Introduction and Key Developments

By Roberto Brandt and Andrés Kidd

CC Chairman Roberto Brandt (RIGHT) and Andrés Kidd, CC Secretary.

The following Progress Report intends to provide the reader with a preview of the technical programme to be delivered during the 24th World Gas Conference (WGC), which will take place in Buenos Aires, Argentina, October 5-9.

As you may have already read in the Preliminary Programme distributed some months ago, or on our website (www.wgc2009.com) the 24th WGC Technical Programme includes different types of sessions:

- 14 Keynote Addresses
- 4 Luncheon Addresses
- 9 Strategic Panels
- 1 Special Session on the TWP 2009-2012
- 24 Committee Sessions
- 18 Expert Fora
- Around 150 posters displayed in the "Technical Cafés"

In *Figure 1* you can see the structure of the daily programme of the conference (with the exception of the closing day on Friday, October 9).

The IGU Technical Committees, the real engine behind the Organisation

The five Working Committees, four Programme Committees and two Task Forces, which channelled the contributions of over 750 members from around the world during this Triennium, will display the results of their work during the Committee Sessions and Expert Fora. In the chapters of the Progress Report that follow you will find a report provided by each of the Technical Committees of what you can expect during the WGC.

As usual, the Technical Committees were also behind the selection of the best papers which resulted from the very successful Call for Papers (see below).

We would like to express our sincere and deep appreciation to the Chairs, Vice Chairs, Secretaries, Study Group leaders and all the Committee members who have contributed with such commitment during this Triennium.

RIGHT
Figure 1.

THE DAILY PROGRAMME OF THE CONFERENCE

Keynote Addresses		Technical Cafés (Posters)
Coffee Break		
	Committee Sessions and Expert Fora	
Lunch (Luncheon Address)		
Keynote Addresses		
Strategic Panels		
Coffee Break		
	Committee Sessions and Expert Fora	

Call for Papers: an incredible response from the global gas industry

The response to the Call for Papers was unprecedented with 683 abstracts submitted – an increase of 40% over WGC 2006.

In *Figures 2 and 3* respectively, you will find the breakdown of abstracts submitted by Committee and by the main countries.

We were very pleased to see that – in a clear change of trend from what we have seen in the past – contributions for PGC A (Sustainable Development) ranked very high, proving that the industry has turned its focus on this key issue which IGU has been promoting for several years.

In *Figure 2* you can also see that 356 papers were accepted, most of which will be presented during the activities of the Technical Committees, particularly at the Technical Cafés, an innovative setting to present the posters which was further described in the welcome message from the President of the National Organising Committee.

Special Projects

The five Special Projects on which we embarked this Triennium have been completed, and materials on each will be included in the delegate's pack. These are:

- The *2030 Natural Gas Industry Study*, which will address the key issues for a strategic analysis of the global natural gas industry for the next 25 years, will be highly profiled during the WGC where a Strategic Panel with members from the study's Steering Committee will debate extensively on the key messages which resulted.
- In a similar way, the CO_2 *Mitigation* project will be summed up in a brochure, and the contribution of the world natural gas industry to sustainable development will also be debated in a Strategic Panel, with speakers from within and outside the industry.

ABSTRACTS SUBMITTED BY COMMITTEE

Committee		*Submitted*	*Accepted*
WOC 1	Exploration and Production	139	47
WOC 3	Transmission	97	48
PGC A	Sustainable Development	89	33
PGC D	LNG	80	44
WOC 4	Distribution	72	46
WOC 5	Utilisation	62	44
PGC B	Economics, Strategy and Regulation	60	37
WOC 2	Storage	40	27
PGC C	Developing Markets	31	24
TF GMI	Gas Market Integration	13	6
Total		**683**	**356**

- The Task Force on Gas Market Integration (TF GMI) will submit their *Guiding Principles for Gas Market Integration*, a topic that will be debated extensively in both a Committee Session, as well as in one of the Strategic Panels.

ABOVE
Figure 2.

TOP 10 ABSTRACTS SUBMITTED BY COUNTRY

Place	*Country*	*Abstracts*
1	Russia	100
2	Iran	76
3	Argentina	48
4	Japan	42
5	USA	40
6	China	37
7	Brazil	32
8	The Netherlands	30
9	India	28
10	France/Germany	22

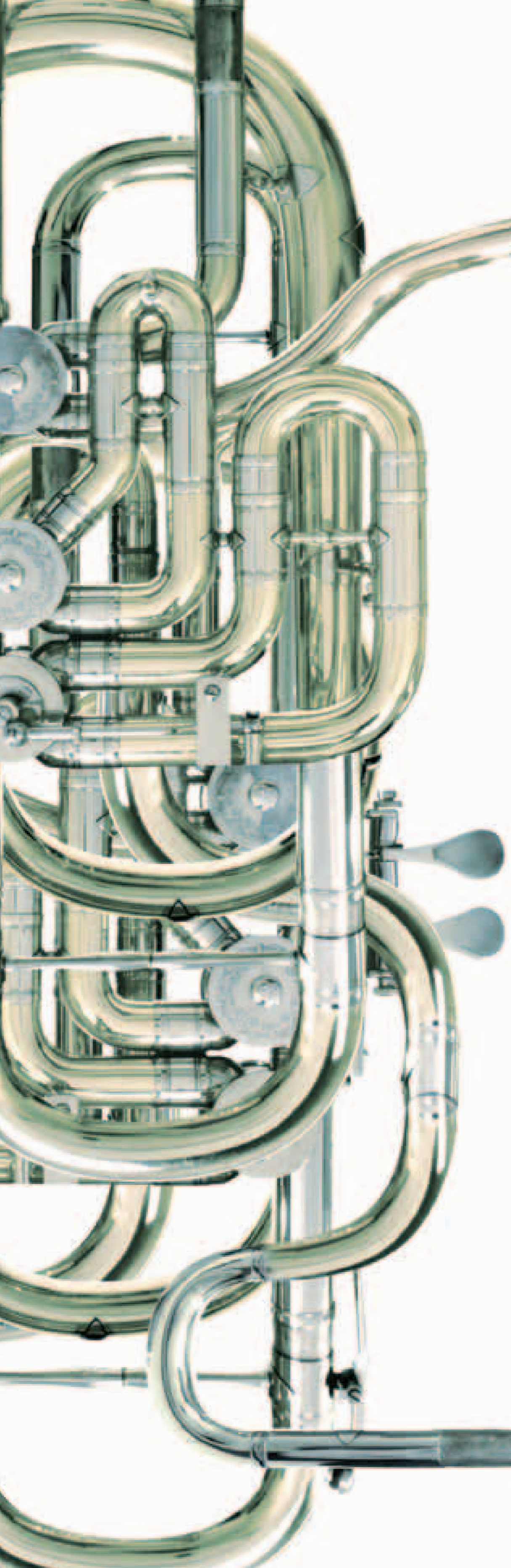
LEFT
Figure 3.

- Following this Triennium's policy on the promotion of energy efficiency as one of the cornerstones to sustainable development, Working Committee 5 (Utilisation) has completed the first model of the *IGU Energy Efficiency Indicators (IEEI)*. This reference tool will be delivered to the delegates.
- The *Initiative on Best Practices Ideas and Proposals*, led by Task Force R&D, will render a useful compilation of best practices that encompasses the whole chain of the gas industry.

Roberto Brandt is the Chairman of the Coordination Committee and Andrés Kidd is the Committee's Secretary. Readers requiring further information are invited to contact Andrés Kidd at andrew@ifisa.com or to visit IGU's website at www.igu.org.

London, UK was the venue in June for the sixth and final Coordination Committee meeting of the 2006-2009 Triennium.

MOL - the key player



MOL Group is an active player in different spheres of gas business and a leading company in increasing the regional security of gas supply to Europe through the development of underground gas storages, diversification of gas sources and the establishment of new transportation routes.

Gas Trading
MOL Energy Trading Ltd. not only supplies MOL Group with natural gas but has recently also developed into an important regional player by establishing subsidiaries in Romania and Austria.

Gas Storage
Throughout its partnerships, MOL is involved in the establishment of unique strategic and commercial underground gas storage facilities in Hungary.

Gas Transmission
MOL Group plays a significant role as initiator of natural gas pipeline inter-connections in the region. FGSZ, Natural Gas Transmission Company of the Group, the ultimate owner and operator of the Hungarian high-pressure network is the leading power of the establishment of NETS (New European Transmission System). The aim of NETS is to increase Europe's security of gas supply by ensuring inter-connections among various national gas networks.

MOL is also one of the leading players of the Nabucco consortium, MOL has recently signed an agreement with Pearl Petroleum Company Limited with the purpose of developing two of the most significant gas fields in the Kurdistan region of Iraq, which will enable gas supplies for Nabucco.

It has operations in EMEA and the CIS member states and it employs over 33.000 people worldwide. MOL owns 5 highly complex refineries in Hungary, Slovakia, Croatia and Italy with a refinery capacity of 23.5 mtpa and according to Wood Mackenzie global survey, the refineries in Hungary and in Slovakia are the most efficient refineries in Europe. MOL Group operates over 1500 filling stations in Europe and a 5,000 km long high pressure natural gas pipeline network in Hungary. MOL is active in regional gas transmission and trading. MOL is currently establishing an underground gas storage with a unique strategic mobile capacity of 1,2 bcm and 0,7 bcm commercial capacities.

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Reports from the Committees

This chapter contains news and information from the five Working Committees and four Programme Committees set up for the 2006-2009 Triennium.

● Working Committee 1 – Exploration and Production

WOC 1's sixth meeting took place in Vienna, Austria, March 11, and was hosted by OMV. The meeting's main aims were to finalise preparation of the Study Group (SG) reports and organisation of the Committee's activity at the 24th WGC in Buenos Aires.

The report of SG 1.1 – "Remaining conventional world gas resources and technological challenges for their development" – provides answers to issues such as: the definition of "mature area"; the current situation as regards reserves and production in mature areas and forecasts of future development; the use of modern technologies for gas monetisation; and Arctic gas prospects, with special attention being paid to the Shtokman project.

The report of SG 1.2 – "Difficult reservoirs and unconventional natural gas resources" – contains: a definition of "unconventional gas resources"; and analysis of the current situation, technologies for their exploration and production and their importance for regional gas industry development (especially in the North America). This is a very important issue for the global gas industry today, because unconventional gas resources and difficult reservoirs exceed conventional resources many times and they are spread much more widely than conventional resources.

In the process of preparation for the 24th WGC, 139 papers from 23 countries were received – the best result of all Committees and Task Forces. This required a comprehensive approach to paper selection, and 47 papers from 17 countries (including five invited experts) have been selected in addition to two Study Report

WOC 1's sixth meeting of the 2006-2009 Triennium was held in Vienna. (ABOVE) Delegates pose for a group picture outside the OMV offices. (OPPOSITE) WOC 1 in session.

Presentations. Four papers have been put on the waiting list and four forwarded to the Best Practices project.

WOC 1 is responsible for two Committee Sessions and two Expert Fora during the 24th WGC. The Committee Sessions will include each Study Group's report and four oral presentations dedicated to the principal issues of the group's study. The Expert Fora will each feature 10 posters and eight oral presentations. Additionally, posters will be explained in the Technical Café using a three-minute oral presentation with one slide.

Committee Session 1.1 – *Difficult Reservoirs and Unconventional Natural Gas Resources, Tuesday, October 6, 1630-1830*
Co-Chairmen: Vladimir Yakushev, Russia and Kamel Chikhi, Algeria

Committee Session 1.2 – *Remaining Conventional World Gas Resources and Technological Challenges for their Development, Wednesday October 7, 0945-1145*
Co-Chairmen: Kamel Chikhi, Algeria and Dominique Copin, France

Expert Forum 1.A – *Exploration of New Reserves and New Areas, Wednesday October 7, 1630-1830*
Co-Chairmen: Stanislaw Rychicki, Poland and Nasir Darman, Malaysia

Expert Forum 1.B – *Production and Processing Techniques, Thursday, October 8, 1630-1830*
Co-Chairmen: Dominique Copin, France and Leopold Brauer, Austria

● Working Committee 2 – Underground Gas Storage

The end of the 2006-2009 Triennium is approaching and this is a good opportunity for our Chairman, Vladimir Onderka, to look back at what we have done – at what helped our work and what we are proud of.

WOC 2 started off with 55 members and has 66 now. We were successful in getting members

from almost all countries active in the gas industry but there is still room for improvement – a good challenge for the incoming chairmanship.

We have worked not only on tasks agreed at the beginning of the Triennium for the Study Groups, but also to increase cooperation between experts, sharing experiences and knowledge. We are proud of the series of workshops organised together with the main Committee meetings. The topics for these workshops were carefully chosen to be both important and timeless, while many well-known (almost legendary) experts in the underground gas storage (UGS) sector honoured us with their presentations. The topics included:

- The legal and regulatory framework for UGS;
- UGS safety;
- New technologies for old wells; and
- Numerical applications for UGS – from E&P to dispatcher.

Our intention was to combine the existing practice and theoretical studies including new experimental methods. And this is what IGU is about.

We believe that we helped to extend the IGU knowledge database and that the published presentations will be useful for people in the future.

As a Triennium always ends with the World Gas Conference, we would like to say that the WOC 2 paper sub-committee did an excellent job selecting the contributions of highest quality. Topics which are of key interest to all UGS companies will be presented in the WOC 2 Committee Sessions and Expert Fora, and there will also be two VIP presentations provided by Fred Metzger, Vice President Storage of Kinder Morgan Energy Partners, and Leonhard Ganzer from Technical University of Clausthal.

Committee Session 2.1 – *Major Trends in UGS Development, Tuesday, October 6, 1630-1830*

Committee Session 2.2 – *New Technologies for UGS, Wednesday October 7, 0945-1145*

Expert Forum 2.A – *Main Drivers and Changing role of UGS, Tuesday, October 6, 0930-1130*

Expert Forum 2.B – *UGS Technology and Applications for CO_2 Sequestration, Thursday, October 8, 1630-1830*

At the beginning of this report the members were mentioned – without people the Committee would be nothing. Writing as the Chairman, I am lucky to have had the opportunity of meeting and working with so many experts from around the world. I believe that our members feel the same.

I would like to take this opportunity to thank to all WOC 2 members for their work and contributions and to say that it was a great honour for me to work with them. I would also like to thank the Coordination Committee for all its help, support and kind words in moments when they were needed. To those who will continue and also to the new members of the IGU family I wish good luck in the next Triennium and to the incoming Malaysian Presidency.

Working Committee 3 – Transmission

For the 2006-2009 Triennium Germany was allocated the responsibility for WOC 3. Helge Wolf served as Chairman, Eric Dam (The Netherlands) as Vice Chairman and Uwe Klaas as Secretary. Based on the members' proposals for topics to be studied during the three-year period, the Committee decided to focus its attention on the following three general topics:

- **SG 3.1:** *The impact of regulation on gas transmission, safety and security of supply;*
- **SG 3.2:** *A review of new technologies in pipeline and construction monitoring; and*
- **SG 3.3:** *The contribution of gas transmission to climate protection and sustainable development.*

These topics formed the basis for three Study Group, each with their own leader. Also these topics provided the framework for the Call for Papers for the 24th WGC. The WOC 3 Call for Papers was

extraordinarily successful and the Committee had to select out of 97 abstracts from 28 countries the papers and posters that will be presented at the Conference (which was not an easy task!).

WOC 3 will be responsible for three Committee Sessions and two Expert Fora as detailed below.

Committee Session 3.1 – *News on Pipeline Transmission Systems, Tuesday, October 6, 1630-1830*
This session will deal with the impact of economic regulation and environmental legislation, new monitoring technologies and challenging new pipeline projects.

Committee Session 3.2 – *Evaluating Challenging New Off- and On-shore Pipeline Projects, Wednesday October 7, 1630-1830*
This session will look at security of supply in an era of growing international gas pipeline networks and energy-hungry markets.

Committee Session 3.3 – *Review of New Technologies in Pipeline Monitoring, Thursday, October 8, 1630-1830*

Expert Forum 3.A – *Impact of Regulation on Gas Transmission, Safety and Security of Supply, Tuesday, October 6, 1630-1830*

Expert Forum 3.B – *Contribution of Gas Transmission to Climate Protection and Sustainable Development, Thursday, October 8, 0945-1145*

In each session there will be six presentations of new findings and challenging projects in the field of interest. The results of the Study Groups will be presented by the Study Group leaders during the first Committee Session.

Beside the sessions during the 24th WGC in Buenos Aires, the results of WOC 3's work and in particular that of its Study Groups will be published in a detailed report on the Conference.

In addition, there will be around 20 interesting posters about gas transmission.

Conclusion of the Triennium

Gas transmission by pipeline is still and will remain in the future the major way of bringing large quantities of natural gas from producers to consumers. This is highlighted by the huge transcontinental projects under discussion around the world (e.g. Siberia-Europe, Middle East-Europe, trans-Sahara and so on).

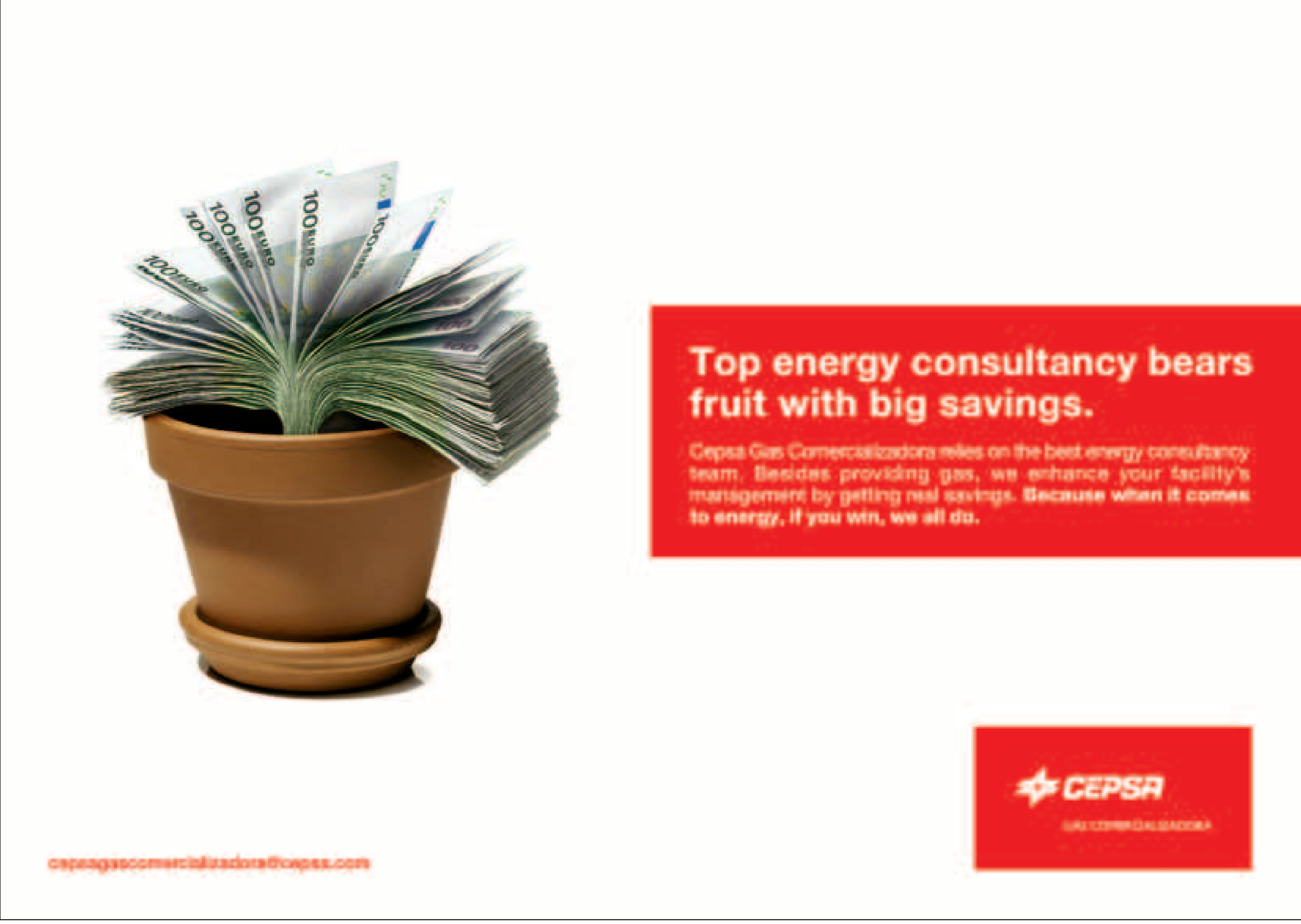
The Study Groups' activities have concentrated on the big challenges faced by gas transmission today. The results demonstrate that gas transmission can not only overcome those challenges, but will also be able to enter a constructive dialogue with all stakeholders to achieve even greater success in terms of fair access to pipelines, of pipeline safety and of environmental protection. The stakeholders have to be aware that the solution is not to replace pipeline transmission by other means (which ones by the way?), but to work on balanced regulatory, technical and environmental solutions in detail. As gas transmission is a highly capital- and operating-intensive business these solutions will not be achieved without costs. In this respect, part of the above mentioned dialogue of the stakeholders has to be devoted to a balanced and fair cost bearing system.

Gratitude

WOC 3 expresses its utmost gratitude to all those who contributed to the successful work of the Committee during the Triennium and especially to those who helped to produce its Triennium report. In this spirit, WOC 3 wishes all participants of the 24th WGC in Buenos Aires a successful Conference and hopes to see a high attendance, because the themes are worth it!

● Working Committee 4 – Distribution

For WOC 4, the 24th WGC represents the culmination of three years of planning. The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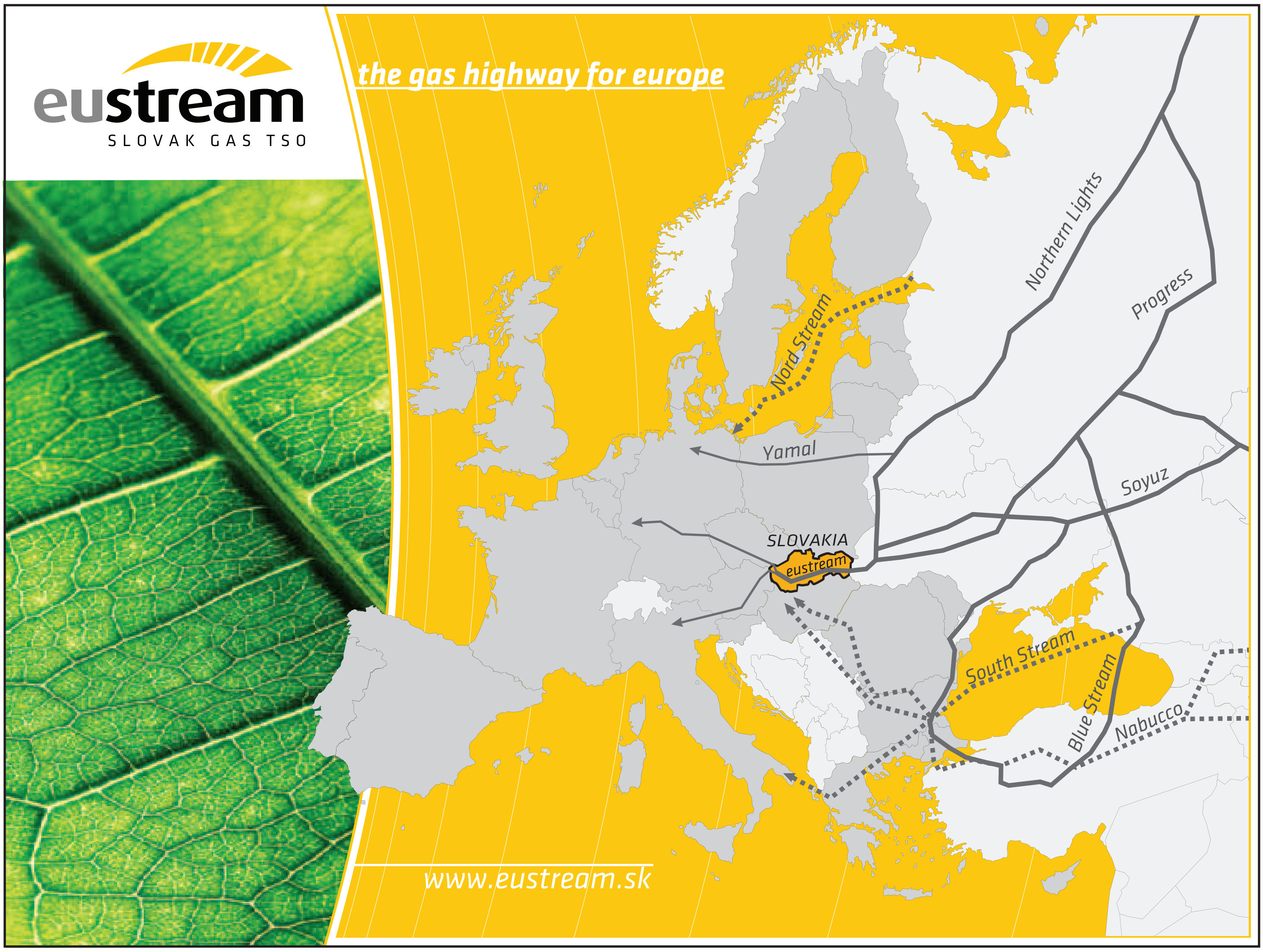
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primary role has been to support the promotion of safety, efficiency and sustainability across the gas distribution community. The success in achieving this objective also serves as a driving force towards achieving the other strategic objectives of promoting gas as the fuel of choice, and ensuring the industry's role as a responsible corporate citizen. Public safety and security of supply have always been the key drivers of distribution integrity management, however environmental, economic and other sustainability issues are becoming increasingly important as energy markets develop.

In order to carry out this role, members of WOC 4 have met together six times since 2006 and exchanged data, analysis and opinions on the current state of asset management systems used by gas distribution operators throughout the world. Their analysis and the conclusions and recommendations that WOC 4 has been able to draw from its work are summarised in the reports of the Study Groups.

The Chairman and the Study Group leaders will present the findings from the three work streams: asset management; a review of leakage reduction strategies and practices; and the prevention of third party interference damage to distribution assets.

WOC 4 will also be joined by technical specialists, industry regulators, practising engineers and economists from over 18 countries, who will deliver information on the latest technologies and research, provide expert opinions on new tools and techniques and on the frameworks and economic incentives in the world of gas distribution. The programme highlights are detailed below.

Committee Session 4.1 – *Asset Management, Wednesday, October 7, 0945-1145*
Chaired by: Jeremy Bending, United Kingdom
The session will start with a summary of findings from the asset management study, including definition of best practice in the following areas:

- Data and information management;
- People management;
- Regulatory issues; and
- Overall asset management strategies.

Then four papers will be presented looking at: the risk management cycle; safety performance indicators; economic incentives to promote safety improvements; and new tools for risk, investment and maintenance management.

Committee Session 4.2 – *Review of Leakage Reduction Strategies and Practices, Wednesday, October 7, 1630-1830*
Chaired by: Steve Vick, United Kingdom
The session wiill start with a summary of findings from the study reviewing leakage reduction strategies and practices, including the definition of approaches for the control of leakage including:

- Methods of leakage measurement and quantification; and
- How the effectiveness of deployed strategies can be measured.

This will be followed by five papers with specific examples of techniques and programmes to reduce leakages.

Committee Session 4.3 – *Prevention of Third Party Interference Damage to Distribution Assets, Thursday, October 8, 0945-1145*
Chaired by: Kevin Knapp, USA
There will be a summary of findings from the study on third party damage, including the definition of best practice in the following areas:

- Current methods of prevention;
- Data management; and
- Emergency planning.

Five papers are scheduled for this session: a report from European Gas Pipeline Incident Data Group; a case study on reconnecting gas services after an incident; detection methods for underground pipelines; protection measures related to pipeline integrity; and damage prevention in the USA.

Expert Forum 4.A – *Asset Management, Tuesday October 6, 0930-1130*
Chaired by: Robert Steven, Argentina
Eight papers will be presented.

Expert Forum 4.B – *Leakage Reduction Strategies and Practices and Prevention of Third Party Interference Damage to Distribution Assets, Thursday, October 8, 1630-1830*
Chaired by: Alessandro Soresina, Italy
Seven papers will be presented.

Working Committee 5 – Utilisation

WOC 5 is ready for the 24th WGC where we will have five sessions to present in detail the situation in the different areas of gas utilisation, identifying the trends, tendencies and technologies.

We will evaluate and propose actions for further market development covering the three segments of Industry (SG 5.1), Domestic & Commercial (SG 5.2) and Transport (SG 5.3). In addition, we will have two Expert Fora, in which we will cover more extensively two topics that are among the most important ones: micro CHP (combined heat and power) and natural gas and renewables.

Finally, the poster session will bring to light details on specific projects and technologies. We hope to see many visitors as we will have about 20 posters covering various topics, such as micro CHP, heat pumps, industrial utilisation and transport (natural gas vehicles – NGVs). Here you will be able to talk directly to the authors.

We have organised and structured the sessions to take into account the global market changes that are seen today with a decrease in gas sales in many countries. WOC 5 aims to produce the answers to the following questions:

- Which utilisation and technologies are expected in the immediate future?
- How to implement renewables and best "marry" gas with renewables?
- What are the new challenges for gas utilisation?

Technologies and utilisation for the near future are key points of the work in WOC 5. SG 5.2's session will have a strong focus on gas heat pumps and we will organise an Expert Forum on micro CHP. SG 5.3's session is dedicated to transport, a sector with strong potential for gas utilisation. Renewables is a topic of interest for all sectors of utilisation and therefore we will have an Expert Forum dedicated to this alone. We will also address overall and horizontal issues like energy saving (especially in industry) and gas quality, for which an EU officer will present the view of the European Commission.

The sessions will typically include several points:

- Presentation of the main results and conclusion of the gas experts that have collaborated with WOC 5 (about 100 members);
- Oral presentations selected through the call for papers;
- External invited speakers on topics of special interest; and
- Roundtables.

A few details of the topics covered in each session are given below.

Committee Session 5.1 – *Industrial Utilisation: Technologies for Tomorrow? Tuesday, October 6, 1630-1830*
Chaired by: Guy Verkest, Belgium

- Present market situation including the regulatory situation and role of renewables.
- Case studies, including Russia, Europe and Asia (energy saving, biogas, CHP, etc.).
- Technology state of the art.
- The future for gas in the sector – trends/ examples.
- Impact of new technologies.
- Recommendations.

Committee Session 5.2 – *Domestic and Commercial Utilisation: Appliances and Products for Tomorrow? Wednesday, October 7, 1630-1830*
Chaired by: Martin Wilmsmann, Germany

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- Overall present market and regulatory situation.
- New technologies:
  - Micro CHP;
  - Cooling and gas heat pumps;
  - Solar biogas and renewables; and
  - Other alternative and innovative appliances.
- Horizontal issues:
  - Efficiency indicators; and
  - Gas quality variations.
- The future for gas in the sector? Hurdles and challenges?
- Conclusion – recommendations for the gas industry.

The session will cover the topics above with a strong accent on heat pumps (as micro CHP and renewables are treated in the Expert Fora).

Committee Session 5.3 – *Natural Gas Vehicles (NGVs): Methane – A Global Eco-Efficient Mobility Solution, Thursday, October 8, 0945-1145*
Co-Chaired by: Davor Matic, Croatia and Eugene Pronin, Russia
- Best practices and state of the art on technology and breakthrough technologies.
- Collection of real life experiences (RLE) from existing fleet operators already using NGVs (natural gas and bio-methane: buses, garbage trucks, taxi fleets, off-road applications [airport machinery], locomotives, ships and ferries, etc.).

Expert Forum 5.A – *Micro CHP Knocks at the Door! Tuesday, October 6, 0930-1130*
Chaired by: Jean Schweitzer, Denmark
Micro CHP poses an opportunity for natural gas to maintain its presence for domestic use. Moreover, micro CHP may be an ideal bridge between natural gas and renewables. The objective of this forum is to present the technology state of the art and to establish recommendations for the gas industry. There will be oral and poster presentations on:
- Technology state of the art;
- Gas industry activity; and
- Challenges and conditions for success.

A roundtable will conclude the forum.

Expert Forum 5.B – *How Renewables Will Support the Natural Gas Business! Wednesday, October 7, 0945-1145*
Chaired by: Aksel Hauge Pedersen, Denmark
The objective of the forum is to demonstrate that natural gas is an obvious partner to renewables. It will include a presentation on state of the art for natural gas and renewables by Nuno Afonso Moreira, Portugal, and will be followed by a presentation of case studies on:
- Bio-methane and transportation;
- Renewables and natural gas in Japan;
- Renewables and natural gas in Spain; and
- Renewables and natural gas in Germany.

Finally, a panel will debate the topic of this forum, focusing mainly on:
- The transportation sector – combined use of natural gas and bio-methane, hydrogen etc.;
- Renewable gas (bio-methane, hydrogen technology) in the natural gas system; and
- Utilisation of renewables as a substitute for natural gas – biomass gasification.

The WOC 5 poster session in the Technical Café is scheduled for Thursday, October 8, 1630-1830.

● Programme Committee A – Sustainable Development

PGC A's sixth and last meeting of the 2006-2009 Triennium was hosted by Gas Natural in Madrid, Spain, April 1-3. During the meeting a final selection of papers for the 24th WGC was made, some 89 abstracts having been submitted to the Committee on the important topics of the environment, climate change and renewables.

In 2006, at the beginning of the Triennium, PGC A was one of the smallest Committees in terms of members. Over the last three years,

BELOW, MIDDLE AND BOTTOM
PGC A had six plenary meetings in the 2006-2009 Triennium. (BELOW) Delegates to the September 2007 meeting in Arnhem, The Netherlands, take a break on a river cruise wearing yellow scarves to symbolise their belief in a bright future for sustainable development. (MIDDLE) In January 2008, a joint committee meeting was held in Copenhagen, Denmark, to plan the CO_2 mitigation report. (BOTTOM) Delegates convened in Kuching, Malaysia, in September 2008.

however, gas industry interest in environmental issues has increased significantly, and during the Call for Papers process PGC A received the second highest number of abstracts.

It has also become clear that high competence as regards environmental issues is available within the industry and there is an increasing will to put these issues on the agenda. Thus we are proud to bring forward to the 24th WGC a programme with reports produced by the Committee together with the contribution of papers from all over the world.

The meeting was also used to agree on the final version of the Study Group reports. The conclusion is that the goals for the Triennium have been met and that interesting reports are prepared.

Study Groups

SG A.1 *Updating IGU's Guiding Principles for Sustainable Development*

SG A.1 has studied the level of implementation of the Sustainability Guiding Principles in different companies in the gas industry. We will present the results in the Committee Session "Gas Industry Response to Climate Change".

The updated Guiding Principles for Sustainable Development will be presented in the same session. In terms of sustainable development companies in the gas industry are urged to be:

- Environmentally sound by making choices today that work tomorrow;
- Socially responsible by supporting healthy communities; and
- Economically viable by supporting sustainable development.

SG A.2 *Case studies on the reduction of greenhouse gases*

SG A.2's work has concentrated on looking for the best practices in sustainability in the gas industry and these initiatives have been included in the CO_2 mitigation report. The case studies are an important part of the main report to highlight real

The North European integrated energy company

DONG Energy is an integrated energy company that operates across the entire energy value chain, with a presence in a number of important markets in Northern Europe – Germany, the UK, Norway, The Netherlands, Sweden, Poland and Denmark. The company's core business activities are: Natural gas and oil exploration and production, production of thermal and renewable energy, natural gas and power sales and distribution in the wholesale market and to end customers. An important part of this business will in the future be part-ownership of an LNG terminal (liquefied natural gas) in The Netherlands. More than 5,000 employees are doing their best to fulfill the ambition of securing stable energy supplies for the company's different markets.

Growth in Northern Europe

DONG Energy constantly tries to improve its competitiveness and expand its presence in the North European energy market – particularly through growth outside Denmark. The growth will be underpinned by a whole series of identified, well-defined investment options that have been chosen because they utilise skills and existing market positions and enable synergies across the entire Group. In the Danish market, the objective is to maintain and strengthen the existing position as the market leader.

E&P activities

On the natural gas and oil account the business boasts an expanding portfolio of 72 oil and natural gas exploration and production licenses strategically located in the North Sea and the Atlantic Margin; west of Norway, west of Shetland, near the Faroe Islands and in Greenland. One of the company's new and principal assets is the giant Ormen Lange natural gas field in the Norwegian sector. It supplies the UK market via the 1,200 km Langeled subsea pipeline, which is part of the Gassled system.

New LNG terminal

DONG Energy is becoming active within liquefied natural gas (LNG) by being a part of an LNG terminal in the Port of Rotterdam, The Netherlands, which will be operational from 2011. DONG Energy owns a stake in the terminal and 25% of the capacity – up to 3 billion m3 of natural gas per year for a period of 20 years. The aim is to import LNG and transport it onwards into the European gas transmission system. The LNG business will enable DONG Energy to supplement the existing pipe-based natural gas supplies from Denmark, Norway, UK and Russia with natural gas from other parts of the world.

Leading in offshore wind

With many years of experience in the wind power industry, DONG Energy is one of the leading offshore wind farm developers. In Denmark the company is involved in six operating offshore wind farms with a total capacity of 234 MW and is currently building the world's largest offshore wind farm in the North Sea, Horns Rev 2.

In the UK two 90 MegaWatt (MW) wind farms are in operation; Burbo Bank offshore wind farm in Liverpool Bay, and the Barrow Project in the East Irish Sea. Our latest projects are the 172 MW Gunfleet Sands 1 and 2 which will be commissioned in 2009 and 2010. Further, Walney will be commissioned in 2010 with a total capacity of approximately 150 MW.

Read more about DONG Energy and the company's engagement in a long range of related projects at www.dongenergy.com.

WE SEARCH DEEP
AND AIM HIGH

DONG Energy participates in licenses in Denmark, Norway, the UK, the Faroe Islands and Greenland. In total we are active in 72 licenses in the North Sea and the Atlantic Margin.

We produce oil and natural gas in the Norwegian and Danish part of the North Sea, and since 2007 from the Ormen Lange field off the mid Norwegian coast. We have significant in-house experience, competencies, and hands-on knowledge within the exploration and production of natural gas and oil. We will continue to strengthen this position in the years to come.

We participate in every phase of the energy process all the way to the consumer – from the rigs in the North Sea, power stations generating electricity and heat, and wind farms, until we market the energy and convey it all the way to the doorstep of our more than one million customers in Denmark and abroad. This ensures a highly reliable supply of energy and gives us the necessary expertise for developing our company.

In the future we will also be active within LNG by being a part of the LNG terminal in the Port of Rotterdam, the Netherlands. We will thereby be able to import LNG and transport it onwards into the European gas transmission system, supplementing the existing pipe-based natural gas supplies.

Innovation is an important part of our everyday work in every part of the company. We are at the cutting edge in the development of new technologies and renewable energy.

DONG Energy is one of Northern Europe's leading energy groups. We are headquartered in Denmark. Our business is based on sourcing, producing, distributing, trading and selling energy and related products in Northern Europe. The company delivered revenue of DKK 41.6 billion in 2007 (approx. EUR 5.6 billion or USD 8.3 billion). DONG Energy has more than 5,000 employees. For further information, see www.dongenergy.com.

www.dongenergy.com

DONG energy

examples that are already implemented and working in the gas industry.

SG A.3 *Post-Kyoto concept*
SG A.3 has studied the situation of the gas sector in a scenario where it will be necessary to buy emission credits, and a report will be presented entitled "A Reasonable Post-Kyoto Concept – the Gas Perspective".

The report says the climate change is a reality, and reminds us of the clean properties of natural gas compared with other fossil fuels. It concludes that a climate policy based on an emission trading system is the most favourable. Different allocation methods for CO_2 certificates are discussed with regards to which impacts they will have on the gas industry.

Technical Programme of the 24th WGC
Strategic Panel 4 – *Natural Gas and the Sustainability Question: How Many Answers Can We Provide? Wednesday, October 7, 1430-1600*
PGC A has coordinated the study about CO_2 mitigation that will be presented in Strategic Panel 4. The study is supported by WOCs 1, 2, 3 and 5 in addition to PGC A.

- Presentation of the study "The Contribution of the Natural Gas Industry to Climate Change Mitigation" elaborated by Olav Kårstad.
- Interventions of:
  - Pablo O. Canciani, Director of Climate Change Studies (PEPACG), Catholic University of Argentina;
  - Juan Carlos Villalonga, Greenpeace; and
  - Jayant Sathaye, International Energy Studies Group, Lawrence Berkeley Laboratory.

Committee Session A.1 – *Gas Industry Response to Climate Change, Wednesday, October 7, 1630-1830*

- The Acting Chairman will introduce a supporting document and the IGU Guiding Principles;
- Dr Kabelitz will present his document "A Reasonable Post-Kyoto Concept – the Gas Perspective"; and
- Two papers on post-Kyoto will be presented.

Expert Forum A.A – *Gas Chain Sustainability, Tuesday, October 6, 1630-1830*
Six papers will be presented including "Life Cycle Assessment (LCA) of the European Natural Gas Chain". This represents a continued focus on LCA from the 23rd WGC in 2006 and an abstract is being published in this issue of the IGU Magazine (see pages 168-171). Another interesting paper is "Recompression of Natural Gas Saving the Environment and Money".

Expert Forum A.B – *Energy Efficiency + Gas and Renewables, Thursday, October 8, 0945-1145*
Five papers on topics including biogas injection into the gas grid, solar water heating and distributed carbon capture and sequestration for city gas systems in Japan will be presented.

Technical Café – *Tuesday, October 6, 0930-1130*
Ten papers have been selected and will be presented as posters. We hope people will stop by to have a cup of coffee and also read and discuss these highly interesting posters. The authors will be present on Tuesday morning to answer questions.

Programme Committee B – Strategy, Economics and Regulation

This Triennium has seen a number of major developments and issues: the price of oil peaked at over $140 per barrel in mid-2008 and then dropped to below $40 before rising to its current level and the gas market has followed this trend; Europe has experienced major supply disruptions; market mechanisms and competition are now well established in a number of major markets; and the supply and demand landscape for gas are at a point of major change.

The remit of PGC B covers this broad range of strategic issues facing the gas industry. The work of the Committee has been undertaken in three Study Groups, each focusing on a critical area:

- The supply and demand of gas to 2030;
- Developments in the pricing of gas; and
- The evolution of regulation.

PGC B has had the active participation of close to 100 people, while its meetings and deliberations have literally spanned the world, with meetings in Amsterdam, Kyoto, London, Madrid, Paris, Toledo and Washington DC.

The work of PGC B and its Study Groups is coming to an end, and is to be marked by the publication of a detailed report, and presentation of the key themes and conclusions at the 24th WGC.

Committee Session B.1 – *Supply and Demand to 2030, Tuesday, October 6, 0930-1130*
SG B.1 has undertaken a detailed analysis of the projection of demand through to 2030, by region and sector. This thorough analysis of demand has been based on both a bottom-up collation and aggregation of country and regional views, combined with a top-down view of global factors. On supply, the latest estimates of reserves and production from today's major production areas have been integrated with projected production from future discoveries. The approach on supply has also been to combine bottom-up views on the production areas, with top-down views of global developments. The conclusion is an authoritative and detailed projection of supply and demand of gas through to 2030.

Committee Session B.2 – *Developments in Gas Pricing, Tuesday, October 6, 1630-1830*
The establishment of competition, the creation of spot markets for gas and the arbitrage opportunities presented by the shift to LNG have all created the dynamics for change in the pricing of gas. SG B.2 has undertaken a comprehensive and global survey of the range of different pricing mechanisms and the prevalence of these by region, and by pipeline versus LNG.

The survey was undertaken at two points in the Triennium so that the progression between pricing mechanisms could be assessed and analysed. This has then been used to develop the hypotheses of the progression and extent of pricing mechanisms in 2020.

Committee Session B.3 – *Evolution of Regulation, Thursday, October 8, 1630-1830*
Since the last World Gas Conference in Amsterdam, the pace of regulatory developments has stepped up, particularly in Europe where there has been a further legislative package and more detailed regulation. Other parts of the world have also responded to the requirement to change the traditional gas industry structures with legislation and regulation. SG B.3 has considered the likely developments in regulation in the major markets, and summarised the trends of the key regulatory devices in each of these markets. One of these major trends has been that of the harmonisation of business practices – the Study Group looks at the rationale and the different approaches being used, and sets out the case for harmonisation. Finally, regulation and economic forces have forced structural change on the industry – the Study Group summarises the major areas of change and how the industry will continue to evolve.

PGC B is also organising two Expert Fora.

The 24th WGC represents the culmination of a three-year programme of effort for PGC B. In addition to the presentation of the conclusions of each Study Group, there are a number of related technical papers and presentations representing the views of key members of the world gas industry. The report of PGC B and the sessions at the 24th WGC will set out a definitive view on some of the major drivers for the industry in terms of strategy, economics and regulation.

● Programme Committee C – Developing Gas Markets

PGC C held its sixth meeting in Port of Spain, Trinidad and Tobago, March 3-5. The meeting was hosted by the National Gas Company of Trinidad and Tobago and brought together members from Croatia, Iran, Korea, Malaysia and the Russian Federation.

The seventh and final meeting of the 2006-2009 Triennium was hosted by OMV Gas & Power in Vienna, Austria, June 30-July 2, and was attended by members from Austria, Brazil, Croatia, Italy, Malaysia, Poland and Serbia. During the meeting, members devoted their efforts towards completing the PGC C report for the 2006-2009 Triennium.

PGC C members pose for group photos during the sixth meeting in Port of Spain (ABOVE) and the seventh meeting in Vienna (BENEATH)

Study Groups

SG C.1 *Developing Gas Markets in South, West and Central Asia, Committee Session on Tuesday, October 6, 0930-1130*

The key issue highlighted by the report is the role that geo-politics will play in shaping the region's gas industry landscape. Recognition of interdependence between gas producing and consuming countries should provide the common basis for governments to cooperate to reduce barriers to the development of gas markets – including the imposition of sanctions on Iran, which has the second highest world gas reserves after the Russian Federation and which is one of the primary gas suppliers in the region. This is considered as one of the primary challenges to the development of cross-border gas pipeline interconnection between Iran, Pakistan and India, and potentially from the Middle East to Europe via Turkey, although Turkmenistan in the Caspian is the other alternative gas supplier. To this end, efforts should be made to promote and facilitate dialogue between gas producers and consumers in the region to address the issues and challenges the development of regional gas markets are faced with.

SG C.2 *Developing Gas Markets in South America (from a more integrated perspective), Committee Session on Thursday, October 8, 0945-1145*

The report notes that South America has rather limited gas reserves with long distances between gas supply sources and demand centres, and that geo-politics is another key stumbling block impeding the development of regional gas market integration. Energy integration in the continent is a complex project and must therefore entail adequate coordination between governments, gas companies and other industry players in order to foster a mutually beneficial outcome for all parties. Developing a common understanding among countries leading to the

foundation of a broad inter-governmental cooperation programme is essential to achieve market integration.

SG C.3 *Developing Gas Markets in South Eastern Europe, Committee Session on Thursday, October 8, 1630-1830*
The report concludes that the region possesses future gas demand growth potential, reflecting robust economic development and likely policy changes relating to the environment. Despite this potential, however, the region lacks the necessary gas infrastructure to support realisation of the development of gas markets insofar as no one country in the region on its own possesses the critical mass to construct such infrastructures. Therefore, regional cooperation to promote gas market integration is imperative. In this regard, the Energy Community process, with the aim of uplifting the countries of South Eastern Europe to the regulatory standards of the European Union, will go a long way to laying the necessary foundations to support market integration.

PGC C has lined up panel speakers to further discuss and deliberate emerging issues, challenges and opportunities in the above three regions during its three Committee Sessions at the 24th WGC. In addition, there will be two Expert Fora:

Expert Forum C.A – *Future Impact of Geopolitics and Globalisation on Sustainable Gas Supply and Trade, Tuesday, October 6, 1630-1830*

Expert Forum C.B – *Developing Natural Gas Markets: How Issues Including Security of Supply, Alternative Fuels, Pricing and Technological Improvements Interact for a Sustainable Development, Wednesday October 7, 1630-1830*
The invited speakers will further enlighten and enrich the audiences attending the various PGC C sessions with useful information, knowledge and intellectual exchange about the gas markets in the said three regions.

Programme Committee D – LNG

During the 24th WGC, PGC D will have three Committee Sessions, two Expert Fora and a Poster session.

Committee Session D.1 – *LNG Quality, Tuesday, October 6, 0930-1130*
Objectives
LNG is increasingly becoming a globally traded commodity. However, its history of dedicated regional trades and more recent substitution of pipeline gas have left a legacy of varying consumer specifications. The challenge for the industry is to match supply quality with transportation system regulations and end-user requirements. This session will explore related issues, with a report by SG D.1 and a selection of orally presented papers by industry specialists.
Content
The Study Group report on LNG quality and interchangeability will be presented by Stephen Hull, United Kingdom. A selected group of speakers will be invited to address some of the related topics, and time will be allocated for a constructive debate with the audience.

Committee Session D.2 – *Economic Aspects in the LNG Industry, Wednesday, October 7, 0945-1145*
Objectives
This session aims to debate the critical factors to foster the sound growth of a competitive LNG market. Issues like LNG contractual clauses and other topics that can support the need for increasing flexibility will be on the agenda. Different views and perspectives will be presented, and we expect creative ideas and opinions on the topic of reference. The discussion will focus on the necessity for change in LNG contracts as well as giving different perspectives on transaction, supply

and demand, emerging markets, globalisation and competition with other energies.

Content

PGC D's Vice Chairman, Alaa Abujbara, Qatar, will present the Committee's report on the status of the LNG industry and Bo-Young Kim, Korea, will present the Study Group's report. A selected group of speakers will be invited to address some of the related topics, and time will be allocated for a constructive debate with the audience.

Committee Session D.3 – *Creative Solutions for New LNG Facilities, Thursday, October 8, 1630-1830*

Objectives

New LNG projects will find it increasingly hard to meet the key criteria of profitability and public acceptability for several reasons. Indeed, LNG plants are likely to be placed in more remote locations, involve more difficult feedstock gases, or will lack the economy of scale we have seen before – and they will be challenged by high construction costs. LNG terminals are subject to increasing public opposition, and schemes may have to include new ways of providing buffer capacity in markets with large variations. This session will explore various creative solutions throughout the LNG value chain, to face these challenges.

Content

The Study Group report on creative solutions for new LNG facilities will be presented by Rob Klein Nagelvoort. It will explore various alternatives such as new on-shore and off-shore technologies, and different construction approaches that can address these issues and provide some promising ideas and guidance. A selected group of speakers will be invited to address some of the related topics, and time will be allocated for a constructive debate with the audience.

Expert Forum D.A – *Operational Improvement, Tuesday, October 6, 1630-1830*

Objectives

The international LNG trade started 45 years ago and today over 30 LNG liquefaction plants and 60 receiving terminals are in operation. A large number of improvements have been carried out in terms of operation and maintenance, which have resulted in substantial cost reductions and high safety standards. In this forum we will discuss operational and maintenance improvements on existing LNG liquefaction plants and LNG reception terminals as well as ambitious approaches to developing new terminals.

Content

A selected group of speakers will be invited to address some of the related topics, and time will be allocated for a constructive debate with the audience.

Expert Forum D.B – *New LNG Projects, Wednesday, October 7, 1630-1830*

Objectives

Due to growing demand for LNG, many new projects for liquefaction plants and receiving terminals are in execution around the world. In the face of high construction costs and difficulties in obtaining permits due to resistance from local communities, new LNG projects are applying innovative technologies and concepts to bring solutions to these issues. During this session we intend to discuss a range of projects.

Content

A selected group of speakers will be invited to address some of the related topics, and time will be allocated for a constructive debate with the audience.

Technical Café – *Wednesday, October 8, 0945-1145*

Content

The PGC C poster session will allow close communication between authors and audiences and 15 interesting posters will be displayed in the Technical Café.

Reports from the Task Forces

This chapter contains news and information from the two IGU Task Forces set up for the 2006-2009 Triennium.

● Task Force Gas Market Integration

The sixth and last meeting of TF GMI was held in Amsterdam, The Netherlands on June 2. Members present at the meeting were: Jorge Doumanian, Javier Fernández, Calliope Webber, Anwar Zakharia, Maxim Potapov and Geert Greving (meeting host). Tim Boon von Ochssée joined the meeting as guest. Dietmar Spohn, Robert Howard and Ridza Shariff could not attend and sent their apologies.

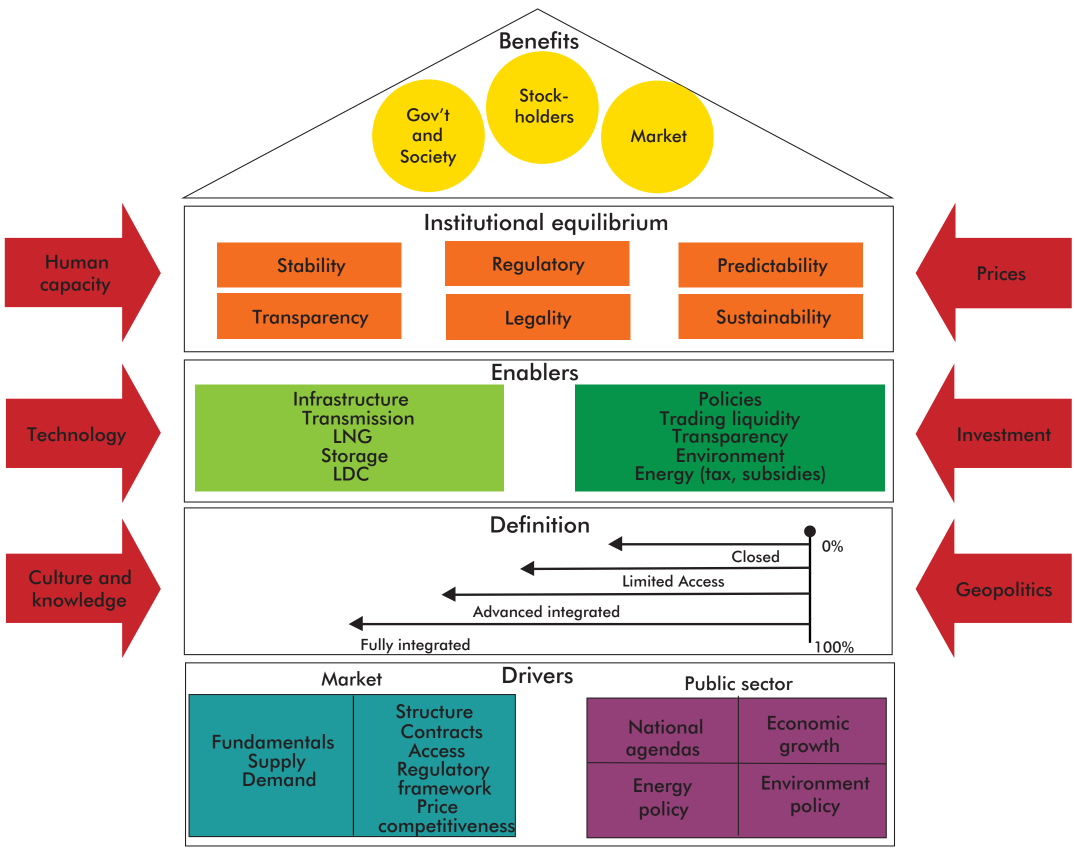
Members reviewed the work done in the previous five meetings and the goals for the Amsterdam session. Throughout, the Task Force has met the schedule agreed at the Lima CC meeting at the beginning of the Triennium.

The Task Force's final report (*see Figure 1*) will have the following structure:

i Introduction
ii Objectives
iii GMI model

RIGHT
Figure 1.

GAS MARKET INTEGRATION BUILDING BLOCKS



iv Key links to GMI papers

v GMI papers

During the 24th WGC, TF GMI will have a poster session of papers on Wednesday, October 7. Six papers have been chosen for this session from a total of 12 received in the call for papers. They cover a range of topics such as integration in the European market, the northwest European gas pipeline and Hungary's gas hub.

The meeting reviewed the status of papers being prepared by TF GMI members. Four have been published in previous issues of the IGU Magazine:

- Russia and Germany: A Solid Regional Energy Partnership (April 2008);
- ExxonMobil and Qatar Petroleum: An Example of Successful IOC-NOC Cooperation (October 2008);
- Gas Market Integration in the Southern Cone (April 2009); and
- The Iran-Pakistan-India Pipeline Project: Cross-border Gas Pipeline Challenges (April 2009).

Three papers are being published in this issue:

- North America Gas Market Integration: Status and Steps (see pages 192-202);
- The Trans-ASEAN Gas Pipeline – Accelerating Gas Market Integration within the ASEAN Region (see pages 204-216); and
- LNG Market Integration from the ASEAN Perspective (see pages 218-231).

Additional papers will be included in the WGC presentation:

- Russia turns East;
- Gulf Cooperation; and
- UK Market Integration Development – From Non to Fully Integrated.

Further discussion in the meeting revolved around three documents:

- Gas Market Integration Model;
- Lessons to Be Learned; and
- Guiding Principles for Gas Market Integration.

A key focus of TF R&D has been to engage in a dialogue with CEOs of key energy companies – the CEOs' roundtable at IGRC 2008.

Task Force Research and Development

A key focus of TF R&D has been to engage in a dialogue with CEOs of key energy companies in order to explore their interest in R&D. In general, it was found that many CEOs have a strong affinity to the R&D agenda as a supporting tool for the vision of the company. Specifically, the CEOs recognised the past contribution of R&D to the successful direction of the corporation in business. Examples were cited of technologies such as LNG, underground storage and polyethylene pipes, which have supported the development of the gas industry as long as the new gas technologies were the basis of marketing programmes. Several CEOs pointed to the critical position of R&D technology in supporting their energy company's corporate vision. Finally, CEOs in the industry considered R&D a key part of the environmental solution on the road to a sustainable energy solution. An example is the movement for biogas development in many parts of the world.

As a result of this dialogue with CEOs, TF R&D staged a roundtable at IGRC 2008, which was held in Paris last October, and has organised a Strategic Panel during the 24th WGC. The aim is to have CEOs and key business executives in the industry participate in discussions on the role of R&D in the strategic positioning of the future gas industry.

TF R&D provided support for the marketing of IGRC 2008 as a forum for technology developers and business managers in the industry to meet and exchange views and information. Over 800 delegates took part, representing a record attendance at any IGRC since the conference series started in 1980.The Task Force was also instrumental in developing and managing an innovative exhibition of new technologies during IGRC 2008.

During the Triennium, TF R&D has also been gathering gas R&D examples from around the world. These include company initiatives to increase R&D efficiency and accelerate the industrial implementation of R&D results, and regional collaborative initiatives not only to share R&D costs but also to improve innovation by bringing together several different points of view, revealing actual scientific and technological issues. If short-term R&D is directly dictated by local industrial, competitive and regulatory structures, long-term R&D is addressing the same issues everywhere: safety, the global environment and reduction of CO_2 emissions.

TF R&D's final report includes practical material that can be used by member companies in order to build a sensible R&D portfolio in their companies. The information largely provided in the annex of the report includes a suggested presentation that can be used internally to promote the role of the R&D as part of the business strategy of an energy corporation. A similar approach was used by the members of the Task Force with a reported significant (over 30% in some cases) increase in R&D budgets.

Recommendations

TF R&D makes the following recommendations based on its work over the last three years:

- The dialogue between the staffs of an energy company's R&D and the business strategy divisions should be maintained and enhanced.
- R&D staff in energy companies should undertake focused marketing efforts to gain corporate support for R&D. This is especially important in light of the significant promises made by energy companies to achieve environmental, efficiency and growth targets.
- IGU management should consider the enhancement of dialogues between CEOs, regulators, investors and customer advocates in IGU meetings. These dialogues at IGU meetings should emphasise the role of R&D as a solution to the business issues.
- At the international level, focused R&D programmes on topics of importance for the gas industry should be encouraged by IGU. As an example, programmes on high efficiency gas domestic appliances should be supported by gas companies worldwide.
- International conferences such as IGRC or other technology based conferences are necessary to enhance the role of R&D and the strong link between business and R&D.

"The EDF Group is an integrated energy supplier operating in a wide range of electricity and gas related activities: power generation, transmission and distribution, gas production, transportation, storage, energy sale and trading. We are the main operator in the French electricity market and hold strong positions in three other principal European markets (Germany, United Kingdom, Italy) making us one of the leading electricity groups in Europe, and a recognized player in the gas market.

In the electricity sector, we have the largest generation fleet in the world with over 127 000 MW and our European supply portfolio has more than 38 million customers. With 58 nuclear power plants in operation, with a total of more than 63 000MW, we are, by some margin, the world leading nuclear generator. Combining this with our position as the leading electricity network operator in Europe, provides us with a sound business model that is balanced between regulated activities and those open to competition.

In the gas sector the EDF Group is present mainly through EDF Energy (United Kingdom), EnBW (Germany), Edison (Italy), EDF SA (France and Belgium) and EDF Trading (pan-European trader). In 2008 we handled approximately 26 bcm in Europe (EDF-Trading not included).

We are preparing for an increase in our own gas needs to around 45 bcm/y in the medium term, both to deliver combined gas/electricity offers to our customers and to supply our own gas-fired power plants. The EDF Group is building a portfolio to supply and optimize our gas sourcing needs via a pan-European approach in long-term gas procurement (purchase and throughput contracts and equity gas) and investments in logistic assets (LNG, pipes, storages). These new project opportunities in North-West Europe (NWE) will complement Edison's historical projects in South-East Europe (SEE).

Our new projects include, our LNG Terminal project in Dunkirk, France (which could have 10 to 13 bcm/y throughput and should be operational by 2014), the gas storage project at Etzel in Germany, where EDF and EnBW signed an agreement with the German company IVG to develop underground salt caverns in order to provide 400mcm of working capacity from 2011 onwards and on LNG where, EDF Trading and Rasgas have signed a medium-term (4.5 years) LNG supply agreement for deliveries in Zeebrugge of up to 4.5 bcm.

Whilst in SEE, Edison co-sponsors the Rovigo offshore LNG Terminal in the Adriatic sea, which is due to start by autumn 2009, and has secured LNG sourcing from Qatar for 6.4 bcm/y. Edison is also involved in the development of 2 leading pipeline projects: IGI (8 bcm/y) between Greece and Italy and Galsi (8 bcm/y) between Algeria and Italy."

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LEADING THE ENERGY CHANGE


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