Reports from the Committees

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

● Working Committee 1 – Exploration and Production

The activity of WOC 1 in the 2006-2009 Triennium is focused on the development of the upstream gas sector. Studies cover the gas reserves of mature areas, arctic potential and natural gas in deep waters, and the options for remote natural gas and oil-associated gas reserves. WOC 1 is also investigating unconventional gas sources (methane hydrates and coal-bed methane) and difficult gas reservoirs (tight, deep [more than 4,500 metres], shallow [less than 500 metres], high pressure/high temperature and those containing sour gas).

Besides the gathering and analysis of information, the Committee is also identifying the potential for further development in these areas around the world, which are expected to become increasingly significant for the global gas resource base. Moreover, WOC 1 is providing input from the upstream sector to the 2030 Natural Gas Industry Outlook study and the project on CO_2 mitigation.

WOC 1 has 50 members from 23 countries and there have been no changes in membership structure since the last report.

The fifth meeting of the Triennium was held in conjunction with the meetings of PGC A and PGC D and was hosted by the Malaysian Gas Association in Kuching, Malaysia, September 16-18, 2008. A total of 13 delegates attended the meeting, which concentrated on the work to be done within the Study Groups. It should be pointed out that the members unable to join the meeting also contribute significantly to the activity of the Committee.

The first day of the meeting was dedicated to presentations from the Study Group leaders on progress in the preparation of their reports for the 24th WGC. Both of them are on schedule and have made considerable progress.

SG 1.1 Remaining conventional world gas resources and technological challenges for their development
Leader: Dominique Copin, Total (France)
The Study Group has four items on its work agenda and had a fruitful discussion concerning them.

WOC 1's fifth meeting of the Triennium was held in conjunction with the meetings of PGC A and PGC D in Kuching. ABOVE A group picture of the delegates. OPPOSITE WOC 1 in session.

For mature areas the previously collected database was enlarged by presentations dedicated to Argentina, Brazil, Malaysia and Indonesia. What remains to be done is to review reserves data and production trends.

For deep offshore fields considerable work has been carried out and the major material for the Gulf of Mexico, Australia, Brazil, Indonesia and Malaysia has been collected. However, some work has to be done again for water depths of more than 300 metres.

As regards Arctic areas, the major part of data (mostly for Russia and Norway) has been collected but we still need minor input from the group members for Alaska and Canada.

In respect of the issue of gas monetisation we are entering the final straight.

SG 1.2 Difficult reservoirs and unconventional natural gas resources
Leader: Kamel Eddine Chikhi, Sonatrach (Algeria)

A wide scope of work has been done during the Triennium by Study Group members who have built a large database of references for unconventional and difficult gas resources covering areas including technology, statistics, economy, environment and development strategies, mainly available from public sources. Significant input was received recently in the form of a case study for a section on gas hydrates.

A proposal to create a Task Force for the next Triennium to consider the issue of a uniform classification of unconventional gas reserves was raised during the Study Group's discussions.

The second day of the meeting was mostly dedicated to preparation for the 24th WGC. In the course of discussion an action plan and schedule regarding the Call for Papers were elaborated. The Chairman of WOC 1, Vladimir Yakushev, pointed out that the final versions of the Study Group reports should be ready by mid-March and outlined the selection criteria for papers. Abstracts will be sent out to all Committee members to give

them an opportunity to rate papers on a special form. The Chairman will have the final say prior to April 15, while the deadline for full paper submission will be July 15. The Chairman also gave an overview of WOC 1's contributions to the 24th WGC and presented the chairmen of the Committee Sessions and Expert Fora.

Overall it can be stated that WOC 1 is on schedule to meet the objectives set for the forthcoming WGC.

Other business

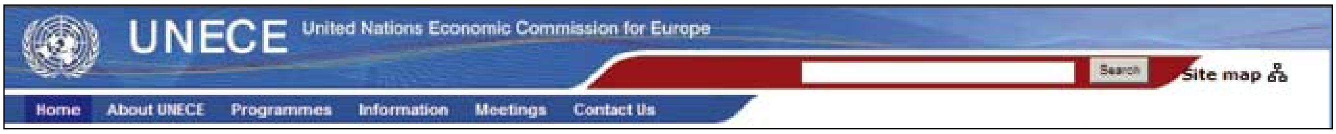
WOC 1's input to the 2030 Natural Gas Industry Outlook study was reviewed and additional questions received from the Steering Committee were considered.

As regards the CO_2 mitigation project, WOC 1's involvement in the Steering Committee and the preparation of the report were reviewed. The preliminary version of the report was presented and some input of WOC 1 to a section on exploration and production was discussed.

As a part of this WOC 1 meeting there was a technical tour hosted by Petronas to the Malaysia LNG plant in Bintulu.

Next meeting

At presstime WOC 1's next meeting was due to take place in Vienna, Austria, March 10-12.



WOC 2 has started cooperation with UNECE and Bloomberg.

Working Committee 2 – Underground Gas Storage

WOC 2 has 61 members from 25 countries. Its work in the current Triennium is focused on gathering new information to update the underground gas storage (UGS) database, to map and analyse the development of UGS technology, to track trends and to provide information about intelligent UGS. Indeed, we know that the future of UGS belongs to the application of the latest IT technology to increase the flexibility and efficiency of storage operations.

The fifth meeting of the Triennium was timed to coincide with the IGU Gas Research Conference (IGRC) and took place in Paris, France, October 6-7, 2008. It was attended by 25 members. As usual a workshop was organised in addition to the main meeting and the topic this time was "Numerical Applications for UGS – from E&P to Dispatcher". Many interesting contributions were presented by our members and we are very proud that we also brought in experts from consulting companies and universities. The contributions can be accessed via WOC 2's section of the IGU website.

The Committee has three Study Groups:

SG 2.1 UGS database
Leader: Joachim Wallbrecht, BEB GmbH (Germany)
SG 2.2 UGS technology improvements
Leader: Hélène Giouse, GDF SUEZ
SG 2.3 Intelligent UGS
Leader: Georg Zangl, Schlumberger Information Solutions, Austria

The Study Groups met separately and then their leaders reported in the main part of the meeting on the status and progress of their work.

During the meeting many other topics were discussed. As our members work together with experts from other Committees on the CO_2 mitigation project, Jacques Grappe spoke about the WOC 2 contribution to this. WOC 2 is also involved in the 2030 Natural Gas Industry Outlook study. The latest progress on this study and requests for support from WOC 2 members were presented.

WOC 2 has started cooperating with the UN Economic Commission for Europe (UNECE) and we hope this cooperation will benefit both IGU and UNECE.

The Bloomberg agency has asked the IGU Secretariat for approval to use the UGS database provided by WOC 2 and a cooperation agreement has been signed. This is a good example of cooperation between IGU and the commercial sector.

There was broad discussion of WOC 2's contribution to the 24th WGC in terms of the format, the Committee Sessions and Expert Fora, and a sub-committee for judging papers was set up. The deadlines for submitting papers were presented as well as the conditions which must be fulfilled for abstracts to be accepted.

After the meeting delegates attended IGRC 2008 and highly appreciated the opportunity to learn about the latest technology and recent R&D work in the gas industry.

Next meeting

The last meeting in this Triennium will be hosted by our Russian colleagues from Gazprom and will be held in Saint Petersburg in May.

● Working Committee 3 – Transmission

WOC 3 held a very successful and well-attended fifth meeting of the current Triennium in Graz, Austria, September 9-11, 2008. Energie Steiermark AG provided an attractive and effective setting for the event, which enjoyed an attendance of 42 people from 22 countries. As usual, prior to the main WOC 3 session the three Study Groups had held their meetings in parallel.

Beside the progress report of the three Study Groups, the preparation of the paper selection progress, the definition of the paper selection criteria and the preparation of the Committee Sessions and Expert Fora for the 24th WGC were the main points on the agenda of this WOC 3 meeting.

As regards the 24th WGC, on behalf of WOC 3 there will be three Committee Sessions and two Expert Fora, which will deal with the following subjects:

Committee Sessions

- News from Pipeline Transmission Systems: Sweeping Blows from Regulation Effects over Environmental Impacts, to New Monitoring Technologies and Challenging New Pipeline Projects.
- Screening for Challenging New Off- and On-shore Pipeline Projects – Security of Supply in the Field of a Growing Worldwide Gas Pipeline Network and Energy Hungry Markets.
- Review of New Technologies in Pipeline Monitoring.

Expert Fora

- Impact of Regulation on Gas Transmission, Safety and Security of Supply.

The striking Kunsthaus (art gallery) in Graz, where WOC 3's fifth meeting was hosted by Energie Steiermark.

- Contribution of Gas Transmission to Climate Protection and Sustainable Development.

In addition, there will be interesting posters about themes relating to WOC 3's work.

SG 3.1 Impact of regulation on gas transmission, safety and security of supply
Leader: Marinus Kornalijnslijper, The Netherlands
The regulation that may affect the safety and security of supply is supposed to be cost of service regulation. Nevertheless, rate of return regulation in conjunction with cost of service regulation forms a package and thus both modes of regulation have to be taken into account. Therefore both the Study Group report and the study done by an independent consultant shall identify if and to what extent cost of service regulation may have a negative impact on the safety and security of supply. The independent consultant will review the report and present the results at the 24th WGC in order to increase the acceptance of those results for readers outside the gas industry such as regulators and governmental entities. The Study Group report and the scope of work for the consultants are defined and will be finished well in time for the Conference.

SG 3.2 Review of new technologies in pipeline and construction monitoring
Leader: Jorge Bonetto, Argentina
The objective of SG 3.2 is to develop a consensus on the technical needs and challenges for future R&D and to support the exchange of information among gas industry experts. The idea is to define a framework to manage this objective by means of the following steps:

- Identification of the general problems affecting the gas transmission industry in different geographical areas. Most significant problems are either corrosion or third party action related.
- Evaluation of new tools and methodologies available in gas transmission to manage existing problems. Altogether four applicable techniques have been identified and examined.
- Developing contributions on specific issues. A "framework" providing guidelines to evaluate proposals for presentation at the 24th WGC has been developed.

With this background, SG 3.2 will select suitable papers for the presentations at the 24th WGC and finish its report, covering the main findings of this Triennium.

SG 3.3 Contribution of gas transmission to climate protection and sustainable development
Leader: Sigve Apeland, Norway
To identify the environmental impact factors, SG 3.3 distributed a questionnaire among WOC 3 members and evaluated the responses. In the remaining time of the Triennium the Study Group will identify best practices to minimise the environmental impacts of the chosen factors and summarise the results in its report.

Next meeting

WOC 3 is fully on schedule to meet the objectives set for this Triennium. The sixth and last meeting before the 24th WGC will be held in Langkawi, Malaysia, April 28-30.

Working Committee 4 – Distribution

The fifth meeting of WOC 4 was hosted by the Czech Gas Association at the Dorint Don Giovanni Hotel in Prague, October 5-8, 2008. Some 60 members and partners enjoyed a well-structured and enjoyable conference programme. The Czech Gas Association provided insights into the management of gas lighting in central Prague and the development of a CNG-fuelled vehicle fleet. Moreover, the gas museum in the RWE offices in Prague is highly recommended for anyone interested in the gas industry. Our thanks go to our hosts Oldřich Petržilka, Miloš Kebrdle, Petr Štefl and Šárka Hladíková.

The gas distribution industry's effects on the health and welfare of the general public are

WOC 4 members meet Mozart in Prague.

confirmed as the greatest driver of performance requirements. A reliable supply of gas to industrial, commercial and domestic users brings benefits to the economy and living standards in countries where such supplies are available. These benefits must be balanced against environmental and safety risks that arise if distribution integrity is allowed to decline through insufficient funding or weak regulatory control.

WOC 4's work to prepare reports for the 24th WGC is reaching its conclusion, and each Study Group has completed its draft report for peer review. The Study Groups continue to benefit from the web-based questionnaire, which has generated a valuable database of international practices and metrics relating to WOC 4's three study areas:

SG 4.1 Asset management
Leader: Andreas Hennig, Germany
SG 4.2 Leakage reduction
Leader: Steve Vick, UK
SG 4.3 Precautions to reduce third party damage
Leader: Kevin, Knapp, USA

As customer expectations for environmental protection and public safety increase, gas network operators need to provide evidence that their systems are well managed. Good asset management systems can objectively monitor and compare network performance and provide demonstration that the benefits being delivered are not outweighed by safety risks or long-term damage to the environment. The SG 4.1 report on the current state of the art of asset management in

Delegates to the Prague meeting also had the opportunity to try out a CNG-fuelled Fiat.

gas distribution will provide an informative assessment of good practices around the world and indicate where network operators can seek advice for the development of their own asset management systems and decision support tools.

The reduction of leakage from gas distribution systems forms a key part of many operators' response to both the economic and environmental pressures bearing on the industry today. The SG 4.2 report will examine the proactive measures companies have adopted to manage leakage through surveying and pressure control systems. Significant reductions in leakage can also arise from the replacement of ageing metallic systems with new pipe materials such as polyethylene (PE), polyvinyl chloride (PVC) and nylon. While leakage reductions may not, by themselves, justify the costs of replacement, improvements in public safety can tip the financial and regulatory balance in higher risk areas.

As modern materials are adopted, the challenge to locate buried pipes increases. The SG 4.3 report will describe the practices adopted around the world that provide the greatest reductions in the risk of pipe damage by third parties. While it is not practicable to send an industry representative to oversee every excavation, the raising of public and construction industry awareness to the risks from buried plant appears to be a worthwhile investment in areas where pipe damage is frequent.

Next meeting

At presstime WOC 4's next meeting was due to be hosted by the Gas Association of Bosnia and Herzegovina in Sarajevo, March 10-13.

WOC 5's fifth meeting in Groningen was the best attended of the Triennium. ABOVE Delegates on a technical visit to a biogas plant operated by Essent and OPPOSITE one of the city's CNG-fuelled buses.

● Working Committee 5 – Utilisation

More than 50 people participated in WOC 5's last meeting, the largest attendance so far during this Triennium. It was held in Groningen, The Netherlands, September 8-9, 2008.

The Committee has 104 members with 32 countries participating through full membership and a further four through corresponding membership. It is organised into three Study Groups. The work of WOC 5 seeks to describe the situation in the different sectors of gas utilisation, to identify trends, tendencies, technologies and practices, and to evaluate and propose actions for further market development. We are going to issue a report in three parts covering: 1. Industry, 2. Domestic and commercial, and 3. Transport.

These reports will be presented in three Committee Sessions during the 24th WGC, corresponding to the work of the three Study Groups. In addition, we will have two Expert Fora. The structure of the sessions is now almost finalised and most speakers have been identified. We have organised and structured the sessions to take into account the global market changes that are seen today with a decrease of gas sales in many countries. WOC 5 is aiming to produce answers to the following questions:

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

Technologies and utilisation for the future are key points of WOC 5's work. The SG 5.2 session will have a strong focus on gas heat pumps and we will organise an Expert Forum on micro CHP. The SG 5.3 session is dedicated to transport, a sector with a strong potential for increased gas utilisation. Renewable energy is of interest for all sectors of utilisation and the second Expert Forum will be dedicated to this topic. We will also cover overall and horizontal issues like energy saving (especially in the industry) and gas quality.

SG 5.1 Industrial utilisation
Chairman: Guy Verkest, Belgium
Vice Chairman: Tatsuo Kume, Japan
SG 5.1 is finalising a report that will include the following points:

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

The North European integrated energy company

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

Growth in Northern Europe

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

E&P activities

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

New LNG terminal

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

Leading in offshore wind

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

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

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

- Impact of new technologies.
- Recommendations.

The session at the 24th WGC will reflect the main topics of the report and will be supported by oral and poster presentations.

SG 5.2 Domestic and commercial utilisation
Chairman: Martin Wilmsmann, Germany
Vice Chairman: Erik van Engelen, The Netherlands
SG 5.2 is finalising a report that will include the following points:

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

The session at the 24th WGC will cover the topics above with a strong focus on heat pumps (as micro CHP and renewables will be addressed in the Expert Fora).

SG 5.3 Natural gas vehicles
Chairman: Davor Matic, Croatia
Vice Chairman: Eugene Pronin, Russia
SG 5.3 is finalising a report. The main material is already available, but a few activities have still to be carried out to complete the work:

- Finalisation of the scenarios for NGV market development.
- Checking collected questionnaires for consistency.
- Addition of new questionnaires from Austria and Poland.
- Collection of real life experiences from fleet operators already using NGVs (natural gas and bio-methane: buses, garbage trucks, taxi fleets, off-road applications [airport machinery], locomotives, ships and ferries, etc). Some of the cases have already been collected.

Plans for the session and presentations at the 24th WGC have been coordinated with IANGV in order to avoid overlaps. SG 5.3 will prepare mainly joint presentations on the best practices and state of the art of technology and breakthrough technologies.

Expert Forum on Renewables

Chaired by Aksel Hauge Pedersen, Denmark, the objective of the forum is to demonstrate that natural gas is an obvious partner for renewables. The forum will include a presentation on the state of the art for natural gas and renewables by Nuno Afonso Moreira, Portugal, and will be followed by a presentation of case studies on:

- Bio-methane and transportation;
- Renewables and natural gas in Japan;
- Renewables and natural gas in Spain;
- Renewables and natural gas in Germany.

To conclude, a panel will debate the topic of this forum, focusing mainly on:

- The transportation sector – combined use of natural gas and bio-methane, hydrogen etc;
- Renewable gas (bio-methane, hydrogen technology) in the natural gas system;
- Utilisation of renewables as a substitute for natural gas – biomass gasification.

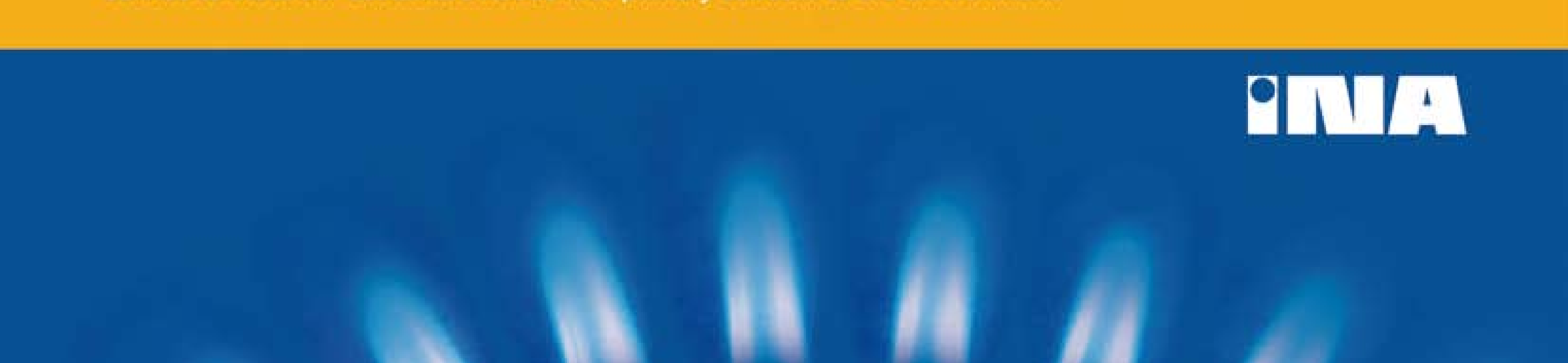
Expert Forum on Micro CHP

Micro CHP offers an opportunity for natural gas to maintain its presence for domestic use. Moreover, micro CHP may be an ideal bridge between natural gas and renewables. Chaired by Jean Schweitzer, Denmark, the objective of this forum is to present the technology's state of the art, and to establish recommendations for the gas industry. The forum session will include oral and poster presentations on:

- Technology state of the art;

Commercial Sector

Is part of Naftaplin – Exploration and Production Division integrated in oil and energy company INA.
Main functions of Commercial Sector are acquisition of natural gas, both import and domestic, as well as wholesale of natural gas to the customers round Croatian Gas Market.
Our Goal is to sustain our position as a leader in the Croatian Gas Market, also to broaden our activities and become a considerable player in the region.
Our Mission is to promote the use of natural gas as one of the cleanest energy sources and provide top quality service to meet our customers needs with primary concern to the environment.



- Gas industry activity;
- Challenges and conditions for success.

  A roundtable will conclude the forum.

Next meeting

The sixth and last meeting of WOC 5 before the 24th WGC will be hosted by GDF SUEZ in Lille, France, April 20-22.

● Programme Committee A – Sustainable Development

PGC A held its fifth meeting of the Triennium in Kuching, Malaysia, September 16-18, 2008. It was hosted by the Malaysian Gas Association simultaneously with the meetings of WOC 1 and PGC D, and the venue was the Kuching Hilton Hotel. On September 19 the group had a technical visit to the Malaysia LNG liquefaction plant in Bintulu.

Study Groups

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

PGC A reviewed the draft report prepared by SG A.1 based on the responses received from the questionnaires sent out. Additionally, the Committee discussed the revision of IGU's Guiding Principles on Sustainable Development, and agreed to set up an editorial committee that will examine the proposals received and prepare a draft to be discussed at the sixth meeting in Madrid.

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

SG A.2 is collaborating with the CO_2 mitigation project and members are currently discussing how to present their case studies.

SG A.3 Post-Kyoto concept

Two very interesting presentations on this subject were offered to the members by Dr Klaus-Robert Kabelitz and Hyo-Sun Kim, respectively. They will form the basis of a joint presentation on the Post-Kyoto concept for discussion in Madrid.

PGC A delegates to the Kuching meeting pose for a group photo.

Contribution of the natural gas industry to CO_2 mitigation

Gro Amundsen presented the progress report on the CO_2 project *The Contribution of the Natural Gas Industry to CO_2 Mitigation*, elaborated by Olav Kaarstad, to the members.

The draft report has been designed in order to facilitate its reading, with a colloquial language and with special stress on the examples.

The Steering Committee subsequently met on October 30 in Oslo to discuss the preparation of a pre-editorial version of the document.

Technical Programme of the 24th WGC

A revision of the preliminary Technical Programme, to be presented to the Coordination Committee, was carried out by the members.

The report *The Contribution of the Natural Gas Industry to CO_2 Mitigation* will be presented in a Strategic Panel and it is important that the time allocated does not conflict with related presentations.

The next PGC A meeting will deal with the papers (abstracts) selection. This selection procedure must be completed before July 15.

Miscellaneous

PGC A agreed the answers to the questionnaire from the R&D Task Force and to the question from the 2030 Outlook Study Group.

Next meeting

The sixth and last meeting of PGC A before the 24th WGC will be held in Madrid, Spain, April 1-3.

● Programme Committee B – Strategy, Economics and Regulation

PGC B's last plenary meeting was hosted by the Japan Gas Association, Osaka Gas and Tokyo Gas in Kyoto, September 17-19, 2008. The main objectives were to:

- Give a last opportunity to discuss drafts in every Study Group;
- Review participation in the 24th WGC;
- Provide new input for the 2030 Natural Gas Industry Outlook study;
- Recommend topics to maintain or to launch in the next Triennium.

In addition, and as intended at every plenary, the meeting was used to get acquainted with the local gas market, in this case through lively presentations from Japanese industry leaders.

PGC B delegates at their last plenary meeting in Kyoto.

Status of the work

SG B.1 Supply and Demand to 2030

- Around 75% of the work is already completed.
- A first full draft is ready.
- The draft report will be fine tuned in March/April.
- A new supply and demand scenario, using an oil price of $100 per barrel, has been developed to consider the impact of high oil prices on gas demand.
- An estimation of global CO_2 emissions is being prepared based on a new matrix for primary energy demand.

SG B.2 Gas price formations and trends

- The final structure of the report has been agreed.
- The price volatility issue is still under review.
- The extensiveness of the different price models is being updated.
- A last and refined draft report is expected for April.

SG B.3 Regulation and future industry structure

- A draft report is ready and is structured in three parts:

  1 An overview of regulatory trends world-wide, focusing on six priority topics, to set the context for discussion and policy recommendations;

  2 Harmonised business practices and natural gas regulations – descriptions of different harmonisation models in operation;

  3 Impact of regulatory models on the different parts of the gas industry chain.
- Additional work is still necessary to incorporate missing information from specific regions and update data for parts one and two.
- Information concerning the latest European regulatory developments will be incorporated.
- A new draft report was made available at the beginning of 2009 incorporating final comments from delegates.

24th WGC

Regarding the WGC Technical Programme, all Study Groups still need further discussions on the speakers for each Committee Session. For the Expert Fora the following issues have been agreed to be dealt with in two separate sessions:

- Development of energy costs from 2010 to 2030.
- Price elasticity of gas demand.
- Sustainability of multiple systems in an increasingly integrated market.
- The future rationale of linking gas prices to oil prices in long-term contracts.
- The gas industry: commercial challenges and strategies.
- Security of supply: regulation, economics and market.

● Programme Committee C – Developing Gas Markets

PGC C held its fifth meeting of the Triennium in Milan, Italy, September 8-10, 2008. The event, hosted by the Gas & Power Division of Eni S.p.A., brought together members from a diverse number of countries – including Argentina, Austria, Brazil, Croatia, Italy, Malaysia, Poland, the Russian Federation and Serbia.

The meeting constituted a key milestone in the Committee's work programme for the Triennium. Building upon the progress and discussions from previous meetings, Study Groups were by now in the position to draft their respective final reports. In this regard, all three Study Groups reported progress.

Discussions on work progress invariably drew attention once again to the importance of geopolitical factors in shaping future outcomes in each region. Another recurrent theme was the need for a common understanding to exist between countries in order for a sustainable inter-governmental cooperative framework for market integration to be established. In all, the lively exchanges served to reinforce the Committee's conviction that these

The Atlantic LNG plant in Trinidad, the venue for PGC C's March meeting.

were important issues that ought to be highlighted.

Members also deliberated at length on how to reprioritise research efforts for the remainder of the Triennium, especially in terms of suitably framing policy suggestions and recommendations in terms of security and reliability of gas supply, market integration, sustainable development, and promotion of rational and responsible use of natural gas, so as to strengthen effective communication during the forthcoming 24th WGC. In this respect, and in moving forward, members were encouraged to be guided explicitly in their thoughts by what "headline" messages they felt ought to be highlighted.

Members were also treated to two enlightening presentations – one, on the current status of the Nabucco pipeline project; and the other, on the causes and consequences of energy nationalism in South America. The latter presentation provided members with much food for thought. It highlighted that whereas many organisations had been projecting increases in the region's indigenous gas production, this was in contrast to the recent experience of declining production, a development that is often attributed to the onset of energy nationalism in the region. Given the rapid growth in natural gas demand, this state of affairs can only add further stresses to the region's demand/supply balances and serves to underscore the urgency with which the region's key energy stakeholders need to forge a way forward to build a sustainable future.

Next meeting

At presstime the next PGC C meeting was due to be hosted by the National Gas Company of Trinidad and Tobago in Port of Spain, March 3-5.

● Programme Committee D – LNG

PGC D and its three Study Groups held their last meetings in Kuching, Malaysia, September 16-18, 2008. They were hosted by the Malaysian Gas Association thanks to the great efforts of Putri

Following their series of meeting in Kuching, PGC D delegates were given a technical tour of the Malaysia LNG plant at Bintulu.

Mohd Kassim, and were followed by a technical tour of the LNG liquefaction plant at Bintulu on September 19. Thirty PGC D members including the Chairman, Secretary, Vice Chairman and the leaders and secretaries of the Study Groups were in attendance. Three Study Group meetings were held on September 17 and PGC D's plenary meeting was held on September 18, reflecting the discussions during those Study Group meetings.

In the plenary meeting we had two special guests from the Coordination Committee, Vice Chairman Ho Sook Wah and Andrés Kidd, the CC Secretary. Andrés Kidd gave a presentation on the Best Practices project, reminding the audience about the procedure, objective and expectations, particularly from PGC D where this issue is very relevant.

Delegates were also updated on progress on the PGC D report "The Worldwide LNG Industry at the end of 2008" and the Committee's contribution to the 2030 Natural Gas Industry Outlook study.

SG D.1 LNG quality and interchangeability

A very constructive meeting of SG D.1 was held in Kuching. The meeting was well attended with delegates from Asia, Europe, the Middle East and US representing both LNG producers and consumers. The aim of the meeting was to review the first revision of the group draft report which had been issued prior to the meeting. The report covers the following areas of study:

- Gas and LNG specifications;
- Impurity levels;
- Analysis/measurement;
- Rollover;
- Quality adjustment at export/import terminals;
- LNG impact on gas turbines;
- LNG impact on consumer appliances.

Good drafts of all these sections were received and each topic leader gave a presentation on their section in the meeting. A lot of feedback was given and a number of actions were taken during the

meeting to further improve the drafts. Overall SG D.1 is very positive about progress.

SG D.2 LNG contract clauses for a more flexible global LNG market

The basic structure of the SG D.2 report was drafted at the second meeting in Barcelona, Spain, in April 2007. Many presentations have been made and active discussions held in the past meetings to arrive at a "win-win" solution for LNG contracts for both sellers and buyers.

Areas discussed in Kuching covered the following topics:

- Price formulae and mechanisms;
- Contract duration and extension – terms and conditions;
- Volume flexibility;
- Destination clauses – diversion;
- Guarantee on take-or-pay and destination clauses;
- How to cope with seasonal demand;
- A liquid, flexible LNG market.

All members are going to submit their final contributions to the report by the end of March. The deadline for the report's submission is July 15.

SG D.3 Creative solutions for new LNG facilities

SG D.3's first meeting of the Triennium identified a range of creative technical solutions for new LNG facilities and subsequent meetings have discussed these. Creative solutions throughout the value chain have been presented, analysed and discussed. The structure of the report agreed upon in the first meeting has been applied:

- A short description of the creative technology, status of what is known in the public domain or within an organisation;
- How does the technology connect to the issues?
- Gap analysis;
- How can we close the gap?

The intention has been to gauge whether creativity is still needed in those areas or whether no significant gaps are present, thus allowing the Study Group to focus on the areas necessary and to continue its work as much as possible in clusters for more concrete in-depth results, even though its topic is very broad.

During the Kuching meeting all the topics were clustered into several groups and benchmarked against existing technologies. This allowed for some interesting high level insights and some bold statements on the evolving creative technology.

Presentations given so far include:

- Floating storage and regasification units (FSRU);
- LNG floating production, storage and offloading vessels (FPSO);
- High capacity tug boats;
- Small/mini-scale LNG;
- Carbon capture and storage
- Shuttle regasification vessels, floating LNG storage;
- LNG offshore transfer systems;
- Regasification technologies, on/offshore;
- Integrated facilities;
- Onshore liquefaction;
- Small-scale LNG;
- LNG storage onshore;
- Shipping;
- Arctic LNG;
- LNG pipelines;
- Gravity-based structures (GBS) and platform-based LNG plants;
- Modularisation;
- Mid-sized LNG;
- Hybrid offshore LNG facilities.

SG D.3 is currently focusing on writing up its findings per clustered group of creative technologies and working towards a coherent and crisp story on the creative solutions for new LNG facilities in the future.

Next meeting

The fifth PGC D meeting will be held in Canada, May 19-21.

Progress Reports from the Task Forces

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

● Task Force Gas Market Integration

The fifth meeting of TF GMI was held in Tokyo, Japan, September 18, 2008. Chairman Jorge Doumanian presided and delegates attending were Ryo Fukushima (meeting host), Geert Greving, Calliope Webber and Maxim Potapov. Ryo Fukushima welcomed old members to Tokyo and to the host company Tokyo Gas and the Japan Gas Association. There was no new attendance.

The group reviewed work done on the milestone document for the Triennium in the first four meetings and the objective of the Tokyo meeting. To date the group has met the schedule agreed at the Lima CC meeting at the beginning of the Triennium.

It was confirmed that TF GMI will have time for a Strategic Panel and presentation of the final report at the 24th WGC.

The group reviewed the papers which the Task Force has committed to prepare:

TF GMI delegates at work during their fifth meeting in Tokyo.

- Iran-Pakistan-India
  - The paper was approved and it is published in this edition of the IGU Magazine (see pages 234-253).
- South America's Southern Cone
  - The paper was approved and it is published in this edition of the IGU Magazine (see pages 216-231).
- Asian LNG
  - The first draft was presented and it was agreed that the final document would be finished for the 24th WGC.
- US, Canada and Mexico
  - The paper was approved and will be published for the 24th WGC.
- Russia Turns East
  - The paper was approved and will be published for the 24th WGC.
- Trans-ASEAN Gas Pipeline (TAGP) and its Impact on Gas Market Integration within the ASEAN Region
  - The final document will be finished for the 24th WGC.
- Nigeria–LNG
  - To be defined.
- Gulf Cooperation
  - To be defined.
- UK Market Integration Development "From non to fully integrated"
  - To be defined.

After updating on the status of the papers, discussion revolved around other documents such as the Gas Market Integration Report and the Guiding Principles for Gas Market Integration.

As regards the Gas Market Integration Report, discussion focused on documents such as the Mind Map (*see Figure 1*), the Primary Policy, Platform and Players (stakeholders), and the links of gas market integration. The study cases will also be part of the report.

The next meeting will be held in Amsterdam, The Netherlands, in the first quarter of 2009.

Task Force Research and Development

The fifth meeting of TF R&D was held in Toronto, Canada, September 4-5, 2008, and was attended by 15 members. This progress report covers that meeting and the IGU Research Conference which took place the following month in Paris, France (October 8-10).

Working Groups

WG 1: Prove the strategic values of R&D to a company and its stakeholders

Leader: H. Watanabe

Seven countries have already produced reports on R&D practices in their regional gas industries; specific efforts will be made to obtain reports from other countries. Task Force members are currently gathering case studies of past R&D successes which will contribute to proving the strategic value of R&D.

A questionnaire on R&D was sent to all the Technical Committees at the end of August 2008. It was based on the three priorities per sector in the gas chain as identified by the questionnaire of the previous R&D Task Force. Missing replies are being chased up.

WG 2: Significantly increase gas R&D investment

Leader: Marc Florette; and **WG 3:** Support and contribute to the success of IGRC 2008

Leader: Christian Beckervordersandforth

GAS MARKET INTEGRATION BUILDING BLOCKS

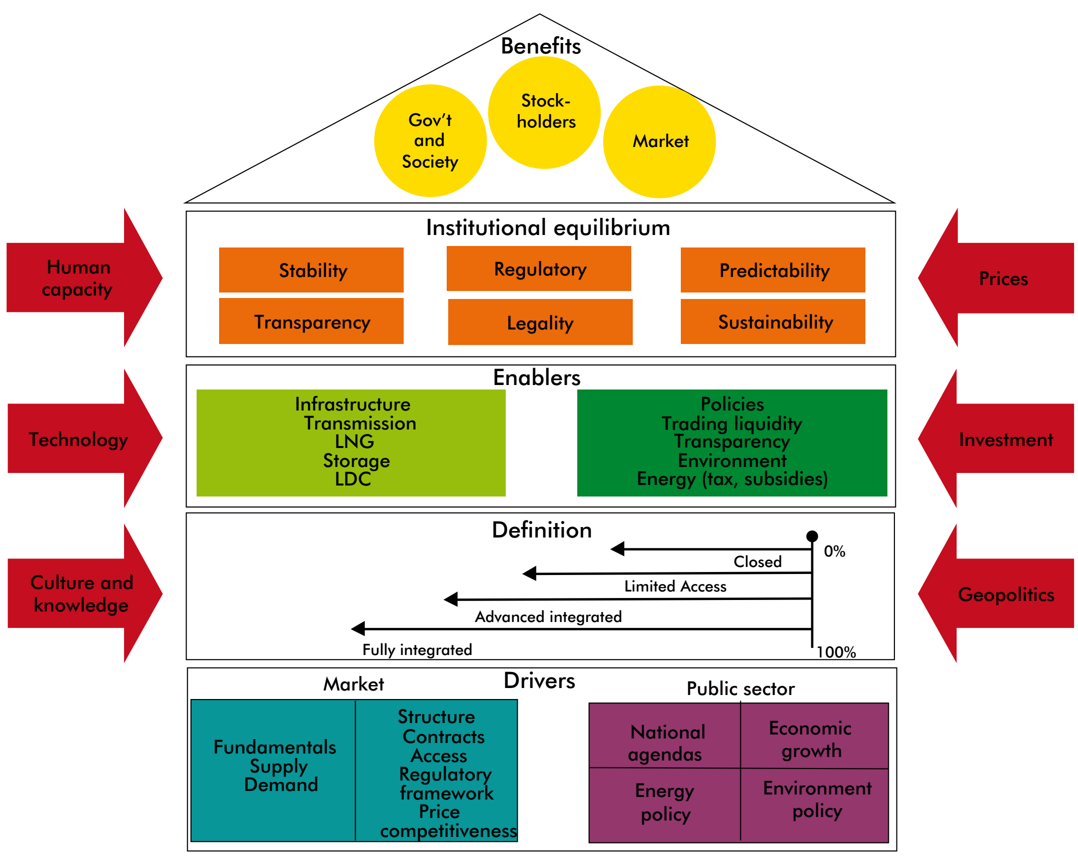


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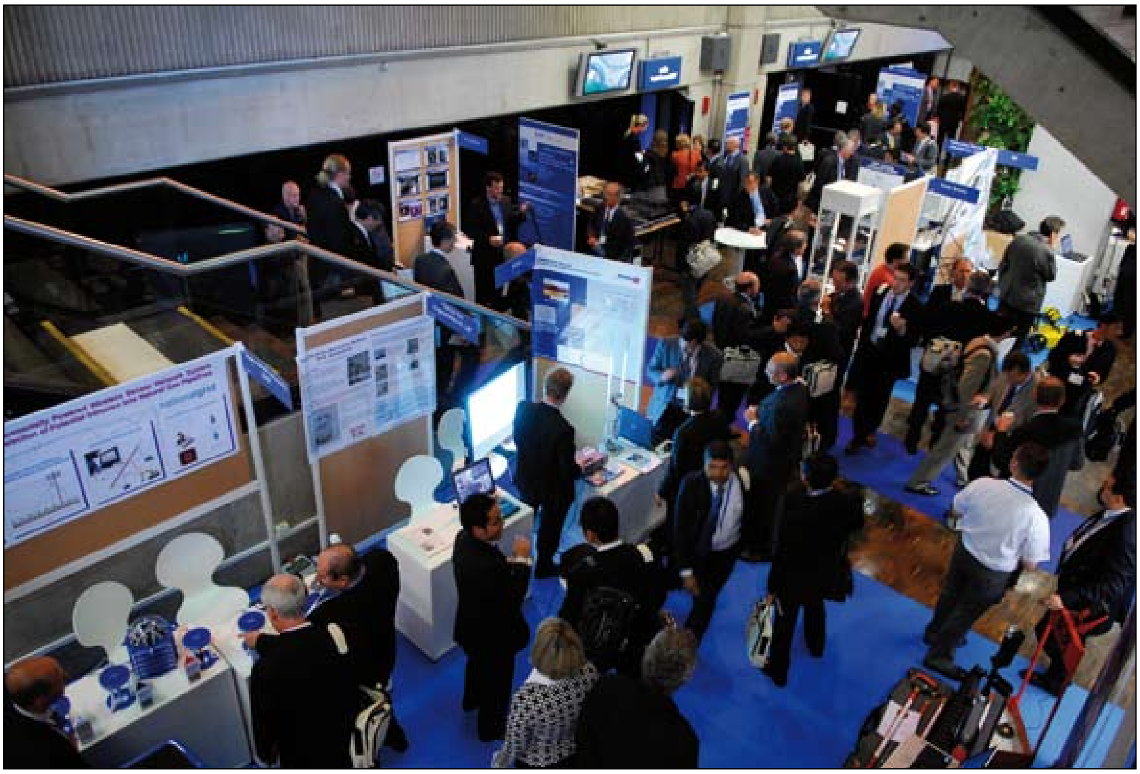
Figure 1.



ABOVE AND BELOW More than 800 people attended IGRC 2008, which was a great success.

TF R&D organised a CEOs' roundtable at the opening session of IGRC 2008 to learn about their R&D vision and policy. It was moderated by Bob Catell, Chairman of National Grid (US). Gérard Mestrallet, Chairman and CEO of GDF Suez (France), Bernhard Reutersberg, Chairman of the Management Board of E.ON Ruhrgas (Germany), Mark Dodson, CEO of Northwest Natural (US), and Tadaaki Maeda, Executive Vice President of Tokyo Gas (Japan), were the four panellists.

It was emphasised that within the gas industry there is a need for significant research into the use of natural gas. Its relatively clean properties make it the star candidate of carbon fuels in any climate change abatement strategy and advanced high-efficiency natural gas appliances, like micro CHP, or gas heat-pumps, can significantly reduce CO_2 emissions. Another issue is the significant amount of new investment needed to improve the infra-structure. Technology can help provide the most desirable features and approach while minimising the cost. However, in order to increase spending on R&D, a new regulatory structure must be created. In particular, regulators should agree that at least a significant part of R&D investment has to be

Seen from left to right at the CEOs' roundtable during IGRC 2008 are G. Mestrallet, T. Maeda, M. Dodson, B. Catell and B. Reutersberg.

recoverable in the tariffs. Finally, collaboration between academia, governments and the energy industry should be strengthened.

TF R&D also refined the IGRC exhibition of innovative developments. From 60 initial suggestions of innovations, 35 definite proposals and three back-ups were selected. Around half of them were related to network operations and a quarter to safety and the environment. A wide geographic spread was achieved.

Both initiatives proved to be a valuable addition to the conference. More than 800 people attended IGRC 2008, which was a great success. Task Force members made a major contribution to that success by writing key messages issued by the IGRC 2008 marketing team and mobilising their own business networks.

Final report and R&D Strategic Panel for 24th WGC

Delegates to the last meeting discussed TF R&D's contributions to the 24th WGC – its final report and a Strategic Panel – and decided to adopt an approach based on giving some key recommendations on R&D to the audience.

The report will summarise the key findings of the five deliverables: the regional reports, results from the new questionnaire, the case studies, the commitment and expectations of CEOs as regards R&D and a summary of activities.

The Strategic Panel will be introduced by a short presentation of the results of TF R&D's work. Five panellists from the gas industry, manufacturers and the regulatory authorities will discuss the role of research and technology.

Subsequent meetings

An additional meeting dedicated to the preparation of the final report and of the R&D Strategic Panel took place in Paris on February 6. The sixth TF R&D plenary meeting will take place in Munich, Germany, April 2-3.

A.Hak

A.Hak is a group of companies operating in the field of infrastructure. The companies are active in the following fields:

- Construction and maintenance of underground structure, including related above ground structures,
- testing, inspection and cleaning of pipelines and tanks up to complete petrochemical installations,
- internal and external coating of pipes for the oil, gas and water pipeline markets, including weight coating for the offshore pipelines,
- production of masts and related structures,
- fabrication of vessels and boilers, including installation and maintenance service.

One of these companies is:

A. Hak Industrial Services, providing industrial, pipeline and inspection services to (petro)chemical, refining and pipeline industries. The Dutch headquarters serves industrial areas in Benelux and UK and from Germany, France, Italy and Spain equipment and personnel is available for European customers. With bases in Brasil, USA, UAE, South Africa and 25 agents, A. Hak secured global presence for serving the industry world-wide.

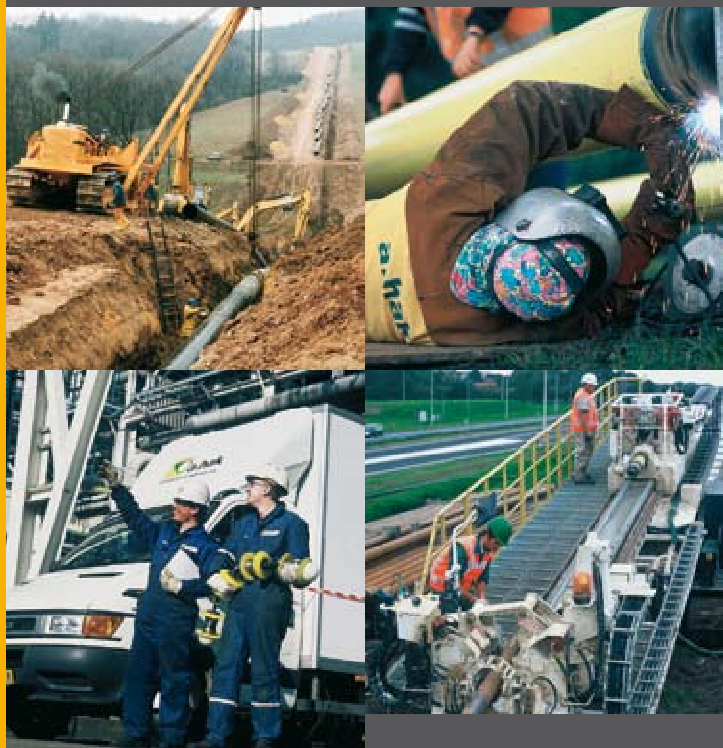
Industrial Services – range of nitrogen services, including reactor cooling, leak detection, system purging, furnace cleaning and chemical cleaning.

Pipeline Services – engineering & construction services, pre-, re-, & commissioning services, maintenance & operating services and decommissioning services.

Inspection Services – in-line inspection of non-piggable pipelines from assessments, pre-engineering, mechanical works/cleaning to gauging/caliper running, inspecting, reporting & consulting.

Internationally appreciated

The dedicated workforce of a.hak



- Full range of in-house services including Welding, NDE, Field Joint Coating, Testing and Commissioning
- Steel, Duplex, Stainless, HDPE, etc.
- As EPC or Installation Contractor
- From Dutch peat ground to the deserts in the Middle East
- Long distance pipelines for gas – oil – chemicals and water
- Multinational/multicultural pipeline specialists
- Updated in Quality, Health, Safety and Environment
- Professional and dedicated
- Crossing waterways, railways, roads and dunes
- Conventional, closed front end and horizontal directional drilling
- Outfalls and intakes
- 36 Inch bottom pull installation up to 20 km
- Connecting pipelines between shore and offshore loading/offloading facilities
- All main pipeline equipment is fully owned
- Well maintained up to the latest and highest standards
- Partly new-developed and always adapted to local requirements
- Inline inspection surveys
- Worldwide integrated services
- All Nitrogen related services

a.hak

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