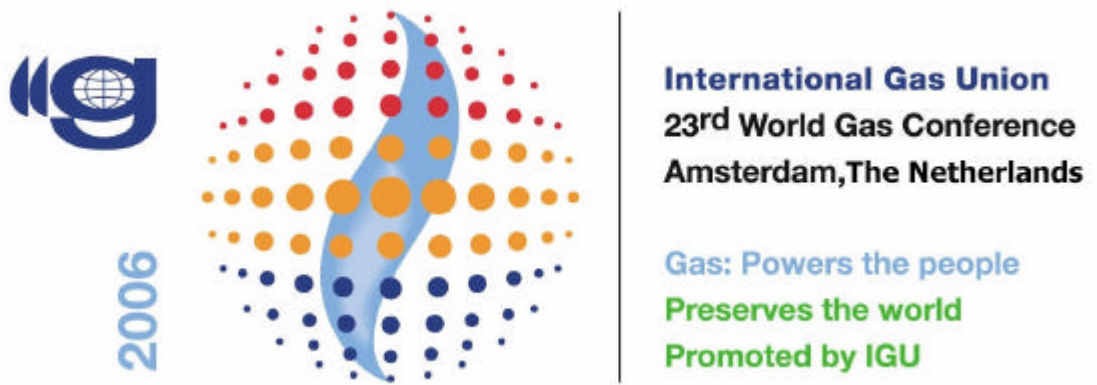


International Gas Union

Triennial Work Programme 2003 – 2006

(Final Draft 25/9/2003)

text subject to final approval By the Executive Committee
in Cape Town on 28 October 2003.



October 2003

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Foreword from the President of the IGU



George H. B. Verberg, IGU President

For this Triennium of the IGU we have conceived three Strategic Guidelines¹ This Triennial Work Programme (TWP), in which the Coordination Committee and the different Working and Programme Committees unfold their plans, reflects those guidelines.

I am convinced that in this new Triennium we will achieve the goals we have set for the IGU. During the Japanese Triennium, which ended with the World Gas Conference in Tokyo in 2003, preparations are being made to shape the IGU for a future as an authority on behalf of the gas

industry worldwide.

In this Triennium we will prepare for a further increase in the membership of our Union. With an industry in transition, marked at the same time by segmentation, fragmentation and integration, the interests of members may change and be different in places, but there are many common interests, notably a healthy growth of the gas business. There is a shared vision that gas has an important part to play in satisfying the global need for an environmentally friendly energy source in a global business climate that is facing major changes and significant challenges. It is expected that gas will double in volume in the coming 30 years. This will be mainly due to the increased use of gas for power generation. This makes it paramount that close consultation with electricity producers takes place.

In this environment the IGU will be one of the most influential, effective, and independent non-profit energy-organisations, while serving as the mouthpiece for the gas industry all over the world. The IGU should also work closely with other international energy organisations such as Intergas Marketing, the International Energy Agency, the World Energy Council, and the World Petroleum Congresses, to support the promotion of gas in the world and avoid unnecessary duplication of effort.

Re-structuring of the downstream business environments of gas and electricity is affecting the gas industry worldwide. A good understanding of the consequences of the different regulatory regimes in the world will enhance the quality of the dialogue of our members with the regulatory and/or governmental authorities in their respective regions of the world. This in turn should help to create a proper investment climate for the desired growth of the share of gas in the world's primary energy needs, while at the same time serving the interests of the consumer. This will also help to strengthen the awareness of the need for ongoing research (e.g. in safety, environmental and energy efficiency aspects).

To demonstrate to ourselves, our customers, and the regulators, that the gas industry is in good shape, the IGU should investigate the possibility of using benchmarking. The union should aim to strengthen its organisation, and to increase the value to its members as a forum for structured enhancement and exchange of knowledge and experience, and as a body for effective representation of the interests of its members in the above-mentioned fields.

The IGU will promote the industry's role as a responsible corporate citizen and play an active role as a non-governmental organisation, by taking part in the appropriate forums in order to promote gas for the benefit of the consumer and the environment, and to help to pave the way for growth. A real global marketplace for gas is still in the early stages of development. The IGU will therefore pay due attention to the development of the regional markets, and will strengthen its efforts to cooperate with regional gas associations. At the same time it is clear

¹ (Enclosed as Appendix)

that LNG has considerable growth prospects, thereby linking these regional markets to each other more and more.

I am confident that, as was done in the past, close cooperation between the members of the different committees will provide valuable contributions with respect to the strategic topics mentioned, for the IGU members and the energy industry as a whole. It is of utmost importance that the IGU greatly enhances the possibilities for direct involvement of the gas industry in the processes of shaping the future role and structure of the energy markets. This will help to establish the authority of the IGU as the mouthpiece of the world gas industry. At the same time the Presidency will act diligently with respect to internal IGU needs, in order to further improve its efficiency and effectiveness. In short:

Gas Powers the People, Preserves the world, Promoted by the IGU

FOREWORD FROM THE COORDINATION COMMITTEE CHAIRMAN



Bert Panman, IGU Coordination Committee Chairman

Goals

This Triennial Work Programme for the Triennium 2003 – 2006 has two main goals:

- To promote gas*
- To increase the added value of membership*

Strategic Guidelines

The Vision, Mission and Objectives of the IGU, together with the Strategic Guidelines, forms the basis for this Triennial Work Programme. Three Strategic Guidelines (see Appendix) are formulated, as follows:

IGU will promote:

- I Technology, Industry Efficiency and Customer Focus**
- II Gas as the fuel of choice preceding a sustainable energy system**
- III The Industry's Role as a Responsible Corporate Citizen.**

Committee Programmes

The Committee Management has formulated their programmes and study projects based on these guidelines, in close cooperation with the Coordination Committee. You will find the scope of the work of the committees described in this TWP. The scope includes marked attention to the possible use of benchmarking, which is viewed as a potentially valuable tool that needs further evaluation.

Task Forces

Two task forces have been established. A first task force on R&D, taking on the present challenges generated by the changes in the gas industry. The second task force, on ICT, will follow up the work of task force A in the Japanese Triennium.

Dutch Presidency Projects

On behalf of the Royal Dutch Gas Association (KVGN) and the Dutch gas industry, three special projects are initiated: one concerning Sustainable Development, one concerning Regulation, and one concerning the consultation of electricity producers in the light of the expected market growth.

Improvement of committees' performance

The different committees have over the years produced valuable information for the gas industry as a whole and will no doubt continue to do this. It is the task of the Coordination Committee to make sure that the quality of the information produced by the committees is maintained at the high level that makes the membership of IGU worthwhile.

There are several points that need attention to achieve this.

At first for some committees it became more and more difficult to get worldwide attendance at their committee meetings. This may have to do with the decreased interest in some of the subjects, but was also definitely caused by the increased awareness of travel costs and a lack of available time. The Coordination Committee will provide the committees with means of communication via the Internet that will allow close cooperation on study projects with less travel time. An optimal balance needs to be established between the necessary

maintenance (live meetings) of a very valuable network of professionals and the effort required to achieve the specific goals of the TWP. The second point that needs looking into is the vast amount of questionnaires that end up on the desk of the contact persons of the member countries. On some occasions they have complained about the amount of work involved in answering so many questionnaires.

The Coordination Committee will provide guidelines to streamline the process that forms the basis for the work of the committees. If we lose the cooperation of some of our members in providing the necessary information for a worldwide knowledge database, the IGU may not be able to maintain its crucial role in this respect.

We will provide the members with easy access to up-to-date information on the gas business and the work carried out by the committees in the context of the TWP. Expertise on Knowledge Management provided by Gasunie Research will be used to improve access to this information.

Cooperation with other organisations

One of the tasks of the IGU is to promote gas. Cooperation with other energy related organisations such as the World Energy Council (WEC), World Petroleum Congresses (WPC), Intergas Marketing, Eurogas, Energy Research Programmes of the EC, and the International Association for Natural Gas Vehicles (IANGV) is a good way to achieve this. In this Triennial Work Programme several examples of cooperative study subjects are listed and the results will become available in the course of this Triennium.

It is envisaged that, in conjunction with the large international oil and gas companies, the scenarios that resulted from the Japanese studies (Global Natural Gas Perspectives Nakicenovic et al and Natural Gas Supply to 2100 Adelman et al)) can be updated. The updated version will be presented in Amsterdam.

Gas history booth

In 2006 it will be the 75th anniversary of the IGU, and during the World Gas Conference in 2006 in Amsterdam a museum booth is envisaged at the exhibition showing the progress in the gas industry over the last 75 years. This should preferably be next to a booth where we can show the developments we envisage for the coming decennia. Gas museums from various parts of the world will be asked to contribute to this exhibition.

Conclusion

I am sure that this Triennium offers many interesting challenges and opportunities that need to be addressed by the IGU to continue its successful journey. The scope of the work of the Triennial Working Programme reflects these challenges and opportunities. The challenge to all of us involved in the work is to perform at a level that is consistent with the role of the IGU as the acknowledged global authority in the gas world.

FOREWORD FROM THE SECRETARY GENERAL OF IGU



Peter K. Storm

Secretary General of IGU

The International Gas Union (IGU) was founded in 1931. The IGU is an international, worldwide non-governmental and non-profit organisation registered in Switzerland and with the Secretariat located in Denmark.

The IGU has the vision that since natural gas has an important part to play in satisfying the global need for an environmentally-friendly energy source, the union will be the most influential, effective and independent organisation, serving as the mouthpiece for the gas industry world wide.

In other word, the IGU will, directly and through its members, promote the technical and economic progress of the global gas industry. The 65 current member countries around the world are listed below.

You will also find the IGU Organisation Chart on page eight.

The Council is the main ruling body, in which one Charter Member from each country is represented.

The Executive Committee, The Presidency, the IGU Management Team and the Secretary General govern the IGU in accordance with the directives from the Council and within the vision, mission and objectives of the union.

The work in the Working Committees and the Programme Committees, as described in this Triennial Work Programme (TWP) for 2003-2006, is managed and coordinated by the Coordination Committee (CC)

Thus, the Management and the members of the IGU Committees refer to the Coordination Committee, which in turn will inform and coordinate with the Management Team via the Secretary General and the IGU secretariat, on matters of principle, of general policy or of special importance to the union.

The result of the work in the IGU committees in the coming three years will be passed on to members as it is developed, and in some cases published, in accordance with the IGU publication policy.

However, it is also an important task for the CC and the IGU Committees to prepare the programme for the World Gas Conferences, which IGU convenes every three years. The next - 23rd - World Gas Conference will take place in Amsterdam, the Netherlands, in June 2006.

The IGU is also promoting Gas by joining a number of relevant UN organisations, and by cooperating with a large number of regional and global energy organisations.

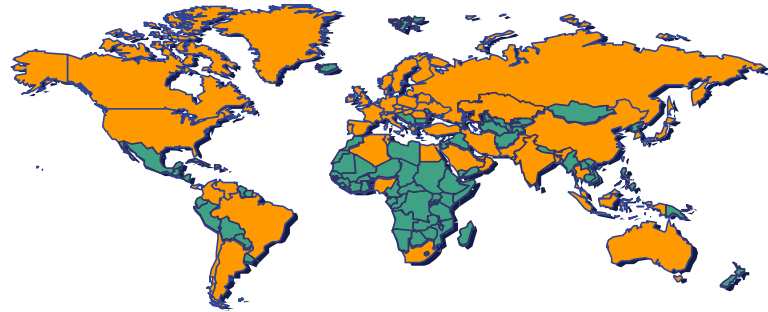
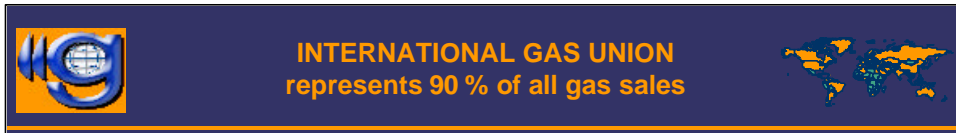
You can find much more about this in the following pages of this new TWP, the contents of which are one of the main instruments in the work of the IGU.

LIST OF MEMBER COUNTRIES

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

LIST OF ASSOCIATE MEMBERS

Tractabel s.a. (Belgium)	IGDAS Istanbul Distribution Co (Turkey)
Naturgas Fy a/s (Denmark)	BP Gas, Power & Renewables (UK)
Total Fina Elf S.A. (France)	Shell Int. Gas Ltd (UK)
Ruhrgas A.G. (Germany)	Chevron Texaco Overseas Petroleum (USA)
n.v. NUON (The Netherlands)	Petrobras (Argentina)

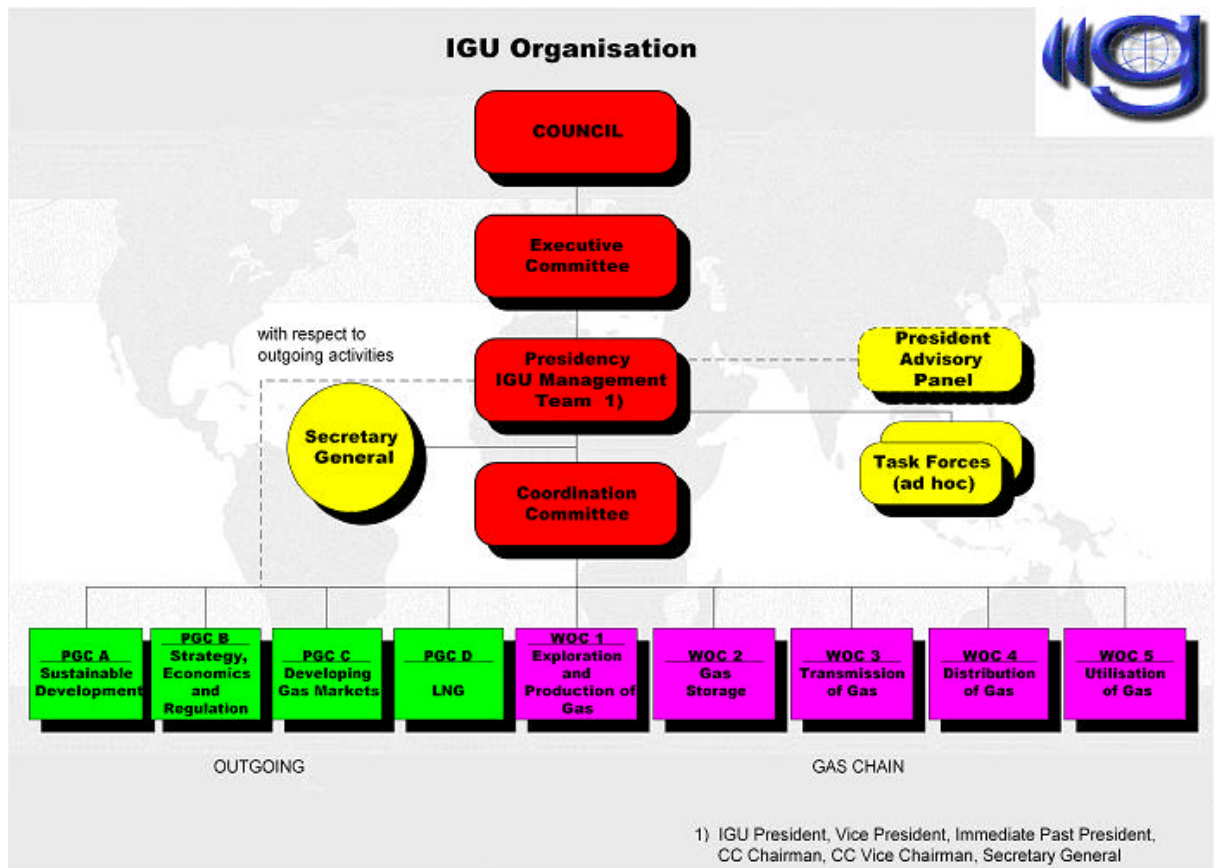


■ Members
■ Non Members

Tuesday,

International Gas Union

IGU ORGANISATION



WHAT IS THE IGU TRIENNIAL WORK PROGRAMME?

1) TWP targets and structure: a balance between strategic and policy objectives

The mission of IGU is, among other things, to promote the technical and economic progress of the gas industry.

It is the task of the Working and Programme Committees to support the mission and vision of IGU. Their fields of work, compiled in this TWP, are defined in such a way that, taken together with the special projects and taskforces, they cover all the current work of IGU. This is done by establishing a network of professionals in their fields of interest, and by providing a platform for the members where they have easy access to a knowledge database of the relevant fields. This database includes not only technical and economical information, such as good and best practices, but will also include news items and a 'who is who', to facilitate the communication between members with respect to the Working Committees' and Programme Committees' relevant subjects. The Working Committees and Programme Committees should achieve this by collecting the relevant information on their fields of interest and providing their findings to the members, with respect to possibilities of progress. Furthermore, it is envisaged that the information will be made available on the Internet and kept up-to-date. The Working Committees and Programme Committees focus their work on topics formulated in the Triennial Work Programme according to the Strategic Guidelines.

It should be recognized that the committees will cover not only the technical aspects of their field of work, but also the economical and financial aspects, and by doing so will implement a balanced approach in the IGU work between business aspects and technology transfer.

2) Working/Programme Committee Structure for 2003 – 2006

The structure of the Working Committees and Programme Committees is different from the last Triennium of the IGU. Task force B in the Triennium 2000 – 2003 proposed several changes to the structure of the committees. The IGU Council adopted these changes in September 2002, which means that there are now two different kinds of committees. On one hand there are the five committees that, as before, are dedicated to the gas chain and cover the whole chain from exploration and production, storage, transport, and distribution to the utilization of gas. On the other hand there are four Programme Committees, which are more dedicated to IGU's image in the world outside the gas industry. These committees are committed to Sustainable Development, Strategy, Economics and Regulation, Gas in Developing Markets, and LNG. Within the committees, study groups may be formed to carry out the work. The committees will supervise the work from the study groups working on the topics approved by the Executive Committee and presented to them in this Triennial Work Programme.

Besides the regular work of the committees there are projects foreseen that will focus on special topics. The deliverables of these special projects are seminars, workshops, and special conferences, or other forms of dissemination during the Triennium, and the presentation of reports at the WGC in Amsterdam in June 2006.

Membership of IGU Committees

All IGU members (Charter and Associate) are encouraged to nominate members to the individual committees (WOCs and Programme Committees).

These individuals should be willing and able to participate directly and actively in the committee meetings, which normally take place twice a year.

Committee members unable to participate directly in the meetings may wish to be considered as corresponding members and will participate in the work through electronic means.

All committee members are registered by the IGU and CC Secretariats.

Scope of the work

IGU Committees are primarily meant to create member services on an ongoing basis, by gathering and treating information from the relevant part of the gas chain.

In addition, the Programme Committees A-D also have the following tasks:

- The preparation of outgoing activities of the IGU to international conferences and workshops (such as issues concerning climate change, sustainable development and technology cooperation and transfer)
- The liaison and coordination with other international organisations within their respective areas.

The specific fields of work per committee are described in the pages of this TWP related to the committees.

The information produced is made accessible to IGU members via the IGU web site, among other means. Information of special importance and general interest may be published in accordance with the IGU Publication policy. Each committee is accountable for the deliverables and services to be produced.

Organisation

It is the responsibility of the Working Committee and the Programme Committee to support the purpose of the IGU by carrying out the tasks assigned to them by the Executive Committee. The organisation of the WOCs is laid down in the Articles of Association of the IGU.

The Council determines the IGU vision and mission. The Executive Committee approves the Strategic Guidelines, the Triennial Work Programme, the field of work of the individual Working and Programme Committees, and appoints the Chairmen and Vice-Chairmen of the Working and Programme Committees and informs the Council about this. The chairmen and vice-chairmen of the Working and Programme Committees were appointed approximately nine months before the Triennium for a non-renewable period of three years, lasting from the World Gas Conference in Tokyo to the WGC in Amsterdam. The overall responsibility for the committees lies with the Coordination Committee (CC) of which committee chairmen are members.

The Secretary General and other IGU officers may attend the meetings. In practice the Secretary General, for instance, tries to visit each committee at least once during the Triennium.

The vice-chairmen are eligible to become chairmen at the start of the new Triennium.

The secretariat of the committee is entrusted to the member that is the chairman of that committee.

The Management Team appoints representatives for each committee after nominations by members. Following the general procedures for the committees, a chairman may decide to set a limit to the number of representatives actively participating in the meetings, in order to maintain an efficient and active committee.

The committees may ask the Chairman of the Coordination Committee for approval to organize symposia, seminars and workshops on topics of special interest.

The Chairman of the Coordination Committee may appoint coordinators for study groups that are in charge of the specific topics selected for study during the Triennium.

Deliverables

- a) Maintain a network of professionals and a platform with easy access to a knowledge database.
- b) Produce a contribution to the World Gas Conference on specific topics to be determined by the CC in the form of one or more reports and/or presentations.
Organize symposia, seminars and workshops if asked for.
Specific information necessary for the CC and the National Organising Committee of the next World Gas Conference.
All the information produced will be made accessible to IGU members on the IGU website.
Information of special importance and general interest may be published in accordance with the IGU publication policy.
- c) Maintain a database including technical and economical information, such as:
- Good and best practices
 - Benchmarking and milestone exercises
 - Case stories and special reports
 - Statistical information.

3) Procedure for Conceiving the New TWP

In August 2002, the Strategic Guidelines were published on the IGU website. In September 2002 they were presented to the Executive Committee and Council meetings. The Strategic Guidelines were tabled for approval at the Executive Committee meeting in April 2003 in Tatranska Lomnica. Guidelines for preparing the 2003-2006 TWP were sent to all Working Committee chairmen by the incoming TCC Chairman. Proposed study topics were discussed and evaluated at the special CC meeting by incoming Committee chairmen and vice-chairmen on 14th January 2003 in Amsterdam, the Netherlands.

Great care was taken to ensure that the IGU mission, vision and objectives, as well as the Strategic Guidelines for 2003-2006 are reflected in the study topics. The results of the discussions in the Netherlands were subsequently put into the draft TWP, which was prepared for and put before the Executive Committee in April, which then authorized candidate topics for Study Groups. With the approval of the IGU Executive Committee, the TWP was made available for information to the Council before it's meeting in Tokyo in June 2003. Throughout the conception and development of the draft TWP, we sought to foster close cooperation and free discussion between all participants. Finally the Executive Committee meeting in October in Cape Town approved the TWP 2003 – 2006.

Key stages of the procedure for drafting the 2003-2006 Triennial Work Programme (TWP)

Date	Procedure
18 September 2002	<ul style="list-style-type: none"> • Presentation of the Strategic Guidelines for the 2003-2006 Triennium to the Executive Committee and Council meetings • Presentation of the planning for preparing the 2003-2006 TWP.
1 November 2002	<ul style="list-style-type: none"> • Mailing of letters to chairmen of Working Committees from TCC Chairman asking for ideas for study topics.
1 November 2002	<ul style="list-style-type: none"> • Request to the Member Associations for their TWP theme proposals
1 November 2002	<ul style="list-style-type: none"> • Distribution of the guidelines for preparing the TWP to the Working Committee chairmen and vice-chairmen
1 January 2003	<ul style="list-style-type: none"> • Submission of the TWP proposals (study topics) by Working Committees and IGU members
14 January 2003	<ul style="list-style-type: none"> • Meeting of the incoming Committee chairmen in the Netherlands to discuss the TWP proposals
9-10 April 2003	<ul style="list-style-type: none"> • Presentation and discussion of the TWP procedure at the TCC meeting in Bratislava • Presentation of the draft TWP at the Executive Committee meeting in Tatranska Lomnica
10 April 2003	<ul style="list-style-type: none"> • Executive Committee approval, in TL Slovakia, of the Strategic Guidelines for the 2003-2006 Triennium • Executive Committee provisional approval of the Draft TWP.
mid-May 2003	<ul style="list-style-type: none"> • Circulation of the draft TWP to the Council Members
1 June 2003	<ul style="list-style-type: none"> • Draft TWP presentation to the Council
5 June 2003	<ul style="list-style-type: none"> • Presentation and discussion of the TWP at WGC in Tokyo
28 October 2003	<ul style="list-style-type: none"> • Executive Committee final approval of the Triennial Work Programme

IGU COORDINATION COMMITTEE MEMBERS

1. Mr. Bert Panman
Chairman
2. Mr. Roberto Brandt
Vice-Chairman
3. Mr. Rob Aptroot
Secretary
4. Dr. Colin D. Lyle
Working Committee 1 Chairman
5. Dr. Sergei A. Khan
Working Committee 2 Chairman
6. Mr. Juan A. Diez de Ulzurrun
Working Committee 3 Chairman
7. Mr. Peter A. Cistaro
Working Committee 4 Chairman
8. Mr. Marc Florette
Working Committee 5 Chairman
9. Mr. Daniël Arias
Programme Committee A Chairman
10. Dr. Klaus R. Kabelitz
Programme Committee B Chairman
11. Mr. Camillo Michele Gloria
Programme Committee C Chairman
12. Dr. Chawki Mohamed Rahal
Programme Committee D Chairman

The Secretary General usually attends the Coordination Committee meetings and other IGU officers may also attend the meetings.

WORKING COMMITTEE 1: EXPLORATION AND PRODUCTION



Dr. Colin D. Lyle
Chairman of Working Committee 1
Director of European Policy
Centrica Energy Management Group
UK

WOC 1 has the very wide subject area of Exploration, Production and Processing of Gas. During 2003-2006 we will continue to develop some of the themes investigated in past triennia, but will take a new approach both in the organisation of activities and the way in which information will be gathered and presented.

Our work will be organised into two subgroups. The first will review the experiences that have been gained from the discovery and exploitation of the world's most significant gas fields: what is their current status and what lessons have been learnt and applied? The second subgroup will gather information on the new commercial horizons for exploration, production and treatment of gases. To qualify for inclusion in this review, the first commercial application must not have been before the year 2000.

Both study groups will need to draw not just on E&P operating company experience, but also the many support industries, from the wide range of upstream equipment manufacturers through to data analysts and software specialists. The first study group presents an opportunity for some of the operating companies to have a platform to explain their achievements and the challenges that they have overcome. The second study group provides a platform for innovative companies who have commercial applications for new upstream technology to bring forward their ideas for consideration.

Case studies will offer both an interesting and practical approach for the Working Group and for presentation to the wider industry. The two study groups will work closely with each other during the Triennium, with regular discussion in the full WOC as the investigations of the study groups move forward. It is expected that both a series of common themes and the development of new trends will emerge from the process of sharing and combining the findings.

If the Working Committee considers that an additional task force is required to report on the current basic E&P gas activities throughout the world, then a small group will also be formed to do this. Alternatively a synthesis of the work of the two study groups will be used to summarise the current hot topics and potential developments of most interest to IGU Members.

Topics for Study Group Activities

SG 1.1: The World's Most Significant Gas Fields

Study goals:

Overview of the exploration and development of the world's most significant gas reservoirs. [These will include the Super Giants but many smaller fields are very significant for other reasons - it will be up to the subgroup to decide on its criteria and its list].

Carry out case studies of several of the larger or otherwise more significant developments, describing the original project and how it has developed, and extracting the most important features or lessons for each type of reservoir or location.

From each case study, investigate, compare and contrast how changes have occurred through the life of the field, including reserve estimates, development plans, reservoir modelling, marketing of the gas, processing techniques, etc.

Identify the current challenges in each of these projects and suggest what the future might bring.

Expected results:

An overview of the world's most significant upstream gas developments.

Case studies of some of these developments.

The current status of the 'Gas Giants' and the implications for future world gas production.

SG 1.2: New Horizons for Exploration, Production and Treatment of Gas

Study goals:

Identify the most interesting developments in the exploration, production and treatment of gas that have begun to be applied commercially in the 21st century.

The new horizons should cover new geographical and geological areas of gas exploration and production, new technology that is being commercially applied to discover, exploit or treat gas reserves, new management approaches across the whole E&P gas business, and new political and commercial arrangements for licensing and for the sale of the production stream.

Extract key messages about the new trends that could develop in the coming decades for the upstream gas industry.

Expected results:

New geographical locations for E&P activity and new gas formations will be identified, and their potential examined.

A presentation of the most exciting new technologies and operational practices that could have a major impact on the world's future upstream gas activities.

Key messages about the possible trends in exploration, production and processing.

WORKING COMMITTEE 2: STORAGE



Dr. Sergei A. Khan
Chairman of Working Committee 2
Vice-Head of UGS Direction
GAZPROM
Russia

The task of Working Committee 2 is to provide information on the state-of-the-art and possible progress in the technology of underground storage. Underground storage plays an important role in the gas chain in balancing supply and demand. It could also play an important role in the future for CO₂ sequestration. Besides addressing aspects such as functionality and technology, it is clear that underground storage is an important cost factor in the gas chain and therefore deserves attention. Cost reduction in storage represents an essential point of competition.

In the European and North American markets, optimisation and cost reduction of operation and maintenance are the essential working areas. In South America, Asia and Africa, the exploration and construction will be the main areas of activity.

The UGS technology could play an important role in solutions for decreasing the emissions of greenhouse gasses. An up-to-date stocktaking of storage methods that are suitable for CO₂ sequestration is therefore paramount. The work of the committee will be divided over 3 groups:

Study group 2.1 "Basic UGS activities"

In this study group, general data on UGS systems worldwide will be collected and used to improve the existing database and to simultaneously try to harmonize UGS terminology. The newly designed IGU Collaboration Portal may prove to be an attractive and easily accessible place to systematically post the UGS sites worldwide.

The work will be carried out along the following lines:

- *Objectives*
 - Revise and update data on UGS.
 - Improve the database.
 - Review basic terminology.
- *Starting point*
 - The originally developed database. -- The glossary of ECE UN on UGS terminology.
- *Results*
 - Updated database on each UGS worldwide, with possible access via Internet.
 - Glossary of basic terminology (in the languages of different countries).

Study group 2.2 "Benchmarking of UGS"

In the Strategic Guidelines for this Triennium, benchmarking has been mentioned as an important tool to assess the quality of one's own operation as compared to others. This in turn will urge the companies to improve their own performance in a competitive world.

This study group will work along the following lines:

- *Objective*
 - Comprehensive benchmarking system for UGS performance worldwide.
- *Starting point*
 - Articles, although probably only a few, that result from a literature search will be used as a starting point.
- *Expected results*

- A list of best practices for optimal UGS systems will be described. These best practices will be useful for countries developing UGS, and for the performance improvement of existing UGS systems.
- A list with short descriptions of state-of-art technologies as well as specific cost estimates will be produced.

Study group 2.3 “Safety and environmental impact reduction of UGS construction and operation”

This study group will cover the potential impacts of UGS on the environment:

- safety
- air : pollution, noise, etc.
- surface : ground, water, etc.
- subsurface : influence on water in aquifers, gas leakages from storages, etc.

This survey will form the basis for an assessment of the potential reduction of the environmental impact of UGS, and will be studied along the following lines:

- *Objective*
 - Safety and environmental impact reduction of UGS.
- *Starting point*
 - A discussion at the Technology Forum during the World Gas Conference 2003 in Tokyo.
- *Expected results*
 - Overview of international standards, experience, best practices and trends.
 - IGU-supported best practices for safety and environmental impact reduction will be formulated.

It is the intention of WOC 2 to prepare different sessions for the **World Gas Conference 2006**, of which the possible subjects are listed below:

- **WOC sessions**
 - VIP/top people’s speeches about the process and problems of UGS development in their countries
 - Study group leaders presentations
- **Round Tables** with the participation of other organisations (ECE UN, IEA, CEDIGAZ, WEFA, CERA, AGA) and recognized experts on the following subjects:
 - Future demand on UGS
 - International services of UGS
 - TPA and UGS on deregulated gas markets
- **Technology Forum** with the focus on technology and economics :
 - Performance improvements
 - New, emerging, and promising technologies
 - CO₂ disposal / sequestration
 - Small (local) storage methods

WORKING COMMITTEE 3: TRANSMISSION



Mr. Juan A. Diez de Ulzurrun
Chairman Working Committee 3
General Director
Sociedad de Gas de Euskadi
Spain

The aim of WORKING COMMITTEE 3 is to study and provide information on the status of technology , legislation and economics of pipeline transmission systems.

The development of gas pipelines and transmission infrastructure implies facing more demanding technical requirements:

- operating pipelines located in areas, initially uninhabited, where the dwellings density grows year after year;
- identifying corridors for new pipelines in countries where the room is more and more limited;
- up rating the existing pipelines for commercial reasons;
- connecting network of different countries;
- rehabilitating old pipelines or modifying them;

Consequently, gas companies must come up with new ways of facing the design and construction of transmission infrastructure, adapted to these long distances and geographical difficulties.

Furthermore, continuous improvement in pipeline integrity management is essential to ensure public confidence in the safety and reliability of the growing pipeline infrastructure. Thus, the gas network will positively increase its longevity and the operation of the pipelines will be improved.

New ways of increasing the service life of pipelines should be applied through a robust design and the continuous research of new materials with higher elastic limits and greater quality.

On the other hand, new problems are created by old pipelines. We should draw our attention to how gas companies can manage oldest pipelines and gas networks. New detection methods and better maintenance, seem to be the answer, and we look forward to performing an in depth research.

However, we must not forget that economic legislation and market aspects turn out to be more critical than technical considerations, when it comes down to making decisions. Also, respect for the environment has become a serious responsibility of gas companies, and even if it is vital to fulfil that responsibility, it can be a serious drawback when creating new infrastructures.

All these non-technical aspects take precedence over technical ones more and more, that's why we believe that they deserve our attention in the next triennium.

For example, third party access has become a common practise in a large number of countries. A study on how Third Party Access affects the transmission of gas will be performed by an ad hoc study group.

Nowadays, gas transmission companies need to cope with safety, environmental, economic and legislative aspects. For that reason, when creating new transmission infrastructures ever greater difficulties are found, and greater efforts must be performed to carry out new projects. For the reasons previously stated, it is important to analyse the current situation

The issues that are to be reviewed by the study groups of Working Committee 3 are explained in detail in the following paragraphs.

INCREASED SERVICE LIFE IN THE DESIGN, CONSTRUCTION OPERATION AND MAINTENANCE OF A GAS PIPELINE

The development of new gas pipelines is conditioned by the ever greater distance between the supply sourced, the gas reserves and the points of consumption, often with increased geographical difficulties (mountains, offshore pipes, etc...)

The quantities to be transported are also ever greater in areas where dwelling grows.

Those are some of the reasons that force us to improve the design of pipelines.

Service life of pipelines can be lengthened through robust design. On the other hand, materials have been developed with higher elastic limits and greater quality to satisfy these growing demands.

The construction systems have also been adapted to these long distances and geographical distances.

The existing transmission infrastructures have to assure to be fit for purpose during their service life; therefore, we must evaluate the real quality of their operating performance and also find out how gas companies can lengthen the service life of their pipelines, as well.

The following issues are for instance suggested because of their remarkable importance:

- 1) Pipelines service life is also threatened by stress corrosion cracking (SCC), a form of environment-assisted cracking, which is known to be one of the most important failure mechanisms for gas pipelines. The role of stress in the SCC of line pipe steel in near-neutral pH environments, as in other SCC systems, is complex. The mitigating methods and technologies used to detect SCC are to be reviewed.
- 2) Also problems related with coal tar and asphalt coatings in old pipelines have severe consequences in pipeline longevity. These old generation coatings provide low-level corrosion protection and are mechanically weak. They have a tendency for chemical breakdown due to alkaline environments generated by cathodic protection currents. Studying the problems derived from these kinds of coating will help improve the service life of the pipelines involved.
- 3) Fatigue effect can be analysed for the old pipelines and considered for the new projects.

GLOBAL REVIEW OF THIRD PARTY ACCESS AND NETWORK CODES

During the 2001–2003 period, SG. 4.1 has analysed the evolution of the process in different countries represented in Committee 3 by means of questionnaires.

The interesting results justify continuing analysing the process for another three years to have a greater perspective of its evolution.

ADDRESS INCREASING DIFFICULTIES TO CREATE INFRASTRUCTURE

Presently gas transmission companies must cope with several requirements in order to create new transmission infrastructure:

- Safety
- Environment
- Legislative issues
- Financing

A fast growth of transmission infrastructures is vital to satisfy the increasing gas demand; therefore, new paths to handle the design and construction of infrastructures are required.

RISK ASSESMENT OF TRANSMISSION PIPELINES THROUGH INCIDENT DATABASES

The main objective of this Study Group is to set up a guideline for operators of high-pressure gas transmission pipelines. This guideline will give information about the differences between available pipeline incident databases and how obtain the best safety performance information needed for risk assessments of high-pressure gas transmission pipelines. Also recommendations shall be given on how to set up an adequate database in order to demonstrate the safety performances of pipeline systems and how to compare this performance with other databases

WORKING COMMITTEE 4: DISTRIBUTION



Mr. Peter A. Cistaro
Chairman of Working Committee 4
Vice President, Distribution
Public Service Electric & Gas Co
USA

Gas distribution companies are by far the most visible aspect of the entire gas chain to customers, the general public and regulatory authorities. So the performance, safety and security of the gas distribution system are critical to the overall success of the gas industry.

The primary role of WOC 4 will be to support the promotion of technology, industry efficiency and customer focus. The success in achieving this objective also serves as a driving force towards achieving the other strategic objectives of promoting gas as the fuel of choice, and ensuring the industry's role as a responsible corporate citizen.

Gas distribution companies operate in an environment of increasing change in regulation, deregulation of the market, and globalisation and growth of the gas industry. The work of WOC 4 must consider these influencing factors when conducting studies and developing conclusions and recommendations. The concept of benchmarking operational performance data and finding leading practices to improve results will be key elements of the committee's work.

The committee will concentrate on the following areas:

- Gas Distribution Pipeline Integrity Management
- Implementation of Leading Practices for Construction, Maintenance and Operations of the Gas Distribution System
- Meeting the Research and Development requirements for Gas Distribution

STUDY GROUP 4.1 Gas Distribution Pipeline Integrity Management

The study will define the process and assess methodology for enhancing system safety through an integrated integrity management plan for gas distribution pipeline systems. Gas distribution companies must be able to prove the safety of their systems through the most technologically feasible, cost effective, least intrusive and most secure methods.

OBJECTIVES AND EXPECTED RESULTS

Evaluate and make recommendations in the following areas:

- Threats to pipeline safety
- Impact of deregulation
- Security concerns
- Condition-oriented maintenance of pipelines and operating devices
- Leak detection methods

- Decision process for the evaluation and prioritising of risks
- Decision process for the balancing of cost, reliability, and customer service
- Non-intrusive methodologies to measure and monitor pipeline integrity
- Gaps requiring standardization or research
- Evaluate the requirements necessary to promote and sustain customer and regulatory confidence in gas distribution systems

Study Group 4.2 Implementation of Leading Practices for Construction, Maintenance and Operations of the Gas Distribution System

The study will determine the process necessary for the evaluation and determination of leading practices used in the industry for the construction, maintenance and operating of the gas distribution system. These leading practices would be based on reviewing commonly defined metrics of operational performance.

In addition to identifying the leading practices, the process will incorporate suggestions for implementing the practices and tracking the results.

Determination of leading practices will help influence customers and regulators regarding the cost effectiveness of the gas distribution company.

Other committees could use this process to identify best or leading practices.

OBJECTIVES AND EXPECTED RESULTS

The study will provide:

- a framework for evaluating common operational data.
- a framework for implementing and tracking practices.
- the impact of practices used in deregulated areas.
- an analysis of differences between practices in mature networks compared to developing areas.
- a review of work management systems that foster improved performance.
- opportunities to reduce damage by external factors.
- A review of coordination activities for large city projects.

Study Group 4.3 Meeting the Research and Development Requirements for Gas Distribution

This is a study to evaluate how each of the IGU member countries approach R&D programs for gas distribution. Considering the nature of our facilities, and the ever-increasing need to improve cost effectiveness, the system safety and reliability of new technology is extremely important.

It is important to determine the various approaches, funding levels and collaborative efforts currently in place. Furthermore, it will be important to evaluate what impact liberalization and deregulation have had on the overall R&D approach.

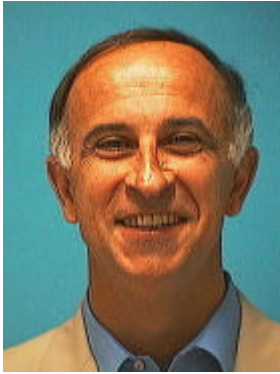
OBJECTIVES AND EXPECTED RESULTS

The study will provide a review of R&D activities associated with gas distribution including:

- the management process.
- the funding process.
- evaluation and prioritisation process.
- collaboration within countries across the industry and with other agencies/organisations.

- the role of government in the overall scheme.

WORKING COMMITTEE 5: UTILISATION



Marc Florette
Chairman Working Committee 5
Executive Vice-President and Director of R&D.
Gaz de France
France

According to the International Energy Agency, the demand for energy in Europe, the OCDE Zone, will increase annually in the next twenty years by around 1%. The share in the total primary energy of gas will increase from 23% today to 28% in 2020 due to its clean fuel properties, and in particular through its increasing use for the production of electricity. In parallel, the renewable energies' share will increase in the energy balance, in particular through the combined use of traditional fuels such as natural gas, and of biogas, biomass and hydrogen. There is consequently a strong interest in improving the utilisation of gas, through the optimisation of the efficiency of end-use devices and pollutant reduction (mainly CO₂ and NO_x emissions).

The WOC on Gas Utilisation will mainly focus on four items, which will be dealt with by four separate Study Groups:

1. Industrial Utilisation
2. Domestic and Commercial Utilisation
3. Natural Gas for Vehicles (NGV)
4. Distributed Energies: from CHP to micro-generation.

The committee will chair, review and coordinate the work of the four study groups. In order to be more efficient, it is strongly recommended that each WOC member be involved in one study group. One or two meetings per year will be organised, on the basis of a two day meeting: the first one dedicated to the work of the study groups, the second one dedicated to the Plenary Committee for sharing information on the study groups' work and organising the contributions to the World Gas Conference.

Study Group 5.1- Industrial Utilisations

End users are faced with new or very strong challenges regarding sustainable development: they have to combine higher energy efficiency to reduce CO₂ emissions and the primary energy resources consumption with less polluting processes to reduce the impact of the industrial activities on environment, better quality, flexibility and reliability of the production to reduce raw materials consumption, waste production, etc.

The Study Group on Industrial Utilisations will report on the improvements concerning:

- **New combustion technologies** like flameless combustion, which are able to provide a substantial contribution to energy savings (25 to 55 % in several industrial furnaces) in high temperature process furnaces and gasifiers, with a parallel reduction of NO_x emissions. The first applications of flameless techniques are in the metal industry, but in the short to medium term will also be in the glass or ceramic industries, in decentralized power generation and gas turbines, for a large variety of fuels: not only natural gas but also alternatives fuels such as biogas, biomass and waste derived fuels.

- **Gas turbines**, which still require improvements and development, in particular for the combustor. Moreover, catalytic combustion and flameless oxidation of lean fuel gases are potentially attractive. Connections with the Study Group on Distributed Energies will be recommended for this topic.
- **Use of hydrogen**, in a medium to long-term vision towards the zero emission goal. Apart from fuel cells, combustion of pure H₂ and of H₂-rich blends causes problems that require suitable investigations, because flame properties change significantly. The issues related to hydrogen are mainly confined to specific industrial furnaces and components like turbine combustors, but would progressively concern hydrogen production and CO₂ sequestration.
- **New devices for gas quality measurements**. The interoperability of networks implies a greater concern for gas quality in appliances.

Study Group 5.2- Domestic and Commercial Utilisation

Gas utilisation for the domestic and commercial markets represents about 10% of the total gross energy worldwide, and this share is growing. The development of the gas market is today one of the most effective solutions for saving energy and reducing the CO₂ emission.

The target of the group will, as a continuation of the work done in the previous triennium, be the study of the impact of new gas technologies in the domestic and commercial sectors:

- **Heating** is the largest energy consumer in the domestic and commercial sectors in most of the countries. Two major issues have been identified for future improvements: energy saving by optimising the installation of the boilers and solutions for achieving low installation costs. Some other points should be worked out further: furnace technology, and integrating safety functions in the boiler technology.
- **Air conditioning**. Current boiler technology is not always adapted to compete with cheap electricity heat pumps. It is therefore useful to assess the ability of gas heat pumps to challenge the electric technology.
- **Combination of gas with renewable energies**. The probable rise in energy costs and the incentives to use renewable energies will make these combinations more attractive.
- **Indoor Air Quality (IAQ)** will be an increasingly important issue. It is a challenge to the gas industry to improve IAQ in order to keep gas cooking in the houses. Another choice could be to abandon gas cooking. It would be interesting to gather arguments for and against, based on IGU members' internal use.

Study Group 5.3- Natural Gas for Vehicles (NGV)

The objective is to demonstrate, in the long term, the world-wide potential for natural gas as a transportation fuel, including compressed natural gas (CNG), liquefied natural gas (LNG), biogas, and the transition to hydrogen from natural gas over a 25 year time frame, with the emphasis on short term (0-10 years) opportunities. By showing a development path through to hydrogen in the long term, the project will enable gas companies to consider the implications and the risks to their future development and investment programs for NGVs.

The output of the study group will be:

- **Provide a brief overview of the state of the art of vehicle and fuelling technologies**, for compressed natural gas (CNG), liquefied natural gas (LNG), and biogas, identifying opportunities and challenges for short and long-term research and development, including pathway technologies for the long term, and the direct use of natural-gas-to-hydrogen for transport sector applications.
- **Select countries for study where CNG, LNG, and biogas are making strong commercial inroads** (selection factors for country cases will be determined in part by access to readily available information, regional representation, and developing countries, using sources such as IANGV market reports, regional and national NGV associations, IGU reports, etc). Baseline assessment would include government support, natural gas industry support for NGVs, technology availability, pricing of natural gas relative to petrol products, and environmental regulations. Additionally, other data points would include, but not necessarily be limited to vehicle fleet composition, natural gas or LNG availability, the potential for biogas production, and regulatory environment for the gas industry, together with information on hydrogen production from natural gas or biogas including time lines, the development and availability of hydrogen fuelled vehicles, and the development of hydrogen distribution and dispensing systems.
- **Development of Scenarios for Future Market and Technology Pathways.** Based upon country assessments and analyses, scenarios will be developed for CNG, LNG, biogas, and the natural gas pathway to hydrogen. Scenarios will include a steady-growth and optimistic view for each of the four gas approaches, using a series of matrices in several timeframes that will consider market development, equipment supply (technology development), fuelling infrastructure, and government policy (legislation and regulation). Specific country/world region opportunities will be suggested for various possible scenarios.

Study Group 5.4 Distributed Energies: from CHP to micro-generation

Combined Heat and Power (CHP) is one of the most efficient gas technologies. It has been well developed all over Europe and still represents a major key issue for gas development.

CHP research and development is focused on two main issues: improving technologies and installation rules for medium and small-scale cogeneration, and sizing down to micro-cogeneration.

- **Medium and small CHP** has indeed to face some difficulties in entering the market and developing sales. The investment price, and operation and maintenance costs, are too high for commercial or small industrial plants. New technologies, such as micro turbines, or technology improvements, such as catalysts, new engine designs and regulation systems, could improve the situation. Packaging will also be a very relevant topic.
Standard rules for installation, and especially electrical connection to the grid, must be defined. Last but not least, incentives and barriers must be analysed, in order to allow structured and coordinated lobbying at a regional level.
- **Sizing down** by using emerging technologies will soon allow micro-cogeneration to catch the residential market. To analyse that trend and share answers, WOC members will study micro-CHP plants in their own country, from the technical, economical and legal points of view. The synthesis will enable the drawing of some general conclusions on the future of micro-CHP development.

PROGRAMME COMMITTEE A : SUSTAINABLE DEVELOPMENT



Mr. Daniël Arias
Chairman of Programme Committee A

Sustainable development and climate change have become part of the international lexicon. Industries, including the energy sector, are under pressure to make their operations more sustainable and climate-neutral. The goal of the IGU Programme Committee A is to monitor and promote sustainable development and the reduction of greenhouse

gas emission, and to recognize, formulate and stimulate opportunities and actions for the gas industry in this field.

The central theme is the transformation of the gas industry towards a more sustainable industrial branch, in accordance with the Brundtland definition *"the needs of the present generation without compromising the ability of future generations to meet their own needs"*. The main topics in this process are distinguished by the triple bottom line: finding the balance between economical, social and environmental objectives.

Environmental aspects: a transition from an energy system presently dominated by fossil fuels to a more sustainable system by production of renewable energy from the sun, wind or biomass, and by climate-neutral new fossil technology. Natural gas plays an important role as fuel of choice in this transition.

Socio-cultural aspects: the gas industry should make a lasting contribution to human welfare, including the socio-cultural development of groups and communities that until now have been unable to benefit from the achievements of the developed world.

Economic aspects: to become a long-term sustainable industry, the gas industry has to contribute to sound economic growth in the countries they operate in, as well as meeting their own economic targets.

International cooperation

The IGU should align and engage with external international bodies working on reporting standards, sustainable development, climate change issues, and performance indicators. Examples are the World Energy Council (WEC), ICET, the IPCC, the Global Reporting Initiative (GRI) and World Business Council for Sustainable Development (WBCSD). In some cases, initiatives for future cooperation, like the WEC study on Life Cycle Analyses, a seat in the UNESCO supported ICET Energy Committee, have already been taken. In this way the initiatives in this area taken in the Japanese Triennium are being followed up.

Study Group A.1. Position and promotion of gas as “the fuel of choice preceding a sustainable energy system“

For the representation of the IGU at (major) events (UN, COP), information has to be developed:

- General IGU vision on sustainable development and climate change
- The gas industry and issues of the developing countries
 - Education on sustainable energy in the third world
 - Key energy data (performance, environment, safety, social)

It is envisaged that a paper will be prepared that will give the arguments for gas as the fuel of choice. This paper should be prepared in such a way that it will be widely accepted, not only by the gas industry.

Study Group A.2. Promotion and dissemination of know-how and technology

The gas industry has a very high level of know-how and expertise.

For sustainable development it is essential that this know-how is known by and accessible to potential operators, for example India, China and developing countries. These activities are in compliance with the Kyoto protocol (CDM, JI).

The objectives are the saving of energy saving, improved efficiency, the introduction of new technology, the replacement of unhealthy applications, etc., with social and economic development as the ultimate goal.

These aspects should be dealt with in cooperation with PGC C.

Study Group A.3 Incorporation of social and community interests into IGU core business

Align and update our programs and policies with the Environmental Charter and Sustainable Development Code of Conduct of the IGU, including evaluation of the results.

This will provide the gas industry with a clear picture of the possibilities of sustainable development for the industry.

PROGRAMME COMMITTEE B : STRATEGY, ECONOMY AND REGULATION



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Head of Department
National economy / Energy industry
Ruhrgas AG
Germany

The gas industry faces two dominant challenges worldwide:

- Firstly, the economic perspective indicates a very clear increase in gas consumption worldwide as the fuel of choice for a sustainable energy system. Increasing use of gas may double the markets in the next 30 years.
- Secondly, state regulation of the gas industry is an ongoing process worldwide, proceeding on the basis of very different regulation systems, and influencing the business and performance of the gas industry to an increasing extent.

When developing a strategy for its successful positioning in the future world energy market, the gas industry will have to handle the tense relationship existing between the market and state regulation.

Some of the resulting questions are to be examined by the three study groups of Programme Committee B. The results should be made available to the IGU members as an orientation based on specific expert knowledge and experience.

Study Group B.1 "Regulatory Framework of the Gas Industry"

This study group is to analyse and compare the pros and cons of different regulation systems and their real market results, on the basis of specific experience of IGU member companies:

- Are the regulatory systems effective and efficient enough to support competition, security of supply, and environmental requirements?
- What are the major mistakes made and lessons to be learned?

On the basis of this analysis, it should be possible to enhance an open dialogue of our members with the regulatory authorities of the respective world regions. This should strengthen the regulators' awareness of the need of sound research and, in general, maintain an appropriate investment climate, while at the same time serving the interests of the consumer.

Study Group B.2 "Mainstreams and Challenges on the Supply Side"

The task of study group B2 is to continue with the IGU's internationally recognised core competence for supply analysis. The analysis should focus, among other things, on the following:

- What are the political, economic and technical challenges producing countries are confronted with?
- What will the role of the Middle East be: will it become a dominant gas producer?
- What will the consequences be for the regions importing oil and gas from the Middle East?
- What will the effects on security of supply be?
- Will Europe lose its exclusive position as the only region importing Russian gas?
- More generally, what will the geopolitics of gas be in the near future?

So this study group is a very strategic one.

Study Group B.3 "Trends by sector in the Gas Industry"

Study Group B3 will analyse the effects of gas industry globalisation and internationalisation on the gas industry structure:

- Will developed gas markets see a progressive convergence of electricity and gas in response to economics and regulations?
- With the emerging expansion of the LNG market, there is the question of what influence this development will have on gas pricing, security of supply, competition between pipeline transportation, and transportation by ship.
- Another question to be examined concerns the structure of the future gas company/the new market player.

The topics of this Programme Committee are very strategic and political ones. Therefore we need effective networking and intensive cooperation with all relevant international bodies such as WEC, IEA, Eurogas or AGA. Cooperation should work in both directions, with the objective of strengthening and emphasising the authority of the IGU in the international energy dialogue.

PROGRAMME COMMITTEE C : DEVELOPING GAS MARKETS



Camillo M. Gloria
Chairman Programme Committee C
Senior Vice President
Eni – Gas & Power Division
Italy

The main task of Programme Committee C will be to monitor and analyse the development of the gas market in gas developing countries (members or non-members) - either the possibility of starting it or of its further growth - and to suggest and prepare IGU actions in these countries, including seminars or work-shops, for example, in order to promote their gas market development.

Special focus will be placed on the developing/transitional economy countries and on the new members.

The scope of this work, broadened with respect to previous years (orientated to the "Developing/Transitional Economy Countries"), will also provide the opportunity to extract knowledge from developing gas markets in economically developed regions, which have not been considered in depth until now.

This perspective will be helpful in reinforcing the link between the gas industries in developing and developed economies. Taking into account the growing interdependence of the national gas markets within the various "Regions", and among the "Regions", this is also an opportunity to create "added value" for all the countries and IGU Members.

The various possible "types" of countries and gas industries to be dealt with could be represented by the matrix shown below:

	Producer	Consumer
Developing Economy	A	B
Developed Economy	C	D

The development of a country's gas markets, in most cases, is linked to specific projects that can only materialise if favourable conditions are present along the complete gas chain, which can include both developing and developed economies as consumers and/or producers (being the growth of the producing countries' internal gas markets, in various cases, linked to the development of export projects).

The picture is completed by various operators such as international energy companies and financial institutions, whose participation is in most cases fundamental for the implementation of the projects.

All the "players" should be able to benefit from the work done by the Programme Committee C ("PGC C). This would be a way to create a favourable environment for

the implementation of new gas projects and consequently for the development of the gas markets.

The above would contribute to the implementation of the "Customer Focus" which is part of the IGU's "Strategic Guidelines for the 2003-2006 Triennium", in which the Customer is defined as "the gas consumers as well as the shippers, gas producers and gas transmission companies".

- Specific attention will have to be paid to the identification and selection of the countries / regions / inter-regional projects to be monitored and analysed.

Some examples that could be considered are:

- The Chinese and Indian gas markets, in the wider south east Asian context
- South America, which is both a large consumer and producing region, also in connection with exports to the United States
- Europe and North Africa / Middle East, where a mix of all the types of gas markets referred to in the "matrix" shown above are present
- Africa (the central part and the south of the continent)

The PGC C's monitoring and analysis activities of the selected "Case Studies" will be performed in order to identify opportunities for, and challenges to, the development of the specific gas markets.

Among the opportunities, special attention will be paid to the gas-fired power generation market possibilities or development programmes.

In many countries the power generation sector is the driver for the establishment of the whole gas market, thanks to the large volumes of gas it requires, and to its economic competitiveness when associated with the combined cycles technology.

In addition, the low construction costs of the combined cycles power plants are the best opportunity for the installation of new electric capacity in most of the developing economy countries.

For the same reasons (low investment costs, high efficiency, environmental compatibility), in the countries that already have developed gas markets, power generation is the gas utilisation sector that can still have a substantial growth in terms of volumes.

With regard to the challenges, in addition to the competing fuels, the most important ones for the specific situations will have to be identified (e.g. regulatory issues, prices/tariffs problems, market constraints), in order to correctly and effectively focus the analyses.

The collaboration with the other PGCs, in addition to the work of the representatives from the countries concerned, will be of fundamental importance in carrying out this task.

- The PGC C will also have the possibility to propose and prepare regional events. Given their importance, decisions on such actions will be taken by the IGU Management Team based on a proposal from the PGC C. Representatives from the IGU management may join Programme Committee C.

Such events (seminars, work-shops), to be identified coherently with the rest of the PGC C's activities, could be held during the Triennium, allowing information to be delivered as it is being updated, or exchanges of ideas on the selected topics to take place, when it can be useful not only for the preparation of a case study but also principally for the countries and players involved.

Institutions and operators outside the traditional IGU activities, but whose tasks or interests are or could be related to the gas market, could be involved.

These events will not necessarily be conceived and managed by the PGC C only. Where possible and convenient they could link the work of various committees and increase their added value.

The choice of venues should also be functional to the final goal of the activities (i.e. the gas market development), and therefore chosen in one of the countries involved.

There is an important pre-requisite for the work of the PGC C to be effective: the active participation of representatives from the countries interested in the specific activities. Their collaboration would allow the identification of the real issues to be dealt with, and the collection of updated information would permit the bi-directional transfer of ideas and messages among the relevant bodies and operators.

- One of the IGU's priorities is to welcome new countries, and around ten new members have joined the union in the last five years.

This means that many new countries are now joining an organisation in which the majority of the members have a long-standing gas culture. These new members have a clear desire to develop their knowledge, and to find answers to questions specific to their country, where the gas industry, or even the economy as a whole, is still in its development phase. As these countries are in a minority, their specific demands cannot always be met, as they do not always concern the gas community as a whole.

This means that the IGU should define its policy regarding relations with countries with an emerging gas industry, and attention will be paid by the PGC C to this highly strategic issue.

PROGRAMME COMMITTEE D : LNG



Dr. Chawki Mohamed RAHAL
Chairman Programme Committee D
Director General
Sonatrach Petroleum Corporation
Algeria

LNG as a form of energy is presently seeing much renewed interest in the world and this will be an ongoing trend for the coming years as natural gas is more and more appreciated for its environment friendly quality.

While it is widely accepted that the growth in the demand for gas exceeds that for other sources of energy, LNG is expected to have a share in the satisfaction of these needs and can contribute greatly to the enlargement of the gas markets simply because it offers the flexibility required for energy storage for transportation as well as for international trading.

PGC D will, as part of its activities in this triennium, continue to monitor the LNG business by issuing a report, which will provide statistics as well as highlight the trends of the LNG trade to which both the traditional actors (exporters and importers) and the new ones will contribute. This report will also address LNG Chain developments providing an update on perspectives in the future but also the share of inter-regional trading.

In this respect, PGC D has set itself the task of attracting old and new actors to participate or take an active role in the IGU activities.

PGCD will also, throughout the triennium, monitor and support the activities of the Working Committees 1-5 as well as those of the other Programme Committees by providing the necessary expertise in the field of LNG.

PGC D was assigned a major task in order to rationalise the LNG activities of IGU in cooperation with the other international LNG organisations. PGCD will during this triennium contact will identify all those which are susceptible to cover the LNG field in some way and attempt to define together with them an understanding of cooperation, coordination and exchange of information on important studies and research.

In this respect, PGC D will establish contact with organisations such as the LNG-x Conferences, its two other Sponsors, the Gas Technology Institute (GTI) and the International Institute of Refrigeration (IIR), the International Group of Liquefied Natural Gas Importers (GIIGNL), the Society of International Gas Tanker and Terminal Operators (SIGTTO), the International LNG Alliance (ILNGA), the World Energy Council (WEC), the International Association of Natural Gas Vehicles (IANGNV) and any other organisation identified which may be covering an area of the LNG Industry.

Apart from establishing closer links with these organisations, PGC D will attempt at combining meetings, at using the same individuals and at offering the possibility for these organisations to participate in the LNG activities in the Study Groups or during the World Gas Conference, the goal to be achieved being enhanced coordination of the respective LNG activities and projects and avoidance of work duplication.

PGC D will also perform, during this triennium, studies on LNG topics of interest to IGU Members. After a large consultation of the IGU Members, taking into account the strategic guidelines set out for 2003-2006, the following three topics have been selected to be studied during this triennium.

S.G. D.1 The standardisation of LNG qualities

This topic deals about the need to challenge the narrow requirements on LNG quality, that is to say to look at the possibility of the definition of a standard LNG trade quality to avoid unnecessary and expensive processing at the LNG export and import ends, and thus promote LNG trading flexibility and lower LNG costs.

S.G. D.2 Safety and Technology Developments in LNG Terminals and Vessels

The development of new LNG import and export terminals and LNG vessels meets many environmental hurdles not least the perceived high safety and security risk. Criteria differ from one country to another. The efficiency improvements and development in LNG vessels technology and terminal concepts, including very large vessels and offshore regasification terminals, are moving the industry into the future. The study aims to remove undue safety risk perceptions and support implementation of new technology by the industry.

S.G. D.3 The future of LNG Spot Market

There is a definite trend towards the development of spot and short term trading of LNG. Apart from analysing the recent development of this market, the role of this market in the energy balance, the future trends, the conditions and limits of its development will be analysed.

TASK FORCE ICT

This task force will dedicate itself to the important task of informing IGU members about issues related to Information Technology (IT). Some of the conclusions from Taskforce A on ICT in the Triennium 2000-2003 were as follows.

- Modern e-Business and the consequences of deregulation can only be handled with powerful and easy-to-use ICT support, as well as application systems, especially communications and data exchange. The development and maintenance of company-specific ICT solutions has been largely replaced by using standardized systems offered by third parties. Standardization and exchange of ICT information has become more important than ever. The importance of ICT is even greater, given the fact that modern ICT support offers new potential for innovative business concepts.
- At a general ICT symposium, where energy experts are normally not present, it is hardly possible to deal with the large number of specific requirements involved in the full energy sector.

Based upon the recommendations and successful results of the Task Force A in the 2000 – 2003 Triennium, the new Task Force will be asked to organise an ICT conference in 2005 in Seoul (South Korea already indicated that they are willing to organise the conference). This conference will be organised in cooperation with other energy related organisations such as the WEC and the WPC. It is the intention to have a conference with a broader scope than just gas, and it could well include all utility related industries.

TASK FORCE R&D

MEETING R&D REQUIREMENTS FOR THE GAS CHAIN

Introduction

R&D in the gas sector is under great pressure. Deregulation of the energy market, combined with the current economic climate, have led to a number of important trends in recent years, namely:

- reductions in R&D funding.
- a move towards short-term targets at the cost of long-term research.
- a reduced interest in new gas technologies (the need for new gas technologies is levelling off).
- increased competition in the gas industry and, as a result, an increasing reluctance to share technical information.
- less interest in career opportunities in R&D.

As a result of these developments, the future of R&D in the gas sector is uncertain. However, perhaps at this moment the actual need for R&D in the gas business is increasing. The increased attention to pipeline safety and environmental issues lead to new demands for risk management. R&D is required for the development and validation of such approaches. New regulations regarding emission reduction create massive challenges for operating departments. Many of the new demands can only be met through the development of innovative technologies and new combustion and treatment processes. In such a challenging period, the future of R&D should be carefully assessed to meet the needs of the business. The task force will address this dilemma and make recommendations as to future possible actions in the R&D sector.

Scope of the Work

The work of the task force will be carried out in three main phases:

1. A global benchmark study with regard to current trends in R&D. This study will address different industries outside the gas sector. The work will mainly involve desk studies, and will look at the different methods of organising, funding and managing R&D programmes.
2. A benchmark study (similar to 1.) focusing on the gas sector.
3. An analysis of the results in order to establish possible best practices. Recommendations will be made to help guarantee the continuity of R&D in addressing future challenges in the gas business.

Expected Results of the Study

The study is expected to provide a review of R&D with respect to current programme objectives and will provide insight into:

- the management process.
- the funding process.
- priorities for future R&D.
- a benchmark between countries as well as industries.
- cooperation efforts with other organisations.
- the Government role in funding and direction.

IGRC, INTERNATIONAL GAS RESEARCH CONFERENCE

The International Gas Research Conference (IGRC) is the world's foremost international forum devoted to the exchange of recent research within gas technology.

The conferences cover the entire gas chain from wellhead to burner tip. They are organised by leading gas companies and research centres from around the world through international committees that take care of conference policies, logistics, and the technical programme.

The conference series began in 1980, and since then has been held triennially, alternating between North American and European venues. The last conference was held in 2001 in Amsterdam, the Netherlands. The next conference will be held in November 2004, in Vancouver, Canada.

The conference features some 300 papers presented in oral or poster sessions. The number of participants is somewhere between 600 and 800.

The conference has always been strongly linked to the International Gas Union (IGU) and is sponsored by major gas associations and industry.

The incoming President of IGU is traditionally Chairman of the IGRC Policy Committee and IGU officers and the IGU secretariat are represented in the IGRC Committees.

Through this and other links, the IGRC's and the World Gas Conferences are closely coordinated to avoid undue overlapping and still cover all relevant gas technology issues to the satisfaction of conference delegates and the industry.

It is the intention of the IGU to present the most interesting and relevant topics from the IGRC 2004 in Vancouver, if new developments have been made at the WGC in 2006 in Amsterdam.

INTERGAS MARKETING

PRESENTATION; GENERALITIES

Intergas Marketing (IGM) was created by the IGU in 1951, and currently includes 16 countries.

Through experience exchanges between experts, IGM contributes to the development of the gas economy. Its area of action is marketing, which means that IGM is particularly of interest to market economy countries with strong downstream gas activities.

The members are officially the countries, which have a delegation with a Head of Delegation and delegates who are either from gas associations or from companies. When it is represented, the country's gas association does not play a particular role in the delegation.

The greatest contribution to the experience exchanges is made by the companies, which also derive axes for operational reflections. In practice, IGM therefore operates as a network of exchanges between the marketing and sales managers of the companies.

The operation

IGM has an activity cycle of 6 months, with two sessions each year, and it chooses topics according to the current preoccupations, which it entrusts to relatively short-term working groups . The relatively limited number of delegates allows the organisation of fairly frequent meetings, and permits in-depth exchanges. Each session includes a review of the marketing and commercial innovations. A roundtable on a current topic can also be decided upon at any time, and arranged for an upcoming session.

Most of each session's works are published in a brochure entitled "News Intergas Marketing". IGM is directed by a Management committee, for which the delegations elect a chairman with a 2-year term.

COOPERATION WITH THE IGU

A Memorandum of Understanding for a closer cooperation between IGM and the IGU has been signed in Tokyo during the World Gas Congress and stipulates that IGM becomes officially an IGU affiliated organisation, with specific competences in the area of commercial activities, in a permanent liaison with the IGU . The followings of this memorandum concerns :

- IGM presidency : its duration will be extended from 2 to 3 years and the mandate will begin in June instead of January, in order to unify with that of the IGU,
- Program : IGM has its own study program already decided and will also assume any outsourced topic from the triennium program of the IGU in order to contribute to all themes relative to customers and marketing .

MARKETING

Definition of marketing for IGM

Marketing prepares product and service offers in order to satisfy the needs and desires of the clients. The steps in a marketing approach include a market study, the client's expectations, and the analysis of the actions of competitors.

A marketing strategy involves identifying the various segments, and focusing on those considered to be priorities. The outcome is the preparation of an overall and consistent offer: the marketing mix.

The marketing approach within IGM

The exchanges, which take place within IGM, relate to all marketing aspects of the solutions, which contribute to the development of natural gas.

They consider the essential data relative to the context, to the qualitative and quantitative demand, to the products, to the competition and to the gas sector. They also consider the various client segments, both with regard to existing and new products, and their marketing channels in order to prepare an overall offer.

Clientele management is also a particularly important aspect, whether involving the physical reception, call centres, prices or invoicing.

Advertising is playing an increasingly important role in order to establish the brand's renown or to present the newest offers.

It is also very important to measure the client's satisfaction relative to the offers and the services made available to him/her.

The current opening of the markets is giving marketing an increased role in the preparation of the strategies of companies.

THE WORK OF IGM

This work can be grouped into 4 main categories.

- Reflections and experience exchanges,
- Comparative studies intended to review the best marketing practices
- Prospective studies intended to determine the marketing opportunities
- Another possibility, currently seldom used, could involve the joint launch of actions intended to promote natural gas or certain particular usages.

Past works

Special studies (some recent titles)

The development of air conditioning in large buildings; Nice; June 2000

E-business, a marketing opportunity for gas companies?; Budapest; April 2001

Marketing and safety with the use of natural gas in an open market: opportunity for new services; September 2002. (IGM1 study outsourced by the IGU)

The impact and opportunities for natural gas marketing resulting from the decisions to limit pollution emissions; September 2002. (IGM2 study outsourced by the IGU) .

The last ordinary sessions

1998 : Barcelona and Paris ; 1999 : Kobe and Leipzig ; 2000 : Antwerp and Zurich
2001 : Budapest and Rome ; 2002 : Amsterdam and Copenhagen ; 2003 : Tokyo and Versailles

During the IGU World Gas Congress in Tokyo on June 2003, IGM presented a session on the role of marketing in the promotion of new environmentally friendly products and particularly the marketing's place relative to NGV (Natural Gas for Vehicles), the Environment and Renewable Energies.

The upcoming working program :

A session is planned in May 2004 in Finland, and another in Germany in autumn.
Already decided topics:

- ***Client satisfaction surveys intended to have an influence on loyalty building. This will include exchanges and recommendations as to the concepts, methods, possible improvements and optimum usages made of the results. This study is piloted by France.***
- In an increasingly competitive sector, Marketing will be essential in order to promote new gas products and/or services. IGM will identify the keys for success and the best marketing practices to be implemented. This study is piloted by Germany.
IGM will assume any outsourced topic from the triennium program of the IGU.

INTERNATIONAL ASSOCIATION OF NATURAL GAS VEHICLES (IANGV)

The association was established in 1986 to provide the NGV industry with an international forum and an advocate for NGVs. International conferences, exhibitions and seminars have been held on a wide range of important technical and marketing topics. The IANGV provides a focus for the exchange of information, and a medium for action on challenges of an international nature. The IANGV provides information to members. It is planning research projects on light and heavy-duty vehicles. The IANGV is working closely with the ISO to develop NGV standards, and with the UN on information about NGVs.

The IGU and the IANGV have a tradition of close cooperation in preparing studies for the World Gas Conferences. In this Triennium too, several topics have been identified that will be part of the work of study group 5.3 in Working Committee 5 Utilisation.

The objective is to demonstrate the long-term, world-wide potential for natural gas as a transportation fuel, including compressed natural gas (CNG), liquefied natural gas (LNG), biogas, and the transition to hydrogen from natural gas over a 25-year time frame, with the emphasis on short-term (0-10 years) opportunities. By showing a development path through to hydrogen in the long term, the project will enable gas companies to consider the implications of and risks to their future development and investment programs for NGVs.

WORLD ENERGY COUNCIL LIFE CYCLE ANALYSIS STUDY

The IGU was invited by the WEC to take part in a Life Cycle Analyses study. The IGU is represented in the WEC study on LCA by Mr. Bertus Postmus of Gasunie, who will report the progress and results to PGC A.

Study Terms of Reference

The main objective of the study is to identify and review existing LCA studies and other relevant publications, and prepare an analytical report outlining the main findings of the review. It is not intended to undertake any original research, and the expected outcome will be focussed on a comparison of the different energy sources in the framework of the full life cycle assessment.

The study will review the various approaches to LCA studies and analyse the different findings of these studies. "Full life cycle analysis" refers to the entire product chain starting from the exploration and extraction through the processing, storage, transport, and conversion to final use. Hence the study will consider each primary energy from its point of origin through to its final use. Final uses to be considered are electricity (including that used for electrical trains), mobility (road, aviation and marine bunkers), or direct heat applications (for buildings and industrial processes).

The Study Process

The Study Terms of Reference were approved in October 2001, and the work began in early 2002. Since the WEC Finnish Member Committee initially proposed the Study, Mr. Ami Rastas (TVO, Finland) was appointed Study Chairman. A study group of nearly 30 volunteers representing WEC member committees in over 20 countries, and representatives of 6 international organisations, has been established.

During the first few months of 2002, an impressive inventory of existing LCA Studies was compiled and reviewed. The study group met on 13 December to discuss the general direction of the study and to define the work programme, schedule and responsibilities. The group agreed that the main output of the study would be the establishment of a comprehensive LCA assessment framework, which would provide a useful, standard, and internationally accepted tool for evaluating various energy projects. Relevant research and drafting assignments have been allocated to the study group members, and it was agreed to meet again in mid-May 2003.

The general schedule for the LCA Study was confirmed as follows:

- Draft reports by April 2003
- Symposium September 2003 in Kiev (in conjunction with the WEC Executive Assembly)
- Final draft report to the WEC Studies Committee January 2004
- Publication and promotion second quarter 2004

CONTRIBUTION TO THE IPCC GLOBAL REPORT

Co-ordination of gas industry participation in the work of IPCC

The Intergovernmental Panel on Climate Change (IPCC) will in the coming years prepare a new report reviewing the risk of climate change, and mitigation or adaptation options. This report will be published in 2007 (<http://www.ipcc.ch/activity/act.htm>). The scope of the IPCC report is very wide. The role of industry is very important in the evaluation of mitigation options, and of adaptation, from a technical, economic, or social point of view.

On request of the IPCC Chairman for support from industry, in order to review evaluations made by scientists, or to provide basic information, IGU will positively respond. The IGU Management Team will oversee this activity in close cooperation with PGC A.

We will take the opportunity to present the case of the gas industry. Other sectors have been keen to provide comments, and in some cases lead authors (oil, cooling fluids).

In our experience, the range of expertise needed covers all domains, from exploration-production to utilisation, and from technology to economy. Furthermore, one can expect that the approach "Energy and Sustainable Development" will play an important role in the coming report.

Therefore, coordination should be organised with the IPCC, with the support of all IGU committees, but with the prime responsibility for PGC A. As a member of PGC A, the coordinator will identify schedules and topics of interest, and propose possible actions to PGC A.

STANFORD STUDY ON GEOPOLITICS OF GAS

This is a study, proposed by the Program on Energy and Sustainable Development of the Stanford University together with the James A. Baker III Institute for Public Policy of the Rice University, on "The Geopolitics of Gas".

To summarize the scope of the study, it aims to pay attention to the political forces that determine which gas projects get built and, to explore how the projected increases in gas consumption could affect world politics. Working hypotheses are that:

1) Continued technological advances in the LNG business could support the development of a global market for gas and might either reduce the need for cross-border pipelines or facilitate pipeline investments, by reducing the energy security risks posed by pipeline gas supply. Alternatively, a shift in the international order such that international shipping lanes can no longer be adequately protected, might have an adverse effect on LNG prospects.

2) Investment in gas transit infrastructures will cause economic and political integration of the countries that supply and use the gas. One of the historical energy examples mentioned here is the foundation of the European Coal and Steel Community.

There will be two research tracks. The first track will use an economic model, containing simplified representations of all major current and prospective world gas producing and consuming regions, to examine broad market developments in the global gas trade. The second research track will systematically analyse particular examples of existing cross-border infrastructure projects, particularly those that connect countries with low levels of economic and political integration, prior to the construction of the project.

Mr. Theo Ebels from Gas Transport Services, the Netherlands, will represent the IGU by liaising with the study team of the Stanford University. This will be done under the responsibility of PGC B.

Completion of the study is targeted for late 2003.

http://cesp.stanford.edu/pesd/eventsgeopol_index.html

HYDROGEN AND THE IGU

The use of hydrogen as an important energy carrier is an essential element for global sustainable development. The widespread utilisation of hydrogen can reduce dependence on depletable energy resources, can achieve substantial savings in greenhouse gas emissions, and can provide a storable form of energy derived from intermittent renewable energy sources. However, there are many significant challenges to implementing all the components of a complete energy system based on hydrogen. Successful development of indigenous sources of hydrogen with low greenhouse gas emissions will be necessary. Effective, economic and safe methods of transporting hydrogen between points of supply and use will be required. Convenient and reliable means of utilising hydrogen for diverse consumer applications will be needed. Despite these challenges, there is global interest in the development of hydrogen as an energy carrier, with commercial competition emerging for the European Union (EU) from Japan and the United States of America.

To progress quickly towards the development of a full hydrogen system, a practical strategy must be adopted within the context of an existing, extensive natural gas system, which has resulted from substantial capital investment over a long period of time. By necessity, the transition to a full hydrogen system will be lengthy and costly, and will require significant research and development.

USA initiative on hydrogen

In 2001, executives representing energy and transportation industries, universities, environmental organisations, and USA Federal and State government agencies and National Laboratories, met to discuss the potential role for hydrogen systems in America's energy future. Based on the ideas and suggestions put forth by the participants during this meeting, a national vision was presented for hydrogen to become a premier energy carrier. The production of hydrogen from natural gas is an integral part of the strategy to introduce hydrogen into the transportation and utility energy sectors, by reducing the cost of conventional production, and developing innovative hydrogen production processes that rely on cheap fossil feedstock. Today, nearly all hydrogen production is based on fossil raw materials. Worldwide, 48% of hydrogen is produced from natural gas, 30% from oil (mostly consumed in refineries), 18% from coal, and the remaining 4% via water electrolysis. The IGU will take the initiative to become involved in further development of this technology road map.

NATURALHY project

The possible use of existing networks for mixtures of natural gas and hydrogen offers a unique and cost-effective opportunity to initiate the progressive introduction of hydrogen as part of the development of a full hydrogen system. Thus the aims of the NATURALHY project are to test all the critical components of a full hydrogen system by adding hydrogen from (initially) current sources to natural gas in existing networks. This transitional approach will provide further practical experience in the transmission of mixtures with varying amounts of hydrogen, and, by means of innovative separation technologies, the utilisation of hydrogen in end use applications.

A Strategic Advisory Committee consisting of representatives from relevant national and international organisations will provide guidance, one of which will be the IGU. Potential collaboration and synergies will be fostered by complementary projects. Established information networks will be used for information dissemination.

SPECIAL PROJECTS

On behalf of the Royal Dutch gas association (KVGN) and the Dutch gas industry, three special projects will be initiated: one concerning Sustainable Development, one concerning Regulation in different regions of the world, and one concerning the expected growth of the gas market for power generation (consultation of electric power producers in the light of the expected market growth).

It is the intention to review the results of the project work on at least three occasions. A regional gas conference of the South American gas and electricity industry in Brazil in 2004, a regional conference focussing on Asian Malaysia in 2005. Finally at the World Gas Conference in 2006 in Amsterdam the focus will be a global view on these matters, including the European and North American markets.

The interaction between the stakeholders, the industry, the government and the customers, is an important factor for these projects. The binding factor between the issues in the projects lies in the process of engaging these parties in an integrated approach to achieve a joint understanding of the critical success factors in each of the three areas. The respective IGU committees will play a crucial role in providing the projects with the view of the gas industry on these issues. The projects will be coordinated from the Netherlands engaging the Dutch gas industry, universities and institutes but may invite local specialists in the global regions.

PROJECT 1 GAS ROUTES TO A SUSTAINABLE ENERGY SYSTEM

Project leader Ulco Vermeulen, Gasunie Trade & Supply.
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Arguments for the fuel of choice

This project is related to the gas industry's vision on sustainable development and is a contribution to the guideline: **Promote Gas as the fuel of choice preceding a sustainable energy system**. It is the intention to promote the arguments underlying the gas industry's point of view that gas is the fuel of choice. This study will be carried out under the responsibility of the Dutch presidency in close cooperation with PGC A. It is envisaged that many experts will be involved, to ensure a widely supported view on the development of the energy system of the future.

This information will be of great value to promote the role of gas on events like COP meetings.

The work will be carried with three objectives:

Disseminate the vision

Make knowledge available and accessible

Demonstrate and promote successful developments.

This project will generate an analysis from several perspectives of the tools available through the gas industry to substantiate the IGU guideline and possible transition routes to a sustainable energy future. This analysis will be discussed with stakeholders outside the gas industry with a view to formulate a vision that finds the broadest support from all stakeholders.

The analyses will have a global scope with a focus on the position of gas in the energy sector. The line of thinking will be the introduction of efficiency measures, fuel substitution and the incorporation of sustainability in the energy system (either direct or via the hydrogen route).

PROJECT 2 REGIONAL REGULATION

Project leader: R. Snijder, Gasunie Trade & Supply. r.snijder@gasunie.nl

The second project is related to the guideline: **the IGU will promote the Industry's Role as a Responsible Corporate Citizen.**

The objective of the project is to provide a description of experiences with regulation of the gas market in different parts of the world. To present an overview of future developments and its impact on gas market investments and to analyse the regulatory requirements for the electricity and gas markets.

Regulation of energy markets is a main topic in different parts of the world. Virtually all gas markets are undergoing fundamental changes. The aim of the regulators is to introduce more competitive markets. Customer choice must lead to increased efficiencies, more choice in service levels and product innovations. The experiences have been mixed. In many cases regulation moves the gas business into uncharted waters. Trial-and-error is often the consequence. Inter change of experience can therefore be of great value, as it assist in avoiding the choice of undesirable avenues. The drivers, the market design and the required regulatory framework will differ throughout the world. But harnessing the learning to date could have substantial benefits. What can be learned from the results of the regulatory influence on the developments in these very different liberalized regional energy markets? A crucial question for the industry and all stakeholders is to preserve the willingness to invest in new projects.

The work in this project will be carried out in close cooperation with the IGU Committee B, Strategy, Economy and Regulation.

PROJECT 3 STRENGTHEN THE GAS-POWER INTERFACE

Project Leader: D. de Jong, dj.dejong@wxs.nl
Fellow of the Clingendael International Energy Programme,

The objective of this project is to realise the fullest economic contribution of gas to sustainability through gas-fired power generation in partnership with the power generation industry and policy makers.

The project will focus on the projected growth of gas-fired power generation, in consultation with the power generation industry and policy makers. These parties will be engaged in an open dialogue around the world to deal with possible misperceptions and to agree on the key success factors for growth. Potential obstacles will be identified, the causes will be analysed and, where possible, remedies will be developed jointly with the power generation industry and policy makers in order to facilitate the successful global development of gas-fired power generation. The findings of this project will be disseminated at different conferences.

STUDY GROUP SUMMARY

Working Committee 1: Exploration and Production

Study Group 1.1 The World's Most Significant Gas Fields

Study Group 1.2 New Horizons for Exploration, Production and Treatment of Gas

Working Committee 2: Storage

Study group 2.1 Basic UGS activities

Study group 2.2 Benchmarking of UGS

Study group 2.3 Environmental impact reduction of UGS

Working Committee 3: Transmission

Study Group 3.1 Network lifetime

Study Group 3.2 Review of international third party access and network codes

Study Group 3.3 Increasing difficulties to create infrastructure

Study Group 3.4 Analyses of incident data

Working Committee 4: Distribution

Study Group 4.1 Gas Distribution Pipeline Integrity Management

Study Group 4.2 Implementation of Leading Practices for Construction, Maintenance and Operations of the Gas Distribution System

Study Group 4.3 Meeting the Research and Development Requirements for Gas Distribution

Working Committee 5: Utilisation

Study Group 5.1 Industrial Utilisations

Study Group 5.2 Domestic and Commercial Utilisations

Study Group 5.3 Natural Gas for Vehicles (NGV)

Study Group 5.4 Distributed Energies: from CHP to micro generation

Programme Committee A: Sustainable Development

Study Group A.1. Position and promotion of gas as "the fuel of choice preceding a sustainable energy system "

Study Group A.2. Promotion and dissemination of know-how and technology

Study Group A.3 Incorporation of social and community interests into IGU core business

Programme Committee B: Strategy, Economy and Regulation

Study Group B.1 Regulatory Framework of the Gas Industry

Study Group B.2 Mainstreams and Challenges on the Supply Side

Study Group B.3 Trends by sector in the Gas Industry

Programme Committee C: Developing Gas markets

Study group C.1 Monitor and analyse gas market development in gas developing countries

Study Group C.2 Prepare regional events to promote gas market development

Programme Committee D: LNG

Study group D.1 : Minimum Emission LNG Plants or Green LNG Plants.

Study Group D.2 : Addressing new technology efficiency and environmental improvements in LNG vessels

Study Group D.3 : Safe LNG terminals

Study Group D.4 : Standardisation of LNG qualities

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VENUES

2003

Autumn : Cape Town , South Africa, Coordination Committee, Executive and
Council meeting

2004

Spring : Doha, Qatar (with LNG 14) Coordination Committee, Executive meeting
Autumn : Oslo, Norway Coordination Committee, Executive and
Council meeting

2005

Spring : Warsaw, Poland Coordination Committee, Executive meeting
Autumn : Tjianin, China Coordination Committee, Executive and
Council meeting

2006

Spring : Coordination Committee, Executive meeting

June : Amsterdam, The Netherlands WGC with Council meeting

23RD WORLD GAS CONFERENCE

“Gas: Powers the people, Preserves the world, Promoted by IGU”

Date : 6 to 9 June 2006

Venue: RAI Congrescentrum, Amsterdam, The Netherlands.

- The Opening Ceremony will be on Monday, June 5, 2006 at the Amsterdam RAI Conference and Exhibition Centre.
- The Conference and Exhibition will be from Tuesday to Friday, June 6-9, 2006 at the same centre.

The core membership of the National Organizing Committee (NOC) comes from the Royal Dutch Gas Association (KVGN), NV. Nederlandse Gasunie, and EnergieNed. As an organisation, it represents a wide range of the Dutch Industry.

Around 5,000 participants are expected to attend similar conferences to those held previously: the expected exhibition space will be about 17,000 square meters (net).

Detailed information on the conference and the exhibition can also be found on the website www.wgc2006.nl and in brochures to be published in advance. A brochure on WGC2006 will be available from the spring of 2004.

Previous World Gas Conferences

1931	London
1934	Zurich
1937	Paris
1949	London
1952	Brussels
1955	New York
1958	Rome
1961	Stockholm
1964	Scheveningen
1967	Hamburg
1970	Moscow
1973	Nice
1976	London
1979	Toronto
1982	Lausanne
1985	Munich
1988	Washington
1991	Berlin
1994	Milan
1997	Copenhagen
2000	Nice
2003	Tokyo

APPENDIX, THE STRATEGIC GUIDELINES FOR 2003 – 2006

The International Gas Union Dutch Triennium will start in June 2003 after the World Gas Conference in Tokyo, and will last until the completion of the 23rd World Gas Conference in June 2006 in Amsterdam.

In this Triennium, the IGU will strongly support a further increase in the membership of our union. The increase will be the result of the union's ongoing efforts to strengthen its organisation and to increase the value to its members as a forum for structured enhancement and exchange of knowledge and experience, and as a body for effective representation of the interests of its members.

The members share the IGU vision in recognising that gas² has an important part to play in satisfying the global need for an environment-friendly energy source, in a global business climate that is facing major changes and significant challenges. In this environment, the IGU will be one of the most influential, effective and independent non-profit energy-organisations, while serving as the mouthpiece for the gas industry worldwide.

The IGU will further promote the technical and economic progress of the gas industry in this Triennium.

The IGU will not only promote the view that gas is the fuel of choice to a sustainable energy system, but also contribute to creating the business environment most conducive to realising this vision. The IGU will implement a balanced approach in its work, between business aspects, environment, reliability, and technology transfer, especially relating to developing gas markets. We are in the growing phase of the gas age and are witnessing the increasing importance of gas for the energy supply to the peoples of the world: the customers of our industry.

Regulation of energy transportation and distribution has become an issue that is increasingly affecting the gas industry worldwide. An understanding of the consequences of the different regulatory systems in the world will enhance the quality of the dialogue of our members with the regulatory and/or governmental authorities in their respective regions of the world. This will help to create an appropriate investment climate, while at the same time serving the interests of the consumer.

The IGU will promote the industry's role as a responsible corporate citizen. In such a context the IGU will play an active role as a non-governmental organisation and will take part in the appropriate forums in order to promote gas to the benefit of the consumer and the environment.

The IGU is aware that a real global marketplace for gas is still in the early stages of development, and will therefore pay due attention to the development of the regional markets, and increase its efforts to cooperate with the gas associations concerned. At the same time, it is clear to the IGU that not only long transmission lines, but also LNG's role, are showing strong growth, thereby interlinking these regional markets more and more. The IGU will further build upon its good cooperation with LNG organisations.

The IGU also intends to work closely with other international energy organisations such as the World Energy Council, the World Petroleum Congresses, Intergas Marketing, and Eurogas, to support the promotion of gas in the world. These interfaces will also help to strengthen the awareness of the need for ongoing research for example into safety, environmental and energy-efficiency aspects) and avoid unnecessary duplication of work. Furthermore, the IGU is ready to intensify the relationship with the International Energy Agency (IEA).

² When the word gas is used, in general natural gas is meant, but propane, butane and other gasses are also used the world over.

The 2003 – 2006 Triennial Work Programme will be characterised by the following three strategic guidelines:

The IGU will promote:

- I Technology, Industry Efficiency and Customer Focus**
- II Gas as the Fuel of choice preceding a sustainable energy system**
- III The Industry's Role as a Responsible Corporate Citizen.**

I Promotion of technology, industry efficiency and customer focus

The Triennial Work Programme will build on what we have drawn from the work done in earlier programmes. Information will be updated on issues such as the safe, reliable and environmentally responsible transport and use of gas, the cost and availability of gas, and the gas infrastructure in the coming years. The possibilities of benchmarking, and producing information on good and best practices will be pursued, and made available in an IGU database. In this way, the IGU serves as a global information clearinghouse and promotes the transfer of technology and know-how.

Technology

Technology can be grouped in two categories:

Those technologies inherent to the gas industry from production to burner-tip, which improve efficiencies, lower costs, contribute to continued competitiveness, and enhance the safety of the gas chain and the security of supply. We expect the IGU committees to provide the members with information on how to access the broad business knowledge with respect to these issues. In this respect, gas quality-related issues will grow in importance.

Emerging technologies, which could shape the future of gas. Examples of these technologies are:

- CO₂ sequestration. It is clear that these technologies could make an important contribution to environmental targets. The IGU recognises concerns about the environment, and wants to contribute to the efforts in this field to find economic solutions.
- Hydrogen Economy. The transition to a hydrogen economy could lead to a marked change in the energy market. Gas is by far the most economic fuel for the production of hydrogen. Issues mainly concerned with the logistics could be addressed together with the hydrogen developers.
- Methane Hydrates. The vast amounts of gas hydrates will have a large impact on the gas market if technology becomes available to produce it.

The contribution that the gas industry can make in this area needs more detailed definition. This makes necessary further discussion with other stakeholders in the market.

Gas industry efficiency

The objective is twofold:

- To improve the competitiveness of the gas industry.
- To promote good corporate citizenship.

An effective mechanism to achieve or enhance this mission is to use benchmarking. *It is the intention of IGU to make benchmarking one of its primary targets, and to present the results thereof at the World Gas Conference in 2006.* Possible subjects are methane emissions, safety scores, and gas transmission and distribution best practices and cost.

Customer focus

It is the objective of the IGU "to encourage development of good customer services and customer relations". The comparisons of business practices, and the sharing of information from lessons learned, will give members a better opportunity to adapt their business to the needs of their customers. In this respect, by customers is meant the gas consumers as well as the shippers, gas producers, gas transmission and distribution companies, among others.

II Promotion of gas as the fuel of choice preceding a sustainable energy system

The need for sustainable operation of energy resources in our daily life and business will guide us in choosing these items for further study. It is of paramount importance that the contribution that gas offers to decrease the growth of CO₂ and other emissions, be disseminated to policy makers all over the world. Since natural gas produces the smallest amount of CO₂ per kWh of all the fossil fuels, replacing coal and oil by natural gas where economically possible, notably in generating electricity, is of prime importance. In the long term, decrease of the CO₂ emission can be realised if CO₂ sequestration is further developed. There is little disagreement about the desirability of gas taking on the role of fuel of choice, especially during the current century. This creates a formidable challenge: it means that the gas business should more than double in size during the next thirty to fifty years, and that virtually all markets need substantial volumes of new gas supplies at competitive prices.

The potential obstacles are considerable: they include the remoteness of supply sources and the consequential size and high costs of new supply chains, funding requirements, transit arrangements, political and security issues, and the effect of deregulation on the allocation of risks between suppliers and the market.

It will take more than the gas industry alone to realise these new gas supplies. It will need active support and cooperation from governments.

There is certainly no common understanding as to what policies and other conditions are needed to bring the new supplies to the market. Every party is not necessarily aware of the magnitude of the challenge. *It is the task of the gas industry and, of the IGU as its mouthpiece, to take a leading role in this discussion, and to create a shared appreciation of the challenges, the solutions, the roles of all players, and the need for an appropriate investment climate.*

The IGU will develop and support initiatives that promote such dialogues, including producers/consumers dialogues. It is of paramount importance that the policy makers and regulating authorities of the different market regions (Pacific rim, Europe, North America) are involved in these discussions.

III Promotion of the industry's role as a responsible corporate citizen

Being a responsible citizen and prudent operator

The IGU will act as a platform for the exchange of information on how to operate as an industry in a responsible and prudent way with respect to issues such as safety, environment, reliability, and land use.

Promoting the dialogue between the industry and various stakeholders

In nearly every part of the world, governments are changing the shape and structure of the gas industry, sometimes under pressure from the customers, and in many cases as a consequence of the global drive towards deregulation and privatisation. The processes that are being followed do not always have the desired result, or at times have unforeseen and undesirable side effects for the industry, the customers or the governments. Independent regulatory bodies are being formed: they already come together in forums to exchange their experiences.

The IGU will be ready to participate in exchange of views with government and regulatory bodies on the above experience, and on the issues of realising the growth of the gas market. Similarly, the IGU will demonstrate that the industry is willing to understand the needs of its customers, and to promote a structured dialogue with representatives of its various customer groups, notably the power generation sector, on which a lot of the growth will depend during the next twenty years.

Introducing global business principles and standards

The IGU promotes the use of global business principles and standards in the different segments of the gas chain. During the Triennium it will explore the areas of the business where the industry and society at large could gain from further articulation of standards.

Demonstrating and enhancing the efficiency of the operations of the industry

One of the arguments for deregulation of the industry is that the introduction of competition serves as a tool to force the creation of operational efficiencies that public and monopoly businesses otherwise tend to neglect. Benchmarking of the efficiency of its operations could help to demonstrate that the industry is willing to shoulder its own responsibility, with or without a competitive environment.

Contributing to environmental targets

In addition to the promotion of the role of gas as a fuel of choice, ongoing research and development of technological improvements will lead to a further reduction in emissions. This, together with an active interest in, and a contribution to the developments around fuel cells and CO₂ sequestration, would assist in demonstrating that the industry is willing to take its responsibility as a member of society.

Conclusion

We feel confident that, as was done in the past, close cooperation by the members of the different committees will provide valuable contributions with respect to the referred strategic topics for IGU members and the energy industry as a whole. It is of utmost importance that the IGU greatly enhances the possibilities for direct involvement of the gas industry in the processes of shaping the future role and structure of the energy markets. This will increase the authority of the IGU as the mouthpiece of the world gas industry. At the same time the Presidency will act diligently with respect to internal IGU needs, in order to further improve its efficiency and effectiveness.

In short:

**Gas: Powers the People
Preserves the World
Promoted by the IGU.**

George H.B. Verberg
Vice-President
International Gas Union