

COORDINATION COMMITTEE PROGRESS REPORT

Introduction and Key Developments	74	Programme Committee A – Sustainability	102
CC structure	75	Programme Committee B – Strategy	106
CC meetings	76	Programme Committee C – Gas Markets	110
Technical Committees and Task Forces: Membership, meeting highlights and external cooperation	78	Programme Committee D – LNG	117
WGC2012 in Kuala Lumpur	80	Programme Committee E – Marketing	120
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Progress Reports from the Committees	84	Progress Reports from the Task Forces	124
Working Committee 1 – Exploration and Production	84	Task Force Building Strategic Human Capital	124
Working Committee 2 – Storage	85	Task Force Nurturing the Future Generations	125
Working Committee 3 – Transmission	88	Task Force Geopolitics and Natural Gas	126
Working Committee 4 – Distribution	92	<hr/>	
Working Committee 5 – Utilisation	96	Annex – Addresses	132



Introduction and Key Developments

By Ho Sook Wah and Ungku Ainon

When Malaysia assumed the Presidency of IGU for the 2009-2012 Triennium it marked the beginning of the Malaysian Coordination Committee's work to support the Presidency and to take on responsibility for coordinating the work of the IGU Committees and Task Forces during the 2009-2012 Triennium. The Coordination Committee or CC for short is the main body behind the planning and execution of the activities and is responsible for the technical programme for the 25th World Gas Conference to be held in Kuala Lumpur in June 2012. Ho Sook Wah is the new Chairman of the CC taking over from his Argentine colleague, Roberto Brandt. He is supported by Ungku Ainon Ungku Tahir, as the CC Secretary, taking over from Andrés Kidd.

The incoming Malaysian team have developed their Triennial Work Programme (TWP), the core document of the Presidency and provided a blueprint of the work that will be carried out during the 2009-2012 Triennium. Two workshops were held in 2006 and 2007 to establish the Theme and Strategic Guidelines which form the basis for the development of the TWP. The final output was a 70-page document "IGU Triennial Work Programme 2009-2012", the culmination of two years work put together through a process of highly constructive discussions with the outgoing CC authorities as well as through brainstorming sessions with the incoming committee authorities, subject matter experts and IGU management. The document was very well received by the IGU Executive Committee, which gave immediate approval to it in June 2009. It was subsequently endorsed by the IGU Council in October 2009. In essence, the 2009-2012 TWP aims to promote the progress, competitiveness and value of the global gas industry, through the development and



Ho Sook Wah, CC Chairman (LEFT) and Ungku Ainon, CC Secretary (RIGHT).



(ABOVE) The first incoming CC meeting was held in Kuala Lumpur. (BELOW) A team-building exercise with from left to right Mohd Farid Mohd Amin, Naiara Ortiz de Mendibil, Peter Storm and Juan Puertas.

exchange of knowledge and information and networking among IGU members and the global community.

Twice a year in April and October, the activities of the CC and its Technical Committees and Task Forces will be reported in the IGU Magazine. The purpose of the report is to provide all Charter and Associate Members of IGU, together with members of the Council, Executive Committee, CC, Technical Committees and Task Forces, as well as other interested parties, with information about the progress of the work as defined in the TWP. The progress report consists of contributions forwarded by the Chairs of the Technical Committees and Task Forces. This report, the first for the 2009-2012 Triennium, covers the first eight months of work beginning in October 2009.

● **CC structure**

The workforce behind the implementation of the TWP comprises Technical Committees and Task

Forces formed to address specific studies covering the entire gas chain, as well as all the major “horizontal” issues concerning the world gas industry. A few changes were made to the organisational structure of the CC for this Triennium, although the core structure has remained largely



unchanged from the previous Triennium. Some of the Committees were renamed and the scopes of work were redefined to ensure greater clarity and transparency. A new Programme Committee (PGC E) on Marketing was introduced to strengthen the importance of natural gas as a major part of the long-term energy solution and to place a special emphasis on its intrinsic contribution to economic growth and sustainable development. PGC E will identify and develop ideas, tools and products for the successful promotion and sale of natural gas as a clean, efficient and environmentally-friendly fuel complementing renewables.

A total of 13 Committees, comprising five Programme Committees (PGCs), five Working Committees (WOCs) and three Task Forces on Special Projects (TFs) form the backbone to support the work as defined in the TWP. The five WOCs are directed towards addressing issues and challenges along the gas value chain. The five PGCs cover strategic and “horizontal” aspects such as sustainability, strategy, gas markets etc. In addition, three Task Forces have been set up. These TFs will undertake the special projects initiated by the Malaysian Presidency during this Triennium. Two of these special projects cover the subject of human capital. One looks at the issue

of attraction and retention of critical skills or talents and building human capacity within the gas industry. The other project examines the longer-term implications in terms of encouraging future generations to seek careers in the gas industry. The third special project focuses on the subject of geopolitics and natural gas. It seeks to examine the interplay between economic and political factors in the development of natural gas resources, a subject of growing importance given the global nature of the gas industry and the concern for energy security.

● CC meetings

The handover of the IGU Presidency normally takes place in June of the year in which the World Gas Conference is held. However, Malaysia took over the Presidency in October 2009, a Triennium shortened by three months. Hence, the Malaysian team had to get a head start in their activity and held their first incoming CC meeting in Kuala Lumpur, February 10-11, 2009. Two interactive and experiential team-building exercises were included in this meeting to quickly acquaint everyone with the Malaysian Triennium and to foster team spirit and effective communication and working relationships among members. The “take away” of the sessions, among other lessons, being that “Life is easier when people are aligned on the rules” and “Sharing information and educating people about the ‘rules’ fosters increased efficiency and performance”. The sessions were facilitated by Mike Gordon and his team from the Works Partnership. Delegates also attended two dinners and a technical visit to Malacca, a historical town about two hours drive from Kuala Lumpur.

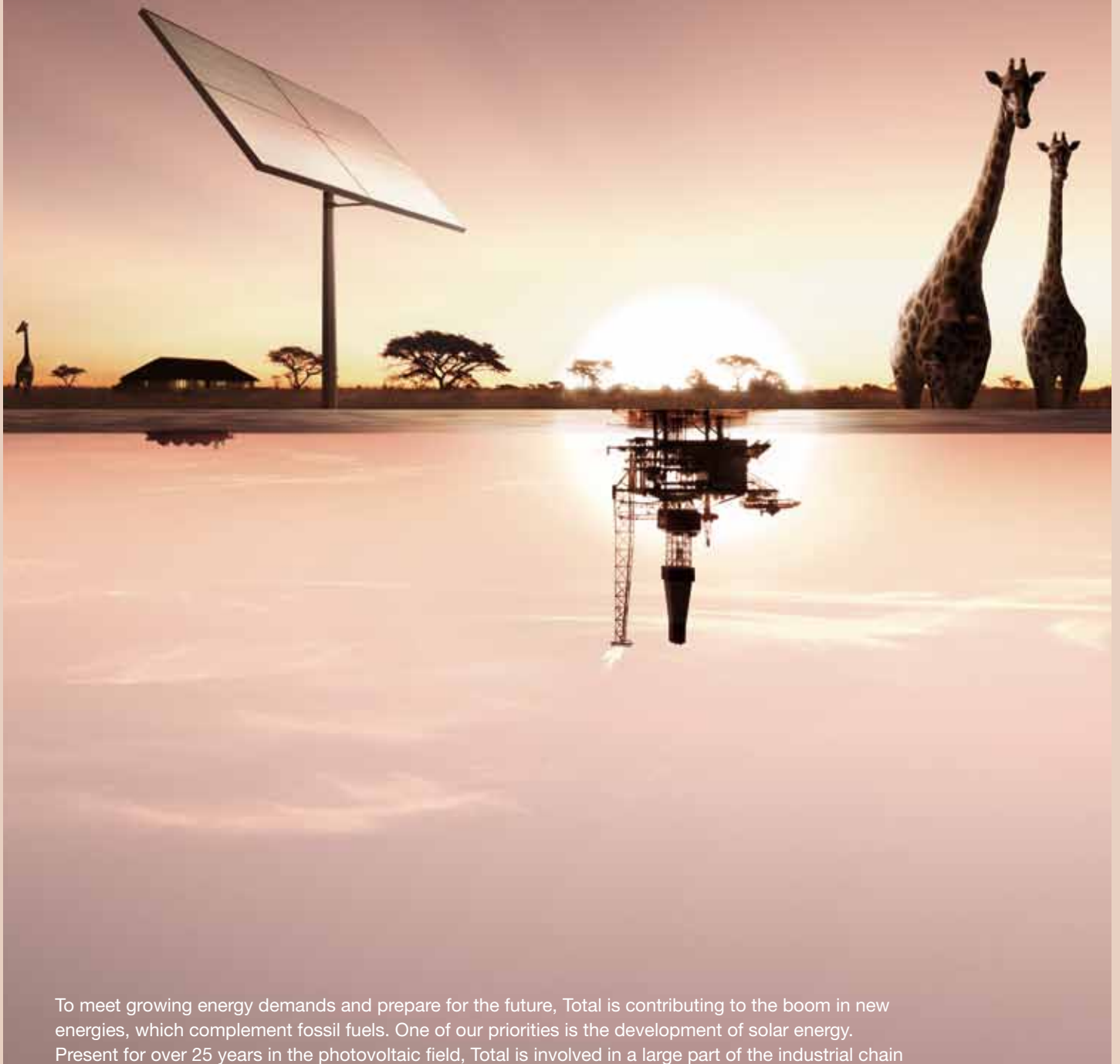
The second incoming meeting was in London on June 5, 2009 and the third in Buenos Aires on October 4, 2009, both held back to back with the CC meetings of the Argentine Triennium. A workshop on the IGU website was also conducted for the Committee Secretaries and invited participants at both venues by Erik Gonder, IGU Webmaster.



Delegates to the second incoming CC meeting in London enjoy a dinner cruise on the River Thames.

Connected for life

Imagine if both new energies and fossil resources
were meant to work together



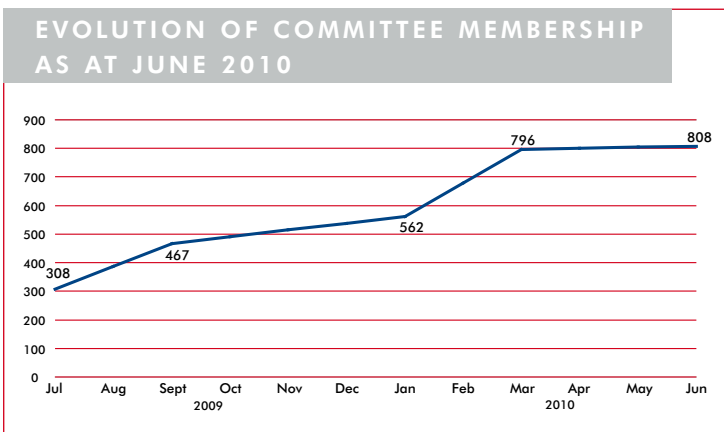
To meet growing energy demands and prepare for the future, Total is contributing to the boom in new energies, which complement fossil fuels. One of our priorities is the development of solar energy. Present for over 25 years in the photovoltaic field, Total is involved in a large part of the industrial chain with our subsidiaries Tenesol (manufacturers of solar panels, system development) and Photovoltech (cell manufacture). Total will invest 45 million euros between now and 2009 to increase Photovoltech's production capacity. www.total.com



Kuala Lumpur's landmark Petronas Twin Towers form the background to this group shot of delegates to the first incoming CC meeting.

On April 6, the first "official" CC meeting of the Malaysian Triennium was held in Bali, Indonesia where the Chairs and/or representative of the various Committees and Task Forces presented the status and progress of their work and projects. The minutes and the respective

BELOW
Figure 1.



presentations of all the meetings are published on the CC section of the IGU website, accessible to members.

The CC Chairman and Secretary also held teleconferences with the Committee and Task Force Chairs and Secretaries and attended a number of their scheduled meetings. Representatives from IGU Management were also in attendance at selected meetings. To encourage wider participation and ownership of the three Special Projects identified in the 2009-2012 Triennium, for the first time, IGU members were invited to become project sponsors.

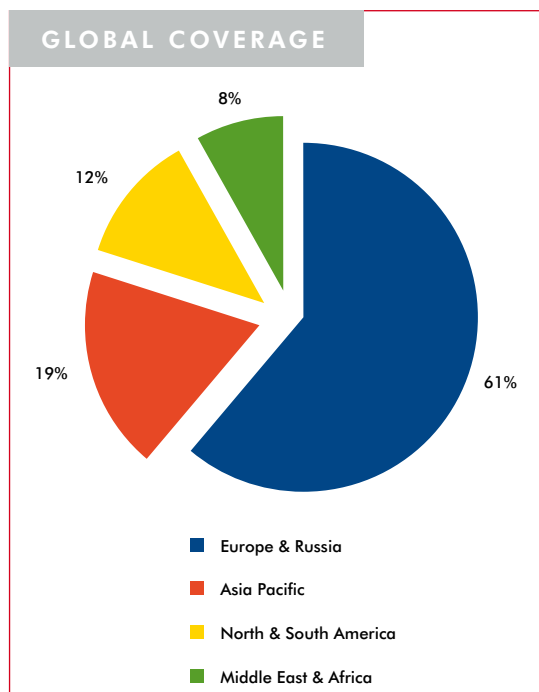
Indeed, a lot of time and energy were put in by the CC Chairman and his team to conclude sponsorships of the three Special Projects and to engage third party subject matter experts to ensure high quality project deliverables.

● **Technical Committees and Task Forces: Membership, meeting highlights and external cooperation**

The invitation to join the 13 Technical Committees and Task Forces was issued by the IGU Secretariat in April 2009. By the July 2009 deadline, only 308 nominations from 32 countries had been received, a rather small number which at this overlapping period of the outgoing and incoming Presidencies was understandable. Membership gradually picked up and by 30 June, a new record of 808 professionals from more than 50 countries was reached. Figures 1 (left) and 2 (over) display the evolution of the total membership since the first invitation was sent out by the Secretariat and the current global coverage. The breakdown of members by Committee and Task Force is shown



RIGHT
Figure 2.



RIGHT
Table 1.

TECHNICAL COMMITTEE MEMBERS AS AT JUNE 2010

WOC 1	Exploration and Production	43
WOC 2	Storage	65
WOC 3	Transmission	88
WOC 4	Distribution	76
WOC 5	Utilisation	87
PGC A	Sustainability	62
PGC B	Strategy	106
PGC C	Gas Markets	69
PGC D	LNG	82
PGC E	Marketing	54
TF 1	Building Strategic Human Capital	38
TF 2	Nurturing the Future Generations	21
TF 3	Geopolitics and Natural Gas	17
Total*		808

*Total nominations exclude the following groups:
 1. Special advisors
 2. Advisory Committee
 3. Subject matter experts

in Table 1, while Table 2 provides a quick reference to the 32 Study Groups with their respective topics.

At press time, only one Working Committee had yet to hold its first meeting. All other Committees and Task Forces have successfully conducted their first meeting, appointed their Study Group Leaders and moved ahead in their activities.

On May 3, WOC 4 successfully organised a one-day workshop on “Smart Meters in Gas Distribution” which was open to the general public. Held at Ruhr University, Bochum, Germany and hosted by Stadtwerke Bochum GmbH, the workshop provided a significant avenue for networking and inputs to the Study Group members in WOC 4.

At the 25th International Scientific & Expert Meeting of Gas Professionals on May 5 in Opatija, Croatia, WOC 5 organised two special roundtables on the topic of renewables and NGVs. The day before, a joint committee meeting involving PGC A, PGC E and WOC 5 was held to discuss natural gas and renewables. The summaries of the progress reports by the various Committees and Task Forces are presented in the following chapters.

● WGC2012 in Kuala Lumpur

Preparations for the 25th World Gas Conference in June 2012 are progressing well with the National Organising Committee (NOC) team fully in place and actively at work.

Indeed, the NOC, the CC and the IGU Committees are all set and ready to meet the challenges in the coming months and will work towards presenting a most interesting programme and most memorable conference and exhibition.

Ho Sook Wah is the Chairman of the Coordination Committee and Ungku Aion Ungku Tahir is the Committee’s Secretary. Readers requiring further information are invited to contact Ungku Aion at ungkuainon@malaysiangas.com or to visit IGU’s website at www.igu.org.

STUDY GROUP TOPICS IN THE 2009-2012 MALAYSIAN TRIENNIUM

<i>Committee</i>	<i>Study Group</i>	<i>Topic</i>
WOC 1	SG 1.1	Recent advances in exploration and production of natural gas
WOC 1	SG 1.2	Most significant new E&P gas projects
WOC 2	SG 2.1	Updating and improving the UGS database and promoting it as a reference
WOC 2	SG 2.2	Definition of some best practices in UGS operations and design
WOC 2	SG 2.3	Skills and competencies for UGS activities
WOC 3	SG 3.1	Strategic gas transmission infrastructure projects
WOC 3	SG 3.2	Integrity of gas transmission systems and environmental footprint reduction
WOC 3	SG 3.3	Securing sufficient expertise to operate gas transmission systems safely and adequately
WOC 4	SG 4.1	Gas distribution safety management systems
WOC 4	SG 4.2	Smart metering systems: characteristics, technologies and costs
WOC 4	SG 4.3	Unaccounted-for gas: identification, measurement, calculation and management
WOC 5	SG 5.1	Industrial utilisation
WOC 5	SG 5.2	Domestic and commercial utilisation
WOC 5	SG 5.3	Natural gas vehicles (NGVs)
PGC A	SG A.1	Sustainability and investment
PGC A	SG A.2	Integrating other gases into the natural gas industry
PGC A	SG A.3	Reduction of gas emissions (a comprehensive industry guide)
PGC B	SG B.1	World gas supply, demand and trade
PGC B	SG B.2	Wholesale gas price formation
PGC B	SG B.3	Corporate strategy and regulation
PGC C	SG C.1	Gas markets in ASEAN and north-east Asia
PGC C	SG C.2	Gas markets in North America
PGC C	SG C.3	Gas markets in Europe and Russia
PGC D	SG D.1	Enhance terminal compatibility
PGC D	SG D.2	Penetrate new markets for LNG
PGC D	SG D.3	Enhance efficiency in the LNG value chain
PGC E	SG E.1	Natural gas and renewables
PGC E	SG E.2	Marketing campaigns
PGC E	SG E.3	Image of natural gas
TF 1	Special Project	Building Strategic Human Capital
TF 2	Special Project	Nurturing the Future Generations
TF 3	Special Project	Geopolitics and Natural Gas

In a world marked by uncertainty, where financial experts move back and forth between the letters U, V and W to forecast the evolution of the world economy, where long term regulation promoting a low-carbon economy – whether based on renewables, nuclear or energy efficiency – is still finding its final form, and where globalisation may further shift demand patterns between OECD and developing countries, the energy industry is particularly exposed. Technological innovation is creating new ways of delivering and consuming energy and is taking traditional players out of their comfort zone, forcing them to assume risks and take positions in yet to be defined value chains. Technical limits in hydrocarbons production have been pushed with remarkable successes on unconventional gas in the USA but also with a large-scale, unsettling failure in the gulf of Mexico. The impact on decision-making in this capital intensive industry, where investments last 20 years or more and supply must lead and support demand to avoid shortages, can be devastating.

Natural gas is an environmentally friendly fossil fuel that will continue to play a fundamental role in supporting the world economy for the next two decades and beyond. According to the IEA, more than one third of the world's supply by 2020 will have to come from fields not currently in production and imports in Europe will reach almost 60% of total demand, while total world gas demand will maintain solid growth during the decade reaching almost 3,700 bcm by 2020 (+1.9% CAGR), with new markets such as India and China becoming top 10 and top 5 world gas consumers. So under all

scenarios the gas industry has to move forward with investments and activity. But investments in the past few years have slowed and the current long gas market could aggravate this trend.

Enel believes that closer collaboration between producers and end users is critical to confront the challenges surrounding the gas industry.

Collaboration with different agents across the value chain, re-writing the script so as to share risks and rewards, pool resources and reassign priorities in a way that makes investments feasible. Collaboration where Enel adds value to each player:

- ▶ To NOCs, through secured long term demand, market access, investment capability and a set of emerging capabilities and experience in upstream;
- ▶ To IOCs, through sharing risks and developing joint proposals to NOCs thanks to Enel's experience in the power sector and its large, stable, long-term gas demand;
- ▶ To Independents, through early stage support of new developments.

In the last year, this collaborative approach has helped Enel develop a unique portfolio of gas assets in four countries, with 10 licenses and 1.1 billion boe of reserves, while we continue to look for opportunities to develop strategic partnerships to develop fields in North Africa, the Middle East and the Atlantic Basin.

This is why, despite the current uncertainties, we are convinced that natural gas will remain a strategic fuel to sustain the welfare of developed and developing nations, and we are stepping up our leadership to support its development.

TODAY'S INNOVATIONS ARE THE BASIS FOR TOMORROW'S SUSTAINABILITY.

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OUR FUTURE IS BUILT ON THE BOLD, RESPONSIBLE CHOICES WE MAKE TODAY. We believe that sustainability has to be achieved day by day, constantly balancing today's needs with tomorrow's. Which is why we invest in all energy sources, researching and using the most advanced technologies. We believe in using gas and coal, in an environmentally compatible way, to meet today's immediate energy needs. At the same time, we're investing in renewable sources to make them more competitive and efficient. For example, Archimede, the world's most advanced solar thermodynamic power generating project. The fact is, we can only ensure sustainability tomorrow by making bold, responsible choices today.



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Progress Reports from the Committees

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

● Working Committee 1 – Exploration and Production

WOC 1's first meeting of the Triennium was scheduled to be held on April 17 in Oran, Algeria, and 18 members were due to attend. Unfortunately, the meeting had to be aborted at the last minute when the Icelandic ash-cloud hit airspace in Europe and disrupted flights out of major European airports. Only one member managed to make it to Oran.

During this Triennium, WOC 1 will focus on the significant advances in natural gas exploration



WOC 1 covers exploration and production.

and production that aim to secure a sustainable supply for global development. To achieve this, two Study Groups are planned.

SG 1.1 Recent advances in exploration and production of natural gas

Leader: Armando Hashimoto (Brazil)

The scope of of this Study Group will cover:

- Resources and reserves assessment;
- Exploration and discovery trends;
- New and frontier exploration areas; and
- Recent gas development technologies and standards.

The plan is for SG 1.1 to undertake the following tasks:

- Update estimates of resources and reserves of both conventional and unconventional natural gas according to IGU's regional distribution;
- Analyse key indicators of global and regional exploration statistically, in terms of efforts (investments, wells drilled), results (success ratios, volumes discovered) and update "creaming curves"¹ for significant gas provinces; and
- Highlight global trends for specific areas making significant contributions to mid-/long-term gas supply.

SG 1.2 Most significant new E&P gas projects

Leader: Flavia Di Cino (Argentina)

The scope of this Study Group will cover:

- Conventional gas projects, both those located in the vicinity of regional consumption areas and those in remote areas; and
- Unconventional gas projects – tight gas, shale gas, coal-bed methane (CBM) etc.

The plan is for SG 1.2 to undertake the following tasks:

- Identify significant current gas projects (in the vicinity of regional consumption areas and

¹ The creaming curve displays the cumulative discovery versus the cumulative exploration activity, being the number of new field wildcats.

those associated with remote areas) in terms of technology, reserves and impact on the regional or global gas industry;

- Review the most significant CBM, shale and tight gas projects of the last decade;
- Prepare an update of methane hydrate projects and
- Map CO₂ sequestration alternatives linked with current projects (in coordination with PGC A).

Currently, WOC 1 has 43 members from 20 countries. The original Vice Chairman of the Committee, Márcio Félix Carvalho Bezerra, has been replaced by Armando Hashimoto from Petrobras, Brazil.

As part of its intermediate deliverables, WOC 1 plans to publish some articles in the IGU Magazine and also to organise a workshop/forum on “Shale Gas Development, Challenges and Achievements – Its Impact on the Global Gas Industry” in early 2012.

At press time the Committee leadership was still hoping to organise an initial meeting prior to the second meeting due to be held in Rio de Janeiro on September 22. The schedule for WOC 1’s meetings is shown in *Table 1*.

For further information, please contact the Secretary, Ilhane Dib at ilhane.dib@ep.sonatrach.dz, or visit the WOC 1 section of the IGU website.

● Working Committee 2 – Storage

Underground gas storage (UGS) is now looked at as a separate business which is supported by the establishment of independent storage companies and integrated energy groups to operate and develop UGS facilities. The growth in this business has provided numerous challenges for the gas storage communities, such as finding enough skilled professionals, developing new technologies and considering existing and new regulations. WOC 2’s work in the current Triennium is aimed at providing key information to face these challenges. The Committee’s activities will include informal exchanges on topics of current interest in

WOC 1 MEETINGS FOR THE 2009-2012 TRIENNIUM

Meeting	Date	Location
First meeting	Original meeting cancelled, hoping to reorganise	
Second meeting	September 22, 2010	Rio de Janeiro, Brazil
Third meeting	February 23, 2011	Beijing, China
Fourth meeting	September 22, 2011	Seoul, Korea
Fifth meeting	February 4, 2012	Paris, France

UGS activity through specific workshops and study areas, undertaken by three Study Groups. The traditional meeting structure with workshops and technical visits will be retained for the Triennium.

WOC 2’s first meeting took place in Paris, France, January 25-27. It was held at the office of IGU’s French Charter Member, Association Française du Gaz (AFG), and attended by 45 members. Hélène Giouse, Committee Chair, and Georges Liens, Vice Chairman of the CC, welcomed all delegates to the meeting and to Paris. Hélène Giouse then provided an overview of the Committee’s objectives. This was followed by a presentation on IGU and the 2009-2012 TWP by Ungku Aion, CC Secretary. She underlined the fact that IGU is the spokesperson for the global gas industry.

The Leaders of the three Study Groups met separately with their teams during the event to start work.

SG 2.1 *Updating and improving the UGS database and promoting it as a reference Leader: Ladislav Goryl (Slovakia)*

This Study Group is in charge of updating the UGS database. As UNECE also has a UGS group, the two bodies have decided to collaborate on a questionnaire. A Memorandum of Understanding will be signed to confirm the exchange of data and the questionnaire is being refined.

ABOVE
Table 1.



SG 2.1 is still looking for more contact persons in key storage countries such as Hungary, Italy, Ukraine and the USA. These countries do not have representatives on WOC 2. The former American member of the group has offered his support, and some extra contacts will be arranged via UNECE or Gas Storage Europe. However, so far these contacts have not been very successful.

SG 2.1 will look at publishing some key data from the database in a special IGU report available for WGC2012.

SG 2.2 *Definition of some best practices in UGS operations and design*

Leader: Eddy Kuperus (The Netherlands)

The activity of SG 2.2 is divided into three topics dealing with surface and subsurface activities. Three dedicated reports have been confirmed and there may be a fourth.

- *Methane emissions* – the objective of this study is first to come up with an overview and categorisation of methane emissions in UGS operation, secondly to define best practices to reduce methane emissions and thirdly to deliver a benchmark for UGS operations. Pierre Marion (France) is in charge of this report, which is due to be available in early 2011 and will subsequently be published in the IGU Magazine.
- *CO₂ sequestration* – this topic was tackled in the previous Triennium and the sub-group will thus focus on technical issues. Herman Spreckels (Germany) is the coordinator of the work. One of the objectives of another Study Group, SG A.1, is to study the state of development of CCS technology and analyse the implications for the gas industry, so close cooperation with PGC A will be necessary. A



WOC 2 held its first meeting of the Triennium in Paris. Apart from the business sessions (TOP) delegates also had the opportunity to make a technical visit to Storengy's UGS facility at Gournay-sur-Aronde in northern France (ABOVE).



NABUCCO Gas Pipeline: Gas Bridge between Caspian Region and Europe.

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Approximately 75 bcm of natural gas is transported annually by OMV via its gas turntable in Baumgarten (Austria), along the West and South corridors: to countries like Germany, France, Italy, Hungary, Slovenia, Croatia.

Within the next years we plan to increase our gas trading volumes to 20 bcm via our trading companies EconGas in Central Europe and Petrom in South East Europe.

With the International Nabucco gas pipeline project we plan to build a gas bridge between the Caspian Region and Europe together with five partners.

first contact has been made and further programme synchronisation will be discussed prior to final definition of the scope of the study.

- *Well integrity assessment* – the report will mainly focus on methodologies used. Nikita Barsuk (Russia) is the leader of the sub-group. A workshop on this topic was organised during WOC 2's second meeting in St Petersburg in June. The seven presentations constituted a good basis for discussion and provided in-depth elements for the report. The aim of the workshop was to come up with distribution of workload, detailed planning and identification of contribution of members.
- An extra topic might be analysed according to availability: the maximum range operation in salt cavern. The coordinator would be Jacques Grappe (France) and a workshop could be organised.

SG2.3 Skills and competencies for UGS activities

Leader: Vladimir Onderka (Czech Republic).

SG 2.3 will add extra questions dedicated to storage to the questionnaire that TF 1 launched in June. This will help to collect some best practices dedicated to storage developed by human resources managers.

SG 2.3 will also organise specific activities such as an exchange programme of students/trainees between storage companies.

The final report will analyse the needs in terms of skills for storage activities, the solutions companies develop to attract and retain collaborators as well as the motivations of the professionals who decide to join the storage business.

Second and third meetings

WOC 2's second meeting was held in St Petersburg, Russia, June 28-July 1, and will be covered in the next progress report. A teleconference of the Committee leadership may take place at the end of the year. The third meeting will be held in 2011 in Slovakia although the precise date has yet to be

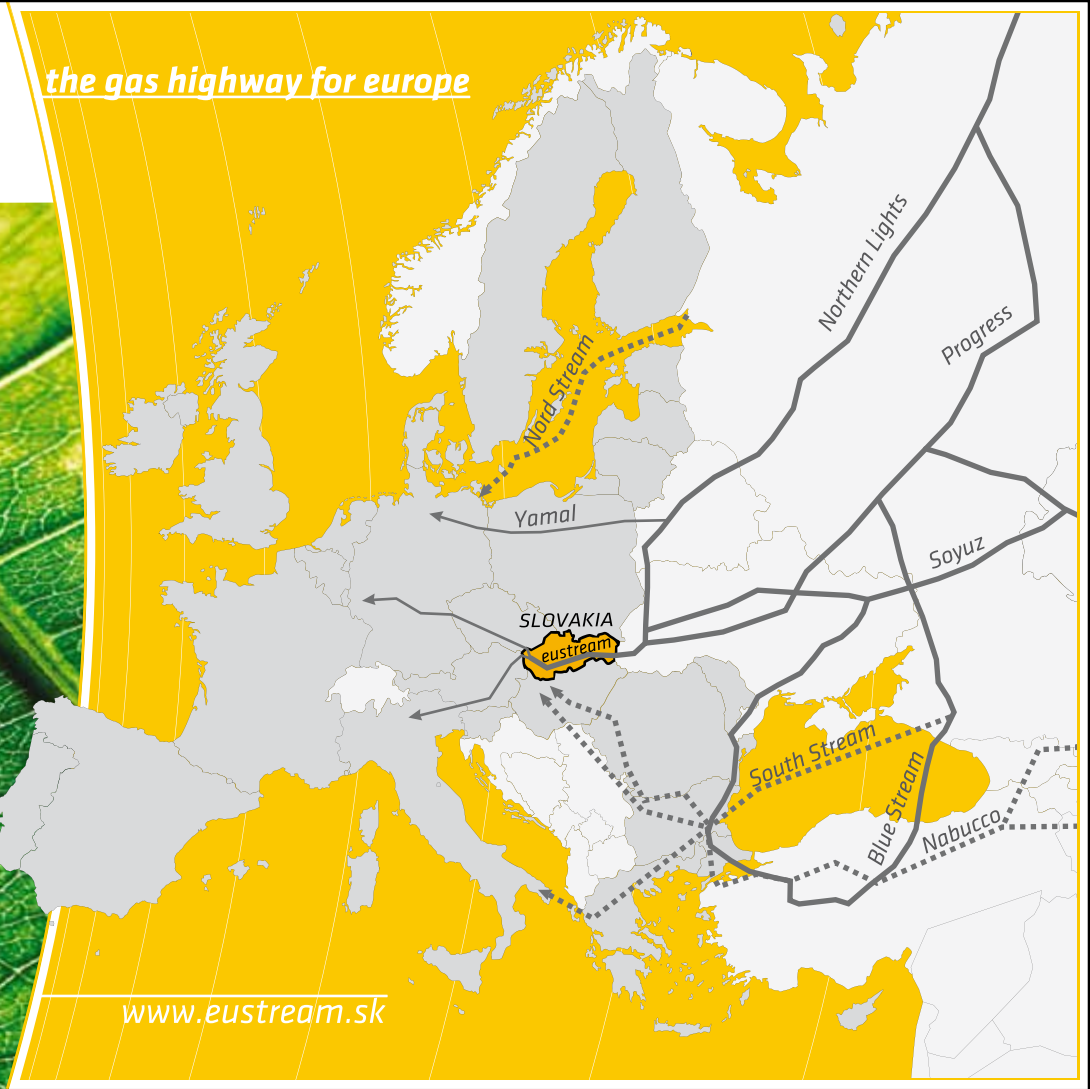
confirmed. For more information, please contact H el ene Giouse at helene.giouse@storengy.com, or the Secretary, Madeleine Lafon at madeleine.lafon@afgaz.fr.

● **Working Committee 3 – Transmission**

In a chilly Amsterdam WOC 3 held its first meeting of the Triennium, hosted by Gasunie, on January 13-15. With temperatures around 0  Celsius and ice in the canals of Amsterdam, some of the participants coming from the southern hemisphere (like Argentina and Australia) had to deal with a 30-40 C temperature difference. On the other hand, the Russian and Finnish participants found the temperatures quite agreeable.

It was a good first meeting for the Committee which was very well attended by 50 members from 21 countries; (WOC 3 has 88 members from 31 countries). The Chairman, Eric Dam, welcomed the 50 members whose presence at the meeting he said marked a successful start of work by a highly enthusiastic and motivated team. He then continued by outlining the TWP for WOC 3 which focuses on the need for more strategic gas transmission infrastructures and long distance pipelines, sometimes operating under extreme conditions, in order to fulfil the increasing demand for natural gas. These systems, he added, must be operated with the goal of ensuring security of supply, using a safe and environmentally friendly set of practices. This means that the new gas infrastructures will become more complex and hence their design and operation must be based on the latest safety regulations, best technical practices and best technological innovations. The next question is, do our personnel responsible for maintaining and operating these complex systems have sufficient education and skills to perform their tasks adequately?

WOC 3 has set up three different Study Groups to address these issues in a comprehensive manner. During the afternoon of the first day, the Study Groups held separate meetings in which they elaborated on the scope of their activities by



Our energy crosses borders

Galp Energia leads the natural gas market in Portugal and is a major energy player on the Iberian Peninsula.



We are an integrated energy company exploring, producing and refining oil and natural gas across four continents. We deliver energy to millions of people every day.



A group picture of delegates to WOC 3's first meeting in Amsterdam (ABOVE). Their technical visit was to the Gate LNG terminal being built in Rotterdam (BELOW).

specifying the deliverables in more detail and by coming up with a detailed plan of action.

SG 3.1 Strategic gas transmission infrastructure projects

Leader: Enno Freese (The Netherlands)

This Study Group will gather information about existing and planned cross-border pipelines (including compressor stations). Then it will investigate experiences of planning, constructing and operating these pipelines and compressor stations. Special attention will be paid to the construction of pipelines under extreme conditions, such as in deep water (>1000 metres), in high mountains and in marshy areas (including permafrost).

A template describing the projects will be devised and sent out to members. At the next

WOC 3 meeting, a short list of projects and topics will be discussed. The group also agreed that the list of projects and topics will be frozen after the next meeting. Based on the inputs, a draft summary of content of the final report will be prepared.

SG 3.2 Integrity of gas transmission systems and environmental footprint reduction

Leader: Mohd Nazmi (Malaysia)

The scope of SG 3.2's activities covers integrity threats, safety regulations and environmental footprint. For each of the three sub-topics a questionnaire will be drafted and issued to WOC 3 members. At the second WOC 3 meeting the results will be discussed. The questionnaire will be refined and fine tuned as per members' remarks and re-issued accordingly before the third meeting in January 2011.

In respect of the topic of integrity threats, SG 3.2 will focus on updating the findings of the study conducted by SG 3.2 during the last Triennium.

SG 3.3 Securing sufficient expertise to operate gas transmission systems safely and adequately

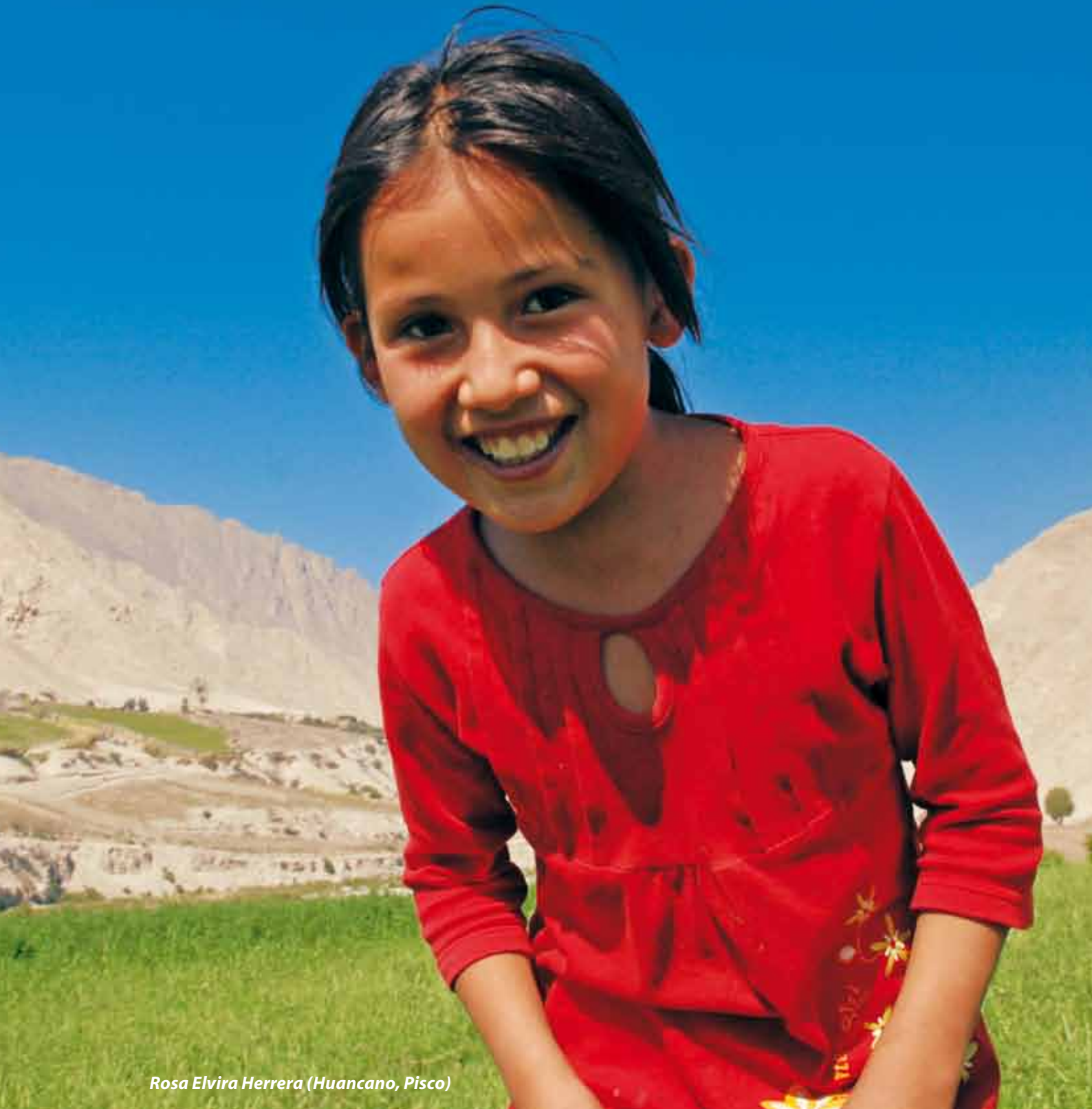
Leader: Barbara Jinks (Australia)

This Study Group will examine:

- How can the required expertise level of personnel be determined?
- Are other organisational models necessary to cover a scarcity of expertise (e.g. pooling of personnel, outsourcing activities)?



**SHE IS FIVE YEARS OLD,
AND HAS BREATHED CLEAN AIR HER WHOLE LIFE.**



Rosa Elvira Herrera (Huancano, Pisco)

Camisea have been working **five years** for a clean, economical and environmental friendly energy source. As the main natural gas pipeline carrier, TgP is proud to be part of the most important energy project in Perú.





WOC 4's workshop on smart metering was a great success.

- Are there other equipment or systems that require less expertise?
 - Does ageing of gas transmission systems require more personnel and other expertise?
- SG 3.3 will also contribute to the work of TF 1: Building Strategic Human Capital.

The next day started with a presentation by Ungku Ainon, CC Secretary, and Jeanet van Dellen of the IGU Secretariat, about IGU in general, the TWP and the run-up to WGC2012. This was followed by presentations by Barbara Jinks on major gas projects in Australia, and by Enno Freese on developments in the gas industry in The Netherlands. In the afternoon the participants visited the recently-opened branch of the St Petersburg Hermitage. A gala dinner was held in the evening and members were surprised by a pleasant serenade by the in-house jazz band and a gas song specially composed by the WOC 3 Chairman, Eric Dam.

On the third day of the meeting a technical visit to the Gate LNG terminal was organised.

Next meeting

At press time the second WOC 3 meeting was

scheduled to be held in Houston, USA, September 8-10.

● **Working Committee 4 – Distribution**

WOC 4 held a very successful and well-attended second meeting of the current Triennium in Bochum, Germany, May 4-7. The meeting followed a one-day workshop on smart metering, which was organised on May 3 by WOC 4 and open to the general public. The events were kindly hosted by Stadtwerke Bochum GmbH, which provided attractive and effective settings for both of them.

Workshop on smart metering

For the first time at least in the last decade, WOC 4 organised a workshop open to the general public.

The topic chosen (Smart Gas Meters in Gas Distribution) is one of growing interest to stakeholders in the global gas distribution network, as it will have an increasingly relevant role in contributing towards energy and industry efficiency. The objectives of the workshop were to:

- Provide a forum for understanding the



WOC 4 members and accompanying persons pose for a group photo at a gala dinner during the Committee's second meeting in Bochum.

prominent role to be played by smart metering systems in gas distribution in relation to legislative and regulatory requirements and principles;

- Analyse the available technologies in smart gas metering; and
- Understand the mechanics of implementation of a smart metering project.

The workshop was chaired by Kim Vrancken, Leader of Study Group 4.2 on smart metering, and hosted presentations by:

- Daniel Hec (Secretary General of Marcogaz), who introduced the audience to legislation/regulation in Europe on smart metering in gas distribution;
- Ernst Kaiser (Head of Data Management of RWE WVE), who presented the current situation as regards smart gas meters in Germany;
- Tom Segers (Smart Metering Engineer at Eandis – Belgium), who presented the implementation of a smart metering project in gas distribution;
- Pieter Claes (Elster Key Account Manager), who analysed modularity as the key to multifarious requirements in smart metering;
- Masanori Iwai (General Manager of the Sales

& Marketing Group at Panasonic Corporation), who described Panasonic's approach to global smart metering, from smart meter to energy management;

- Takashi Saeki (Toshiba Corporation Manager), who presented the ultrasonic smart gas meter;
- Bernd Lang (Product Manager Gas Smartmeter at Landis+Gyr), who presented the view of a smart metering company on the topic; and
- James Davey (Tactical Marketing Manager at Microchip Technology), who described how advances in microcontroller unit (MCU) and wireless technology are leading to more robust and longer-lived smart gas meters.

The workshop, held at Ruhr University in Bochum, was attended by around 60 people and was a great success in terms of the interest shown by the participants and the quality of presentations. Moreover, it provided WOC 4 with a series of significant inputs to the activities on the topic. We are very proud that we brought in such high-level experts from both the gas industry and the manufacturers.

The contributions can be accessed via WOC 4's section of the IGU website.

Thinking long-term in the gas business

By Dr. Bernhard Reutersberg

The European gas markets are in motion. The continent is experiencing a massive oversupply of gas and plummeting prices on the spot markets. One reason is certainly the fall in consumption as a result of the global economic crisis. Another reason, which has a much more important effect, is the far-reaching shifts in gas markets around the world. The USA has ousted Russia as the world's largest gas producer, at least for the time being. Some are already speaking a little prematurely of the "new natural gas super-power". This development is being driven by the technical progress that has been made in gas exploration and production. This has made so-called unconventional gas deposits that can only be produced using special exploration technology economically interesting. In the USA, unconventional gas now accounts for roughly half of total gas output.

What does that mean for Europe? The growing self-sufficiency of the USA has meant that some of the LNG (liquefied natural gas) that was actually destined for the American market is being redirected to the European continent. In addition, producer countries such as Qatar have made massive investments in liquefaction capacities in recent years so that large LNG quantities are now available and are also finding their way to Europe. An oversupply has occurred that is putting the prices for natural gas under pressure. As a result, flexibilities in gas purchasing have to be used and contracts adapted to the current market situation. Some observers already believe that the end of the conventional gas trade, in particular the pipeline business, has come. They are demanding a new strategy away from long-term supply contracts with the major producers and away from oil-price indexing towards an exclusively trading-based market.

However, this estimate of the situation is too short-sighted. The gas business is a decade business. When considering the development of German and European gas consumption, we always have to keep an eye on the medium and long-term perspectives as well. The present oversupply will not last. On the contrary: in just a few years, there may be a global increase in consumption and a shortage of available gas volumes. The experts



still cannot agree about when and to what extent this will be the case. Their forecasts depend greatly on the use of gas for power generation. For example, in its World Energy Outlook, the International Energy Agency (IEA) is predicting an increase in global gas consumption of between 17 and 42% by 2030. The forecasts for Europe range from a slight decrease to an increase of up to 18%. In all scenarios, natural gas will also play an important role in

primary energy consumption in 2030 and thus remain indispensable for covering global energy demand.

Therefore, in the gas business we have to think long-term. It would be wrong to give up all too quickly contractual instruments that have guaranteed secure gas supplies for decades. We are – as always in the past decades – conducting talks with producers in order to reflect the new market situation that has recently arisen in long-term supply contracts. The contracts will remain the backbone of European gas procurement. No other instrument unites supply security and flexibility in this way. E.ON Ruhrgas relies on a broad mix in gas purchasing covering not only pipeline gas but also LNG and increasingly our own gas production. The company is involved in exploration and production projects in the British and Norwegian North Sea, in Russia and in North Africa. It is investing billions in the expansion of national and international pipeline infrastructure. The latest examples are the start of construction of the Baltic Sea pipeline, Nord Stream, or the joining of the consortium of the Trans Adriatic Pipeline (TAP) which is to transport natural gas via the so-called fourth corridor from Azerbaijan to the southern gas markets of Europe.

The current oversupply has created a lot of movement on the gas markets and is still a great challenge for all those involved. That is, however, no reason for unconsidered actionism. On the basis of a clever procurement strategy, it is now a question of setting the course for future market developments and securing Europe's supplies of gas in the long term.

Dr. Bernhard Reutersberg is the CEO of E.ON Ruhrgas AG (Note: Since August 11, 2010 Member of the Board of Management of E.ON AG)



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Manager, Developing Assets
E.ON Ruhrgas

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WOC 4 meeting report

The meeting started with an introduction by the hosting company (Stadtwerke Bochum GmbH) and its CEO (and our Vice Chairman) Dietmar Spohn, and a presentation by the hosting country of their view on the study topics. On this occasion Uwe Klaas of DVGW joined our Committee giving a presentation on DVGW's Technical Safety Management (TSM) System, as well as introducing WOC 4 to a topic of growing interest in our industry: the injection of biogas and gas from biomass into gas distribution systems. The work then went on via separate meetings of the three Study Groups:

SG 4.1 *Gas distribution safety management systems*
Leader: Ben Lambregts, Liander, The Netherlands

SG 4.2 *Smart metering systems: characteristics, technologies and costs*
Leader: Kim Vrancken, Eandis, Belgium

SG 4.3 *Unaccounted-for gas: identification, measurement, calculation and management*
Leader: Barbara Jinks, GHD, Australia

The Study Groups focused on finalising the questionnaire that will be circulated as a single web-based document. The questionnaire will address specific areas of interest covering the three study areas, in particular:

- For safety management systems it will address process safety leadership, human factors and competence, inspection and maintenance, emergency arrangements, audit and review;
- For smart metering systems it will address the meter reading process, smart meter functions and services, regulation and smart metering, cost/benefits in smart metering, technologies used/considered; and
- For unaccounted-for gas it will address its definition, components and measurement, and issues related to network operations, unbilled gas, metering and custody transfer.

The meeting was completed by a "social-technical" tour, visiting the German Mining Museum, the most important museum of its kind in the world and a highly acclaimed research institute for the history of mining and metallurgy. The fascinating insight mine underneath the museum grounds offered us a glimpse into the world of mining.

Next meeting

WOC 4's next meeting will take place in Tokyo, Japan, by the kind invitation of Tokyo Gas, September 28-October 1.

The Committee currently has 76 members (some of them corresponding members) and new members are still more than welcome to join. For further information on WOC 4's activities, please contact the Chairman, Alessandro Soresina at alessandro.soresina@a2a.eu, or the Secretary, Mario Pelizzoli at mario.pelizzoli@a2a.eu.

● **Working Committee 5 – Utilisation**

WOC 5 focuses on the downstream part of the gas value chain, which plays a significant role in the sustainable development of the gas market. The Committee aims to be a platform for information exchange, to demonstrate the positive impact of new gas technologies, create and update databases of technical information and market data, as well as provide recommendations to the gas industry.

The activities of WOC 5 are divided into three Study Groups (detailed below); and two Expert Fora (EF) have been set up in order to integrate topics common to the three Study Groups: EF 1 for renewables and EF 2 for efficiency and gas quality. Currently WOC 5 has a total of 87 members from 29 countries.

The first two meetings

Apart from the first informal meeting of WOC 5 leaders at the time of the 24th WGC in Buenos Aires in October 2009, WOC 5 has held two

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WOC 5 held its first meeting in Osaka during which delegates made a number of technical visits including one to the Higashinada sewage treatment plant in Kobe (ABOVE). WOC 5's second meeting was held in Opatija (BELOW).

meetings with its members. The first was held in Osaka, Japan, January 31-February 3, and was attended by 34 delegates from 18 countries. The second meeting was held in Opatija, Croatia, May 3-4 and 37 delegates participated. In the latter part of the second meeting, a special session by EF 1 was held during which the necessity for collaborating with other Committees (PGC A and PGC E) and current issues surrounding the gas market related to this topic were highlighted to the members.

Scope and objectives of the Study Groups

The overall common objectives of WOC 5's Study Groups are to:

- Describe the situation in each different gas utilisation sector;
- Identify trends, tendencies and technologies; and
- Evaluate and propose actions for further market development.

In all cases, the work will be done in continuity with the work of the last Triennium. In the 2009-2012 Triennium, special attention is being paid to the issue of harmonising biogas and natural gas for the benefit of customers and the gas industry.

During the last two meetings, each Study Group discussed and identified key issues, and assigned members and appointed leaders to each issue. In the second meeting, participating delegates gave presentations on the situation of the related topics in their own countries.

SG 5.1 Industrial utilisation

Leader: Nuno Afonso Moreira (Portugal)

Deputy Leader: Egidio Adamo (Italy)

Five key issues have been decided on:

- Energy efficiency;
- Renewables;
- CHP and power generation;



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- Gas quality variation: and
- Energy services.

Nuno Afonso Moreira has also contributed an article entitled “Biomethane as a Substitute for Natural Gas” to the April issue of the IGU Magazine (see pages 158-160).

SG 5.2 Domestic and commercial utilisation

Leader: Martin Seifert (Switzerland)

Deputy Leader: Eric van Engelen (The Netherlands)

Six key issues have been decided on:

- Renewables;
- New appliances;
- Smart metering;
- Appliance labelling;
- Energy services; and
- Gas quality.

At the first meeting in Osaka it was decided that the SG 5.2 report of the previous Triennium should be disseminated widely to stakeholders around the world. Martin Seifert has sent out the modified report to over 60 manufacturers and at the same time asked for their support for IGU’s work in the field of domestic and small commercial applications.

SG 5.3 Natural gas vehicles

Leader: Eugene Pronin (Russia)

Deputy Leader: Davor Matic (Croatia)

Six key issues have been decided on:

- Monitoring and analysis of world, regional and local NGV markets;
- Best practices for CNG refuelling stations;
- To investigate opportunities/complementarity between biomethane and natural gas;
- To survey applicable technologies to NGV for enhancing efficiency;
- NGV for large fleets; and
- Hydrogen-natural gas mixtures.

Eugene Pronin, who is also a member of the group preparing the UNECE study on the use of gas in transport in the UNECE region (see News from Organisations Affiliated to IGU

page 58), proposed to combine SG 5.3’s work with the UNECE study and obtained consent from the CC Chairman. This will allow the quality of both studies to be upgraded and creates greater opportunities to knock on the door of not only the energy industry but also governments, automotive manufacturers and transportation companies.

Technical tours/collaboration with local gas associations

Holding technical tours and participating in the events of local gas associations plays an important part of the activities of WOC 5. During the first meeting in Osaka, technical tours to eight sites were conducted:

- *Osaka Gas Senboku LNG Terminal* – tour of the LNG terminal, Senboku natural gas power generation plant and the Gas Science Museum;
- *Osaka Gas Energy Technology Centre* – tour of laboratories for solar cooling, gas heat pumps (GHP), industrial furnaces and cogeneration;
- *Kawasaki Thermal Engineering Shiga factory* – tour of the factory which manufactures double effect and triple effect absorption chillers, boilers for industrial use, etc.;
- *DILIPA Shiga* – tour of a gas appliance showroom for residential use;
- *Kyoto Biogasification Experimental Plant* – tour of a biogas producing experimental plant using household food residues;
- *NEXT21* – tour of Osaka Gas’s experimental condominium housing introducing state-of-the-art technologies such as the neighbouring cogeneration system (NCG) which won an IGU Gas Efficiency Award in 2008;
- *Osaka Gas R&D Centre for residential appliances* – presentation of R&D into fuel cells; and
- *Higashinada sewage treatment plant in Kobe* – presentation and site tour of sewage and

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sludge treatment plant and biogas fuelling station for NGVs.

During the second meeting in Opatija, a technical tour to the oil receiving terminal on the Island of Krk was held and delegates were informed of the high safety standards and precautions taken in its daily operation. A tour to the planned LNG terminal construction site was also held.

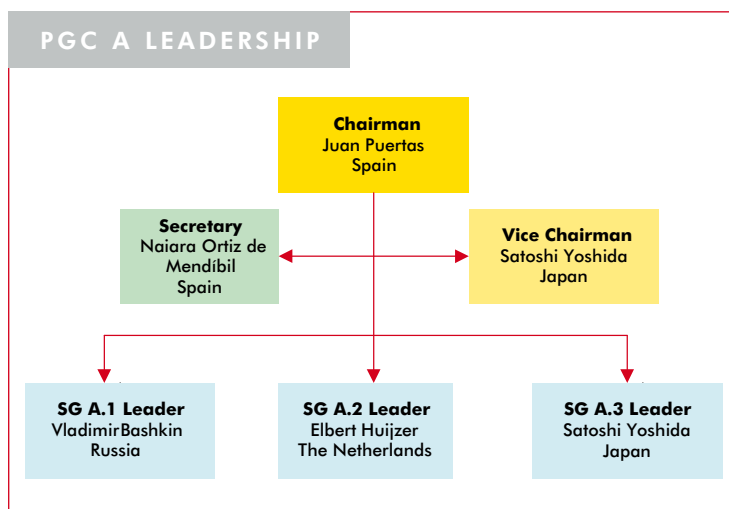
On May 5, in collaboration with the Croatian Gas Association, WOC 5 members participated in two sessions of the 25th International Scientific & Expert Meeting of Gas Professionals held in Opatija. Session 1 on “How renewables will support the gas business” was chaired by Aksel Hauge Pedersen and Session 2 on “Gas (and liquefied gases) and renewables reduce the emissions of harmful gases in traffic” was chaired by Eugene Pronin, who as well as being the Leader of SG 5.3 is also the Vice Chairman of WOC 5.

Next meeting

At press time the third meeting of WOC 5 was due to take place in Moscow, Russia, September 14-16.

For more information, please contact the Chairman, Tatsuo Kume at tatuo-kume@osakagas.co.jp, or the Secretary, Ichiro Baba at Ichiro-baba@osakagas.co.jp.

BELOW
Figure 1.



● **Programme Committee A – Sustainability**

Key issues on today’s energy agenda are the need to guarantee supply and mitigate climate change in the face of the large-scale use of fossil fuels to fulfil energy demand.

In this scenario, energy decisions are favouring the implementation of renewable energies to address both issues. However, renewables are not enough to solve the world’s energy supply problem and require a support fuel. Natural gas is, without doubt, the ideal fuel for this function and IGU, which has been characterised historically by its responsible approach to environmental issues and sustainability, is willing to study these synergies and provide constructive solutions for the future.

Furthermore, IGU seeks to reduce any adverse impact of the industry’s installations. For that reason, studies are directed at studying formulas and processes which promote improvements in process efficiency and the safety of operations.

Looking into the future, applicable energy models are appearing which consider two final-use energy vectors: hydrogen and electricity, and propose that CO₂ be captured and stored (CCS). Undoubtedly, this model will have repercussions in the gas industry which must be analysed.

PGC A’s objective is to enhance IGU’s image as regards sustainable development and to promote the best available and most efficient technologies, best practices and health, safety and environmental (HSE) elements that use natural gas alone or as a complement to renewable energies resulting in a reduced negative impact on the ecosystem.

PGC A’s leadership is shown in Figure 1. The Committee has 62 members from around the world and held its first meeting in Barcelona, Spain, February 10-12. It was hosted by Enagás and attended by 33 delegates. On February 11, delegates had the opportunity of visiting the Enagás plant in Barcelona, which is the biggest regasification terminal in Spain.



PGC A's first meeting was held in Barcelona where delegates had a technical tour to the Enagás regasification terminal.

SG A.1 Sustainability and investment

Leader: Vladimir Bashkin, Gazprom (Russia)

SG A.1's objectives are to:

- Design a hydricity (i.e. the complementary use of hydrogen and electricity) model in which the role of natural gas as a transition fuel will be analysed;
- Present the best hybrid solutions between renewable energies and natural gas in a video; and
- Study the state of development of CCS technology and analyse the implications for the gas industry.

PGC A, PGC E and WOC 5 held a joint meeting on May 4 in Opatija, Croatia. During this meeting it was agreed to look at working together with PGC E on a video, and there was a subsequent telephone conference in July to discuss the objectives and methodology of the work. If cooperation between the Committees is accepted, the video will consider both environmental and marketing aspects.

SG A.2 Integrating other gases into the natural gas industry

Leader: Elbert Huijzer, Liandon (The Netherlands)

SG A.2 aims to set the basis for the natural gas industry to take advantage of other gases,



PGC A delegates pose for a group photograph outside the Gas Natural headquarters in Barcelona.

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PGC A MEETINGS FOR THE 2009-2012 TRIENNIUM

Meeting	Date	Location
First meeting	February 10-12, 2010	Barcelona, Spain
Second meeting	September 15-17, 2010	Tokyo, Japan
Third meeting	March 2-4, 2011	Novi Sad/Belgrade, Serbia
Fourth meeting	September 7-9, 2011	Moscow, Russia
Fifth meeting	February 1-3, 2012	Milan, Italy
Sixth meeting	April 25-27, 2012	Amsterdam, The Netherlands

ABOVE
Table 2.

eliminating any possibility of impacts on people's health and the useful life of installations.

During the joint meeting in Opatija on May 4, there was a discussion between PGC A, PGC E and WOC 5 regarding natural gas and renewables. The conclusion was that IGU will elaborate only one document on biogas from the previous ones published. This document will be coordinated by PGC A under the slogan "Biomethane = renewable or green natural gas".

SG A.3 Reduction of gas emissions

Leader: Satoshi Yoshida, Tokyo Gas (Japan)

SG A.3 aims to record best practices in the gas chain and to develop a comprehensive industry guide to reduce gas emissions, which provides for a reduction in emissions in each process and a reduction in the environmental impact of each activity.

Members are gathering best practices to reduce CO₂ emissions along the natural gas chain using a designated format. These best practices are to be collated and presented at the second meeting in September. Additional best practices for methane reduction besides the ones gathered by SG A.3 members are expected to be provided by courtesy of the US Environmental Protection Agency.

Future plans

Details of PGC A's meetings are shown in Table 2 and at press time the next meeting was due to be held in Tokyo, Japan, September 15-17.

● Programme Committee B – Strategy

PGC B held its first meeting in London, UK, February 24-26. Chaired by Colin Lyle, the meeting was attended by 55 senior gas representatives from 41 different organisations in 23 countries, who joined in working sessions and debates with leading global experts, in what one delegate described as "a refreshingly open and intense discussion of intentional strategy".

For those who arrived early, there was a technical visit hosted by National Grid at the Isle of Grain LNG terminal – a facility that is expanding to become one of the largest delivery points for UK, and indeed European, LNG supplies. In the evening, the strategy summit was formally opened by Jeremy Bending President Elect of IGU's UK Charter Member, the Institution of Gas Engineers and Managers (IGEM), who chose the gas industry's response to climate change as his strategic theme.

Torstein Indrebø IGU Secretary General, put the meeting in context with a reminder of the IGU mission and organisational structures. Ungku Aion, CC Secretary, set out the Strategic Guidelines for the Triennium which underpin the theme of "Gas: Sustaining Future Global Growth" and form the basis for the TWP.

The core objectives of this first meeting were for PGC B to establish an outline work plan based on the activities of the three Study Groups, and to assign responsibilities for leadership and content of the work.

SG B.1 World gas supply, demand and trade

Leader: Jaap Hoogakker (GasTerra)

Co-Leader: Hiroshi Hashimoto (Institute of Energy Economics, Japan, seconded from Tokyo Gas)

SG B.2 Wholesale gas price formation

Leader: Mike Fulwood (Nexant)

Co-Leaders: Mark Stubbe/Lowell Bezanis (Cheniere) & Howard Bevan (Qatar Petroleum)

SG B.3 Corporate strategy and regulation

Leader: Francisco de la Flor (Enagás)

Co-Leaders: Ram Ramathan (Saudi Aramco) & Susan Court (Hogan Lovells)

A UK regulatory perspective

Ofgem CEO Alistair Buchanan stimulated a lively debate about the UK Energy Regulators' findings in Project Discovery, which is currently open to consultation. Are changes in the UK regime needed to deliver the investments required in the next decade? Delegates observed that the UK gas market is a resounding success story, and heavy intervention there could be unwise. The NBP or National Balancing Point (the UK's traded gas market) is viewed as one of the best wholesale markets in the world and successful gas infrastructure investments in the liberalised market to bring new supplies to the UK provide a wide diversity of pipeline routes and LNG supplies from

across the globe. The regulator could help, however, by ensuring that further required investments to cope with future changes in imported gas qualities were not delayed.

Gas resources and global markets

After a long day of debate, PGC B stayed hard at work during the evening with BG Group Director Nigel Shaw explaining his company's strategy; not just an E&P company, but a truly integrated gas major. Discussion in the bar continued for those with the stamina, but already we were looking forward to hearing from our early morning expert speaker, about the next phase of the shale gas revolution that has changed the outlook for US gas production, contributed to a global supply surplus and fundamentally changed LNG trade. Committee member Porter Bennett, CEO of Bentek, showed that resource costs of unconventional gas could sustain increasing production levels for several years. The last, but certainly not least, guest speaker was Gazprom Marketing & Trading's Head of Origination, Andy Williamson, suggesting how the world's largest gas producer



PGC B's first meeting was held in London (ABOVE). It was opened by Jeremy Bending, President Elect of IGU's UK Charter Member IGEM, who is seen here at the subsequent cocktail reception (RIGHT).



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 sales and trading.

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Our existing LNG operations include the medium-term (4.5 years) LNG supply contract between EDF Trading and RasGas for deliveries into Zeebrugge of up to 4.5 bcm and the Edison co-sponsored Rovigo offshore re-gasification terminal in the Adriatic sea, which started operations toward the end of 2009 and for which Edison secured sourcing of 6.4 bcm/yr of LNG from Qatar. New LNG developments include our re-gasification terminal project in Dunkirk, France (10 to 13 bcm/yr capacity), which targets operational start-up by 2014.

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PGC B will meet in other continents of the world to draw out local knowledge and understand different perspectives. Work is now underway on regional supply and demand cases, a price formation survey will be launched and proposals are being developed for a joint workshop with the newly formed International Confederation of Energy Regulators (ICER).

The first meeting ended with a rousing vote of thanks for our Secretary, Harry Whitaker of the BG

Group, whose industrious and tireless organisation had been the foundations of this successful event. If anyone is interested in contributing to the activities of PGC B Harry would be delighted to hear from you.

Next meeting

At press time PGC B was due to hold its second meeting in Oran, Algeria, September 14-16. For more information, please contact Harry Whitaker at harry.whitaker@bg-group.com.

● **Programme Committee C – Gas Markets**

During the current Triennium, PGC C will be exploring the development of gas markets in the ASEAN+4 region, North America and Europe & Russia, with a focus on security of supply and demand. The analysis will include non-conventional sources, trends in environmental regulation, harmonisation of rules across national boundaries, natural gas sourcing and competition with other fuels, infrastructure and other general market drivers, including geopolitics.

The Committee has a total of 69 members and advisors from 30 countries, organised into three



Delegates to PGC C's first formal meeting of the Triennium at a welcome reception (TOP). They also had the opportunity to visit the Petrobras R&D centre in Rio (ABOVE).

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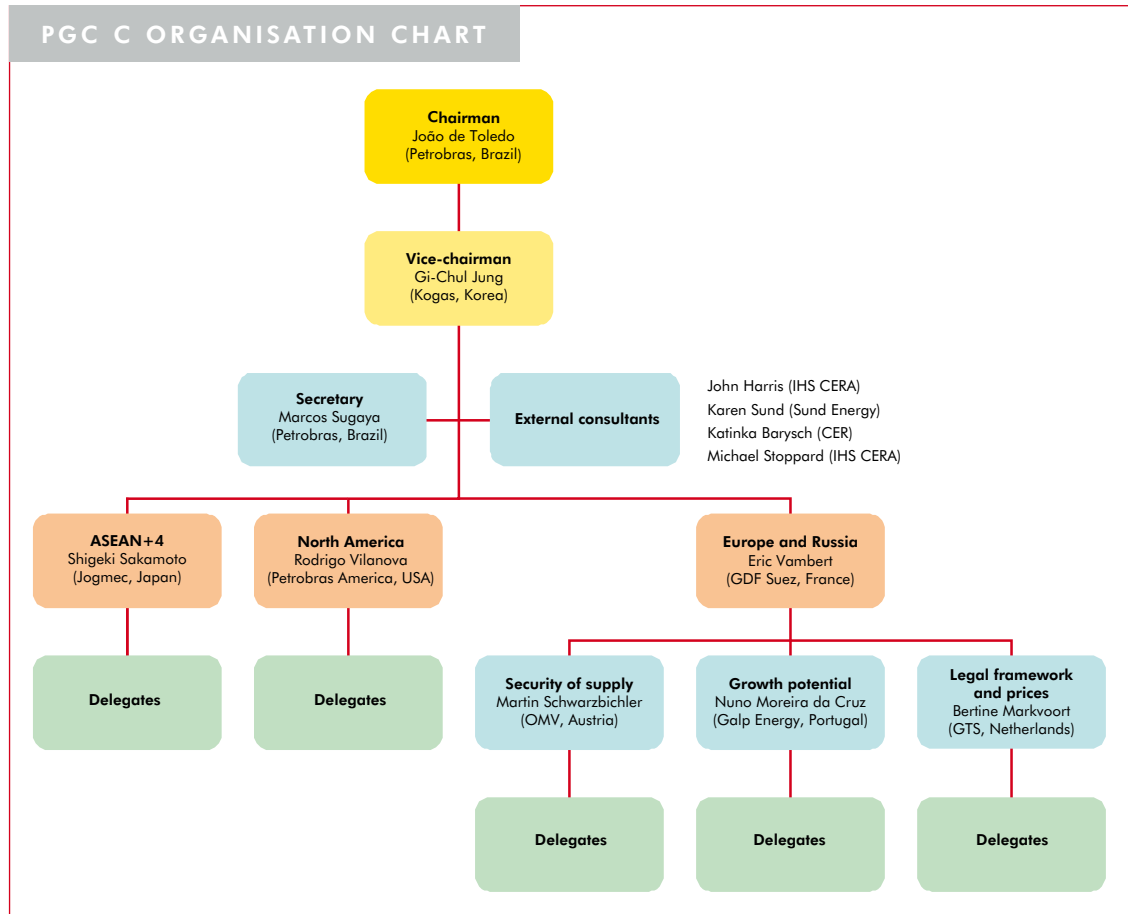
Through strategic gas pipeline projects, such as the Greece-Turkey, Greece-Bulgaria and Greece-Italy interconnectors, DEPA Group plays a leading role in the creation of a major energy hub in South-Eastern Europe, thus bridging the energy sources of East with the European markets.

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RIGHT
Figure 2.



Study Groups, which correspond to the three regions under analysis (see Figure 2).

After a preliminary get-together during WGC2009 in Buenos Aires, PGC C held its first formal meeting of the 2009-2012 Triennium in Rio de Janeiro, Brazil, February 8-11. It was hosted by Petrobras and attended by 33 members and guests from 13 countries. There were 25 presentations during two plenary and three Study Group sessions, and a technical visit to the Petrobras R&D centre on the last day.

Study Groups

SG C.1 ASEAN+4

Led by Shigeki Sakamoto (JOGMEC, Japan), SG C.1 will continue the excellent work carried out in the previous Triennium by the Task Force on Gas

Market Integration, and will expand the original ASEAN analysis to include China, Japan, Korea and Taiwan.

During their first meeting, members decided on the structure of the final report. They will study emerging issues and challenges to the integration and harmonisation of technical and commercial interests in the region, a task that seems to require extensive cooperation among industry players and governments.

Security of supply issues will be revised, and local drivers will be identified, including the potential supply from non-conventional sources such as coal-bed methane and shale.

In this region, demand centres are located mostly away from the supply sources. As a consequence, long-term availability depends on

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the development of upstream and downstream infrastructure.

LNG imports will also be investigated, as Indonesia is supposed to divert more of its current production to the internal market, and technical difficulties have been delaying production in fields with a high CO₂ content.

John Harris (IHS CERA) will act as an external advisor for this Study Group.

SG C.2 North America

Rodrigo Vilanova (Petrobras America, USA) is the leader of SG C.2, which is tasked with identifying and analysing key market drivers for the development of gas markets in North America, highlighting strategic options for the development of gas businesses in the region.

Following an overview of the gas markets in the region, the analysis to be performed will include geopolitical and local factors, environmental issues, non-conventional gas and the effects caused by contraction of the labour force in the hydrocarbon industry.

Other activities on the agenda of SG C.2 are to:

- Characterise E&P challenges in the region, evaluating the risks involved, investment and operational costs, human capital and technology requirements;
- Analyse natural gas competition in different market segments (gas on gas vs. other sources of energy);
- Identify the roles of industry structure and regulatory framework and how they can stimulate or constrain the market development (supply and demand);
- Examine the potential impacts of non conventional gas and LNG as additional sources of supply;
- Offer views and suggestions on strategic options to promote the development of gas markets.

During their first meeting, members produced a booklet detailing activities and plans for the

current Triennium. The structure of SG C.2's report will be defined during the second meeting in Seoul.

SG C.3 Europe and Russia

Under the leadership of Eric Vambert (GDF Suez, France), SG C.3 will study the development of gas markets in Europe and Russia, with an emphasis on energy security. It will follow on from the study report of the previous Triennium "Developing Gas Markets in South-eastern Europe".

The region to be investigated is one of the most interesting and complex in the world, with demand centres located far from the reserves, and a regulatory network that is passing through significant changes to address climate change and security of supply issues. Consequently a roundtable was organised at the offices of GDF Suez in Paris, May 5-6, to agree detailed terms of reference and a division of the work.

Prior to the roundtable a questionnaire had been sent to key market specialists and industry authorities to determine the most important issues for the gas industry in the region, and the themes that SG C.3 should explore to a deeper extent during the current Triennium. Following discussion of the answers to this questionnaire (see *Table 3* over), members decided to organise themselves into three focus groups:

- *Security of supply (C3.1)* – under the leadership of Dr Martin Schwarchbichler (OMV, Austria), this group will analyse supply, storage, infrastructure and other relevant upstream issues that can affect the development of gas markets in the region;
- *Growth potential (C3.2)* – under the leadership of Nuno Moreira da Cruz (Galp Energia, Portugal), this group will investigate levers for the development of gas markets in the region, with a focus on technology, competitiveness, efficiency, investment and climate change issues;
- *Legal framework and prices (C3.3)* – under the leadership of Bertine Markvoort (Gas Transport Services B.V., The Netherlands), this group will

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Table 3.

SUMMARY OF ANSWERS TO THE SG C.3 QUESTIONNAIRE

The image of natural gas

- Overall, a positive image of natural gas exists, but there are two clear groups of countries in the region:
 - In one group, natural gas enjoys a very positive image, where attributes such as being clean, flexible and competitive and having security of supply prevail (e.g. Russia, Kazakhstan, Slovakia, Slovenia, Croatia, Portugal and Spain);
 - In the other group, the image is positive as well, but it has been affected by an increased perception of gas as a fossil fuel, by competitiveness issues, and also by external events such as the Ukrainian crisis (e.g. Poland, The Netherlands, Germany, Serbia and Austria).
- Natural gas can be made greener by technological innovations, increased efficiency, biogas and the use of renewable energies.

Growth potential

- In general, growth potential is perceived as limited in the residential, tertiary and industrial sectors, and is likely to depend on the regulatory environment (CO₂ reduction, subsidies for renewables, etc).
- In Poland and Croatia the displacement of other fossil fuels deserves investigation, while

- in Russia, Kazakhstan and Serbia the expansion of existing infrastructure should be discussed. In countries like Croatia, Russia and Kazakhstan natural gas consumption could increase as a feedstock for the industry.
- In the remaining countries, the growth potential would depend mostly on CCGT developments.
- Subsidised renewables and “clean” coal are new competitors for gas in addition to traditional oil products and electricity.

Security of supply

- In spite of the current market retraction, security of supply remains an important issue around the region, with the exception of Russia, Kazakhstan and other natural gas producers, where this issue translates into security of exports or security of demand.
- Importing countries usually consider investment in E&P and additional storage facilities, as well as the diversification of suppliers and supply routes (pipelines and LNG terminals), but demand-side management and better cooperation between stakeholders during crises could produce a similar effect without significant impact on the consumer costs.

BELOW
Table 4.

PGC C MEETINGS FOR THE 2009-2012 TRIENNIUM

Event	Date	Location
Informal meeting	October 6, 2009	Buenos Aires, Argentina
First meeting	February 8-11, 2010	Rio de Janeiro, Brazil
SG C.3 roundtable	May 4-6, 2010	Paris, France
Second meeting	September 28-30, 2010	Seoul, Korea
Third meeting	March 1-3, 2011	Houston, USA
Fourth meeting	September 6-9, 2011	Moscow, Russia*
Fifth meeting	February 14-16, 2012	Paris, France

* Joint meeting with PGC A (to be confirmed)

analyse the impact of price policies and regulatory trends in the gas markets of Europe and Russia.

Meetings

All PGC C meetings for the current Triennium are detailed in Table 4. The next one will take place in Seoul, September 28-30, thanks to the kind sponsorship of the Korea Gas Union and Kogas.

For further information on PGC C activities, please contact the Secretary, Dr Marcos de Freitas Sugaya at sugaya@petrobras.com.br, or visit the PGC C section of the IGU website.

Legal framework and prices

- Price stability and predictability are important for customers, because they might decide to replace natural gas by other forms of energy, and also for the gas industry, for investment decisions in infrastructure expansions and security of supply measures.
- The development of gas hubs and marketplaces depends on simultaneous infrastructure developments, to allow for physical exchanges between hubs and market areas.
- The large differences that have recently been observed between short-term market prices and long term oil-indexed contract prices constitute one of the most important issues to be addressed by the IGU during this Triennium. Market prices have been pushed downwards by the current oversupply, but long term oil-indexed contracts seem to remain very resilient in renegotiation talks, in spite of the fact that the competition with renewables, electricity and other alternatives is impairing the usual link between gas and oil prices in most of the customer segments, making it more and more difficult to justify.

- The competitors of natural gas are often subsidised (e.g. renewables), which rises a question about the role that politics can play in gas competitiveness. On the other hand, in many countries a significant portion of the end market is still under regulated tariffs, mostly in the residential sector.
- In Russia there appears to exist an important discussion involving the expansion of the current infrastructure, which would lead to a significant increase in prices, and the desire to produce economical development and social stability, which would maintain prices at their current levels.

Expectations as regards IGU and other organisations

- Europe must create conditions for competition, but should stay away from any temptation of ruling the gas markets.
- A single European voice seems to be far away from reality, as there are multiple goals in the countries, some of them not in favour of natural gas.
- Associations of gas transporters and organisations such as IGU and Eurogas will have a key role in the construction of a European marketplace.

● Programme Committee D – LNG

PGC D's first meeting was held in Doha, Qatar, January 26-27. A stand-up reception was held on the evening before the opening of the meetings which allowed all the Committee members to meet since this was the first time for many to get to know each other. This also allowed for many newcomers to Qatar to become familiar with the local culture and hospitality.

A kick-off general meeting was conducted the next day by the Chairman, Alaa Abu Jbara, who provided an overview of the Committee's objectives. The CC Chairman, Ho Sook Wah then

provided a brief overview of IGU and the TWP.

The three Study Group Leaders had been selected prior to this meeting. Each of the Study Groups met separately after the kick-off meeting to initiate their internal engagement process of reviewing their specific objectives and workscope.

SG D.1 Enhance terminal compatibility

Leader: Jean Yves Capella (France)

The scope of of this Study Group is to gather receiving terminal data regarding ship compatibility with the objective of providing recommendations for further enhancing



PGC D held its first meeting in Doha (ABOVE) during which delegates made a technical visit to Ras Laffan (BELOW).

compatibility. Sub-groups were organised to review the following topics affecting compatibility:

- Operational safety – LNG facilities and carriers;
- Characteristics of LNG carriers;
- Characteristics of LNG facilities; and
- New creative LNG facilities.

SG D.2 Penetrate new markets for LNG

Leader: Ted Williams (USA)

The scope of this Study Group is to review and study new market entrants, in particular to identify market entry factors with an objective of applying new market entry lessons learned to new potential markets. The following key topics were identified for study:

- Identify key market drivers for the implementation of LNG projects to meet and sustain current and future overall natural gas demand

and new end use needs;

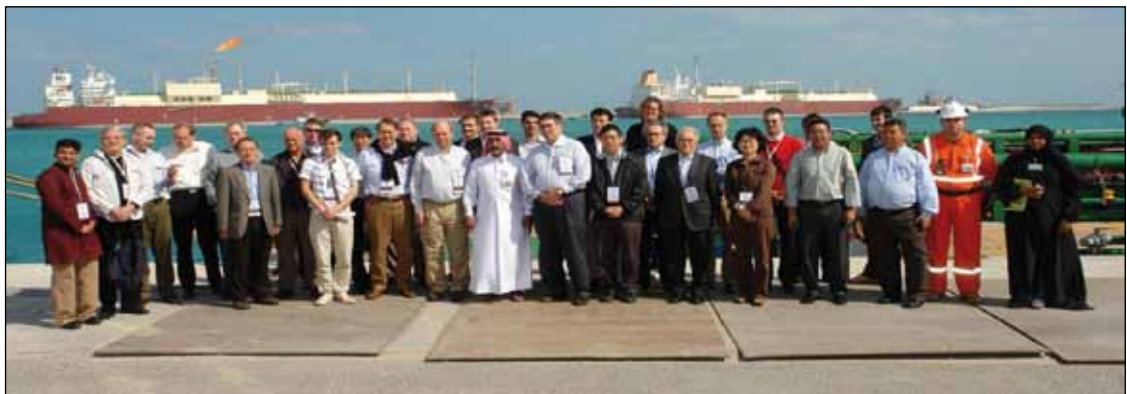
- Identify barriers to entry – overcome or minimised in the course of introducing LNG supply; and
- Formalise analysis of new market entrants based on this experience and using previously applied methods or developing new analytic approaches.

SG D.3 Enhance efficiency in the LNG chain

Leader: Rob Klein Nagelvoort (The Netherlands)

The scope of this Study Group is to review and study alternative LNG project solutions to satisfy unique locations, environmental and public requirements, and to review further efficiency enhancements to existing operating facilities with the objective of applying new market entry lessons learned to new potential markets. These include the following:

- Status – operating / new / future projects;
- New onshore and offshore technologies;
- New LNG operations;
- Different construction approaches;
- Enhance efficiencies in existing facilities;
- Efficiency of wells to electrons;
- New uses of LNG product;
- Gas price vs. efficiency; and
- Utilisation vs. efficiency.





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The Committee members met for two days within their respective Study Groups to organise themselves and brainstorm ideas associated with the scope and objectives of their work.

A plant and port tour of the Qatargas LNG facilities was conducted which gave delegates an opportunity to see the mega trains and mega ships.

PGC D member Jacques Rottenberg is also serving on the UNECE Committee on Sustainable Energy. This Committee has launched a study on the "Current State and Prospects of LNG in the UNECE Region" which is expected to be completed soon.

Following a request from the CC Chairman, PGC D will provide an update of the "Worldwide LNG Industry" report which was presented during WGC2009.

PGC D will also be supporting the "Regulators and Natural Gas" workshop which is being organised by PGC B together with ICER (International Confederation of Energy Regulators) in Washington DC, March 8, 2011.

PGC D's second meeting was held in Rotterdam, August 30-September 1, and will be covered in the next progress report.

For further information on PGC D's activities, please contact the Secretary, Abdulla Ahmad Al-Hussaini at aalhussaini@qatargas.com.qa, or visit the PGC D section of the IGU website.

● Programme Committee E – Marketing

PGC E held its second official meeting in Amsterdam, The Netherlands, June 2-5. The meeting was hosted by Nederlandse Gasunie, GasTerra, EnergieNed and KVG N and brought together 29 members from 14 countries.

During the meeting delegates devoted most of their efforts to streamlining their ideas of what will be done during the Triennium. It was a pleasure to see the three Study Groups highly motivated and working on their topics. The good working atmosphere brought about many fruitful discussions

and gave the meeting the air of a productive think-tank on marketing natural gas. All the Study Groups managed to set up clear task lists and responsibilities for their further working progress.

SG E.1 Natural gas and renewables

Leader: Uwe Klaas, DVGW (Germany)

SG E.1 will identify the position of natural gas in combination with renewables in the future energy market. During the meeting several case studies of combinations of gas and renewables were selected, and these will be followed up by different members. The Study Group will then choose the most promising combinations and will focus on their marketing strategies. Furthermore, it was agreed to deliver information for a joint study report on biogas proposed by PGC A which will also have the lead. The Study Group is supposed to deliver marketing-related information on biogas within different countries.

SG E.2 Marketing campaigns

Leader: Urs Zeller, Swiss Association of Gas Industry (Switzerland)

SG E.2 focuses its work on analysing the business behaviour in marketing across different sectors. A questionnaire has been developed to collect the necessary information. During the meeting the Study Group devoted most of its time to discussing the final structure and the questions of the survey. The questionnaire will be online to simplify completion and return and thus encourage a higher response from the target groups. The plan is to start sending out the questionnaire this autumn. During the next meeting in November the Study Group is planning to start discussions on what will be presented during WGC2012 and how this will be realised.

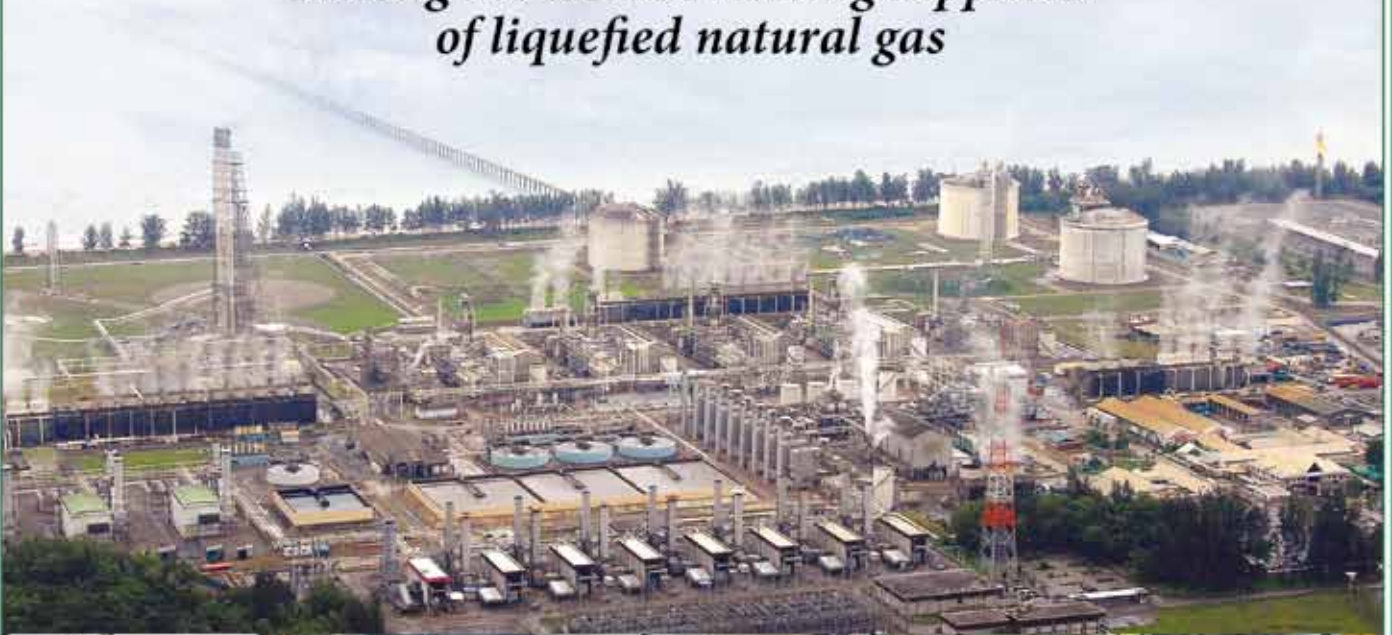
SG E.3 Image of natural gas

Leader: Hansch van der Velden, Nederlandse Gasunie (The Netherlands)

SG E.3 stands very much in the focus of IGU's

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Led by four decades of growth and a proven track record, the company has been a preferred LNG supplier to Japan and Korea since 1972 and 1994 respectively. To date, more than 6000 shipments have been delivered uninterrupted from Lumut to Japan and Korea. The company strives to move forward towards its vision of being one of the top performing LNG plants in the world, synonymous with reliability and quality. Some of its past achievements include first ranking amongst Shell's Joint Venture operated LNG plants in 2008 and Best Shell Laboratory in Correlation results in 2008, which it has achieved for five consecutive years. As a responsible organisation that cares for the environment, Brunei LNG operates in harmony with the natural surroundings of the Liang Lumut area of Brunei Darussalam where it is based. Its successful environmental management system (EMS) was accredited to EMS ISO14001:1996 series in 2000. The EMS was upgraded to EMS ISO 14001:2004 series in 2005 and then recertified for another three years in 2008. Brunei LNG employs more than 500 personnel, of which 95% are locals. The company strives to be the Employer of First Choice within the community and in Brunei Darussalam generally. Plant capacity is 7.2 million tonnes of LNG per annum. To ensure continuous plant reliability and efficiency, two major rejuvenation projects were implemented in 1990 and 2004, which have proven to be critical factors in securing ongoing long-term sales contracts beyond 2013. Brunei LNG is committed to maintaining its strength as a Supplier of First Choice to customers, and to move forward with increased business potential into the future.

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"Sustaining Operational Excellence"





efforts on improving the image of natural gas. The roundtable discussion in Bali, which took place during the Executive Committee meeting in April, made clear that IGU wants to become a policy shaper rather than a policy taker. It is now this Study Group's task to advise and support IGU on how to strengthen its industry voice in the future. One important deliverable will be the development of guidelines describing how to improve the image of natural gas in different countries/regions.

SG E.3 will therefore develop country case studies in order to investigate the image of gas,

and 12 key countries have been identified which will be followed up by different members. Furthermore, the Study Group plans for further communication tools such as setting up an online platform with all kinds of information related to the image of natural gas. This could be used as a library and as a discussion forum.

PGC E currently has 52 members and two corresponding members from 22 countries. New members are still welcome to join this Committee.

The next meeting will take place in Barcelona, November 17-19, by the invitation of Gas Natural Fenosa and with the support of IGU's Spanish Charter Member Sedigas.

Marc Hall is the Chairman of PGC E. For more information, please contact him at Marc.Hall@bayerngas.de, or the Secretary of PGC E, Barbara Schmid at Barbara.schmid@bayerngas.de.



PGC E held its first meeting in Amsterdam (INSET) where delegates posed for a group photograph (ABOVE).

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Progress Reports from the Task Forces

This chapter contains news and information from IGU's three Task Forces.

● Task Force 1 – Building Strategic Human Capital

The second meeting of Task Force 1 was hosted in Prague, March 30-31, by the Czech Gas Association and RWE. It was attended by 16 members.

The meeting started with a brief welcome from Miloš Kebrdle, President of the Czech Gas Association. Mr Kebrdle then gave an insightful presen-

tation on the development of the gas sector in the Czech Republic and its future prospects. This was followed by a presentation from Jitka Adamkova, Head of Human Resources (HR) at RWE Transgas, on "Challenges and Opportunities in Recruiting and Retaining Talents in RWE", during which she highlighted the Talent Management Programme conducted by the RWE Group.

TF 1's Secretary, Manu Kohli, gave a brief update on the Task Force's developments and revisited the milestones agreed in the first meeting held in November 2009, while TF 1's Vice Secretary, Marius Popescu, presented details about the content and the delivery process for a demographic survey. The survey is initially being sent out in electronic format to over 500 gas companies worldwide. The interpretation of the demographic survey will provide a snapshot – in two different periods – of current human capital issues in the gas industry which will complement a more qualitative, in-depth survey and expert interviews.

The meeting was followed by a lovely dinner hosted by the Czech Gas Association and a tour of the central district of Prague. During the tour we had the opportunity to appreciate some of the beautiful buildings in the downtown area. Moreover, all the participants had a chance to experience briefly the life of a street gas lamp lighter, and we even got a commendation certificate for our efforts!

The second day started with a brief presentation on HR processes and organisation development within Taqa Gas Egypt by Reham Gharib. Following Ms Gharib's presentation, Juan Arraibi and Ángel Gutiérrez spoke briefly about a project which has been initiated by their company, Naturgas Energía (Spain). The project involves working closely with a university and setting up an Energy R&D Department in partnership with Naturgas. The underlying theme of this partnership is the use of "Innovation" as a tool to establish a close link between the academic and business environments. TF 1 Chair, Ieda Gomes welcomed the Naturgas



TF 1 held its second meeting in Prague where the business sessions (TOP) were complemented by an evening tour (ABOVE).

initiative and proposed to deepen the future collaboration between TF 1, Natargas and the partner university, including visits and presentations from TF 1 members. She also invited other members to present themes related to HR in the forthcoming TF 1 meetings.

The presentations were followed by deliberations on the way forward for TF 1 and an action plan with hard deadlines. The discussions focused on:

- *A detailed survey* to obtain qualitative information on the current status and outlook for the gas industry. The questions for the demographic survey and a company database were completed after the meeting and the survey was launched in June. Schlumberger also presented a brief summary on how they produce their annual survey on the oil and gas industry, which is compiled from major companies and presented in the company's traditional December meeting in Paris.
- *Expert interviews* – the purpose is to obtain the views of experts in the fields of environment, energy, economics, public policy etc. and how each of them regard the future of business as a whole and the energy sector in particular. Jon Butterworth, Anita Hoffmann and Emma Hardaker-Jones have already compiled a list of experts and questions for the interviews.
- *Next meeting and workshop in Doha, Qatar on October 19* – hosted by Qatargas the meeting will be held in the morning and the workshop in the afternoon. The theme of the workshop will be "Recruiting and Retaining Talent in the Gas Industry: Challenges and Opportunities in the Middle East". Speakers from Middle Eastern gas companies and experts from other regions have been invited. At present we are also checking potential presenters from China, as suggested by Daniel Paccoud, and from Europe, via Dave Pinchbeck of GERG. For more details or workshop registration please contact Salli Cavanagh at Salli.Cavanagh@uk.bp.com.

● Task Force 2 – Nurturing the Future Generations

TF 2 held its first meeting in Kuala Lumpur, Malaysia on January 14-15, hosted by the Malaysian Gas Association. The Chair, Soh Mey Lee, welcomed members and expressed her gratitude for their commitment to the project and for sharing their experiences with the team.

Although only two out of six Tier 1 team members attended the inaugural meeting, the team was successful in addressing many key issues on how to take the project forward and in finding the solutions to nurture youth in science, technology, engineering and mathematics (STEM) education and attract younger generations into the industry. The team was grateful to have experienced members onboard – Agnès Grimont, Talent Development Manager for GDF Suez, Paris, and Dr Jitka Adamkova, Head of Human Resources for RWE in the Czech Republic.

Presentations were made by Soh Mey Lee, Agnès Grimont, Jitka Adamkova and Suhana Sidik, the Leader of TF 2's Youth Team. The presentations looked at the efforts of governments, companies and academic institutions to promote STEM education/learning in respective countries and regions, and the Youth Team's plans and ideas.



A group photo of delegates to TF 2's first meeting with CC Chairman Ho Sook Wah.



Petosains' Director of Programmes, Saiful Bahri Baharom, gave an exclusive technical tour of the Discovery Centre to TF 2 delegates.

YouTube, iPhone applications, Twitter, Facebook and BlackBerry were among the keywords that were heard at the opening meeting. The relatively small but energetic gathering had a smooth-sailing series of discussions, presentations and sharing sessions during the two days.

The meeting also discussed the strategic study report and programmes and activities for younger generations during the Triennium, as well as the organisation of an on-site carnival at WGC2012. After the meeting, the team had the opportunity to go on a technical visit to Petrosains, The Discovery Centre, which uses an interactive approach to tell the story of the science and technology of the petroleum industry. This is one of the sites that will be hosting activities for young people during WGC2012.

The team was invited to a dinner hosted by the CC Chairman, Ho Sook Wah, at KL Tower on the first day, while the following day's dinner was graciously hosted by the IGU President, Datuk (Dr) Rahim Hj Hashim at the Malaysian Petroleum Club.

The team aspires to expand its size by recruiting more young professionals from other companies and countries to contribute to this grand

event. Five new members have joined since the first meeting and TF 2 now has 14 Tier 1 members, six Tier 2 members (Youth Team Leaders) and seven Tier 3 members (Youth Team Members). Altogether, the team is supported by 27 lively members.

The second TF 2 meeting was hosted in Hong Kong by the Hong Kong and China Gas Company Limited, August 19-21, and will be reported on in the next progress report.

● Task Force 3 – Geopolitics and Natural Gas

Natural gas has been widely regarded as the fuel of choice on the way to a future world of sustainable energy. At the forefront of the growing eminence of natural gas is the key issue of global energy security, as producing and consuming nations compete for control of resources and markets. Concerns about import dependence and tensions between producing and exporting countries should be dealt with if world economies are to take the full benefit of this environmentally friendly but finite energy resource called natural gas.

The geopolitics of natural gas is the complexity of political and economic intergovernmental and industry relations that shape its development. The recent internationalisation of natural gas has seen the removal of some of the political and economic obstacles to international natural gas development, while others stayed firmly in place with new and different forces emerging. The world is moving from uni-polarity to multi-polarity, and gas relations will play a part in shaping the new international (energy) relations. Though traditional geopolitical conflicts have not disappeared, geoeconomic competition has become an important element in the distribution and balancing of power.¹

1 G. Csurgai, "Geopolitics, geo-economics and competitive intelligence", *Geofocus*, 2002, Available at: http://geofocus.site.voila.fr/2112_3.htm.

Recruiting and Retaining Talent in the Gas Industry: Challenges and Opportunities in the Middle East

Objective:

Task Force 1 (TF1) of the IGU 2009-2012 Triennium will hold 3 workshops to debate and understand the key issues impacting the attraction and retention of talent in the gas industry. The first TF1 workshop will be held in Doha with the aim of gathering comprehensive information as well as developing a strategic approach to human capacity in the Middle East, as required for the attraction and retention of skilled workforces in the region and to ensure continued safe operations in the gas industry. Participation in this workshop is by invitation.

RSVP to Salli Cavanagh at Tel +44 1932 760708 or email at salli.cavanagh@uk.bp.com

October 19, 2010
at Four Seasons Hotel
Doha, Qatar

The Programme

1400	Welcome Note from IGU	Datuk Abdul Rahim/Ho Sook Wah
1410	Update on Task Force 1	Ieda Gomes
1420	Regional Panel with representation from Qatar, Oman, UAE, Saudi Arabia, with focus on: <ul style="list-style-type: none"> • Key challenges and opportunities • Employment of national workforce • Best practices in field of Human Capital development and management • Retaining and attracting women 	
1535	Tea / Coffee break	
1600	Experience from other developing/mature markets (Europe, Asia)	
1630	<ul style="list-style-type: none"> • Round-table discussions on the following themes: • Shortage of skills in the sector? Is the shortage restricted to specific skills? • Best practices in the area of Human Capital development • Challenges in attracting/retaining talent • Future developments in the sector that may effect how we look at talent today 	
1745	Conclusion/Recommendations and closing of the workshop	
2000	Welcome Dinner hosted by IGU	

The Workshop Host:



Task Force Sponsors:





CIEP and TF 3 leaders met energy industry experts in The Netherlands in January.

The objective of the project then is to better understand and examine the interplay between economic and political factors in the development of natural gas resources and analyse the political challenges, mega-trends, issues and consequences, to better understand what could impede and what may shape and drive the future in a more international natural gas-intensive world. Natural gas is rapidly emerging as the key and critical fuel due to its availability and its relatively clean characteristics. Therefore, what oil was to the 20th century, natural gas could become to the 21st.

In the Malaysian Triennium 2009-2012, Geopolitics and Natural Gas has been identified as one of three Special Projects. A Task Force has been set up and is responsible for the study and roundtables that will be organised to examine the interplay of economic and political factors in the development of the increasingly international natural gas sector. The following is the activity report from TF 3 on Geopolitics and Natural Gas.

Progress report

The objectives, scope and deliverables for TF 3 were finalised with the publication of the IGU Triennial Work Programme for presentation at the 24th WGC in October 2009, and are summarised

on the IGU web page for the project, www.igu.org/committees-2009-2012/task-forces-tfs/task-force-2-1.

Significant efforts were initiated in mid-2009 to solicit sponsors for the work, and these efforts are still underway. We are pleased to report excellent progress on this front, with the following line up of sponsors as of press time:

- Royal Dutch Gas Association (KVGN), premium sponsor;
- Chevron, WGC strategic panel sponsor;
- Gazprom Export, general sponsor;
- Eni S.p.A., general sponsor; and
- CPC Corporation, Taiwan, partial regional roundtable sponsor.

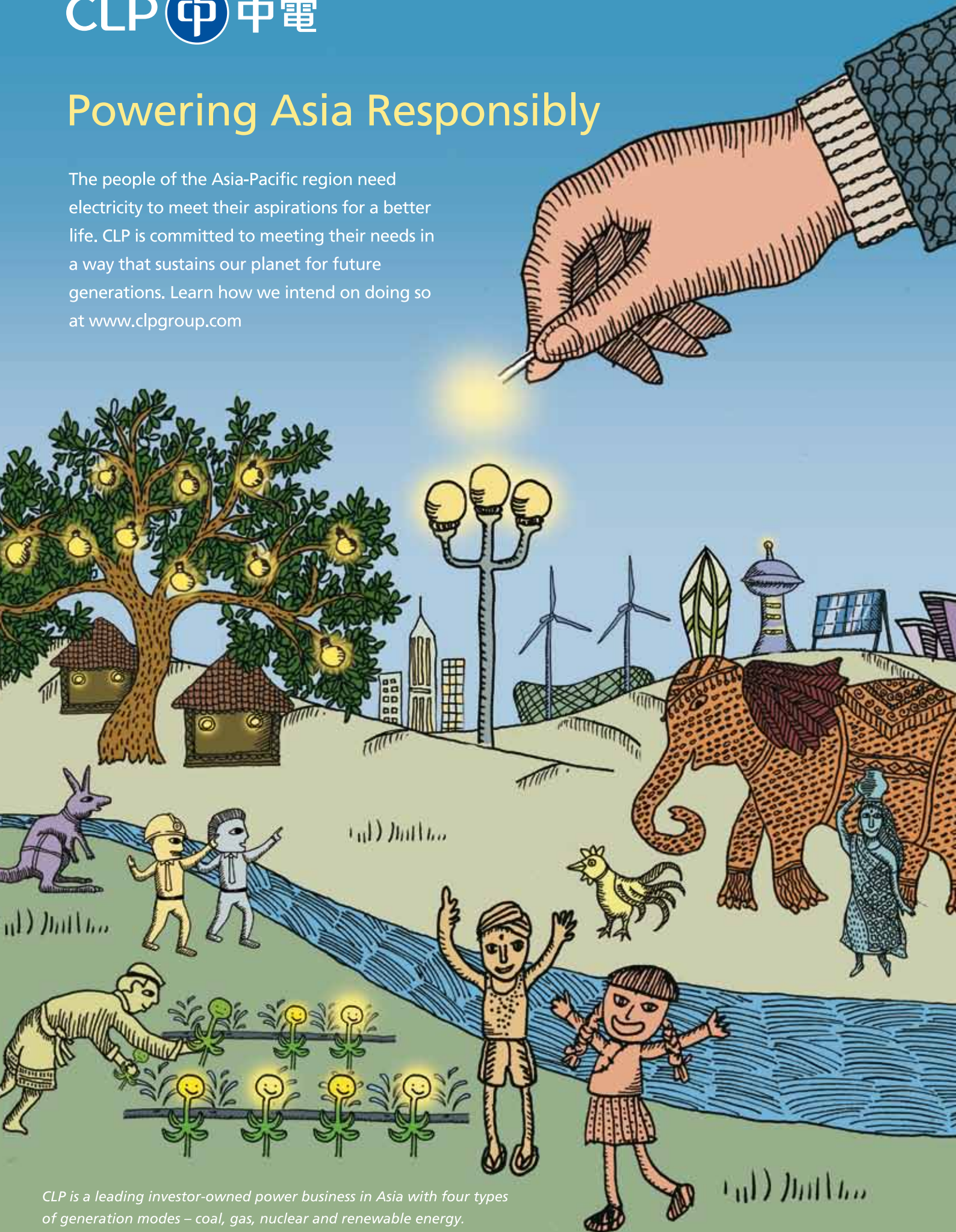
We would like to formally thank those organisations that have committed to provide financial support for the work of the Task Force. In addition to those listed above, an agreement is currently being developed with one other interested organisation, and discussions are underway with other parties as well.

Shortly after the 24th WGC, an Advisory Committee of IGU Wise Persons was recruited to provide support throughout the project term.

During the same timeframe, Clingendael International Energy Programme (CIEP) was engaged

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The first formal meeting of TF 3 took place in May in Toronto, where members had the opportunity of meeting the Speaker of the Provincial Legislature during a tour.

to provide an independent and objective perspective in developing the formal report on Geopolitics and Natural Gas. A meeting was held in January, in The Netherlands, to finalise working arrangements with CIEP. Following this meeting an initial report planning workshop with CIEP and a number of world energy industry experts was hosted by Royal Dutch Shell plc, at their headquarters in The Hague, to test potential themes and the format of the report.

Recruitment of Task Force members began in June 2009. Interest from IGU members has been high, with over 50 nominations or personal expressions of interest received by the end of 2009. The nature of the work being undertaken, and the fact that the actual report will be developed by a consultant, however, led to a conclusion that the number of parties invited to join the Task Force would best be limited to a small group with representation from the key regional areas, economic sectors and sponsors. Initial

invitations to participate have been accepted by 17 members. We expect that membership will continue to evolve in the near future.

The first formal meeting of TF 3 took place on May 13 and 14, in Toronto, Canada, and was attended by eight members as well as guests from CIEP, IGU and the Canadian gas industry. One key agenda item addressed was a review of an initial draft of the report that has been developed by CIEP. Robust discussion of the contents led to significant input for CIEP to consider incorporating in the draft.

Task Force members are expected to provide additional input on the report contents and the Advisory Committee will be asked to review the contents in the near future.

In addition, the Task Force discussed initial plans for three to four Regional Roundtables on Geopolitics and Natural Gas. The intent of the roundtable sessions is to provide a forum for industry experts and regional policymakers to initiate a dialogue about local geopolitical issues. Information from these sessions will provide additional information for separate regional reports and the final report, as well as provide additional background for the WGC panel discussion on geopolitics.

The roundtable sessions, at which attendance will be by invitation only, are being planned as follows:

- Asia-Pacific region, location Taiwan, late 2010;
- Middle East region, location Egypt, early 2011;
- Europe-Russia region, location The Netherlands, late 2011; and
- South America region (tentative), early 2012.

TF 3 has been split into sub groups that will each provide required support for a regional roundtable session. Task Force members have agreed that roundtable planning can be best accomplished via email exchanges and telephone conferences.

The next formal meeting of TF 3 is expected to be held in early 2011.



The UK has always been a pioneer in the energy sector. The eighteenth and nineteenth centuries saw the birth of the industrial revolution powered by water and coal. In the twentieth century we developed new technologies to access the oil and gas reserves of the harsh environment of the North Sea. The twenty first century sees the UK as a world leader in wave and tidal power systems and other low carbon technologies.

Today the UK energy sector has an enviable reputation around the world founded on five key principles:

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We are not rigid in our thinking and are considered flexible and open to ideas. The solutions we offer are diverse. Solutions right across the energy mix, solutions that are truly cross-border.

Sustainability

We have a keen eye to the future and are looking for sustainable energy solutions not just for the UK but also worldwide. Whether it is the more sensible use of existing energy sources or the development of new technologies, our focus is on long-term sustainable change, not short-term gain.

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Perhaps our most valuable and unique resource is our workforce who underpin our excellence in energy. Their exceptional skills and abilities are founded on a firm foundation of first class education and training. The breadth of our energy expertise means that we are trusted worldwide.

To find out more on partnering with UK Energy visit UK Trade & Investment (UKTI) at www.ukti.gov.uk or call **+44 (0)20 7215 8000**.

UK Trade & Investment is the government organisation that helps UK based companies succeed in the global economy and assists overseas companies to bring their high quality investment to the UK.



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Innovations to bring natural gas to markets

The world needs more energy, by 2050 many estimate that double the amount of energy used today will be required. At the same time, concerns about climate change and the impact of fossil fuels are growing. More energy is needed, but with significantly lower greenhouse gas emissions, both in energy production and in use.

Natural gas is the cleanest burning fossil fuel; widely used in industry and to warm homes and offices. It produces around 50% less CO₂ than coal when used in modern design

power plants to produce electricity. This makes it a fuel of choice to help meet climate change targets.

However, the days of easy oil and gas are numbered. To bring more gas to more markets, we will need to access more technically demanding resources in increasingly challenging environments and remote locations. Shell has a long and successful track record as a leader in energy technology development and innovation.

Shell technology is used to produce liquefied natural gas (LNG) on Sakhalin island in the North East of Russia. This island is known for its large seasonal temperature differences, which posed a real challenge to the production of LNG. Shell developed liquefaction technology which flexibly works across this temperature range, resulting in better efficiency and fuel consumption in Russia's first LNG plant.

Unconventional gas has become a major gas supply source in North America. The innovative combination of hydraulic fracturing with horizontal drilling was a key enabler. Shell engineers in North America successfully focused on applying this technology and improving well performance at lower cost. This now allows Shell to also pursue such unconventional gas projects in China, Australia and around the world.

Shell developed floating liquefaction technology (FLNG) to enable the development of offshore gas



Artist's impression of Shell's FLNG design

resources that would otherwise be considered too remote or too costly to develop. FLNG offers greater flexibility and economic access to new natural gas resources. It builds on Shell's strengths in bringing gas to markets and its experience in offshore operations, shipping, floating production, storage and off-loading facilities (FPSOs) and the execution of large integrated projects. Shell expects to install the world's first FLNG facility on its Prelude field in NW Australia.

Natural gas can also be turned into cleaner burning diesel, kerosene and other products, such as base oils for top-tier lubricants. Shell has a long history in this field through its proprietary gas-to-liquids (GTL) technology at the heart of the world's first commercial GTL plant in Bintulu, Malaysia, since 1993. Based on the success of this plant, Shell is now constructing the world's largest GTL plant, Pearl GTL, in Qatar. When ready, this plant will produce 140,000 barrels per day of GTL products, and an associated 120,000 barrels of oil equivalent per day of natural gas liquids.

Shell has long been at the forefront of innovations and breakthroughs in the gas industry and there is more to come. Shell is committed to bringing more natural gas, the fossil fuel of choice to more markets around the world.



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