m^3 of natural gas over 25 years, starting in 1984. The natural gas is delivered in DONG's pipeline from Tyra to Nybro, Denmark, from where the gas continues to markets in Denmark, Sweden and Germany. With additional gas sales agreements in 1990 and 1993, the quantities of natural gas were increased, and today up to 7.5 billion m^3 per year is delivered through the pipeline to Nybro.

The new gas pipeline is owned by A.P. Moller - Maersk, Shell and ChevronTexaco with 19.5%, 23% and 7.5% respectively, and DONG owns the remaining 50%. The owners of the new Danish pipeline are entitled to transport gas in the pipeline in quantities corresponding to their interest. This means that they can elect to utilise their share of the transport capacity or sell it to a third party.

The new gas pipeline makes it possible to sell additional natural gas from DUC's fields in the North Sea and gives access to new markets. A.P. Moller - Maersk entered into an agreement in 2003 on the sale of natural gas to Norsk Hydro with delivery to Den Helder in the Netherlands. Delivery to DONG will continue in accordance with the existing agreements.

The pipeline runs from the Tyra West A platform to the F3-FB platform, operated by Nederlandse Aardolie Maatschappij (NAM), Shell and ExxonMobil's jointly owned operator company in the Netherlands. The pipeline connects the Danish fields in the North Sea with the pipeline system NOGAT, which runs from the fields in the northern part of the Dutch sector of the North Sea to Den Helder from where there is a connection to the Dutch pipeline system.



Message from the Secretary General

Dear Reader

You are now holding the third edition of the new IGU Magazine *International Gas* in your hands.

From the feedback I have received it seems that the idea of issuing a multi-purpose publication has been well received, and we will continue to edit this Magazine in three parts:

First, we have information and news from IGU and affiliated organisations for the benefit of our members and the members of our affiliated organisations. This section is followed by the progress reports from the IGU Coordination Committee, its nine standing Committees and from the special activities of the current Presidency of IGU. The latter have a broader scope because they display what IGU is working on right now, the studies undertaken and the progress made towards the final presentation of results at the next World Gas Conference. Finally, we feature a number of articles about the prospects for gas now and in the future, which should be of interest to anybody working in and with the global gas industry or taking an interest in it.

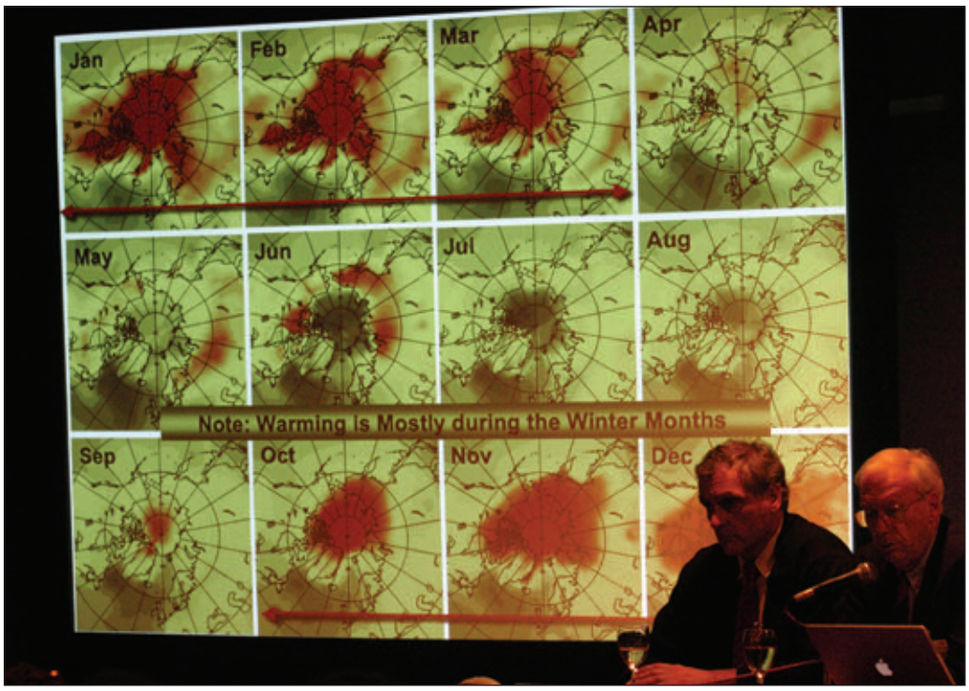
Peter K. Storm, Secretary General.

It was a big step for our organisation to introduce advertising in our publication and we have limited it to approximately one-third of the Magazine. I am grateful to the many advertisers for their support, but I am sure that they do this

ABOVE AND OPPOSITE COP 10 was held in Buenos Aires in December.

because they realise that the wide circulation of the Magazine is also to their benefit.

We will continue to expand in the number of copies distributed, and we are now ensuring that not only members of IGU and affiliated organisations, other energy organisations and the European Union as well as individuals having an interest in energy receive the Magazine. This edition and future ones will also be distributed to Energy Ministries around the world, as well as to global regulatory gas and electricity authorities.



I am happy to say that the Magazine has become popular. A good example is the UN Climate Change Convention (COP 10) in Buenos Aires last December. Within the first week several hundred copies of the last Magazine were taken from the IGU stand by official delegates and observers to COP 10.

This of course only reflects the fact that natural gas – even if it is a fossil fuel – is increasingly recognised as the fuel of choice in the transition towards a more sustainable future.

And when you browse this Magazine you will see that through the work of the Committees, Task Forces and Special Projects, IGU and the current Dutch Presidency is targeting the most important topical issues of the gas world today: Gas to Power, Regulation, Sustainability, Research & Development, Security of Supply and LNG.

This is also why you should mark your diary for the 23rd World Gas Conference taking place in Amsterdam, The Netherlands in June 2006, where the results of the work of more than 600 leaders and specialists working within IGU will be presented, to the benefit of the future global gas industry.

IGU is a vibrant, expanding organisation. Now representing – through our members – almost 95% of gas produced and sold in the world, we are getting closer to our Vision, which you can find on page 4, of being the most influential, effective and independent non-profit organisation, while serving as the spokesman for the gas industry worldwide.

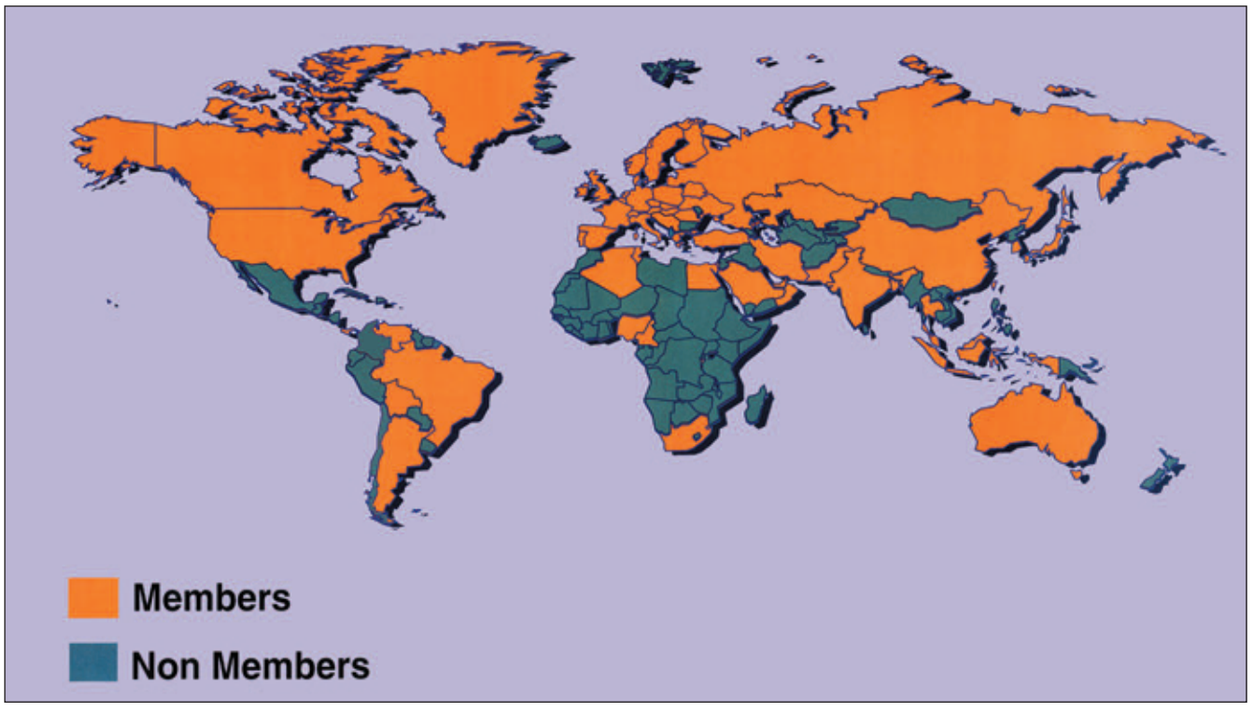
As usual the IGU Secretariat and the Editor welcome any suggestions to improve this Magazine, the next edition of which will appear in October 2005.

Enjoy your reading.

Peter K. Storm.

Countries Represented in IGU April 2005

Algeria
Argentina
Australia
Austria
Bangladesh
Belarus, Republic of
Belgium
Bolivia
Bosnia and Herzegovina
Brazil
Brunei
Cameroon
Canada
China, People's Republic of
Croatia
Czech Republic
Denmark
Egypt
Estonia
Finland
France
Germany
Greece
Hong Kong, China
Hungary
India
Indonesia
Iran
Ireland, Republic of
Israel
Italy
Japan
Kazakhstan
Korea, Republic of
Latvia
Lithuania
Malaysia
Monaco
Netherlands, The
Nigeria
Norway
Oman, Sultanate of
Pakistan
Poland
Portugal
Qatar
Romania
Russia, Federation of
Saudi Arabia
Serbia and Montenegro
Singapore
Slovak Republic
Slovenia
South Africa
Spain
Sweden
Switzerland
Taiwan, China
Thailand
Trinidad and Tobago
Tunisia
Turkey
Ukraine
United Arab Emirates
United Kingdom
United States of America
Venezuela



CHARTER MEMBERS

Algeria
Association Algérienne de l'Industrie du Gaz – AIG

Argentina
Instituto Argentino del Petróleo y del Gas

Australia
Australian Gas Industry Trust c/o Energy Networks Association

Austria
Österreichische Vereinigung für das Gas- und Wasserfach (ÖVGW)

Bangladesh
Petrobangla (Bangladesh Oil, Gas & Mineral Corporation)

Belarus, Republic of
Beltransgas

Belgium
Association Royale des Gaziers Belges

Bolivia
Cámara Boliviana de Hidrocarburos

Bosnia and Herzegovina
Gas Association of Bosnia and Herzegovina

Brazil
Associação Brasileira das Empresas Distribuidoras de Gás Canalizado (ABEGAS)

Brunei
Brunei LNG Sendirian Berhad

Cameroon
Société Nationale des Hydrocarbures

Canada
Canadian Gas Association

China, People's Republic of
China City Gas Society

Croatia
Croatian Gas Association c/o INA Naftalin

Czech Republic
Czech Gas Association

Denmark
Dansk Gas Forening – Danish Gas Association

Egypt
Egyptian Gas Association

Estonia
Estonian Gas Association

Eurogas

Finland
The Finnish Natural Gas Association

LEFT
The IGU Secretariat is currently hosted by the Danish energy company DONG in its offices in Hørsholm outside Copenhagen.

CHARTER MEMBERS (CONTINUED)

France
Association Française du Gaz (AFG)

Germany
Deutsche Vereinigung des Gas- und Wasserfaches e.V. (DVGW)

Greece
Public Gas Corporation of Greece (DEPA) S.A.

Hong Kong, China
The Hong Kong & China Gas Co. Ltd

Hungary
Association of Gas Distribution Companies

India
Gas Authority of India Ltd (GAIL)

Indonesia
Indonesian Gas Association (IGA)

Iran
National Iranian Gas Company (NIGC)

Ireland
Irish Gas Association – Bord Gais Eireann

Israel
The Israel Institute of Petroleum & Energy

Italy
Associazione Tecnica Italiana del Gas (ATIG)

Japan
The Japan Gas Association

Kazakhstan
KazTransGas

Korea, Republic of
Korea Gas Union

Latvia
JSC Latvijas Gāze

Lithuania
Lithuanian Gas Association

Malaysia
Malaysian Gas Association c/o Petronas

Monaco
Société Monégasque de l'Électricité et du Gaz (SMEG)

Netherlands, The
Koninklijke Vereniging van Gasfabrikanten in Nederland (KVGN)

Nigeria
Nigerian Gas Association c/o Nigeria LNG Ltd

Norway
Norwegian Petroleum Society (NPF)

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Oman LNG L.L.C.

Pakistan
Petroleum Institute of Pakistan

Poland
Polskiego Zrzeszenia Inzynierów I Techników Sanitarnych (PZITS)

Portugal
Associação Portuguesa dos Gases Combustiveis

Qatar
Qatar Liquefied Gas Company Ltd (Qatargas)

Russia, Federation of
OAO Gazprom

Saudi Arabia
Saudi Aramco

Serbia and Montenegro
Gas Association of Serbia & Montenegro

Singapore
Power Gas Ltd

Slovak Republic
Slovak Gas & Oil Association

Slovenia
Geoplin

South Africa
CEF Ltd

Spain
Spanish Gas Association – Asociación Española del Gas (SEDIGAS)

Sweden
Svenska Gasföreningen – Swedish Gas Association

Switzerland
Société Suisse de l'Industrie du Gaz et des Eaux

Taiwan, China
The Gas Association of the Republic of China, Taipei

Thailand
PTT Public Company Ltd – Petroleum Authority of Thailand

Trinidad and Tobago
The National Gas Company of Trinidad and Tobago Ltd

Tunisia
Association Tunisienne du Pétrole et du Gaz (ATPG) c/o ETAP

Turkey
BOTAŞ

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Ukrainian Oil and Gas Academy /Naftogaz of Ukraine

United Arab Emirates
Abu Dhabi Liquefaction Company Ltd (ADGAS)

United Kingdom
The Institution of Gas Engineers and Managers

United States of America
American Gas Association

Venezuela
Petróleos de Venezuela S.A. (PDVSA)

ASSOCIATE MEMBERS

- BP Gas, Power & Renewables (United Kingdom)
- ChevronTexaco Overseas Petroleum (USA)
- Gaz de France (France)
- IGDAŞ – Istanbul Gas Distribution Co. (Turkey)
- Instituto Brasileiro Petróleo e Gás (Brazil)
- Naturgas Fyn A/S (Denmark)
- nv NUON (The Netherlands)
- Petróleo Brasileiro S.A. – Petrobras (Brazil)
- E.ON Ruhrgas AG (Germany)
- Russian Gas Society (Russia)
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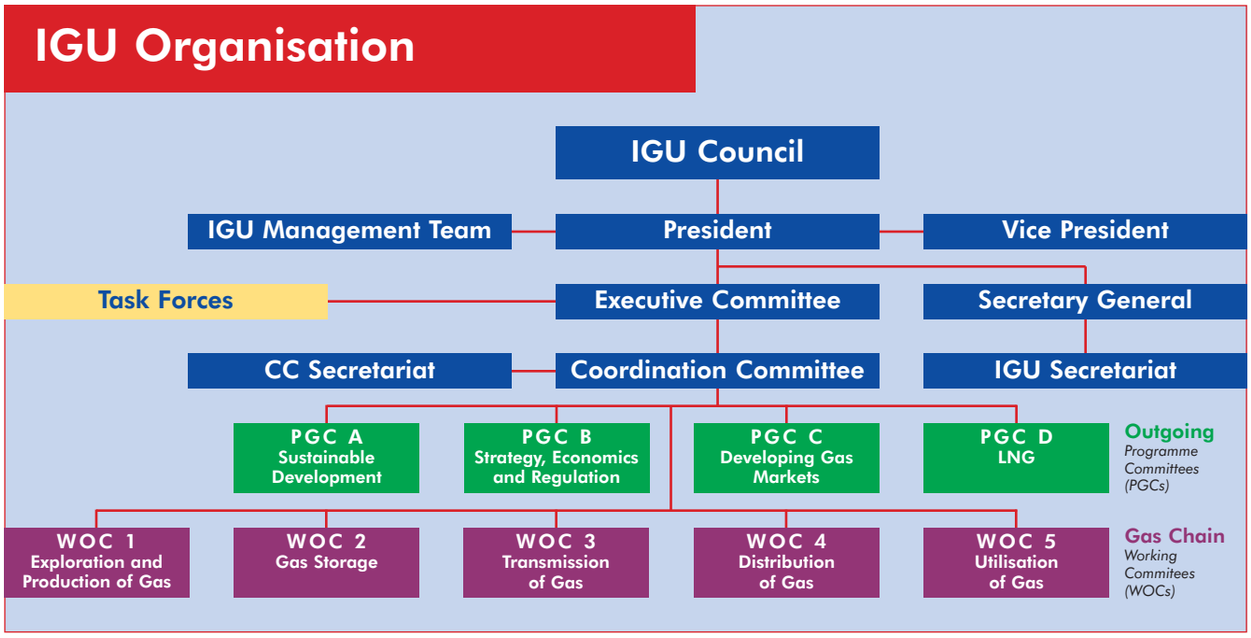
- Shell Gas & Power International B.V. (The Netherlands)
- S.N.G.N. Romgaz S.A. (Romania)
- Suez-Tractebel S.A. (Belgium)
- TBG – Transportadora Brasileira Gasoduto Bolívia-Brasil S/A (Brazil)
- TOTAL S.A. (France)
- Unión Fenosa Gas (Spain)
- Union of Independent Gas Producers (Russia)

IGU Organisation



From left to right in the back row of this photograph taken at the Executive Committee meeting in Cape Town, South Africa in October 2003 are Pavol Janoćko, José R. Dávila (who was substituting for Antoni Llardén), Christian Beckervordersandforth (who also acted as a substitute for Jürgen Lenz), Alexander I. Lipatov, Jong-Sool Kim, John Kean Sr, Ole Nygaard Olsen, Bert Panman, Abdul Rahim Haji Hashim, Hans Riddervold, Domenico Dispenza and Eduardo Ojea Quintana (now succeeded by Pablo Ferrero). From left to right in the front row are Peter Storm (who of course attended as Secretary General and is not a member of the Executive Committee), Robert J. Harris, Hiroshi Urano, George H. B. Verberg, Ernesto L. Anadón, Roberto D. Brandt, Boleslaw Rey and Chawki M. Rahal (who was substituting for Ali Hached). Daniel Paccoud attended the meeting but missed the photo session, while Yves Tourníé could not attend the meeting or send a substitute.

IGU MANAGEMENT TEAM

Mr George H. B. Verberg, IGU President (Chairman) (The Netherlands)

Mr Ernesto L. Anadón, IGU Vice President (Argentina)

Mr Hiroshi Urano, Immediate Past President (Japan)

Mr Bert Panman, Chairman of IGU Coordination Committee 2003-2006 (The Netherlands)

Mr Roberto D. Brandt, Vice Chairman of IGU Coordination Committee 2003-2006 (Argentina)

Mr Peter K. Storm, Secretary General

IGU EXECUTIVE COMMITTEE AS OF JANUARY 2005

Mr Ali Hached
Algeria

Mr Ernesto L. Anadón
Argentina

Mr Roberto Daniel Brandt
Argentina

Mr Pablo Ferrero
Argentina

Mr Ole Nygaard Olsen
Denmark

M. Daniel Paccoud
France

Dr Jürgen Lenz
Germany

Dr Eng. Domenico Dispenza
Italy

Mr Hiroshi Urano
Japan

Mr Jong-Sool Kim
Republic of Korea

Mr Abdul Rahim Haji Hashim
Malaysia

Mr George H. B. Verberg
The Netherlands

Mr Engbert (Bert) Panman
The Netherlands

Mr Hans Riddervold
Norway

Mr Boleslaw Rey
Poland

Mr Alexander I. Lipatov
Russia

Mr Pavol Janoćko
Slovak Republic

Mr Antoni Llardén
Spain

Dr Robert J. Harris
United Kingdom

Mr John Kean Sr
United States of America

Mr Christian Beckervordersandforth
Ruhrgas AG, Associate Member

M. Yves Tournié
Total, Associate Member

RasGas – A Major Force in LNG

In a little over a decade since it was first established – and only five years after shipping its first cargo of liquefied natural gas (LNG) – Ras Laffan Liquefied Natural Gas Company Limited (RasGas) has already established itself as a major force in the expanding natural gas market, acquiring new customers and an enviable reputation for technical and commercial excellence at a relentless pace.

As the pace of gas development has grown and world demand for environmentally friendly LNG has increased, Qatar's commitment and vision to expanding the country's LNG industry has remained absolute. RasGas typifies this vision by striving to become not just an active player, but also a pacesetter in the world of LNG supply.

Success story

Two fundamental elements in the success story of RasGas are its long-term Sales and Purchase Agreements (SPAs) with the Korean Gas Corporation (KOGAS) in 1995 and Petronet LNG Limited of India (PLL) in 1999. To supply the KOGAS SPA, RasGas constructed its first two LNG trains. In March 2004, to fulfill the requirements of the Petronet SPA, RasGas inaugurated train 3, the largest in the world to date, with production capacity amounting to 4.7 million tonnes per annum (mta). In October 2002 RasGas (II) commenced detailed engineering, procurement and construction (EPC) work on train 4 while in July 2004 RasGas's vision as a leading LNG producer came one step closer when the company awarded the onshore EPC contract for train 5 to Chiyoda, Snamprogetti and Co., W.L.L.

During 2003 RasGas (II) entered into four new agreements with leading energy companies; Edison Gas S.p.A. of Italy, Endesa Generacion S.A. of Spain and the Chinese Petroleum Company (CPC) of Taiwan, China. To further consolidate the company's position as a world leading LNG company Qatar Petroleum and Exxon Mobil Corporation signed a Heads of Agreement for the supply of 15.6 mta of LNG for a period of 25 years. The agreement covers the development of two large LNG trains with a combined capacity of 15.6 mta of LNG to be supplied by RasGas (II).

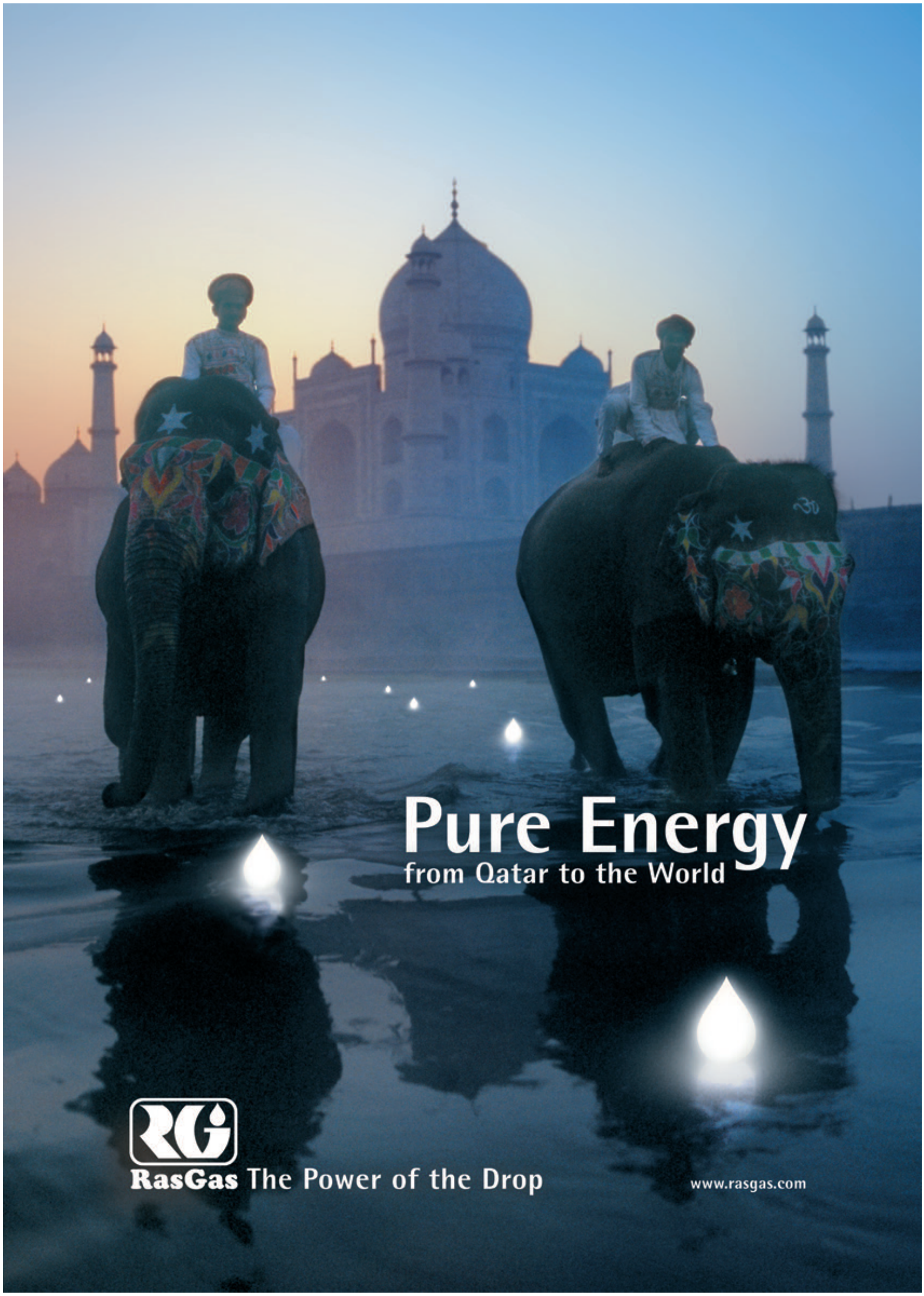
In 2004 the marketing achievements of RasGas were further rewarded with two new agreements. The first of these agreements was concluded with Belgian corporation Fluxys LNG for the delivery of 3.4 mta of LNG produced by RasGas (II) commencing in 2007. The second agreement with FPL Group Resources LLC, will supply approximately 6 mta of RasGas (II) LNG from Qatar to a proposed LNG terminal and regasification facility located on Grand Bahama Island commencing mid-2008.

To accommodate its new ex-ship SPAs, RasGas (II) has concluded a number of time charter agreements. The first acquisition programme will provide six LNG tankers; the first two *Fuwairit* and *Maersk Ras Laffan* were delivered in early 2004.

In addition to the existing agreements, during 2004 RasGas signed time charter agreements for the acquisition of a further eight LNG tankers. The completion of these agreements increases the RasGas long-term charter fleet to a total of 14 ships, further underscoring the company's commitment to provide safe and reliable transportation to their growing customer portfolio.

RasGas Company Limited crossed another boundary in 2003, when it was appointed to construct and operate the first phase of the Al Khaleej Gas Project (AKG-1) for and on behalf of ExxonMobil Middle East Gas Marketing Limited. The project will supply pipeline sales gas to domestic and regional markets and will produce associated condensate and natural gas liquids (NGLs). Project start-up is scheduled for the 4th quarter of 2005.

Before the end of the decade, the expansion of RasGas is expected to include four additional trains including giant 7.8 mta trains to feed US supplies. Total production is expected to grow nearly six times from the initial 6.6 mta in 2000 to 37 mta by 2010.



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From the IGU Secretariat

Peter K. Storm, Secretary General.

Lisbeth Koefoed, Assistant to the Secretary General.

Lotta Hållén-Kragh, Secretary and Webmaster.

These pages feature news items and information from the Secretary General (PKS) and his Assistant (LKO). In this issue the Editor (MWB) has contributed a report, while comments and suggestions of general interest from members or other organisations may also be displayed here. When submitting contributions to the Secretariat please ensure that any electronic pictures are supplied in a high resolution – 300dpi is the minimum required for print reproduction.

Council meeting in Oslo

The 2004 Council meeting was held in Oslo, Norway on September 22 following the autumn meetings of the Coordination Committee and the Executive Committee. The meetings were hosted by the Norwegian Petroleum Society (Norsk Petroleumsforening – NPF) and sponsored by Statoil and Hydro. A total of 110 delegates and 35 accompanying persons attended, who were impressed by the hospitality and efficient organisation of the Norwegian hosts.

The day opened with a closed session to discuss internal affairs including approval of the 2003 accounts, the projected financial result for 2004, the budget for 2005 and the estimates for 2006-2008. After this the meeting was opened to delegates from international organisations and other invited guests.

The second session started with a progress report on the Triennial Work Programme from Coordination Committee Chairman Bert Panman. He was followed by Robert Doets, Secretary General of the National Organising Committee for WGC2006, and Daniël Vlugt, Chairman of the Exhibition Committee, who gave a presentation on preparations for the 23rd World Gas Conference and Exhibition in Amsterdam.

Then there were presentations on special issues from three Charter Members. From Belgium, Ferdinand de Lichtervelde of the Royal Association of Gas Professionals (ARGB-KVBG) reported on investigations into the tragic accident of July 30, 2004 at an industrial estate in Ghislenghien, when a pipeline exploded leaving 24 people dead and 131 injured. Mr de Lichtervelde explained that investigations had shown that the transit pipeline had been damaged during construction work on the site in June and that the damage had weakened the pipe leading to the eventual explosion. Safety rules regarding protection of the pipeline route during work on the site did not appear to have been followed by the construction company.

He was followed by Salih Selmanović, President of the Gas Association of Bosnia and Herzegovina, who reported on a project to harmonise legislative and technical regulations in the gas sector of the countries of south-eastern Europe. This project is supported by the Charter Member from Germany, the German Technical and Scientific Association for Gas and Water (DVGW).

Thirdly, the Eurogas General Secretary, Jean-Marie Devos, introduced Eurogas as a new Charter Member.

After the special issues, the Secretary General Peter Storm gave an overview of future conferences supported by IGU and invited delegates of the Charter Members from India and Korea to give

detailed presentations on their hosted events. Mr Sundaresen Ravishankar from the Gas Authority of India Limited (GAIL) talked about the 3rd Asia Gas Buyers' Summit (which was later held in New Delhi on February 14 and 15), while Dr Seung-Hwan Lee from the Korea Gas Union presented ICT2005, which will be held in May.

To round off the second session, Mr Storm invited representatives of related international organisations to give presentations. These were Angelo Ferrari of the International Group of LNG Importers (Groupe Internationale des Importateurs de Gaz Naturel Liquéfié – GIIGNL), Michael Dugan of the Gas Technology Institute (who was talking about the International Gas Research Conference), Urs Zeller of Intergas Marketing and Dr Eivald Røren of the World Petroleum Congress.

After lunch the Council reconvened for the third session, which followed the successful format introduced for the 2003 Council meeting in Cape Town of having a presentation and debate on a topical issue. The issue was "Energy Supply Security for Europe and its Impact on the World Gas Market" with presentations by Bjørn Kjetil Mauritzen, Political Advisor to the Norwegian Minister of Petroleum and Energy, Professor Dr Coby van der Linde, Director of the Clingendael International Energy Programme and Wiebe Draijer, Principal in the Amsterdam office of McKinsey & Co.

There was a lively debate involving the speakers, a panel of invited guests and the Council delegates. Key issues discussed included the new gas developments of the host country Norway at Ormen Lange and Snøhvit, the importance of having supply diversity, potential bottlenecks on the major sea routes used by LNG tankers, the European Union's regulatory environment and the move from linked regional gas markets to a true global market.

The day's business was drawn to a close by a meeting for IGU contact persons.

MWB

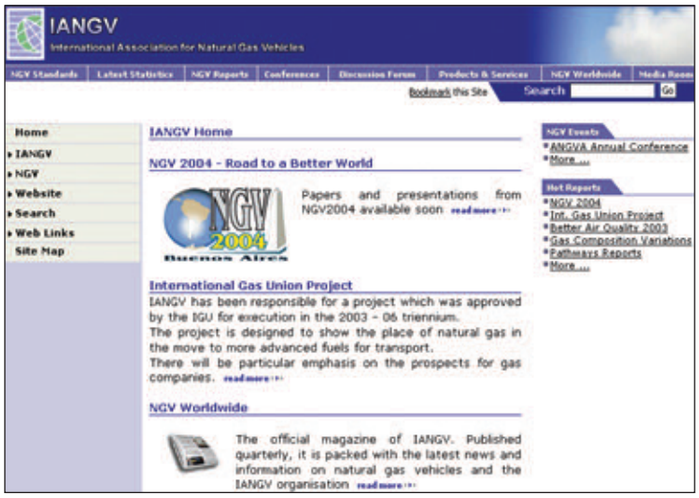
The President's table at the IGU Council meeting on September 22, 2004 in Oslo.

Organisations affiliated to IGU

Following earlier information about the special concept of "an Organisation Affiliated to IGU" and the work of **Intergas Marketing (IGM)** and **Marcogaz**, I am happy to announce that the **International Association for Natural Gas Vehicles (IANGV)** has entered into a similar agreement with IGU.

IANGV, which also encompasses the European branch (ENGVA), is the world organisation for

Mr Hans and Mrs Sigrid Riddervold of host NPF in traditional Norwegian folk costumes at the gala dinner.



Find out more about the latest organisation to affiliate to IGU at www.iangv.org.

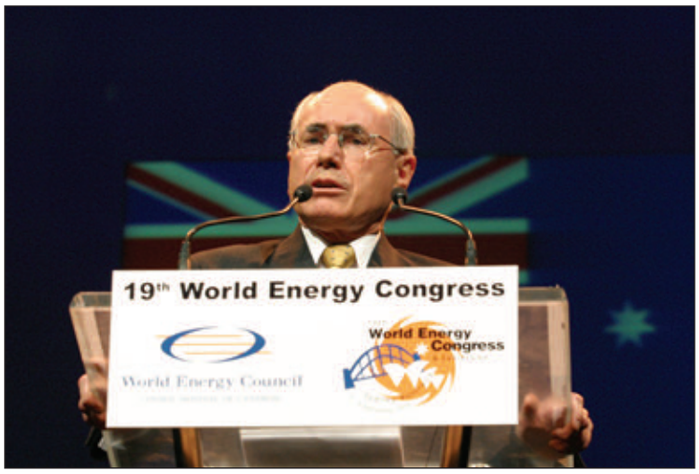
natural gas vehicles. These are increasing considerably in numbers around the world.

You can find more information about the affiliated organisations on the following pages.

The purpose with these agreements is to coordinate and rationalise the work being done in the different gas organisations. The organisations affiliated to IGU get access to the relevant IGU Committees, bringing in their special expertise, and in some cases IGU outsources special studies or projects to these organisations leading up to a presentation at the next World Gas Conference. Furthermore the affiliated organisations get a column in this Magazine, which is in turn also distributed to their members.

I believe that this idea is not only logical and a way of saving resources, but it also shows the world around us that the organisations of the gas industry are conscious of the need to rationalise and work together, and that we are doing something about it.

PKS



Australian Prime Minister John Howard speaking at the opening ceremony of the 19th World Energy Congress, which was held in Sydney, September 5-9, 2004.

The major energy organisations

Most readers will know that the global energy industry is served by three major international organisations: **World Energy Council (WEC), World Petroleum Congress (WPC)** and **IGU**.

The three organisations, all being more than 70 years of age, each organise a major World Conference and Exhibition every three years. A few years ago we managed to coordinate these events so that each year has its World Conference.

Thus WEC had its 19th Congress last year in Sydney, Australia; WPC will have its 18th Congress in Johannesburg, South Africa in September; and hopefully you are all aware of the fact that IGU will have its 23rd World Gas Conference and Exhibition in Amsterdam, The Netherlands in June 2006 (see below).

Similarly WEC will have its next Congress in Rome, Italy in 2007; it has recently been decided that WPC will have its following Congress in Madrid, Spain in 2008; and IGU will stage the 24th World Gas Conference in Buenos Aires, Argentina in 2009.

The three organisations work closely together in many respects, support some of each other's events, and IGU is intent on increasing further the interface between the organisations.

As recorded earlier we strengthened the ties to WPC last year. Among other things this means that

IGU will be responsible for a full Natural Gas Session at the WPC Congress in Johannesburg this coming September, where the IGU President, the Secretary General and a number of other IGU representatives will also be involved.

Since many IGU members are also active in or take an interest in the WPC Congress it is worth mentioning that the registration brochure for Johannesburg is out, and that an "early bird" registration fee expires on June 30.

PKS

● ICT World Congress in Korea

The 7th Global Congress on Information and Communication Technology in Energy, initiated by IGU and supported by WEC, WPC and a number of companies, will take place in the second largest town in South Korea, Busan, May 23-25, 2005. The Korean Charter Member of IGU, Korea Gas Union, is the organiser of this event.

IGU has set up a special Task Force to prepare the technical programme, aiming at bringing the IT and energy industries together and hopefully obtaining synergies and new ideas for both industries.

If you have not already done so you should hurry to register for this event, which will certainly give you a valuable professional and cultural experience.

You can find more about ICT2005 on pages 140-142, or you can visit the website www.ict2005.com directly or through the link on the IGU website.

PKS

● R&D and IGRC

It is important for IGU to encourage its members and the global gas industry as a whole to maintain a high level of R&D. Everybody can agree that this "investment in the future" is crucial for the future of the gas industry, but unfortunately we are seeing a fairly drastic decrease in active R&D.

This is why the Dutch Presidency created a special Task Force for R&D and why IGU has been a major sponsor behind the International Gas Research Conference (IGRC) since it started in 1980.

You will find an article from the IGU R&D Task Force on pages 134-138.

After a successful IGRC-2004 in Vancouver, Canada, the Conference Policy Committee decided that IGRC in the future should be organised under the auspices of IGU. Up to now what is today the US Gas Technology Institute (GTI) has taken care of the practical organisation of the conferences, but GTI has announced that it will have to stop this activity.

IGU and GTI remain the main sponsors, supported by a large number of important gas companies, but IGU will take charge of future IGRCs bringing the event closer to the World Gas Conferences.

The IGU management is currently considering how best to organise this activity within the IGU organisation.

PKS

● Liquefied natural gas (LNG)

It is a well-established fact that the LNG industry is storming forward, taking a still bigger share of the global gas market. New technology has rendered

The IGRC-2004 opening ceremony where IGU President George Verberg received a "Talking Stick" from local people.

The entrance to the IGRC-2004 exhibition at the Pan Pacific Hotel in Vancouver.

the LNG chain cheaper and continues do so, and a small spot market has developed. The prospects for LNG seem particularly bright in countries like China, India and the USA. The importance of the sector is also why you will find an independent article about LNG in this issue, as indeed you did in former issues of the Magazine.

IGU is heavily involved in LNG activities. We cooperate with GIIGNL, we have our own permanent LNG Committee, Programme Committee D (please refer to the progress report), and we are a major stakeholder in the large global LNG-X Conferences. These conferences are managed by a Steering Committee of which both the President and the Vice President of IGU are members. The other major sponsors are GTI and the International Institute of Refrigeration (IIR), the latter based in Paris. The Secretary General of IGU is automatically secretary of the Steering Committee. Many readers may have participated in a very successful LNG-14 in Doha, Qatar in March last year, which attracted several thousand delegates and included a huge exhibition.

The Steering Committee has just started the preparation of LNG-15, which will take place in April 2007 in Barcelona, Spain and which promises to be an even greater event. The Spanish Gas Association, SEDIGAS, the Charter Member of IGU, will be the organiser of LNG-15 with SEDIGAS Secretary General, Juan Pons as the NOC Chairman. The venue is the Barcelona International Conference Centre (CCIB), which was opened last year on the seafront at the end of the Avinguda Diagonal and consists of two linked buildings. The blue, triangular-shaped Forum Building is the work of the prestigious architects Herzog & De Meuron. It houses an auditorium with 3,200 seats where the main LNG-15 ceremonies will be held. The rest of the exhibition and meeting rooms are in an adjoining building, which has more than 67,000 square metres of floor space spread over three floors. You can certainly look forward to LNG-15 in this beautiful Mediterranean city.

The Steering Committee has also elected Algeria as the host and venue for LNG-16 in 2010.

PKS

LNG-15 will be held at the Barcelona International Conference Centre.

Annual meetings and conferences of national gas associations

The IGU website www.igu.org and the Collaboration Portal are continuously expanding, bringing more services to members including recent hyperlinks to important databases and other collections of statistics. However, one older facility has never been in much use.

On www.igu.org under "Members" you find in the drop-down menu an entry called "Annual Meetings". The idea is that national gas associations should report the dates and venue of their annual meetings as a service to other members, but so far very few do. Currently you only find information from Denmark, France and The Netherlands. This is a pity, because the Secretariat is often asked for such information. It may be that many people regard this type of information of only domestic relevance, which is not always true, and if a Charter Member has provided us with their link on the membership list it is sometimes possible – although more complicated – to find the desired information through that route.

If there is interest we could expand this page to cover both national annual meetings and nationally organised conferences/events, in the hope that the national associations would be more eager to promote such events. Please contact the IGU Secretariat with your views.

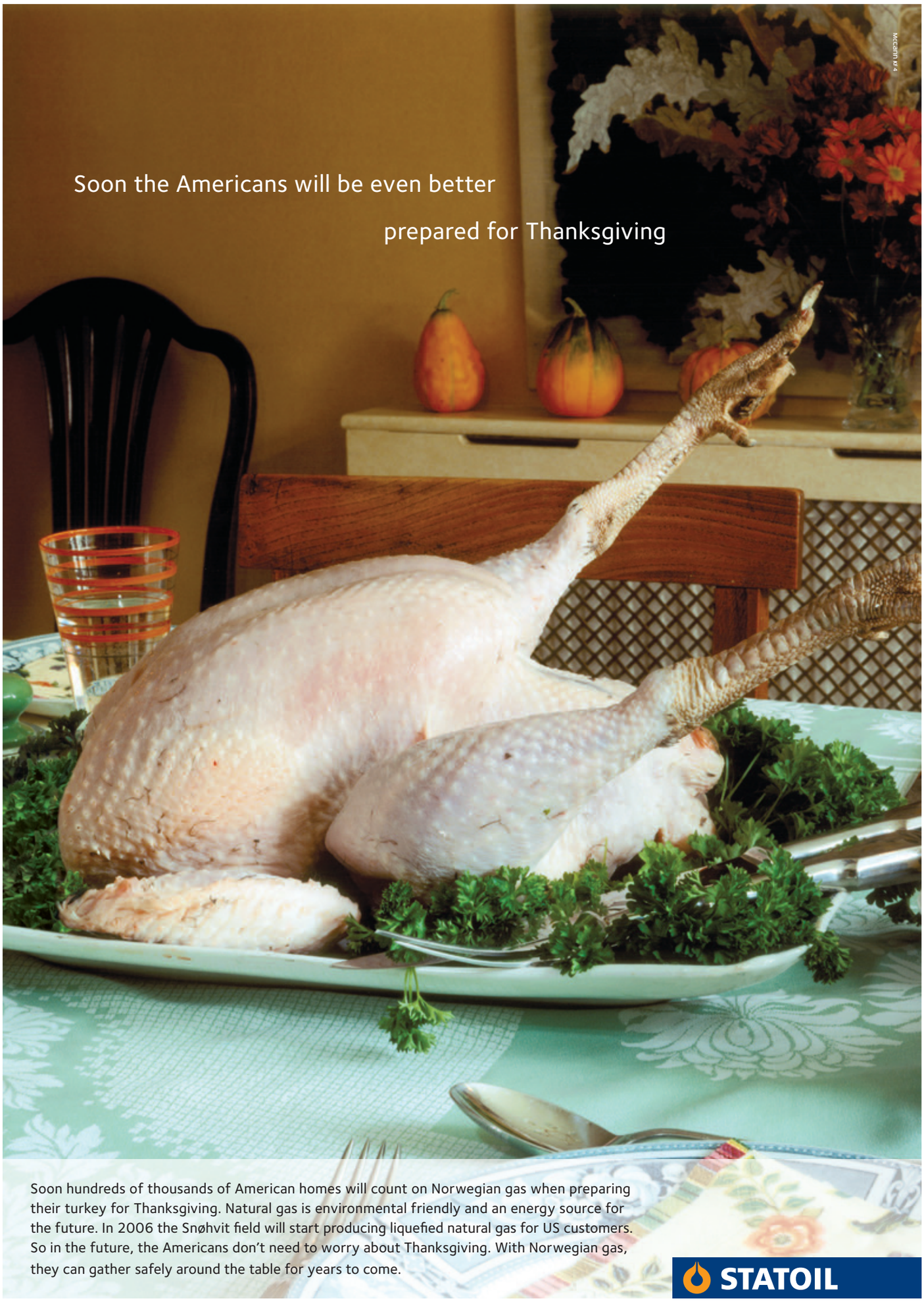
PKS

The IGU subscription fee

We are happy to announce that the IGU Council has decided that the annual subscription fee for 2005 will – once again – be maintained at €4500.

Members received the invoice for 2005 in the course of January with the request that the fee be paid to IGU before March 1, 2005. When reading this we certainly hope that most of you have already done so, not least to keep up the good record.

In fact, IGU members have lately been very disciplined with regard to paying their fees. Out of 85 members only five had not paid their subscription fee for 2004 by year-end, which is very



Soon hundreds of thousands of American homes will count on Norwegian gas when preparing their turkey for Thanksgiving. Natural gas is environmental friendly and an energy source for the future. In 2006 the Snøhvit field will start producing liquefied natural gas for US customers. So in the future, the Americans don't need to worry about Thanksgiving. With Norwegian gas, they can gather safely around the table for years to come.

STATOIL

changing your everyday life

commendable, but certainly also an extra stimulus to the missing five to fulfil their obligations as soon as possible.

The Secretariat is aware of the fact that in some countries the transfer of money internationally can be quite a slow and difficult process, which should only encourage members in such countries to initiate the process as soon as possible.

PKS/LKO

Visa required

The IGU 2005 Council meeting will take place in Tianjin City, People's Republic of China, October 17-20. The venue is situated approximately 100 kilometres from Beijing, which will be incorporated in the programme. Having been in contact with our Chinese hosts I can promise participants an exciting event in all respects.

As usual the Secretariat will send out invitations and the programme two-to-three months before the event, but since practically all foreigners need a visa to enter China you should be aware in good time that obtaining a visa is your own obligation. You will receive a necessary letter of invitation, but you have to obtain your visa from the Chinese Embassy or Consulate in your own country, a procedure which in some cases may be fairly lengthy.

On www.igu.org under "Members" you find in the drop-down menu an entry called "Annual Meetings". Please contact the IGU Secretariat with your views regarding better use of this facility.

A similar challenge faces members of the IGU Executive Committee joining the Executive meeting in Goa, India in March 2006.

PKS

"The show goes on"

There is just over a year to go until the biggest IGU event, the World Gas Conference, with the 23rd WGC taking place in Amsterdam, The Netherlands, June 5-9, 2006. You can read more about the preparations in the report on pages 38-39, and you can expect the programme and registration handbook in the autumn of this year.

Apart from the preparatory work going on in the nine IGU Committees with a large representation from around the world, the Dutch Presidency has initiated a number of fascinating and topical Special Projects all with the aim of making the 23rd WGC a memorable event. You can read much more about all that in the second part of this Magazine, the Progress Report from the IGU Coordination Committee.

PKS

Future deadlines

Although we are in the middle of a busy and very active Triennium led by the Dutch Presidency, the clock is ticking and the Secretariat is committed to starting preparations for the Triennium 2006-2009 under Argentinian Presidency.

In fact the IGU Articles of Association demand that some decisions regarding the future organisation and work of IGU be taken at this year's Council meeting in Tianjin City. That meeting will decide which Charter Member shall take over the Presidency of IGU for the Triennium 2009-2012. I sent a letter about this to all Charter Members, dated August 18, 2004, and the deadline for applications was March 1.

The October Council meeting will also decide which Charter Member countries (not persons) shall take responsibility for the nine standing IGU Committees and later nominate a candidate to

Tianjin City, venue for this year's Council meeting, is the base for operations supporting the gas and oil rigs in Bohai Bay.

take the chairmanship. The Council will also decide which countries shall have the right to nominate a Vice President to the IGU Committees.

In this regard I wrote a letter in January to the nine Charter Members currently holding the Vice Chairmanships. **The deadline to respond to this is September 1, 2005.** I subsequently wrote to all Charter Members asking who would be interested and able to nominate a Vice Chairman to the Committees. **The deadline to respond to this will also be September 1, 2005.**

The Charter Members elected by the Council both concerning Chairs and Vice Chairs will have to nominate a qualified and able candidate within one month of the Council meeting in Tianjin City. The Management Team will then evaluate the candidates and make proposals concerning their election to the IGU Executive Committee, meeting in Goa, India in March next year.

Also in the spring of 2006 all Charter Members not scheduled to have a seat on the Executive Committee will be encouraged to apply for a seat for the Triennium 2006-2009. Six seats are available and the people for those seats will be chosen by the Council in the meeting preceding the 23rd World Gas Conference in Amsterdam.

The Associate Members of IGU will in this respect be left in peace this year, but we certainly hope to see their representatives join the IGU Council meeting in Tianjin City. However, in the spring of next year the IGU Secretariat will conduct a voting procedure among all Associate Members with the purpose of electing from their midst two or possibly three representatives to join the Executive Committee for the Triennium 2006-2009. Those elected will then be confirmed by the Council in Amsterdam.

PKS

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 works by integrating electricity and gas operations around a central portfolio management.

Distrigas is a merchant company offering industries, distribution companies, electricity producers and natural gas resellers, tailor-made solutions at competitive price, combining with flexibility and security of supply. Its core businesses are natural gas sales and arbitrage, sale of international transit and transport capacity, LNG trade and shipping.

Fluxys completes the picture by offering natural gas transmission and storage services and LNG terminalling services in Belgium, while operating also the Zeebrugge Hub, the leading international short-term market for natural gas in Western Europe.

SUEZ's international energy division operates gas distribution networks in Korea, Argentina, Mexico and Peru and holds significant shares in the national gas distributors of Thailand and Chile.

The SUEZ business model is reflected in its worldwide LNG operations. For example, the Group has established a strong position in the LNG sector through four of its subsidiaries - Distrigas, Fluxys, SUEZ Global LNG and SUEZ LNG North America. **SUEZ Global LNG** leads the worldwide expansion of the SUEZ Group's LNG business activities while **SUEZ LNG North America** is one of the leading importers and most experienced LNG terminal operators in North America. Here again, it uses its strength in this market to balance supply and demand, thus ensuring competitive prices and stability of supply.

SUEZ strives for absolute mastery of art, and in all aspects of its business provides all the necessary value-added services. Its subsidiary **Tractebel Gas Engineering** for example is recognised as one of the leading specialists in the design and construction of plants for the handling of gas (LNG and LPG) from well-head to storage throughout the gas chain.

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.

GET IN TOUCH WITH OUR EXPERTS

DISTRIGAS
www.distrigas.be

FLUXYS
www.fluxys.net

TRACTEBEL GAS ENGINEERING
www.tractebel.de

SUEZ GLOBAL LNG
www.suez.com

SUEZ LNG NORTH AMERICA
www.suez.com

SUEZ
www.suez.com

EXPERTS IN NATURAL GAS AND LNG

The activities of SUEZ cover the entire gas supply chain, except exploration and production. The wide scope of its operations means that companies such as Distrigas, Fluxys, Tractebel Gas Engineering, SUEZ Global LNG and SUEZ LNG North America LLC are able to provide tailor-made solutions to meet the numerous challenges of any project in either the private or public sector.

SUEZ,
a smart gas strategy,
your preferred gas partner.

SUEZ

News from Organisations Affiliated to IGU

The International Association for Natural Gas Vehicles (IANGV)

By Juan Carlos Fracchia

It is a distinguished honour for me to send as President of IANGV a cordial salutation to the great NGV family worldwide. This particular opportunity has been made possible by the generous invitation of IGU to our Association to be present in the IGU Magazine, *International Gas*, with our message based on the progress of compressed natural gas (CNG) as a vehicular fuel around the world.

The growing global demand for energy and environmental concerns highlight the advantages of natural gas as an economic, clean and abundantly available fuel. In the transportation sector natural gas will play an increasingly significant role and the near four million vehicles running on natural gas (principally CNG although there are small fleets running on LNG) are a promising start.

Juan Carlos Fracchia.

IANGV plays an active role in the promotion of CNG and in the development of a strategy to face the challenge of a major market expansion. The size of that market is estimated to be 12 times as big as today's inside 15 years, with CNG a bridging fuel between petrol/diesel and future hydrogen projects.

While CNG is a growing commercial sector with a bright future, there is a continuing need to provide public and media information to support its development. IANGV has updated its communications strategy and developed a Customer Marketing Programme to include: the NGV Electronic Newsletter, the Link Programmes and the Marketing Alliance Programme. These offer the NGV industry the possibility of marketing goods and services through the intensive use of our website, which is the key vehicle for NGV industry promotion. With 10,000 separate visitors per month the website offers an extensive range of information and is extremely attractive to international visitors.

We take advantage of the invitation of IGU to reach all those companies that want to promote their services and products by means of professional advertising aimed specifically at the NGV business. They can find a résumé of the Marketing Alliance Programme on the next page. We want those companies to contact us, to join us.

Do not hesitate to ask any questions. Be one of the stakeholders of this new campaign by becoming a sponsor and joining the new IANGV communications plan.

Juan Carlos Fracchia is the President of the International Association for Natural Gas Vehicles.

INTERNATIONAL ASSOCIATION FOR NATURAL GAS VEHICLES

The International Association for Natural Gas Vehicles is offering companies the opportunity to market goods and services to a wide range of potential customers from around the world. This marketing programme is available through the IANGV website and other public media such as the electronic magazine.

The website of IANGV (www.iangv.org) has approximately 10,000 separate visitors per month, growing at about 10% per year. It thus offers companies widespread international exposure to potential customers. The IANGV website is truly international.

There will be three distinct levels of annual partnership – Gold, Silver and Bronze. This gives companies flexibility for selecting the most appropriate type and amount of marketing exposure through the IANGV website. The broad outline of benefits to partners is:

Gold Level Partner $15,000 ($19,000 non member)

- Company logo and link at Gold position on the IANGV website home page, the Discussion Forum, website sponsorship page and other selected pages.
- Company logo and link on all IANGV website related emails (announcements, changes, etc.).
- Premier Gold level position in the International Business Directory listing.
- Opportunity to post up to three distinct banner advertisements on the website. A sponsor banner advertisement selected at random will appear on most web pages.
- Free link and preferred position on the links page.
- Company logo in the new IANGV electronic monthly/weekly magazine.
- Gold level concessionary rates for advertising in the new IANGV electronic magazine.
- Company logo displayed at IANGV conferences.

Silver Level Sponsor $8,000 ($10,000 non member)

- Company logo and link at Silver position on the IANGV website home page, the Discussion Forum, website sponsorship page and other selected pages.
- Recognition on all IANGV website related emails (announcements, changes, etc.).
- Silver level position in the International Business Directory listing.
- Opportunity to post one banner advertisement on the website. A sponsor banner advertisement selected at random will appear on most web pages.
- Free link and preferred position on the links page.
- Company logo in the new IANGV electronic monthly/weekly magazine.
- Silver level concessionary rates for advertising in the new IANGV electronic magazine.

Bronze Level Sponsor $2500 ($3000 non member)

- Company logo and link at Bronze position on the IANGV website home page, the Discussion Forum, website sponsorship page and other selected pages.
- Recognition on all IANGV website related emails (announcements, changes, etc.).
- Bronze level position in the International Business Directory listing.
- Free link and preferred position on the links page.
- Company logo in the new IANGV electronic monthly/weekly magazine.
- Bronze level concessionary rates for advertising in the new IANGV electronic magazine.

The enhanced listing for companies in the on-line International Business Directory and the links page means the company name and logo will stand out from the competition. Banner advertisements, for Gold and Silver sponsors, will run on most IANGV website pages.

A marketing alliance with IANGV and its website makes good business sense. For more information, please contact Garth Harris at IANGV – iangv@iangv.org or telephone +64 9 524 0945 during New Zealand business hours.

Intergas Marketing (IGM)

As IGM President Mr Urs Zeller, Switzerland, explained in the last issue of the Magazine, the IGU Secretariat, hosted by DONG A/S, the national energy company of Denmark, now also manages the IGM Secretariat. This is done against a fixed annual fee for a three-year period, and there were a number of good reasons why the IGM Management approached IGU about this question.

IGM grew out of IGU about half a century ago, and IGM is today an organisation affiliated to IGU.

One of the important tasks of IGM is to prepare a dedicated Marketing Session each time IGU stages a World Gas Conference, and it puts IGM in a good position to take care of issues within its expertise out-sourced by IGU.

On the practical level it is already clear that there is rationalisation and synergy in having the two Secretariats working together out of the same place. The Webmaster of IGU and IGM, Lotta Hållén-Kragh, is assisting the Secretary General in IGM matters, and the fact that we have integrated the Secretariats gives us good opportunities to evaluate how we can integrate the two organisations even more in the future.

IGM revised its Statutes last year. You can find them on the IGM website: www.igmnews.com.

Among other things the organisation was simplified: A small Steering Committee is in charge of daily affairs together with the President and the Secretary General. The Plenary meets twice a year to discuss current projects and listen to country reports.

IGM will hold its 95th Session on May 13-14 in Barcelona, Spain. The 96th Session will take place in Brussels in October (the exact date will be announced later) and the 97th Session will be staged in connection with the 23rd World Gas Conference in Amsterdam in June 2006.

IGU members who are not members of IGM are welcome to attend a Session as a guest of the President. Please contact the Secretariat.

The IGM website is at www.igmnews.org.

Introducing Greenstream:
the longest gas pipeline in the Mediterranean Sea.

Thanks to the company's great skill, another ambitious Eni project has come to a conclusion: Greenstream will help strengthen ties between two continents. Eni's 520km long and 1,127m deep pipeline will carry 8 billion cubic meters per year of clean energy from Libya to Italy, thus making it available to its competitors. The amazing numbers and figures involved in this huge project are evidence to demonstration of Eni's capability and initiative.

Eni

Eni's Way

On Track for the 23rd World Gas Conference

By Robert C. A. Doets

June 2006 is rapidly approaching and everyone involved in organising the 23rd World Gas Conference is working with great enthusiasm. I am happy to report that we are on schedule with the preparations. Please find below an update about the technical programme, plans and activities for WGC2006.

Technical programme

The IGU Vision, Mission and Objectives, together with the Strategic Guidelines, form the basis for the Triennial Work Programme whose results will be presented during WGC2006 in Amsterdam. The three Strategic Guidelines are:

I Technology, industry efficiency and customer focus;

II Gas as the fuel of choice preceding a sustainable energy system; and

III The industry's role as a responsible corporate citizen.

These guidelines underpin the programmes and study projects of IGU's nine standing Committees. Study topics encompass: identifying the most important gas fields, difficulties in creating infrastructure and gas utilisation (e.g. NGVs and micro-CHP), plus more general subjects such as strategy and market development across the whole gas industry. There are also two Task Forces, one for research and development and one for information and communication technology. Moreover, on behalf of the Royal Dutch Gas Association (KVGN) and the Dutch gas industry, three Special Projects are looking into sustainable development, regulation and gas to power based on the principle of market where possible, regulation where needed. The results of these Special Projects will be presented at a special session during WGC2006.

Call for papers

The call for papers was distributed around the world at the beginning of March and it is possible to submit abstracts for WGC2006 via the Conference website up until September 1, 2005. The Coordination Committee is asking for your assistance in gathering interesting abstracts for inclusion into the technical programme. Accepted posters will be presented during the technical forums, which will be one of the highlights of WGC2006.

Selection of papers (abstracts)

The relevant Committees will evaluate all submitted abstracts with the final decision to accept or reject an abstract made by the Committee Chair.

Ben Warner, Robert Doets, Henriëtte Schakel and Joop Worm sit on the National Organising Committee for WGC2006 (ABOVE LEFT FROM LEFT TO RIGHT), while the Exhibition Committee comprises Daniel Vlugt, Henriëtte Schakel and Joop Worm (ABOVE RIGHT FROM LEFT TO RIGHT).

The WGC2006 Conference Secretariat will send notifications of acceptance or rejection by e-mail to all main authors before November 6, 2005.

Submission of full papers

Authors of accepted abstracts are requested to submit full papers through the WGC2006 website by February 1, 2006. Full papers will be registered with IGU as reference literature, will be published to all registered WGC2006 participants over the IGU and WGC2006 websites and will be distributed in the WGC2006 proceedings (on CD-Rom).

Key dates

Key dates in the run-up to WGC2006 are:

Until June 2005	Circulation of technical information to exhibitors
September 1, 2005	Deadline for submission of abstracts Deadline for names of invited speakers
October 6-7, 2005	2nd venue inspection (Exhibition) for country delegations
November 1, 2005	Paper selection ready, authors to be notified
November 2005	Publication of the general programme and registration handbook
February 1, 2006	Deadline for paper submission by invited speakers Deadline for Committee report submission
June 5-9, 2006	Conference and Exhibition dates

Exhibition

The Conference venue will house an extensive exhibition on the latest equipment, technology and corporate strategies covering all aspects of the energy industry. Although WGC2006 is not specifically an NGV event, there will be a number of NGV-related sessions and, most visibly, a special exhibition hall. Covering 7000 square metres this will be dedicated to NGVs, fuelling station technology and related equipment and industry services. WGC2006 will be the first World Gas Conference where NGVs have been highlighted to this extent.

PRELIMINARY PROGRAMME OVERVIEW

MONDAY JUNE 5, 2006	
09.00 – 18.00	Registration
10.00 – 15.00	Amsterdam city tours by boat departing from Amsterdam RAI Harbour
16.00 – 18.00	Opening Ceremony
18.00 – 22.00	Gala Dinner
TUESDAY JUNE 6, 2006	
07.30 – 17.30	Registration
08.30 – 18.00	Conference programme
10.00 – 17.30	Opening times of the exhibition
11.30 – 12.00	Official opening of the exhibition
WEDNESDAY AND THURSDAY JUNE 7 & 8, 2006	
08.30 – 18.00	Conference programme
10.00 – 17.30	Opening times of the exhibition
FRIDAY JUNE 9, 2006	
08.30 – 15.30	Conference programme
10.00 – 17.30	Opening times of the exhibition
15.30 – 17.00	Closing Ceremony
17.00 – 22.00	Farewell Party

More information

Please refer to www.wgc2006.nl to find more details about Amsterdam, the tentative programme, how to reserve hotel accommodation, contact details of the Conference Secretariat and other information. We look forward to seeing you in Amsterdam!

Robert C. A. Doets is the Chairman of the National Organising Committee WGC2006.

afg
association française du gaz

LE SYNDICAT PROFESSIONNEL DU GAZ EN FRANCE

- L'AFG est le syndicat professionnel de l'ensemble des acteurs de la fillère gazière (Gaz Naturel et GPL).
- L'AFG rassemble l'ensemble des entreprises, industriels, professionnels et associations professionnelles intervenant sur le marché français.
- L'AFG est le lien entre tous les acteurs de ce secteur d'activité et contribue à sa promotion.
- Etre adhérent de l'AFG, c'est être représenté dans tous les domaines de l'industrie gazière.
- L'AFG représente l'industrie gazière française au sein de l'Union Internationale de l'Industrie du Gaz (UIIG).
- L'AFG est membre de Marcogaz (Association Technique de l'Industrie Européenne du Gaz Naturel) et d'EASEE – gas (Association Européenne pour la Rationalisation des Echanges d'Energie – gas). Elle est ainsi en mesure de mettre en valeur, de promouvoir et de défendre l'industrie française au niveau européen et, plus largement à l'international.

THE GAS TRADE ASSOCIATION IN FRANCE

- The AFG is the trade association for all those involved in the gas sector (Natural Gas and LPG).
- It includes all businesses, manufacturers, companies and trade associations operating on the French market.
- The AFG is the link between all participants in this business sector and contributes to promoting it.
- Being a member of the AFG means being represented in all fields of the gas industry.
- The AFG represents the French gas industry in the International Gas Union (IGU).
- The AFG is a member of Marcogaz (Technical Association of the European Natural Gas Industry) and EASEE – gas (European Association for the streamlining of Energy Exchange – gas). It is thus able to enhance, promote and defend the French industry in Europe and, more broadly internationally.

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com'océan 12/03

COORDINATION COMMITTEE PROGRESS REPORT

Introduction and Key Developments

The purpose of this Coordination Committee progress report is to provide all Charter and Associate Members of IGU, together with members of the Council, Executive Committee, Coordination Committee, Programme and Working Committees, Task Forces and Special Projects, as well as other interested parties, with information about the progress of the work as described in the Triennial Work Programme (TWP). The progress report consists of contributions from all parties involved. It is published as part of the IGU Magazine as well as on the IGU Collaboration Portal. The report is edited by the Coordination Committee (CC) Secretariat under the responsibility of the CC Chairman.

As far as the content of the work of the Committees, Task Forces and Special Projects is concerned, this third report in the Dutch Triennium concentrates on the last six months of 2004.

General

The Coordination Committee held its third formal meeting in Oslo, Norway on September 20 and 21. It was organised differently from the first two CC meetings, with the meeting being held on two consecutive days in order to have more time for presentations of the content of the work. Organisational matters were discussed for one and a half hours on the first day, followed on the second day by three hours of content delivered by the respective chairmen and leaders of the Committees, Task Forces and Special Projects in the presence of IGU Executive Committee members and guests. The minutes of the meeting and the respective presentations are published on the CC section of the Collaboration Portal.

For various reasons not all the formal delegates were able to attend, but the alternates of those who could not travel to Oslo did an excellent job in their place. Overall, the meetings went very smoothly and we would like to thank our Norwegian hosts for their excellent organisation and hospitality.

Several Chairmen and other people involved in the work of this Triennium took the opportunity of getting together during their ferry journey to Oslo. During this informal meeting a number of points were discussed including the detailed programme of the 23rd World Gas Conference in Amsterdam and developments in the Special Projects.

The preparations for WGC2006 are progressing. The structure of the conference has been set up and we have started to invite keynote speakers and panellists.

The preliminary conference programme we have in mind will cover the following themes:

- Market Growth & Gas to Power on Tuesday June 6;
- Regulation & LNG on Wednesday June 7; and
- Sustainability & Security of Supply on Thursday June 8.

Finally on the Friday we envisage speeches and a panel about the issues of whether there will be a seller's or buyer's market in the near future and how policy makers from around the world assess gas market developments. However, all this might change during the process of developing the programme and depends on the availability of speakers.

Meetings and visits

The CC Chairman and the authors of the report on Gas to Power (GTP) in South America held several conference calls about the finalisation of the report. It has now been published and is available from the CC Secretariat as a booklet or in electronic (PDF) format.

From June 14 to 19 GAS2004 (International Conference on Development in the Gas Industry of South and East European Countries in Transition) was held in Belgrade, Serbia and Montenegro. On behalf of IGU several speakers gave talks about

1 At the time of IGU's creation in 1931 the organisation was called the Institution of Gas Engineers (IGE); it became the Institution of Gas Engineers and Managers in October 2001.

different aspects of the gas business. IGU was one of the supporters of the event.

On June 22 the CC Chairman gave a presentation to a meeting of the Institution of Gas Engineers and Managers (IGEM), which was held in Coventry, UK. IGEM was one of the founding members of IGU[1].

During the summer several contacts were made with WPC to discuss possible contributions from IGU to the 18th World Petroleum Congress being held this September in Johannesburg. Cooperation with WPC is also under consideration regarding the organisation of a workshop on greenhouse gases in conjunction with the International Petroleum Industry Environmental Conservation Association (IPIECA).

It was decided that Mr Bertus Postmus of Gasunie Trade & Supply, The Netherlands, will represent IGU in the Business Action for Energy (BAE) initiative, which was launched by the World Business Council for Sustainable Development, World Energy Council and International Chamber of Commerce.

The Chairman and Secretary of the CC held a coordination meeting on August 17 with the President and Secretary General of IGU and the Chairman of the Dutch National Organising Committee for WGC2006. The main items covered were the preparation of the Executive and Council meetings in Oslo. In particular the content of the third part of the Council meeting was discussed.

The CC Chairman and Secretary and the project adviser for GTP, Dick de Jong, took part in the European GTP workshop that was held on October 4 in Brussels, Belgium. The President represented IGU at a high-level GTP meeting organised by IEA in Paris, France on October 22.

The CC Chairman in his capacity as Vice President of IANGV took part in the Association's Executive and Council meeting and visited its 9th biennial conference and exhibition NGV2004. The events were held in Buenos Aires, Argentina, October 26-28.

IGRC 2004 was held in Vancouver, Canada, November 1-4. The CC Chairman took part and Erich Jurdik and Roy Bilbé of the R&D Task Force presented their progress report. The summary in the proceedings reads: "The objective is to analyse the R&D situation across the gas chain and in different countries and establish priorities. Initiatives such as those of the R&D Task Force are of key

BELOW
Table 1.

SUMMARY OF MEMBERSHIP OF COMMITTEES

Country	*Number of Members*	*Country*	*Number of Members*
Algeria	33	Kazakhstan	6
Argentina	16	Malaysia	14
Australia	10	The Netherlands	18
Austria	13	Norway	13
Belgium	21	Pakistan	23
Bosnia Herzegovina	7	Poland	9
Brazil	1	Portugal	1
Cameroon	3	Qatar	4
Canada	2	Romania	6
China, People's Republic of	11	Russia	46
Taiwan, China	2	Serbia and Montenegro	18
Croatia	26	Slovak Republic	17
Czech Republic	8	Slovenia	5
Denmark	18	South Korea	23
Finland	5	Spain	23
France	27	Sweden	5
Germany	24	Switzerland	7
India	1	Tunisia	1
Indonesia	3	Ukraine	12
Iran	28	United Arab Emirates	2
Ireland	1	United Kingdom	18
Italy	21	United States	12
Japan	18	Total	582

RIGHT
Table 2.

importance for the energy business as they address technological challenges in a coherent way. By so doing, future energy R&D priorities will be better identified, providing a guide to both market players and governments, to enable them to react in the most appropriate way and to allocate resources for the most promising R&D directions. In addition, the risk of taking decisions regarding the future of R&D that could be regrettable for many years to come can be minimised."

At COP 10 in Buenos Aires IGU was represented by the Secretary General and the CC Chairman. During the conference, which was held December 6-17, IGU and the Argentinian Charter Member, the Instituto Argentino del Petróleo y del Gas, organised a special event.

BELOW
Table 3.

COMMITTEE MEETINGS DATES AND VENUES AUTUMN 2004

Committee	*Autumn 2004*	*Attended from IGU Management by*
WOC 1	September 15-17, Copenhagen, Denmark*	Storm, Panman, Aptroot
WOC 2	September 15-17, Copenhagen, Denmark*	Storm, Panman, Aptroot
WOC 3	September 16, Helsinki, Finland	
WOC 4	October 5-8, Milan, Italy	
WOC 5	November 4-5, Vancouver, Canada	Storm, Panman
PGC A	September 15-17, Copenhagen, Denmark*	Storm, Panman, Aptroot
PGC B	September 19, Copenhagen, Denmark	Panman
PGC C	November 22-23, Cairo, Egypt	Panman
PGC D	September 27-28, Arzew, Algeria	Storm
CC	September 20-21, Oslo, Norway	All
TF R&D	November 1, Vancouver, Canada	Storm, Panman
TF ICT	September 15-17, Copenhagen, Denmark*	

* Joint meeting

SUMMARY OF NOMINATIONS FOR COMMITTEES BY IGU MEMBERS

WOC PGC	*Leadership*	*Members*	*Associate Members*	*Total*
1	3	33	5	41
2	3	43	6	52
3	3	57	1	61
4	3	54	1	58
5	3	76	1	80
A	3	17	1	21
B	3	54	2	59
C	3	43	3	49
D	3	58	6	67
All	27	435	26	488

Committee membership

Based on information collected so far, 582 people are involved in the work of the Committees. This figure includes those formally nominated by IGU members and other participants including some specialists from outside IGU. The spread over the regions is: Africa 37, Asia-Pacific 105, Europe 375, Middle East 34, North America 14 and South America 17 (*see Table 1*).

The figure for formal nominations is 488, which includes delegates, alternate delegates, corresponding members and Study Group members (*see Table 2*). Some 67% of countries represented in IGU have appointed nominees with this Triennium's target of 65% being reached in October 2004. Nominees come from 45 Charter Members and eight Associate Members and for each of the Committees at least one Associate Member has nominated a member.

A complete list of all the delegates is available on the Collaboration Portal.

QUESTIONNAIRES DURING THE 2003-2006 TRIENNIUM

Subject	*Committee*	*Period*	*Published*	*Audience*
General IGU	CC	Q2 2003	www.SurveyMonkey.com	EXC and Committee Chairs
Standardisation of LNG qualities	PGC D SG1	Q1 2004	E-mail	PGC D members
Safety of LNG plants and vessels	PGC D SG2	Q4 2004	Letter	Plant and terminal managers, vessel owners, IGU members and members of the Society of International Gas Tanker and Terminal Operators (SIGTTO)
Acid gas injection	WOC 1	Q3 2004	Portal and e-mail	WOC 1 members
What are the world's most significant gas fields?	WOC 1 SG 1	Q2 2004	www.SurveyMonkey.com	Operators of some significant gas fields and WOC1 members
Glossary on UGS terminology	WOC 2 SG1	Q3 2004	E-mail	WOC 2 members
UGS: Achievements and trends in the field of technical efficiency, environmental stability and safety	WOC 2 SG2	Q3 2004	E-mail	WOC 2 members
UGS environment related	WOC 2 SG3	Q3 2004	E-mail	WOC 2 members
Global review of third party access	WOC 3 SG1	Q2 2004	E-mail	WOC 3 members
Address increasing difficulties to create offshore infrastructure	WOC 3 SG3	Q12005	Email	Gas industry
Address increasing difficulties to create onshore infrastructure	WOC 3 SG3	Q1 2005	Portal and e-mail	WOC 3 members
Pipeline integrity	WOC 4 SG1	Q4 2004	E-mail	WOC 4 members
Best practices	WOC 4 SG2	Q2 2004	E-mail	WOC 4 members
Research and technology	WOC 4 SG3	Q2 2004	E-mail	WOC 4 members
GTP in South America	Special Project GTP	Q1 2004	E-mail and letter	Gas industry, power industry, authorities in South America
GTP in Europe	Special Project GTP	Q2 2004	E-mail and letter	Gas industry, power industry, authorities in Europe

ABOVE
Table 4.

Meetings of Committees and Task Forces

All the Committees and Task Forces have held their third meetings (*see Table 3*) and report on their work in the next chapter.

Joint meeting

In the week preceding the Oslo Council meeting a joint meeting was held, in which WOC 1, WOC 2, PGC A and TF ICT took part. This joint meeting took place at the headquarters of DONG in Hørsholm (near Copenhagen) in Denmark. The committee delegates met for their regular committee meetings and Study Group meetings and the joint meeting was concluded with a workshop on greenhouse gas issues for the gas industry. The workshop has advised on a draft position and policy paper to be discussed further within IGU. A second joint meeting for the other committees is planned around the Spring Executive meeting in Warsaw. This will involve WOC 2, WOC 3 and WOC 4, who will meet in Moscow, and PGC B, PGC C, PGC D and the R&D Task Force, who will meet in The Netherlands.

The Committees are in the middle of their respective studies and are working on different questionnaires. In *Table 4* you can find their respective questionnaires as they have been produced so far. In some cases the special IGU-funded site for carrying out surveys (www.SurveyMonkey.com) is used. This website has the advantage that it produces the analyses in the form of histograms directly online.

Saudi Aramco: Three Decades of Gas Development

In Saudi Arabia the past three decades have witnessed extraordinary growth, both in the development of gas as a resource and in the mammoth expansion of local industries that use gas as a feedstock or as fuel. The domestic gas sector has enabled the development of a robust petrochemical industry that now ranks among the world's largest.

Gas reserves and production play an ever-increasing role in sustaining industrial development in Saudi Arabia. Today, Saudi Arabia utilises more gas per capita than the UK, Germany or Japan, all in high value-added end uses. The demand for gas is expected to continue to grow at 5% per year over the next two decades as the country's domestic and industrial bases expand.

To meet that demand, the last few years have witnessed the construction and start-up of a number of world-class gas facilities: the Hawiyah gas plant (named Project of the Year for 2002 by the Project Management Institute or PMI), the Haradh gas plant (PMI's Project of the Year 2004), and the Berri Gas Plant upgrade and expansion. Both Hawiyah and Haradh process exclusively non-associated gas and have a combined capacity of 3.2 billion standard cubic feet per day (scfd), bringing total Saudi gas plant capacity to 9.3 billion scfd. Ranking ninth in the world in gas production, Saudi Arabia is the largest gas producer in the Middle East and in OPEC.

Along with capacity growth, sales gas (dry gas or methane) supplies have also been extended beyond the production areas in the east. About a billion scfd of sales gas is now supplied to the Riyadh area and some 400 million scfd now flows to Yanbu' in the west.

With known total gas reserves of 235 trillion cubic feet (tcf), Saudi Arabia's gas reserves comprise approximately 4% of the world's known reserves and place the country fourth in reserves worldwide. The growth in production has been underpinned by Saudi Aramco's large and successful exploration effort that nearly doubled the non-associated gas reserves over the last decade to the current 97 tcf.

Future projects

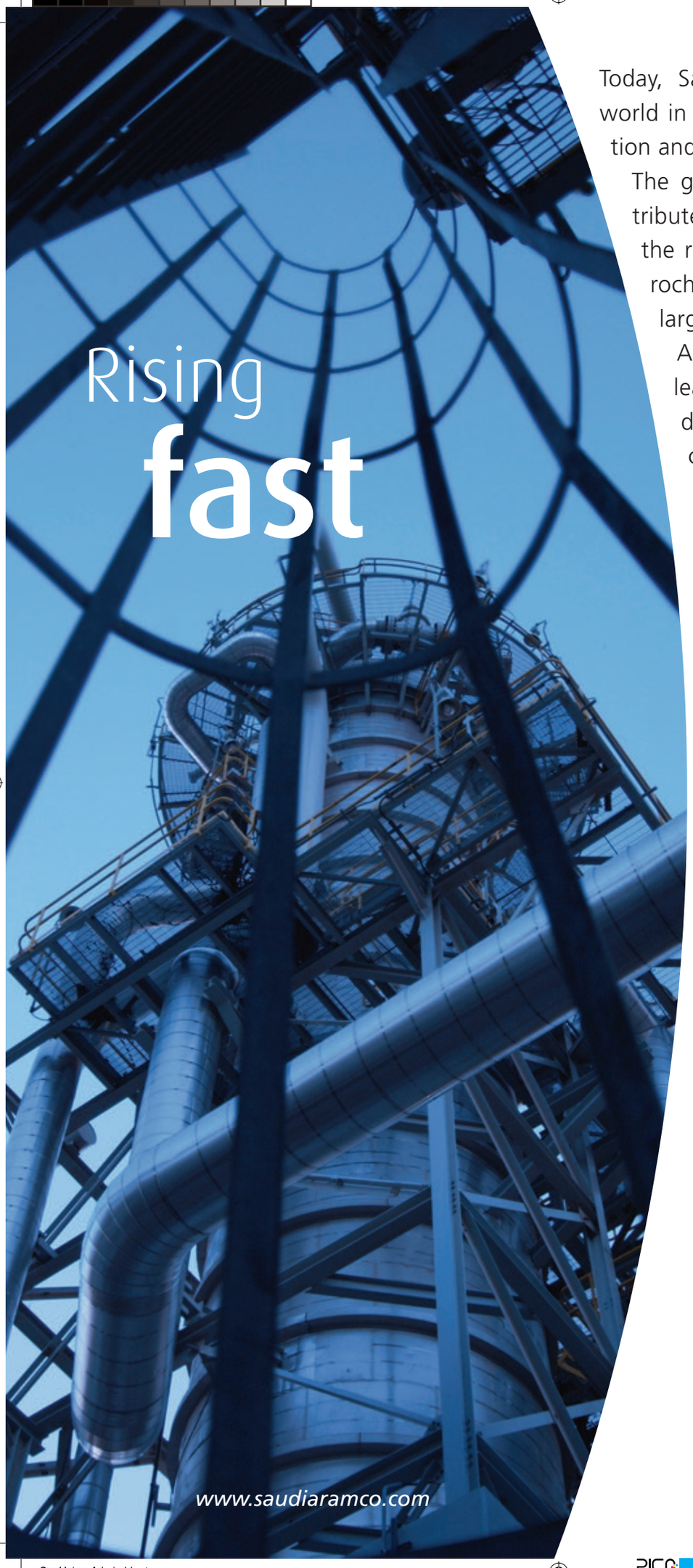
Further expansion is on the way. In south Ghawar, in a multi-billion dollar project, the Hawiyah gas plant is being expanded and natural gas liquids (NGL) recovery is being added to the combined stream from Hawiyah and Haradh gas plants. In the north, in conjunction with the massive increase in crude oil production capacity under way, treating capacity for the associated gas is being added both in the existing Berri gas plant and in a new grass roots gas plant at Khursaniyah. In parallel, NGL fractionation capacity is being increased at Ju'aymah in the east and Yanbu' in the west. In all, sales gas output will increase to nearly 8 million scfd and NGL production will approach 1.3 million barrels per day by the end of this decade.

Saudi Aramco is expanding its gas plants.

Partnerships in upstream gas offerings

In a series of landmark events in 2003 and 2004, Saudi Aramco signed four joint-venture agreements for the exploration, development and production of non-associated gas in the Rub' al-Khali, or Empty Quarter. In an agreement signed in 2003, Saudi Aramco has teamed with Royal Dutch Shell and France's Total. In 2004 additional agreements were reached with Lukoil of Russia, Sinopec of China and a consortium of Italy's Eni and Spain's Repsol YPF.

We are working hard to increase gas reserves and production to drive local economic development both within the company and with our partners. By making gas and associated products available to more industries, we diversify the kingdom's revenue sources and create more employment opportunities for the nation's citizens. At Saudi Aramco we never lose sight of our dual commitments: providing reliable energy to the world and supporting economic development at home.



Today, Saudi Arabia ranks fourth in the world in gas reserves and ninth in production and is rising fast.

The gas discovered, produced and distributed by Saudi Aramco has impelled the rapid growth of the domestic petrochemical industry, one of the world's largest.

And, once again, Saudi Aramco is leading the way to expand the Kingdom's gas resources and production capabilities.

Over the last two years, we've enlisted the partnership of international majors to further increase gas reserves and production. Four joint ventures have begun exploration work in the Rub' al-Khali, or Empty Quarter.

Gas growth beckons further profitable investments along the entire value chain.

After three decades of extraordinary expansion, the Saudi gas sector is still rising. And Saudi Aramco is making it happen.

ارامكو السعودية
Saudi Aramco
Energy to the world

Progress Reports from the Committees

This chapter contains news and information from IGU's Working and Programme Committees.

Working Committee 1 Exploration and Production

WOC1's third meeting of the 2003-2006 Triennium was held in Denmark, September 15-17, 2004, with 19 members present. The meeting took place at DONG's headquarters in Hørsholm at IGU's invitation and preceded a joint workshop on greenhouse gases with WOC 2 and PGC A.

The Committee's working sessions included an informative presentation by guest speaker Søren Gath Hansen, CEO of DONG Exploration and Production (Denmark). From within the group, we had presentations on methane hydrates and on the Hassi R'Mel gas field in Algeria. Prior to the meeting, members of WOC1 contributed upstream perspectives to research by the Chairman of the Research and Development Task Force, Roy Bilbé, on the most significant technological topics in all areas of the gas industry.

Over the day and a half WOC 1 members were together, the Study Groups spent time individually discussing their subject areas and how they want to progress, which resulted in presentations to the entire Committee. In plenary, the Committee members discussed how they envisage their final contribution to the World Gas Conference in 2006, in order to provide a clear goal as well as actions for the Study Groups over the coming years.

The two Study Groups made much progress on their focus areas.

SG 1.1's 15 members have the task of identifying the world's most significant gas fields. Djaouid Bencherif of Sonatrach, Algeria is leading this Group with Torstein Hole as Deputy Leader and Marie-Françoise Chabrelie of Cedigaz as Technical Advisor. Since the last meeting members of the group have been working on a specific geographical area and investigating the most significant gas fields there. The results from the research were discussed in order to identify further analysis needed for the final report. The idea of WGC delegates voting for the world's most significant gas fields was also discussed.

SG 1.2 is focusing on new upstream horizons in the 21st century. This Group is led by Dominique Copin of Total, assisted by Muhnie Hwang (Korea Gas Union) as Deputy Leader and Mark Howard as Technical Advisor from BP. There are 23 members. Vladimir Yakushev, of VNIIGAZ, Gazprom, has been asked to take on the responsibility of coordinating the work on methane hydrates. Both Study Groups have drafted a proposed framework for their contributions to the WGC in 2006 and an initial list of subjects for the call for papers was decided.

Members and meetings

There are 41 members of WOC 1 and the geographical split is: Africa (two), Asia (10), Australia (one), Europe (26), North America (one) and South America (one). The meetings held in the second half of 2004 and planned for the rest of the Triennium are detailed in *Table 1*.

Working Committee 2 Storage

WOC 2 participated in the joint meeting in Hørsholm, September 15-17, 2004 and our new member from the Russian Gas Society, Dr Lichachov, gave a presentation to the workshop on greenhouse gases. The discussions during the workshop were very interesting for us, particularly those concerning CO_2 sequestration in geological formations, which is our core business.

WOC 2 has three Study Groups. SG 2.1 covers basic UGS activities and its main outcome will be a comprehensive database that includes all storages

worldwide. This means updating the work done in the last Triennium and the first task was preparing and then circulating a questionnaire. The design of the questionnaire, the glossary of terms and the structure of the database were finalised during the meeting in Hørsholm. The questionnaire was sent out in October. Part of the questionnaire relates to environmental issues and has already been tested by some companies.

Questionnaires for the other Study Groups have also been finalised and sent out. It has been decided that the final reports of the Groups should include case studies and during the last Committee meeting we discussed the structure of the sessions and our contribution to the World Gas Conference in Amsterdam. We decided that it would be better for us to have three expert forums. The first will cover the technological side, title performance and improvement of the storages. The second will address the safety and environmental aspects of storage operations and it will draw on the work of Study Group 2.2. The third expert forum will look at new storage types and new options for storage.

One of the ideas was to open with the report of SG 2.1 and concentrate this session on the prospects of storage development in different countries. It will cover all issues of the storage business. This means technological, economic, environmental, safety and commercial, the latter being a relevant issue in liberalised gas markets. It will be very interesting for people related to the storage business.

Working Committee 3 Transmission

Currently there are 61 members in WOC 3 (40 delegates, 20 alternates and one associate). The spread over the continents is: Africa (two), Asia (10), Australia (one), Europe (45) and South America (three).

WOC 3's third meeting was hosted by Gasum in Helsinki, Finland, September 16, 2004. Presentations were given by Mr Stephane Heuschling on the Ghislenghien accident and the Study Group Coordinators on the work performed by each Study Group. The Committee's proposed participation in the World Gas Conference 2006 was also presented to the members.

The Study Groups have progressed considerably in the steps fixed towards WGC 2006.

SG 3.1 The results of the first questionnaire were handed out to members in the third WOC 3 meeting in Helsinki. A coefficient calculated with these results allows the quantification of the degree of liberalisation of a country. Mr Francesco Caria (SG 3.1 Coordinator) concluded that some modifications needed to be made to the questionnaire that was due to be sent out in the first quarter of 2005.

WOC 1 MEETINGS

Date	*Host*	*Venue*	
2004	September 15-17	IGU Secretariat	Hørsholm, Denmark
	September 17	Joint Session with WOC 2, PGC A and ICT Taskforce	Hørsholm, Denmark
2005	March 16-18	Branislav Tomović, NIS-Naftagas	Belgrade, Serbia and Montenegro
	Autumn	Joint Hosts: Muhnie Hwang, SK-Enron and Ki-Hwan Park, Korea Gas Corporation	Je-Ju Island, Korea
2006	Spring	Leopold Bräuer, ÖMV	Vienna, Austria

LEFT
Table 1.

WOC 3 discussed the Ghislenghien accident during its third meeting.

SG 3.2 The Group's third meeting took place on September 15, 2004, prior to the main Committee meeting in Helsinki. The interesting contributions of the Russian members have focused the scope of work on the stress corrosion cracking (SCC) issue. Mr Bonnetto (SG 3.2 Coordinator) and Vladimir Kotenev presented some of their experiences in dealing with SCC

SG 3.3
Onshore: A Coordinator for this Group has not been appointed but, following a proposal of the IGU President, the WOC 3 leadership is carrying out a survey based on a questionnaire. The aim is to identify the difficulties in creating onshore infrastructure in different countries and the questionnaire was sent out January.
Offshore: The first meeting of this Group took place in Stavanger, Norway on January 25. The results of the meeting will be presented to WOC 3 members in the next Committee meeting.

SG 3.4 The Study Group's third meeting took place on September 30, 2004 in Calgary, Canada. North American participation from Canada and the US has been achieved. Mr Bolt (SG 3.4 Coordinator) reported that the comparative analysis between databases has begun.

Meetings
One of the most important challenges for WOC 3 will be the participation in a joint meeting with WOC 2 and WOC 4 in Moscow, Russia, April 12-13. Interesting conclusions and a greater interactivity amongst the Working Committees are some of the expected results of this event. The following meeting is scheduled for September in Stavanger.

Working Committee 4 Distribution

There are currently 37 countries represented on WOC 4 as members, associates or observers: Africa (one), Asia (10), Australia (one), Europe (20), North America (three) and South America (two).

During the second half of 2004 the Committee met in Milan, Italy, October 5-8. Some proposals for topics to be included in the WGC2006 Call for Papers have been made and the Committee has also identified key research topics for gas distribution to send to the CC as information for the R&D Task Force. The progress made by the three Study Groups is detailed below.

SG 4.1 (Pipeline integrity) has prepared a basic questionnaire covering four integrity areas: drivers, external influences, policy and enablers. The final

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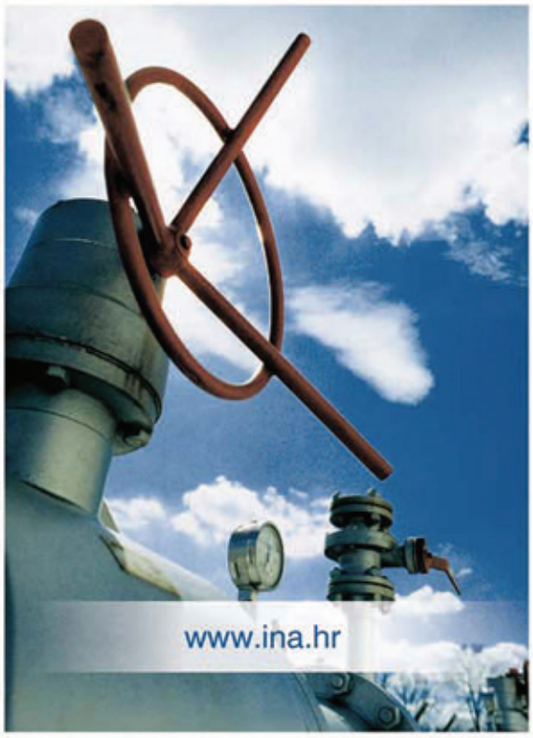

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Fax. 385 1 6451 21000

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OIL COMPANY

review was made at the Milan meeting and it was subsequently circulated by e-mail with responses requested by January 31. A summary is to be prepared and reviewed at the next meeting in April. A US study on distribution integrity was published earlier this year and will also be presented at the April meeting.

SG 4.2 (Best practices) has selected seven topics concerning the construction and operation of distribution networks that are being used for data collection. The general data collection for Phase I has been completed and data summarised. The companies for the second phase of the study on best practices will be selected at the April meeting and the Phase II follow-up questionnaires sent out with responses due by June 30. The preliminary draft of the report will be prepared and reviewed at the September meeting.

SG 4.3 (R& D in the gas industry) has reviewed responses to a questionnaire showing some results of worldwide gas market liberalisation and their potential impact on gas distribution research. Following the Milan meeting a draft report was reviewed and a second draft is being prepared for review at the April meeting. Liaison with the R&D Task Force is planned.

Meetings

Going forward WOC 4 will participate in the Moscow joint meeting (April 12-13) and has scheduled meetings for September in Spain and spring 2006 in the Slovak Republic (exact dates and venues to be decided).

● Working Committee 5 Utilisation

WOC 5 has 80 members from 38 countries. The Committee scheduled its meeting during the second half of 2004 to coincide with International Gas Research Conference and met in Vancouver, Canada, November 4-5, 2004. There are four Study Groups.

SG 5.1 Industrial utilisation – Howard Levinsky

Industrial end users are faced with substantial challenges arising from the drive towards sustainable development. They have to combine higher energy efficiency to reduce CO_2 emissions and primary fuel consumption, with a major reduction in pollutant emissions to reduce the impact of industrial activities on the environment. Moreover, they need to improve the quality, flexibility and reliability of their production processes to limit the consumption of raw materials.

SG 5.1's work was restarted in September 2004 at a meeting hosted by Gaz de France. The Study Group's targets were revised at this and the following meeting in Vancouver in November 2004 to inventory the challenges to industrial gas utilisation (regulatory, economic, customer needs, sustainability, gas quality, etc.) and the technological means to address them. The inventory will be carried out by means of a questionnaire on international practices. Initially this will be sent to all WOC 5 members, with the specific request to consult with the various industrial groups in each country. Also included are questions regarding impediments to the implementation of new technology and ways to overcome them, as well as questions concerning technological R&D for this sector. In addition, the opinions of WOC 5 members will be sought concerning the actual importance of the industrial sector and the role of technological development for their businesses.

SG 5.1's deliverables for 2006 are to present the results of the questionnaire and organise a round-table discussion on challenges to industrial utilisation at the World Gas Conference. In addition to a round-table discussion, possible topics for a "regular" session at the WGC could be: challenges to industrial utilisation, the state-of-the-art in industrial utilisation technology and impediments to the implementation of new technology in industrial gas utilisation.

Do not damage. When you choose Gaz de France for your nest, you are conserving your environment. In order to help each one to develop and strike the best possible balance between one's needs in energy and the necessary respect of the environment and people, Gaz de France mobilises, day by day, its high innovation capacity. High-performance boilers, geothermal power, solar energy and biomass associated with natural gas, vehicles running on natural gas: because the cleanest energy is the energy we don't consume, Gaz de France helps you to consume better. **www.developpementdurable.gazdefrance.com**

australie - © Photo : Laziz Hamani.

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SG 5.2 Domestic and commercial utilisation – Jean Schweitzer

The utilisation of gas for domestic and commercial markets represents about 10% of the total gross energy consumption worldwide and this share is growing. The development of the gas market is today one of the most effective solutions for saving energy and reducing the CO_2 emissions.

The work of the Study Group is a continuation of that carried out during the previous Triennium under SG 6.1. While the previous work was done at a very general level, SG 5.2 operates in more detail using case studies. The work of SG 5.2 will be influenced by the changes that are seen every day in the new energy market: the appliances of tomorrow will be multi-energy and most of the gas companies will also sell electricity or other forms of energy.

In practice we suggest the following targets are suggested:

- In continuation of the work previously done, to study the impact of the new gas technologies in the domestic and commercial sectors. The work will concentrate on the most important points identified during the previous Triennium and include the aspects and countries that have not been covered sufficiently or for which data have not been very accurate. Thus the first objective is to complete the previous report.
- An assessment of the potential of gas-powered air conditioning (with the possibility of a case study).
- A reflection on the future of the market for gas appliances in a world where energy market is changing very quickly to see how best to combine different forms of energies for the benefit of society, consumers and the gas industry (with the possibility of case studies).
- To establish a permanent database of installed domestic appliances in coordination with Marcogaz, the European Gas Research Group (Groupe Européen de Recherches Gazières – GERG) and possibly other organisations that have data and can share their market knowledge. The database already exists as a result of the work of the previous SG.6.1, but needs to be completed and verified/tuned. The database would be useful for IGU studies and also for the other organisations. The database will avoid the duplication of work and questionnaires in IGU and other organisations.

The work is organised in several topics that are placed under the responsibility of one or several experts in the Group (about 10 experts in all). The topics are:

1. Indoor air quality (Japan);
2. Central heating/district heating (Russia);
3. Air conditioning (France);
4. Low installation costs (Denmark);
5. Integrating safety functions (Belgium);
6. Combining different forms of energy (Switzerland); and
7. New technologies (all).

Questionnaires on each topic are being circulated within the Study Group, while externally we have started collaboration on topic 4 (low installation costs) with a Canadian research centre.

Beside this work the Group has started a report about reinforcing the presence of gas in the domestic and commercial sectors when facing new challenges. In the domestic sector it is important to consider the future of central heating boilers. More of tomorrow's customers are likely to want air conditioning and some may also want to produce their own electricity. There is certainly a future for those multi-generation systems based on gas or gas with renewable energy. Another question is whether those systems will be individual or shared ones such as smaller district heating systems (see the EU energy service directive).

The work done in the Group should bring some element light on some of the points above and we could as form of reporting try to imagine a couple of solutions presented as drawings at WGC2006. Another outcome of the SG will be a round-table about safety and gas quality (to be discussed with

SG 4.3). Finally for the items where we have obtained the most interesting results we will produce a paper to be presented at the conference.

SG 5.3 Natural gas for vehicles (NGV) – Davor Matic

The objective of the project called "Global opportunities for natural gas as a transportation fuel for today and tomorrow" is to demonstrate long-term key factors for development of natural gas as a transportation fuel. It will also highlight the implications and risks for the gas industry of future development and investment programmes in NGVs. Targeted ways of CH_4 utilisation that will be observed more closely are: compressed natural gas (CNG), liquefied natural gas (LNG), biogas and hydrogen produced from natural gas.

The final report should provide:

- An opening chapter giving an overview of the existing fuels and technologies and analysis of future development;
- Country reports;
- Overviews of existing technologies used in respective countries;
- Trend analysis;
- A strength, weakness, opportunity, challenge (SWOC) analysis; and
- A scenario matrix (recommended actions and strategy along the development path).

The Chairman of SG 5.3 is Mr Davor Matic from Energy Institute Hrvoje Pozar in Zagreb, Croatia, and the Vice Chairman is Mr Björn Ahlnas from Gasum in Helsinki, Finland. Dr Garth Harris, Secretary General of IANGV, and Dr Jeffrey Seisler, past president of IANGV and present Executive Director of ENGVA, will be acting as consulting partners to provide guidance, participation and information to this project.

The initial core team of 11 people from Europe, North Africa and South America has been expanded with 15 new active members. Country representatives and experts have been recruited, among others, from large and important NGV markets like Italy, Russia, Iran and India, together with the representatives of some characteristic NGV markets such as Sweden and Switzerland (biogas).

During its meeting in November 2004 members of SG 5.3 discussed the Group's contribution to WGC2006. It was proposed that SG 5.3 contribute to IANGV's two-hour slot for a panel on the strategic aspects of natural gas usage in the transport sector, where challenges for NGVs will be discussed. The Study Group will also get its own two-hour slot and it was suggested that the session be split between a presentation of the work that has been done with strong proactive recommendations and conclusions and 15-minute slots for four case studies (country reports) given by top quality speakers. This would leave 30 minutes for a question and answer session. It is confirmed that some 7000 square metres will be

Barcelona, Spain is one of many cities around the world that has buses running on CNG.

In pursuit of a second supply route

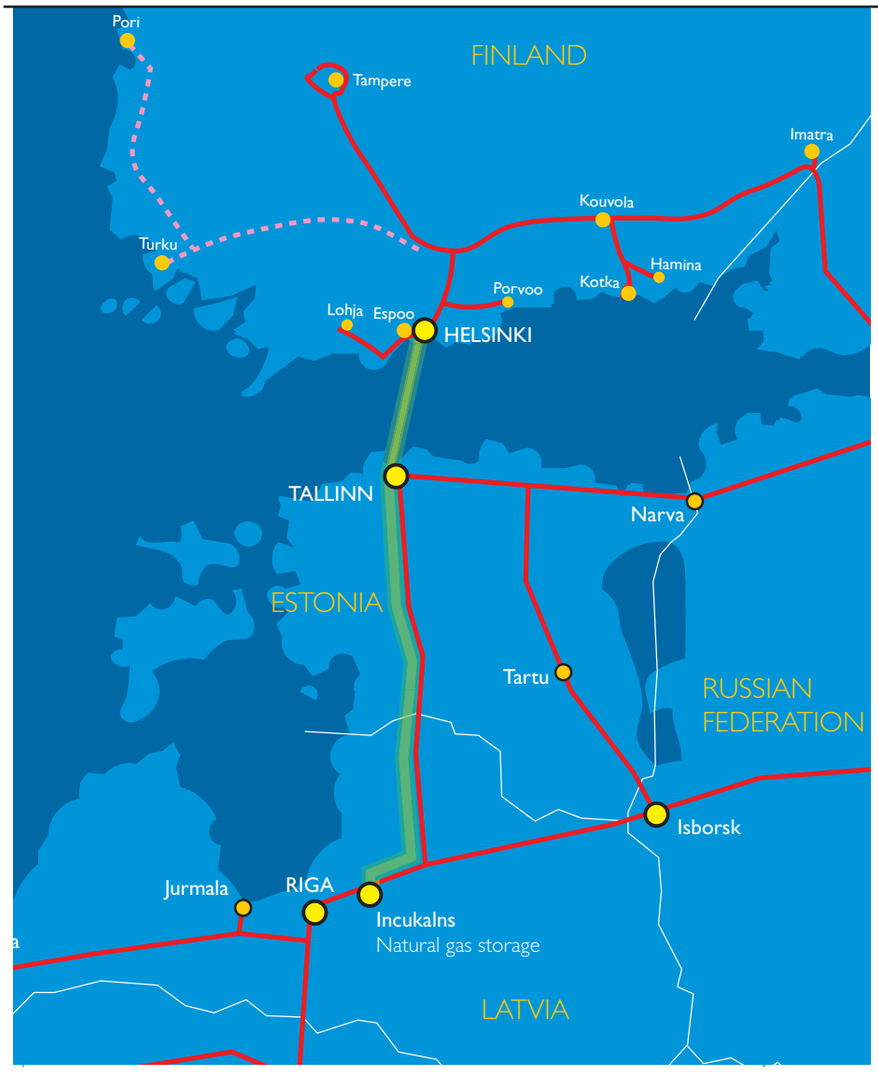
Finland is one of the few countries in Europe not having a natural gas grid directly linked to the European grid. The natural gas consumed in Finland is imported solely from Russia. Dependable supplies have always been a high priority for Finland. To date, there have been no problems and natural gas has flowed uninterruptedly to Finland for over 30 years. Nevertheless, connecting the Finnish natural gas grid to the grids of the Baltic states would provide the impetus to draw on existing and potential natural gas storage facilities.

Balticconnector – a shared vision

The natural gas grids in the Baltic states have a long tradition of working together. This also applies to cooperation with Lentransgaz, the Russian transmission company delivering natural gas both to the Baltic states and to Finland. Intense cooperation on the operative front provides a sound platform for a quality, dependable supply of natural gas.

Balticconnector is the new vision of the form of future cooperation shared by the key natural gas companies in the region. When put in place, *Balticconnector* will create a new natural gas transmission system stretching from the Inchukalns natural gas storage facilities in Latvia via Estonia to Finland. It will link the Finnish, Estonian and Latvian natural gas grids and enable Latvia's natural gas storage capacity to be used to meet the needs of all three states.

The principal natural gas companies in the region, Gasum Oy, AS Eesti Gaas, JSC Latvijas Gaze and OAO Gazprom, are studying the possibility of establishing a new jointly-owned company, which would assume responsibility for developing the new transmission system. Achievement of this aim calls for the construction of a pipeline link (DN 500, 80-120 kilometres) between Finland and Estonia, new compressor capacity (15-25 MW) and the integration of existing transmission pipelines (DN 700) in Latvia and Estonia as part of the transmission network operated by the envisaged new company. Plans show that use of this transmission route could raise imports of natural gas to Finland to around 20 TWh a year, equivalent to over some 25% of Finland's entire consumption of natural gas between 2008 and 2010.



devoted to an NGV pavilion and that NGVs will have a session on sustainable energy.

The next Study Group meeting will take place in Opatija, Croatia on May 2 and evaluate a first draft of its report. Prepared scenario matrixes for different ways of utilising CH_4 will be discussed, and a final general scenario covering all ways mentioned will be made. The Group will also discuss and then decide upon clear recommendations to the gas and automotive industries, based on the data and analyses provided in Chapter 1 of the report and through synthesis of the results of questionnaires (country reports) and results of an established technical database.

SG 5.4 Distributed energy generation: from CHP to micro generation – Samuel Bernstein

Combined heat and power (CHP) is one of the most efficient gas technologies. It has been well developed in Europe, Japan and North America and represents a key issue for gas development.

CHP research and development is focused on two main issues: improving technologies and installation rules for medium- and small-scale cogeneration. Medium and small CHP has faced some difficulties in entering the market and developing sales. The investment price, operation and maintenance costs are too high for commercial or small industrial plants. New technologies, such as micro turbines, or technology improvements, such as catalysts, new engine designs and regulation systems, could improve the situation. Packaging will also be a very relevant topic. Standard rules for installation, and especially electrical connection to the grid, must be defined. Last but not least, incentives and barriers must be analysed, in order to allow structured and coordinated lobbying at a regional level.

Sizing down by using emerging technologies may allow micro-cogeneration to enter the residential market. To analyse that trend and share answers, WOC members will study distributed power generation and CHP plants in their own countries from the technical, economical and legal points of view. The synthesis will enable the drawing of some general conclusions on the future of distributed generation development.

Members of SG 5.4 presented two papers in international technical meetings on behalf of the Committee during 2004 and two more presentations are scheduled for 2005. The work of the Group includes: ongoing discussion/exchange, site visits, a database on the technologies, status report, Internet links (which will be reviewed by experts of the Group). Finally plans are being formulated for a round-table at WGC2006.

Meetings

WOC 5 will hold its next meeting in Croatia, May 2-3. The subsequent meetings are scheduled to be held in Italy, October 13-14, and Russia, April 20-21, 2006. Individual Study Groups have additional meetings planned during the forthcoming months.

● Programme Committee A Sustainable Development

PGC A currently has 21 members but we would like more countries to improve global representation such as Australia, Brazil, Canada, Mexico and the United States.

The Committee participated in the September 2004 Hørsholm joint meeting and we were delighted to welcome representatives from Iran and Italy. The PGC A session was divided into two parts. First of all we conducted a plenary meeting with presentations about work in progress. Committee Secretary Patricia Yurgel looked at NGV in Latin America and in particular in Argentina, Brazil and Bolivia as study cases. Spain presented some views on life cycle analysis (LCA) and some ideas related to the gas leakage from gas pipelines. This was followed by a presentation from our host company DONG and one by the Iranian representative on the National Iranian Gas Company.

PGC A has two Study Groups.

Natural Gas

National energy asset

Natural gas is being used at an ever faster pace in everyday life.
Together with DEPA, multinational companies are investing in the natural gas networks of Greek cities.

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SG A.1 Life cycle analysis of the natural gas chain

SG A.1 is working with other Committees and Study Groups to obtain and exchange data, and documents are being collected on the Collaboration Portal. We invite readers to visit our section of the Portal; your recommendations and views are welcome.

One of SG A.1's members is involved in work by Marcogaz on LCA, so we will synchronise our efforts and try to identify those items about sustainability and LCA that will be useful for both our projects. We will also cooperate to avoid any overlapping.

SG A.2 Sustainable aspects for the natural gas industry

The Study Group has discussed the work of the previous Triennium's WOC 8, in particular SG 8.2's strategic document on guidelines, and will build on this. The Group will report on the creation and implementation of sustainable market conditions. Two important issues are the use of hydrogen produced from natural gas and security of supplies, and we will liaise with other Study Groups whose work touches these areas. Further points concern collaboration and integration, on which we are trying to collect data for analysis, and new market development. In the latter case we will amplify data collected from NGV use in Latin America with some aspects of experience from the Middle East and other countries that are using NGVs.

Our analysis will cover all issues related to sustainability from social aspects, such as public health and environmental pollution, to technical aspects, such as fuel cells, micro CHP, condensing boilers and virtual power plants.

One member from Germany is addressing the issue of new odorants, which we consider very important for the gas companies who provide gas for public use. He is also looking at the optimisation of software to monitor leakages in gas distribution. In the next meeting we will amplify this item for the rest of the members to obtain some opinions about how we can present this topic in our brochure and report for WGC2006.

Following our September meeting a number of draft documents were submitted in December and these are being analysed with a view to producing a first draft of the PGC A report for the next meeting. Our expectation is that after this meeting we will have the first draft available via the Collaboration Portal.

● Programme Committee B Strategy, Economics and Regulation

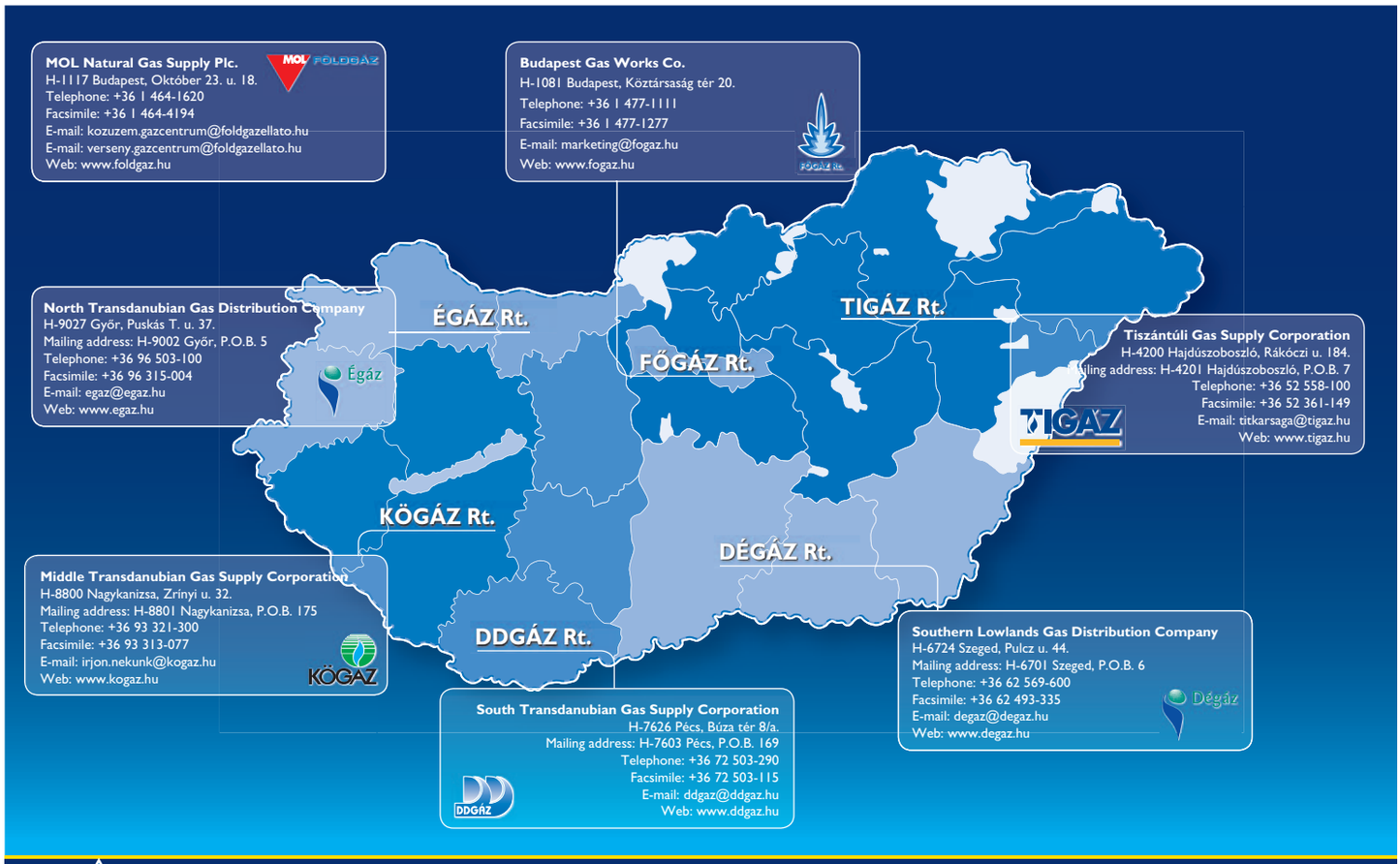
PGC B has three Study Groups, which had up to three meetings each during 2004 and made good progress. There is a strong team spirit within the Groups and members dedicated up to three days to some meetings.

SG B.1 Regulatory framework of the gas industry

SG B.1 is tasked with identifying, analysing and comparing different regulatory frameworks. The aim is to find out what the impact is of these different frameworks on investments to enhance security of supply, on environmental protection and on competition. Information is being collected via a questionnaire which was distributed in February. Prior to this, two meetings of the Study Group had been dedicated to designing the questionnaire to make it as simple and clear as possible in order to get useful answers. The first results will be available during the second quarter of this year.

SG B.2 Main streams and challenges on the supply side

Having started with just 12 members, SG B.2 has become PGC B's strongest Study Group with more than 30 members dealing with a range of issues. These include a supply and reserve analysis that will evaluate and compare the results from the last Triennium in respect of supply and production



PGC D MEMBERSHIP STATISTICS

	Nominated
Countries represented	30
Gas associations represented	28
Associated Members represented	5
Total number of PGC D members	67
Members	37
Alternate members	19
Corresponding members	2
Representatives of Associate Members	6
PGC D Staff (Chairman +Vice Chairman +Secretary)	3

ABOVE
Table 2.

figures with analyses published by other organisations such as IEA and WEC. Other issues are identifying the challenges facing producing countries and the geopolitics of gas.

SG B.3 Major trends in demand

SGB.3 had two meetings in 2004 during which the first essays about trends in energy and gas demand were presented. They looked at regional trends as well as taking a global perspective.

One initial observation is that forecasts of future gas demand are being reduced, particularly in the US, and this is an important issue requiring further analysis. Another issue is gas to power. This subject was presented and discussed with several presentations for different gas regions. The first results of these studies indicate that inflexible gas contracts and issues relating to regulation and risks may lead to substantial delays or even disruption in gas to power investments.

Then there is the issue of the convergence of electricity and gas. Here the Group's Vice Chairman Mr Ohsaki from Japan is taking special care of the subject and has presented the first ideas for a framework of a guideline containing eight case studies.

Programme Committee C Developing Gas Markets

PGC C has 49 members from Africa (four), Asia (12), Australia (one), Europe (29), South America (two) and the World Bank (one). The Committee held its third meeting in Cairo, Egypt, November 24-25, 2004. It was attended by 12 members from nine countries as well as by CC Chairman Bert Panman. (The PGC C Secretary had previously had a meeting with Mr Panman on September 28.)

The main topics addressed during the meeting were the four case studies that the Committee had previously decided to develop:

- China;
- Egypt and the Mediterranean Basin;
- Brazil; and
- Further market developments in Europe.

The material prepared by the relevant Study Groups, according to the terms of reference approved in the previous meeting in Kuala Lumpur, was analysed. The discussion focused on the data collected and on the key issues characterising each case study.

Following the indications given by the Committee, the Study Groups were tasked with preparing the first drafts of the case studies by the end of March, to enable the Committee to discuss them during its April meeting. SG C.1 was asked to focus the preparation of its analysis on data and key issues and shape its draft as a contribution for the preparation of a panel discussion during the October Council meeting.

During the Cairo meeting the Committee also started the preparation of its sessions at WGC2006, discussing their possible contents and structures.

The next meeting is scheduled for April 19-20 in Noordwijkerhout (The Netherlands), followed by a joint meeting with PGC B, PGC D and the R&D Task Force on a subject of common interest.

Contributions to conferences and workshops

During the second half of 2004 PGC C participated in the IGU workshop "The Future of Natural Gas in European Power Generation", which was held on October 4 in Brussels, Belgium. The Committee may contribute to other events organised by IGU on gas to power.

Programme Committee D LNG

By the end of 2004 the number of PGC D members and experts in Study Groups had reached 87 of which 67 are the nominated members to the Committee (*see Table 2*). Since the last progress report the following new members have been nominated to PGC D:

1. Mr Alberto Gonzalez Santos from Gas Natural (Spain) as a member of SG D.3;
2. Ms Maria de la Paz Velasco Pares, from Gas Natural (Spain) as a member of SG D.3;
3. Dr Karl Sjoen from Statoil ASA (Norway) as a member of SG D.1;
4. Dr Peter Taff, from Centrica Energy Group (UK) as a consultant member of SG D.1;
5. Dr Christopher Mansfield from the Department of Trade & Industry (UK) as a consultant member of SG .1;
6. Mr Gheorge Radu from S. N. G. N. Romgaz s.a. as a representative of an Associate Member; and
7. Mr Luc Sabbe from Fluxys (Belgium) as a PGC D alternate member.

During our last PGC D meeting in Arzew we were informed that the PGC D alternate member of Qatar, Mr Hassan J. Al Thani, had been assigned to another activity not related to natural gas in his country.

All members have been introduced to the Collaboration Portal. Some members reported problems in accessing the Portal to the Committee Secretary and these have been resolved. The Chairmen of the Committee's Study Groups have been entered in the Portal as managers and the Secretaries as authors.

Following the March 2004 Doha meeting reported in the last issue of the progress report, Study Group SG D.2 met in London on June 24 and the Committee and SGs D.1, D.2 and D.3 met in Arzew, September 27-28. BP hosted the London meeting, while the Algerian Gas Association and Sonatrach hosted the Arzew event, which was attended by 29 delegates representing 13 countries and one Associate Member.

At Arzew the business meetings were held on the first day and were followed by a technical visit to the GL 4Z plant (ex-Camel), which was celebrating the 40th anniversary of LNG production and marketing. Some members of the LNG-15 Steering Committee including IGU

Delegates to PGC D's Arzew meetings pose for a group photograph.

Secretary General, Mr Peter Storm, also attended and afterwards were taken on a tour of facilities in Algiers, which will be the venue for LNG-16 in 2010.

Since the London meeting no major change has been made to PGC D's organisation: three Study Groups and one New Actors Group are leaded by job leaders who are Steering Committee members. It should be noted that the Chairman of PGC D is coordinating the following three following Groups: LNG Organisations, LNG Conferences and Coordination within IGU.

The latest status concerning the membership of the Study Groups is given below.

SG D 1: Standardisation of LNG qualities

SG D.1 is led by Mr. Robert Klein Nagelvoort (The Netherlands) and has 19 members representing the following countries: Algeria (two), Belgium (one), France (one), Finland (one), Iran (one), Italy (two), Japan (one), The Netherlands (three), Norway (two), Qatar (one), UK (three) and USA (one).

The Group has identified key stakeholders and has collected a number of consultancy reports on LNG quality and gas interchangeability issues. Also, the detailed scope of its work has been defined and eight tasks assigned:

1. Rational description of LNG quality;
2. Review of LNG quality constraints;
3. Contacts with other groups working on the issue;
4. Identify target audience, rule makers;
5. Strategy for new LNG markets;
6. Importance of LNG quality specifications;
7. Economic implications of LNG quality adjustment; and
8. List of possibilities for LNG quality adjustment.

A questionnaire has been drawn up and sent to members to collect data on LNG quality restrictions at both exporting and importing facilities, as well as views on the relative importance of these restrictions and the chances of easing them in the future. Responses to the questionnaire are under evaluation.

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

SG D.2 is led by Mr. Bruno Larsen (Norway) and has 19 members representing the following countries: Algeria (two), China (one), France (one), Indonesia (one), Iran (one), Italy (two), Japan (one), Korea (two), The Netherlands (one), Norway (two), Qatar (one), Spain (one), UK (two) and USA (one).

The Group has drawn up a questionnaire with a supporting table to report use of standards and codes at LNG terminals and onboard LNG vessels in order to identify safety gaps. The questionnaire was sent to an extended list of plants and ship operators. The results will be analysed and included in SG D.2's report, which will be divided into chapters dealing with safety in LNG plants, vessels and receiving terminals; the technology of import and export terminals; and vessel technology.

SG D.3: The future of LNG spot market

SG D.3 is led by Dr. Bo-Young Kim (Korea) and has 18 members representing the following countries: Algeria (two), Argentina (one), Finland (one), Germany (one), Iran (two), Italy (one), Japan (one), Korea (two), Norway (one), Pakistan (two), Spain (two), Ukraine (one) and USA (one).

The Group has been assigned the following tasks:

1. Definition of LNG spot and evaluation of the role of spot cargo in the LNG market;
2. Data: statistical approach;
3. Analysis;
4. Market changes;
5. Physical constraint; and
6. Contractual changes.

SG D.3's report will be divided into two main sections. One will deal with the conditions for the activation of the spot market and the second will give a review of regional markets (Asia-Pacific, Atlantic and Europe).

Total Gas & Power
A global player in natural gas

Total is a leading player in the dynamic world gas market, with experience and expertise at all stages of the gas chain, from exploration and production to pipeline transport, the LNG chain, gas distribution and electricity generation.

Through its trading expertise the Group has become a major trader of gas, in particular in the European market where development is becoming easier as a result of new directives on the opening-up of the energy markets. Supplying gas to industry requires great contractual flexibility, which Total has developed through its experience.

Our involvement in all aspects of the industry makes Total a partner of choice for gas projects worldwide.

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TOTAL

TOTAL

No. 4 ***World's fourth-ranked gas producer***
LNG ***Ranked in the top three in the world in LNG***
No. 1 ***Top-ranked supplier of gas to industrial and commercial consumers in the United Kingdom***

Natural gas

Natural gas is expected to experience the strongest growth of all fossil fuels over the next decade – an average of around 3% a year globally – driven by demand from the power generation segment.

Leveraging more than 60 years' experience in natural gas, Total is a top-tier operator in the global market with recognised expertise across the gas chain, from exploration and production, liquefaction and regasification, and transportation to storage, trading and marketing, and power generation.

In an environment of gas and electricity market deregulation, we are pursuing a strategy aimed at capitalising on our natural gas reserves – which account for one-third of our total reserves – and identifying markets for new potential resources. In line with this, our Gas & Power business is strengthening its positions across the gas chain, in particular in natural gas marketing and sales.

Our involvement in all segments of the gas industry makes us a preferred partner for a large number of gas projects worldwide.

Transporting gas to often distant consumer areas is a key to developing resources

A trailblazer in the LNG industry since 1964, Total has interests in five of the world's largest liquefaction plants, which represent around 40% of global LNG production capacity.

Nearly one-quarter of our gas production is dedicated to the LNG industry.

We are strengthening our positions across the LNG chain, as illustrated by the construction of the Snøhvit liquefaction plant in Norway. We have also acquired interests in three regasification terminals to ensure additional markets for our production from the Middle East, the Gulf of Guinea and, in the future, northern Europe. India's Hazira terminal is scheduled to come on stream in early 2005, while Mexico's Altamira terminal and France's Fos Cavaou terminal are expected to begin operations in 2006 and 2007, respectively. And from 2009, Total will have regasification capacity in the Sabine Pass terminal on the US Gulf of Mexico.

Pipeline

Total has contributed significantly to developing a western European gas pipeline network to carry our North Sea production. We now have interests in more than 12,000 kilometres of high-pressure pipeline in Europe and operate close to 5000 kilometres of pipeline in France.

More recently, Gas & Power has expanded its presence in South America with the acquisition of substantial interests in pipelines in Argentina, Chile and Brazil.

LNG carriers

Liquefied natural gas shipping is more flexible than pipeline transmission and is expanding rapidly.

Total has acquired extensive expertise in this area and will be chartering a 145,000-cubic-metre LNG carrier for our share of production from the Snøhvit liquefaction plant in Norway.

We also have a 30% interest in GazTransport & Technigaz, which develops membrane technologies for LNG carriers. More than 90% of carriers on order today deploy these technologies.

Total experts work in the field supervising fleets and shipowners, in particular checking that vessels are maintained to the highest standards and ensuring that crew members are properly trained.

Natural gas storage

Storage is a critical logistics tool for natural gas distribution, ensuring security and adjustment of

supply in response to sharp seasonal variations in demand. It also enables optimisation of upstream investment, in particular in transmission and production infrastructure.

Total owns and operates two underground water table storage facilities in France, with an aggregate capacity of 5.4 billion cubic metres.

We also have an interest in Géostock, specialised in designing, building and operating underground storage facilities.

Developing our underground storage facilities in France allows us to help create major gas hubs ensuring the fluidity of markets, the competitiveness of natural gas and its growth in Europe.

LPG storage

Total has acquired broad experience in liquefied petroleum gas (LPG) storage. In November 2003, we signed an agreement with Hindustan Petroleum Company Ltd, India's third-biggest refiner, to build an LPG import and storage terminal in the port of Visakhapatnam. The project, which has a capacity of 60,000 metric tonnes, is expected to begin commercial operation in 2006.

Natural gas – trading & marketing

Gas market deregulation is moving forward worldwide, especially in Europe. Against this backdrop, Total is strengthening its position in marketing and selling natural gas to industrial and commercial (I&C) consumers.

In this area, we have successfully built up experience in the United Kingdom, the first European Union market to be deregulated, beginning in the late 1980s. Total is now the leader in the UK I&C market, with 60,000 customer sites and 5.6 billion cubic metres of sales, for a market share of around 19%.

As deregulation advances, we are expanding our commercial presence in continental European markets, especially Spain and France. A key asset is comprehensive expertise that enables us to efficiently meet varied customer expectations. In France, we were the first to gain a foothold in the eligible customer market before the I&C market was fully deregulated on July 1, 2004.

In Latin America, we recently created an organisation to market our gas from Argentina and Bolivia across the Southern Cone.

Trading lets us optimise flow management on a global scale, leverage our production and outlets, and secure margins thanks to hedging in markets.

Power generation

Power generation is the main outlet for the gas chain. To expand gas demand and integration, Total is taking part in a variety of gas-fired power generation projects in Europe, South America, Asia and the Middle East.

We operate more than 5000 megawatts (MW) of power generating capacity. Our commitment to cogeneration is reflected in the 2003 commissioning of the Taweelah A1 facility in Abu Dhabi. Rated at 1430 MW and with a seawater desalination capacity of around 385,000 cubic metres per day, it is one of the largest cogeneration plants in the world, and is 35% more efficient than conventional power generation. With the project's success, Total has set an industry benchmark.

We also have a 40% interest in Humber Power Ltd, which owns and operates a 1260 MW combined cycle power plant in the United Kingdom, which we supply with a percentage of the gas consumed.

In Latin America, via our interests in Central Puerto SA and Hidroneuquen, we operate gas-fired power plants with an aggregate capacity of 2165 MW and a hydro power plant with a capacity of 1400 MW.

In Thailand, EPEC, in which Total has a 28% interest, commissioned the 350 MW Bang Bo combined cycle power plant in March 2003.

Progress Reports from the Task Forces and Special Projects

This chapter normally contains news and information from IGU's two Task Forces and three Special Projects. However, as this issue of the IGU Magazine contains a special contribution from the R&D Task Force (see pages 134-138), there is no additional report here.

Task Force Information and Communication Technology

The ICT Task Force is in charge of the organisation of the 7th Global Congress on Information and Communication Technology in Energy (ICT2005), which will take place in Busan, Korea, May 23-25. The objective of the Congress is to gather together executives and experts in ICT and energy to share their knowledge and discuss the future evolution of ICT in the energy sector.

The ICT Task Force has 12 members from seven countries representing Africa, Asia, Europe and North America (*see Table 1*). They had a busy 2004 during which they:

- Defined the Congress architecture, themes and key focus;
- Launched the Call for Papers;
- Secured the participation of more than 45 speakers and several highly recognised keynote speakers; and
- Finalised a comprehensive programme in line with current ICT issues and business trends in the energy sector.

Two meetings were held in the last six months of 2004, which were hosted by DONG at Hørsholm near Copenhagen, Denmark in September and by the Czech Gas Association in Prague in November. Final details of the ICT2005 organisation were reviewed at a meeting in February, hosted by the Korea Gas Union in Seoul.

For more information about the ICT2005 programme see the special feature on pages 140-142 and visit the website at www.ict2005.com.

Special Project Regulation

The regulatory conditions necessary for gas markets to foster growth are highly dependent on a market's development phase, its structure, its functioning and its import dependency. Preliminary research using sources including literature, the recent IGU gas to power workshops and the opinions of experts, makes it clear that a regulatory framework requires a balanced approach based on a realistic analysis of actual market conditions and the objectives that can be achieved. This is often called "market design". Further study by the Clingendael Institute of The Netherlands will analyse in detail the need for adaptive regulation and outline the choices to be made. Later this year the preliminary results will be reported and discussed at a high-level workshop as a run up to a presentation of the findings at the World Gas Conference in 2006 in Amsterdam.

For the purposes of this study a regulatory framework is defined in a broader sense and not simply as regards the responsibility and available instruments of the "energy regulator". The impact of the full regulatory framework needs to be taken into account in assessing its impact on the investment climate. This can be a combination of the roles and allocated responsibilities not only of the regulator, but also of the government, the ministry, the competition authority, the financial regulator, a licence agency etc. A framework's instruments can target different parts of the gas chain. In the case of cross border dependencies there are also supranational regulatory aspects involved.

Special Project Sustainability

One of the main aims of this Special Project is to present to IGU and its members recommendations for the follow-up to the "Guiding Principles for Sustainable Development" adopted in 2003.

Professors Catrinus Jepma from the State University of Groningen and Nebojša Nakićenović from the International Institute for Applied Systems Analysis and the Vienna University of Technology have been asked to prepare a report on the "Future Role of Natural Gas and Strategic Impact for IGU".

A first draft of the report was discussed with representatives of IGU, IGU members and external stakeholders in Buenos Aires in December 2004. The meeting was organised in cooperation with PGC A and was hosted by the delegation of Argentina. A workshop to discuss the second draft was being arranged in Vienna at presstime.

In the report Nakićenović and Jepma will reflect the flux in energy markets and picture future developments in a couple of story-lines. These story-lines will emphasise the main themes for the gas industry, namely the issues of security of supply, market structure, market share and transition. Based on the story-lines the impact for the position of natural gas will be analysed – with a special focus on sustainable development – followed by a set of recommendations to IGU. Story-lines were chosen in preference to scenarios because of the opportunities to concentrate on major themes and illustrate potential structural changes.

The report will include "boxes" that describe major options for the gas industry to cope with sustainable development. It has been identified that these options have quite different natures and range from short-term and highly-efficient to long-term and high-cost. A key example of the first type is improving energy efficiency, while a key example of the second type is the change-over to a hydrogen economy. Within the whole range special attention will be paid to the further penetration of natural gas in the transportation sector, the trend towards decentralisation of the energy infra-

BELOW
Table1.

MEMBERS OF THE ICT TASK FORCE

Name	*Function*	*Organisation*	*Country*
Véronique DURAND-CHARLOT (Chairwoman)	Chief Information Officer	Gaz de France	France
Hervé LEFEBVRE (Secretary)	IT Lead Buyer	Gaz de France	France
Hughes BEAUDOIN	IT Director	GazMétro	Canada
Khaled BRIEDJ	Assistant Director, PMO	Sonatrach	Algeria
Denny (Dong-sung) CHOI	Chief Information Technologist	SK-Enron	South Korea
Eric DAM	Chief Information Officer	N.V. Netherlands Gasunie	The Netherlands
Yoshihiro HATANO	Manager for Regional Programmes	World Energy Council	Japan
Eleanor HYDE	Functional System Manager SAP IS-U	N.V. Netherlands Gasunie	The Netherlands
Sang-youp LEE	Head of International Relations	Korea Gas Corporation	South Korea
Olga SOLAŘIKOVÁ	Secretary General, Czech Gas Association	Czech Gas Association	Czech Republic
Korea National Organising Committee (NOC Team)			
Seung-Hwan LEE	Chairman, ICT2005 NOC	Korea Gas Union	South Korea
Peter (Yong-Sub) SHIN	Secretary, ICT2005 NOC	Korea Gas Union	South Korea

Transportadora de Gas del Perú

Transportadora de Gas del Perú (TgP) is the Peruvian company that was awarded the concession of the Camisea Project Downstream component. By virtue of this adjudication, it signed a Concession Agreement with the Government of Peru in December 2000 for the transportation of natural gas and natural gas liquids.

TgP arose from a partnership between TECGAS (pipeline operator), Hunt Oil, Sonatrach, Pluspetrol, Graña y Montero, SK and Tractebel.

Between April 2002 and August 2004 TgP built a pipeline transportation system that brings natural gas and natural gas liquids from the Camisea cryogenic separation plant, located in the rainforest of Cusco, to the Pacific Coast. The liquids pipeline covers 560 kilometres from the Malvinas separation plant in Camisea to the fractionation plant in Pisco. The natural gas pipeline runs for 731 kilometres from the plant in Camisea to the City Gate in Lurín, where distribution to the City of Lima begins.

The transportation system was designed to transport 285 million cubic feet of natural gas per day and 50,000 barrels of natural gas liquids per day. Four pump stations and three pressure reduction stations control the flow of natural gas liquids throughout pipeline route. The flow of gas and liquids, as well as all pipeline facilities, are controlled by the Supervisory Control and Data Acquisition system (SCADA) from the control room located at TgP's main office in Lurín (Lima).

Construction challenges

The construction of the transportation system implied numerous social and environmental challenges. For instance, how to prevent access of potential migrants to primary rainforest – rich in biodiversity and used exclusively by indigenous communities – leading to a decision not to build new access roads in the jungle area and to use the right of way (RoW) as access. As a result of this decision, construction was accessed through the Urubamba River and the existing Calca-Kiteni road, in the Cusco region. Through these accesses, complemented by air transportation, 61,000 tonnes of steel pipes, 4000 men, equipment and machinery were placed at work fronts for the first 174 kilometres of pipeline construction.

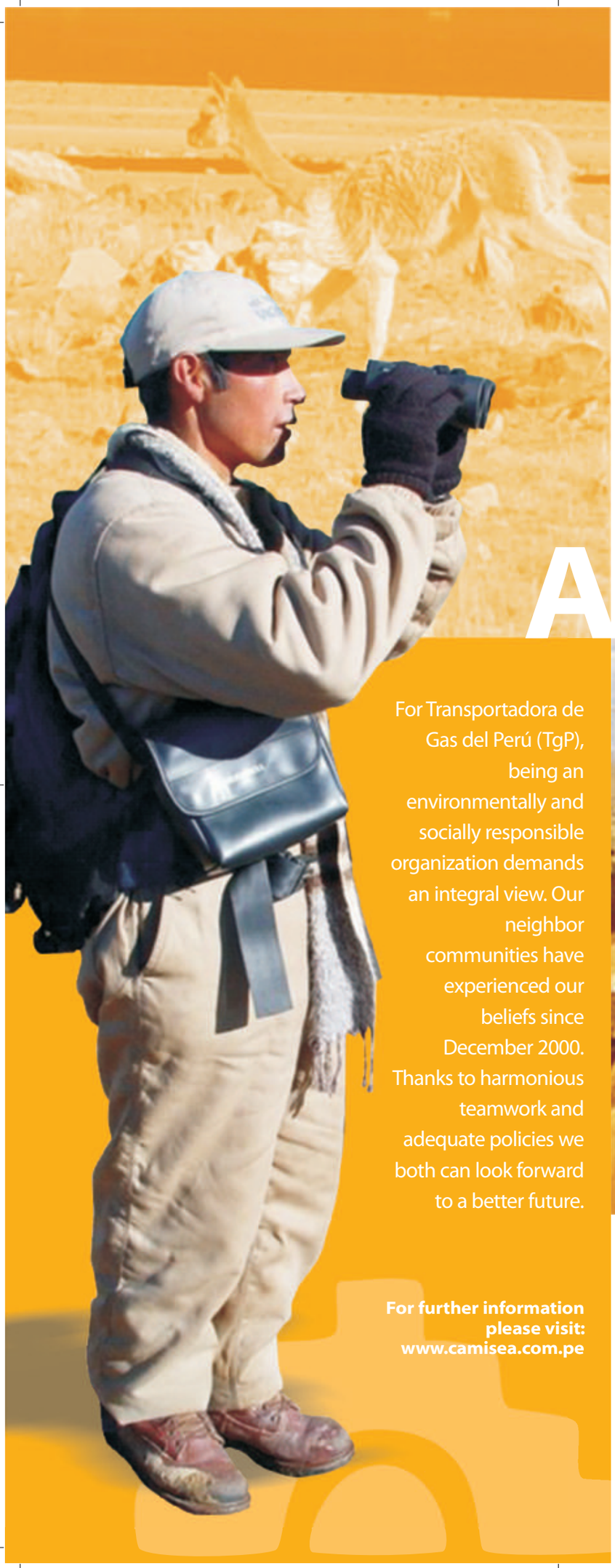
While crossing the Andes through the regions of Ayacucho and Huancavelica, TgP faced extreme weather conditions and altitudes over 4800 metres above sea level, dominating gradients up to 40 degrees.

Pipeline construction was performed strictly following international standards for environmental protection and industrial safety. TgP's Environmental Management Plan included extensive erosion control and revegetation activities. By the end of November 2004, the company had completed recomposition, erosion control and revegetation of the RoW. During the operation phase, TgP will assess the performance of erosion control systems, vegetation coverage and forest development in order to identify areas where additional efforts may be needed.

TgP is committed not only to environmental protection but also to improving the lives of the communities located along the route of the pipeline. Some 80% of the workers hired during construction came from areas neighbouring the route, representing 14,000 work posts in rural areas of five regions of Peru. Throughout the construction phase, TgP improved 700 kilometres of roads, repaired 80 bridges and built 10 new bridges, providing infrastructure that will contribute to the growth of the communities adjacent to the project.

Based on consultation with the local population, TgP implemented communication systems for geographically isolated communities, allowing them to notify emergencies and join the federal communication network. Likewise, the company supported communities in the construction of schools, community centres and health posts, based on prioritisation of development projects presented by the benefiting communities. As well, TgP supported the Peruvian government in the implementation of health and education programmes.

TgP shows its commitment to sustainable development by bringing cleaner and efficient sources of energy to industries and homes, preserving the environment, respecting local cultures and helping their development, and supporting the feasibility of new industrial projects and employment opportunities.



In the highlands of Peru, the local communities of Santa Rosa de Tambo, Ayaví and Huaytará are devoted to breed vicuñas and to shear and trade its precious wool.

Since the beginning of the Camisea Project we have worked closely with these communities, located along the pipeline route, developing strategies to protect vicuñas from illegal hunting as well as optimizing its care.

As a result of joint outstanding effort, vicuña count has increased 55 per cent, breaking records in wool production in 2004.

A remarkable achievement

For Transportadora de Gas del Perú (TgP), being an environmentally and socially responsible organization demands an integral view. Our neighbor communities have experienced our beliefs since December 2000. Thanks to harmonious teamwork and adequate policies we both can look forward to a better future.

For further information please visit: www.camisea.com.pe

TgP

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Miraflores
Tlf:617.7777 / Fax:617.7701

Tecgas
Pipeline operator

pluspetrol
Hunt
SK
Tractebel
GyM Contratistas Generales

structure, the introduction of clean gas and CO_2 sequestration (clean fossil fuels). The "boxes" will be developed in close cooperation with the relevant Working Committees.

Work on the role of natural gas in the transportation sector will be done together with IANGV. This work will look at the potential contribution of natural gas as a transportation fuel to the improvement of local climate conditions, especially in dense urban areas, and also consider the time-frame for a further penetration in this market segment. To define the time-frame major conditions will be ranked and the interaction with the application of biogas will be taken into account.

Regarding the impact of a further decentralisation of the energy infrastructure for natural gas, a group of experts has been asked to prepare a working document that describes the economic and technological concepts, to reflect on the experience so far and to indicate the way forward. As a decentralised energy infrastructure is based on the integrated and local production of heat, electricity and cooling, a market-scan for energy-demand will also be presented. To conclude the working document the group will analyse the potential for small-scale renewables (wind, solar, bio) in a decentralised energy infrastructure.

The presentation of the "boxes" and the working document on decentralised energy infrastructure will be included in the Vienna workshop. For more detailed information please contact CC Secretary Rob Aptroot.

Bridging to the Future

In the last progress report (IGU Magazine, September 2004) we wrote about the follow-up to the Sustainable Urban System Design (SUSD) competition of the 2000-2003 Triennium. This follow-up is an international collaborative project called "Bridging to the Future" and aims for a vision on integrated urban and energy planning with a time horizon of 30 years. The results will be presented at the World Gas Conference in 2006 and will help urban regions manage the difficult transitions to sustainable energy systems by:

- Finding energy pathways for a number of urban regions covering a range of climates, cultures and continents;
- Establishing a method for integrated long-term energy planning that is transferable, field tested and collaborative;
- Operating a website that functions as a clearing-house for energy knowledge and providing tools for urban utilities and urban planners; and
- Proposing demonstration projects in each urban region consistent with the new pathways.

During the second half of 2004 start-up workshops were organised in Canada, China, India and The Netherlands. These workshops brought together the CONSENSUS Institute, IGU, the local teams and sometimes also representatives from the other teams. CONSENSUS is coordinating the contributions of the various teams and is led by Sebastian Moffatt. The Sheltair Group is now coordinating the Canadian team with Angela Griffiths acting as project manager. For the Dutch, Chinese and Indian teams the team leaders are respectively Klaas Jan Noorman, Professor Li Jingsheng and Aromar Revi.

The core project plan was discussed and evaluated in the various workshops. So far everyone has agreed with the key themes of the project: integration of energy planning into all urban long-range plans; staging the transition to sustainability using natural gas as a bridging fuel; designing resilient energy systems; proposing pilot projects for the next phase of work; and involving local government and academics in the planning process.

Each team suggested improvements and new tools. As a result, changes have been made to the core project plan. The changes will simplify the work, add some important analytical content (for example on macro economics) and improve the visualisation products. The website (www.bridgingtothefuture.org) will soon be revised to reflect these changes to the core project plan.

The collaborative process has already proved to be very valuable. The aim is to continue this learning and sharing, and meet together in workshops as a group of teams on other occasions, before the World Gas Conference in 2006. The collaboration will also allow results to be compared in a number of ways. For example, a core set of energy indicators will be calculated for the cities, using the same calculation method and the same presentation graphs. This is unique. We will even be presenting some of the conclusions jointly as an international team at the WGC, instead of as a series of presentations by separate teams.

This is a very interesting and promising way of enhancing knowledge to the energy industry about urban planning, and to the urban sector about energy planning.

Special Project Gas to Power

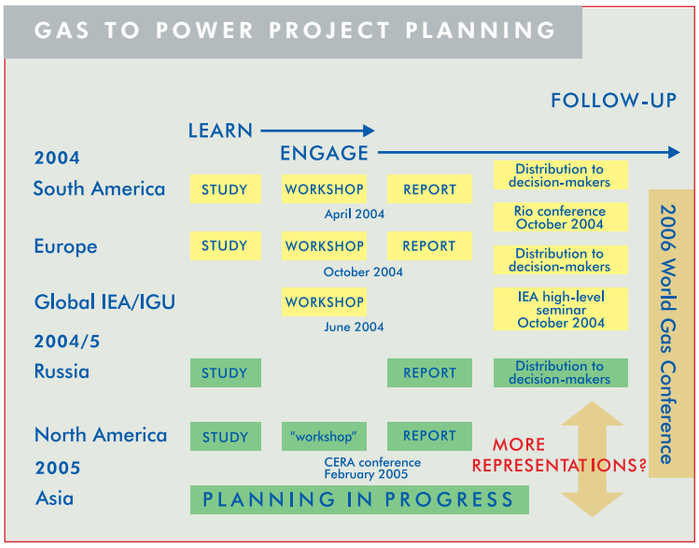
Taking into account the pivotal role of the power sector for the future development of natural gas markets, IGU launched the Special Project Gas to Power (GTP) in order to come to a better understanding of the future role that natural gas can play in power generation. Through a series of surveys and workshops the critical issues influencing the role of natural gas for power generation are being analysed. The project focuses on the views of governments, the electricity and the gas industry with respect to GTP and ways to tackle possible problems arising from different points of view among the stakeholders. This interim report gives a short impression of the main findings of the work conducted so far, focusing on South America and Europe. More detailed information can be found in the reports referenced in *Table 2*, while *Figure 1* gives an overview of the project planning.

The low capital costs and high conversion efficiencies of combined-cycle gas turbine (CCGT) power plants are the driving forces behind the projected strong global growth of demand for natural gas. Many forecasts expect natural gas to be the fossil fuel showing the highest growth rates. Recently, however, there has been increasing scepticism about its prospects. This is due to high natural gas prices, caused by insufficient supplies (North America) or the price linkage to the oil market (Europe, Asia Pacific), and the increasing acknowledgement that the natural gas industry will have to meet investment challenges of a different

BELOW
Table 2.

INFORMATION SOURCES FOR THE GTP SPECIAL PROJECT AND ADDITIONAL BACKGROUND MATERIAL

Title	*Source*
IGU, Gas to Power in South America	www.igu.org
IGU/CIEP: The future role of natural gas for European power generation (release: January 2005)	www.igu.org
Joint IEA/IGU workshop on the future role of natural gas in power generation	www.igu.org/database/2003database/IEAIGUWorkshop.asp
Outcomes of the IEA high-level meeting on the role of gas for power	www.iea.org/Textbase/work/2004/gas_power/summary.pdf
Anouk Honoré: Argentina: 2004 Gas Crisis, Oxford Institute for Energy Studies, November 2004	www.oxfordenergy.org/pdfs/NG7.pdf
George H. B. Verberg: It's the 21st Century, so it is Natural Gas! Presentation to Rio Oil and Gas, October 4-7, 2004	www.igu.org/database/2004/RioOilandGas200405-10-2004.ppt



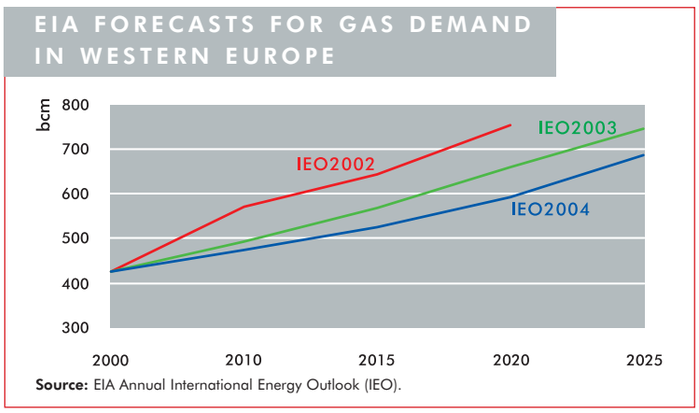
ABOVE
Figure 1.

magnitude than those in other fossil fuel markets. Major forecasting agencies, such as IEA and the US Energy Information Administration (EIA), have revised their gas demand forecasts slightly downwards, in particular for North America and Europe (*see Figure* 2), and in recent years coal has been growing at a much faster rate than natural gas.

IGU has started to look deeper into this increasing scepticism in a series of workshops. Not surprisingly, gas and electricity companies state two main criteria for the successful large-scale use of natural gas in power generation: gas needs to be reliably available at prices which make it competitive with other forms of generation and to ensure this, the regulation of energy markets needs to be as stable, transparent and predictable as possible.

However, the first stages of the project have shown that while the principal criteria look alike, the main issues hampering the use of natural gas in power generation are different in the various regions of the world.

BELOW
Figure 2.



South America

Although South America is well endowed with gas resources there are a variety of obstacles that currently hamper the development of the gas sector. The main issues are related to politics and government actions. For instance, as part of its response to Argentina's financial crisis the Argentinian government introduced price caps on wellhead prices, which has undermined the gas industry's confidence in the profitability of new investments. As a result, the power industry is concerned about the availability of sufficient natural gas to fuel new power plants. The government also cut exports of gas to Chile, arousing similar concerns in that country's power industry. The rather unclear prospects for Bolivian gas exports, due to political differences within the country, further increase the uncertainties about the availability of sufficient gas supplies in the region.

Other issues have a stronger market component. Hydropower plays a significant role in countries such as Brazil and investments in thermal generation are risky. Government actions are crucial in this respect as well. For instance, alternative regulations, imposed by government intervention, could provide incentives for gas-fired power plants and increase the reliability of the electricity system as a whole. So far, a more gas-friendly government approach to the Brazilian electricity sector is not discernible.

As in other parts of the world, investments in large-scale natural gas projects need some backing by long-term take-or-pay contracts. However, in South American countries lacking a well-developed "gas culture", consumers with little experience of

this type of contract might be reluctant to commit to long-term purchases with rather high take-or-pay obligations.

Overall, the South American gas market currently suffers from a lack of confidence in the investment climate for gas-fired power generation, and clear and credible government policies are needed if gas is to play a larger role in the region's power generation.

Europe

Government policies are much less in the frame when the perspectives of gas for power generation are discussed in Europe. Power generators and smaller gas companies stress the need for effective market opening, transparent and efficient third party access to transportation and flexibility of services in removing obstacles to future gas-fired generation. However, they do not see current regulation of markets and government influences as major impediments to the increased use of natural gas in power generation, not even to the realisation of new large infrastructure projects.

Pricing and prices of gas are much more prominent issues. Some power generators consider the linkage of natural gas prices to oil prices as the main obstacle for an increased use of natural gas for power generation. The connection to oil exposes power generators to the volatility of the oil market, which can make other forms of generation look more attractive. However, other groups of power generators have fewer reservations about the price linkage. According to them, oil price developments can be hedged against in oil future markets and a large portfolio of different types of generation plants offers another risk management tool for large generation undertakings.

Regardless of the form of indexation, some players simply consider the gas price as such as being too high to be competitive for power generation. There are two poles of countries within Europe. On the one hand market players in countries such as Spain, Italy and the UK consider natural gas as being very competitive for power generation and a corresponding increase in generation capacity can be observed. On the other hand the use of natural gas for power generation is considered as economically too risky or not competitive in countries such as Germany and Sweden.

Gas supplies within Europe are increasingly organised by integrated companies, active in the gas as well as in the electricity sector. Gas merchants invest in power generation and trade themselves, while power generators contract their gas supplies directly with the producer. Gas companies would like to increase their profitability by capturing the full market value of gas, including the added value from power generation. Power generators on the other hand strive to become more cost-efficient by excluding the wholesale gas players and are confident that they can strike better deals while negotiating directly with the producers. Non-discriminatory and efficient access to transportation capacity supports the electricity industry's strive for independence from traditional suppliers and in consequence, power generators plead for further efforts in ensuring transparent and efficient third party access regimes.

At least some European power generators are concerned about Europe becoming too dependent on imported gas and consider this as an obstacle to the increased use of gas in power as well. Yet, the concerns about the reliability of gas supplies, consequences of these concerns for new investments in generation plan and ways to deal with them remain rather unspecific and difficult to assess.

Further steps

IGU will further examine the future role of natural gas in power generation. Questions from the first workshops need to be addressed, such as the implications of increased import dependence for gas to power or the need for more flexibility in gas supplies for Europe. Then there will be research and workshops to assess the role of natural gas for power generation in North America, Russia and East Asia.

Trends in Financing the Growth of the International Gas Business

By Anthony M. Dols

The significant growth in gas demand poses society and the industry with new challenges. Both on the supply side and demand side the risks have increased substantially. In the main consuming markets in the OECD, production from indigenous sources is declining and "new" gas has to come from larger distances, at higher costs and with higher associated supply risks. Increasing scale of new gas developments and volatility in markets are other factors that have further spiced the cocktail of risk that both investors and lenders are facing. Deregulation and demand for greater competition have been driving changes in contract structures that provided traditionally a high level of predictability in volume and price over a long period.

In the future, emerging markets are going to require a larger proportion of overall investments in gas production than hitherto. Emerging markets financing capacity is normally constrained, with state-owned enterprises having limitations because of state budgetary demands combined with low credit rating, and private companies often lack in size and credit rating. The involvement of multi-laterals and/or ECAs has been a prerequisite to almost any financing of long-term investments in many of these circumstances. Despite high complexity and time/resource consuming nature, these types of structures will continue to be a prime funding source in many emerging markets, but the resources are constrained. However, recent developments provide optimism that the availability of financing for the substantial future investments in the energy sector around the world, in particular in gas, will increase.

Where international companies, next to direct investment, traditionally played a facilitating role in providing local sponsors access to external funding, these companies are now also acting increasingly as co-lenders to projects, alongside banks and other investors. In other examples, highly-rated parent companies have been willing to provide credit support to a subsidiary trading company, which is counterparty to the main gas sales contract in a venture that is targeting new and not yet established markets, or when market risks are deemed too high for lenders.

Also, emerging markets local funding availability has increased in the last three-to-five years. Several state-owned energy companies in export-oriented emerging markets have substantially strengthened both their operational and financial profiles. Restructuring of local economies in several import-oriented emerging markets have contributed to better credit standing and larger local market funding capacity. Combined with a general improvement in emerging markets country risk in the last two years, this means that larger amounts and longer tenors than ever before can now be achieved for financings on a corporate or quasi-corporate basis. Contracted spreads at the high end of the credit spectrum have also fuelled interest in higher yielding sub- or just-investment grade paper in 2004.

The very successful transactions for Gazprom in which ABN AMRO had leading roles recently have set a new benchmark in terms of size, tenor and pricing for Gazprom and Russia in both bank and public debt markets. The Tengizchevroil US$1.1. billion, seven-year corporate bond transaction, jointly led by ABN AMRO, also set a record for raising finance in the CIS. Also, the massive $7.6 billion Qatargas II LNG project financing with very long tenors and competitive pricing witnessed a strong appetite from the bank market (57 banks participating) despite higher end-market risks. The transaction that Guangdong LNG closed earlier in the year with only PRC banks in the financing syndicate is another example of increasing emerging market funding capability.

It seems very likely that the trend of strengthening emerging market players will continue and a new emerging markets crisis is currently not on the horizon. This year we have furthermore witnessed an increase in import-oriented NOCs securing major positions in upstream projects in other challenging emerging markets countries, e.g ONGC investing in LNG projects in Iran. The financing of these projects with external funds will face extra challenges over those that export to higher-rated OECD countries. But with increasing local funding capacity and the possibility to diversify sales into other LNG export markets, financing solutions will be found also for these investments.

ABN AMRO has successfully dealt with gas projects and worked with gas companies as financial advisor or as arranger of financings. We have a team of experts around the world with knowledge in upstream, midstream and downstream parts of the gas value chain. Our advertisement in this publication is further evidence of our continued commitment to the gas sector around the world.

We are optimistic about the international gas business finding solutions for the main challenges it faces. As the IEA stated in the release of the 2004 World Outlook: "The issue is not finding reserves, but will money find reserves?" We are confident they definitely will for gas.