International Gas Union

TRIENNIAL WORK PROGRAM
2018-2021

A Sustainable Future - Powered by Gas
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Foreword

The 2018-2021 Triennial Work Program (TWP) will build on the momentum of previous Presidencies to enhance the role of the International Gas Union (IGU) as the Global Voice of Gas.

The world is on the brink of an unprecedented transformation of the global energy mix while facing the challenge of coping with ever-increasing global energy demand, the need to mitigate greenhouse gas emissions and improve air quality, and the mission to bring affordable energy to the tens of millions of people who don’t have it.

IGU as the global voice of gas, has been focused on tackling these critically important global issues. As such, the previous USA Presidency spent tremendous efforts to deal with the challenges that the energy industry is facing and with considerable achievement. But, much more has to be done.

To this end, we embark on a journey to A Sustainable Future Powered by Gas as an Affordable, Accessible and Abundant energy source.

Under the themes of, Environmental Leadership, Market Vitality, and Value Creation we will present compelling, credible and factual arguments why gas is well positioned to be a catalyst to the energy transition. We will do so by working through cross-industry and member collaboration and innovation.

The Korean Presidency is ready to establish a platform to execute these three functions: strong advocacy, transparent governance and delivering value to members.

We respect the voice of IGU members and will strive to deliver tangible outcomes to meet your needs.

Welcome to the World Gas Conference 2021, welcome to Korea.

Joe M. KANG
IGU President

Luis Bertran Rafecas
IGU Secretary General
IGU Organization Chart

IGU COUNCIL

EXECUTIVE COMMITTEE

MANAGEMENT TEAM

President,
Vice President,
Immediate Past President,
Secretary General,
CC Chair,
CC Vice Chair

Jérôme Buxton
FRA

COORDINATION COMMITTEE

Director
Rodney Cox
AUS

CC Secretary / Director in presidency
Dong Hoon Kim
KOR

Secretary General
Luis Buxton
FRA

Director Advisor
Rafael Huarte
ESP

Public Affairs
Mel Videsas
CAN

CC Chair
Jeongwook Khang
KOR

CC Vice Chair
Xavier Chen
CHN

EVENTS

Director
Rodney Cox
AUS

COORDINATION COMMITTEE

IMMEDIATE PAST PRESIDENT
David Carroll
USA

VICE PRESIDENT
Li Yalan
CHN

PRESIDENT
Joe M. Kang
KOR

COMMITTEES

Distribution
Chair
José Carlos Bro超出Oliver
BRA

Exploration and Production
Chair
Ekaterina Litvinova
RUS

LNG
Chair
Farid Bernahou
DZA

Gas Markets
Chair
Zhaoyan Liu
CHN

Marketing and Communications
Chair
Hansch Van der Velden
NLD

R&D and Innovation
Chair
Hisataka Yakabe
JPN

Storage
Chair
John Heer
USA

Strategy
Chair
Gerald Linke
GER

Sustainability
Chair
Azrina Abdullah
MYS

Transmission
Chair
Patrick Pelle
FRA

Utilization
Chair
Carlos Serrano Tarala
ARG

Task Forces

Strategic Communications and Outreach
Chair
Alex Burnett
AUS

Energy for All
Chair
Barbara Jinks
AUS

Energy Policy
Chair
Hedayat Omidvar
IRN
2018 – 2021
TRIENNIAL WORK PROGRAM
(TWP)
Introduction to the Triennial Work Program 2018-2021

The Triennial Work Program (TWP) is the core document that defines the work and activities that IGU Committees and Task Forces will carry out during the next three years. Its objective is to support the Mission of IGU, in its efforts to aspire to the Vision “As the global voice of gas, IGU seeks to improve the quality of life by advancing gas as a key contributor to a sustainable energy future.”

The 2018-2021 TWP strives to advance the role of gas in a sustainable energy future through the development and exchange of knowledge and information. The strategic guidelines for 2018-2021, which is the basis of TWP, are explained further on the next page. These Strategic Guidelines were presented to the IGU Council in Tokyo, Japan in October 2017 and endorsed by the IGU Executive Committee in Cairo, Egypt in April 2018.

The IGU Committees and Task Forces will implement this work program through a global network of knowledgeable professionals representing the members of IGU and according to the descriptions and scope outlined later in this document. Their work will cover the entire gas chain, as well as address all the major issues affecting the gas industry worldwide. The members of the committees will work in study groups to identify and collect the relevant information in their field of expertise for analysis and preparation of the deliverables in relation to the topics chosen for the triennium. They will participate in various meetings, forums, discussions and interactions with external organizations linked to IGU through conferences and constructive sharing of information.

The IGU Presidency and Secretariat warmly invite all Charter and Associate members to nominate individuals from their ranks to join and support the work of the committees. Each committee member chooses the committee study groups in which he/she would like to participate. It is preferred that the nominee is an active representative (and deputy) who will be able to attend at least one full committee meeting and one study group meeting every year. We have observed that the personal contact, group interaction and cultural/social experiences through active participation in IGU working meetings add significant value for the participating individuals, companies and organizations. Not only does this IGU experience expose participants to different international outlooks and perspectives, but the increased knowledge and insight acquired by sharing information with technical and commercial peers from other countries provides a unique opportunity for improving future decision making, enhancing business relationships, and gaining operational excellence.
The Theme of the Triennium

The theme for the 2018-2021 triennium leading up to the 28th World Gas conference (WGC) to be held in Daegu, Korea in June 2021 is:

“A Sustainable Future – Powered by Gas”

Gas will be an essential component of energy transition, helping to meet increasing demand while lowering greenhouse gas emissions and improving air quality. Gas is one of the few energy sources that can be used across all sectors of the global economy to generate electricity, to provide heat and feedstock fuel for essential industrial processes, to provide a variety of domestic applications including heating, and to fuel the transport of people and goods. Fulfilling the enormous potential of gas in the global energy supply system will depend largely on economics, policy and the environmental benefits of natural gas. Against this backdrop the overarching aim of 2018-2021 triennium will be to advance and insure a role for gas in a sustainable energy future.

Strategic Guidelines

Under the theme of the triennium, the following three areas of strategic focus and detail strategic guidelines have been established in order to guide the work and efforts of the committees and task forces.

Environmental Leadership

• Overcoming environmental challenges
• Enhancement of energy efficiency
• Advocacy for policy and public acceptance

Since COP21, there has been a growing focus on addressing environmental challenges. The gas industry should increase its effort and contribution in overcoming these environmental challenges while enhancing energy efficiency. With these efforts and IGU’s advocacy work we will endeavor to improve the public acceptance of gas and convince the global community that natural gas is the key energy source for our sustainable future.

Market Vitality

• Affordability
• Flexibility
• Strategic partnership & policy cooperation

We are in an era of energy transition. To expand global gas markets we will make efforts to enhance the affordability of gas and remove barriers that could affect gas demand. We will also support strategic partnerships with other major organization to promote the benefits of gas and cooperate on adequate policy frameworks.

Value Creation

• Technological innovation
• Collaboration with renewable energies
• Accessibility improvement

We will encourage technological innovations to increase the role of gas in emerging sectors such as gas transportation and collaboration with renewable energies (electricity and gases). Along with these efforts, we will also work on improving the accessibility of natural gas worldwide. Gas could deliver economic and social development and enhancement in the quality of life by creating economic prosperity, new jobs, generating new markets and by lifting people out of energy poverty. This focus is in line with IGU’s vision to ‘improve the quality of life by advancing gas as a key contributor to a sustainable energy future.’
Structure and Organization

To support the work as defined in the Triennial Work Program (TWP), a total of eleven Committees and three Task Forces have been set up.

The 11 Committees are composed of Exploration & Production, Storage, Transmission, Distribution, Utilization, Sustainability, Strategy, Gas Markets, LNG, Marketing & Communication and R&D and Innovation. Within the committees, Study Groups (SG) has been formed to carry out their identified tasks which cover the entire gas value chain and main issues facing the gas industry.

During the Korean presidency triennium, the three Task Forces (TF) will have specific focuses. TF1, Strategic Communications and Outreach, will have oversight and provide insight to the IGU’s strategic positioning and advocacy activities. TF2, Energy for All, will focus on energy access and economic development. TF3, Energy Policy, will carry out case studies identifying the global, national and regional policies that facilitate natural gas use and share these policies with our members and key policy makers.

The Coordination Committee (CC) has overall responsibility for the performance of the committees. It is comprised of the Coordination Committee chair, vice-chair and secretary and all the chairs of the committees and task forces. The CC will hold at least two meetings per year to conduct lively discussions on the topics for the triennium, to evaluate the progress of the committees and to review progress for the deliverables for the triennium and World Gas Conference 2021.

Scope and Deliverables

The deliverables will consist mainly of comprehensive reports providing sharp insights into selected topics, identifying the key lessons learned from policies and practices, and a set of proposals for future developments of improvement in these areas. In addition, intermediate deliverables on specific issues and topics raising the global voice of gas will be delivered in support of seminars, workshops and publications.

The committees and task forces will also shape the technical program that will be presented at the 28th World Gas Conference, which will be held in Daegu, Korea on 21-25 June, 2021.

The information produced will be made available to IGU members via the website (www.igu.org) as well as via other channels. Information of special importance and general interest may be published in accordance with the IGU publication policy.

Jeongwook Khang
Chair of IGU Coordination Committee

Dong-Hoon Kim
Secretary of IGU Coordination Committee
COMMITTEES AND TASK FORCES: TERMS OF REFERENCE
Introduction

What will be the main challenges in 5 years for the gas distribution industry? In evaluating this question one concludes that there will be many important points related to the future challenges of the gas industry and gas distribution. It is possible to identify general issues and more specific questions, all relevant to the future of gas distribution.

The list below presents some of the issues and questions developed from a quick brainstorming exercise, which exemplify the type of challenges the distribution industry faces, with the Distribution Committee members:

- Data management (smart metering, privacy, security issues).
- Data analysis;
- Knowledge transfer, maintain the technical expertise inside the Distribution System Operators (DSOs);
- Speed up the implementation of technology. New applications;
- IoT (Internet of Things) in distribution, including together “implementation of technology”;
- Methane emissions in distribution mains, improving the carbon footprint;
- Revenue protection;
- Distribution of Hydrogen, including biogas, green gases;
- Small scale LNG and virtual pipeline;
- Digitalization and “communications” with existing and potential customers;
- Data accessibility for the customers;
- Environmental aspects: gas advocacy;
- Others

During the 2018 – 2021 trienniums the Distribution Committee will study the following topics to be explored by the 3 Study Groups.

Study Group 1:
Make Grid Smarter

The objective of the SG1 is to analyze how to improve the use of the gas distribution grids. There are enormous extensions of gas infrastructure being implemented around the world. How could this infrastructure development be improved and operated under a vision of energy integration? How could it be used to better meet the needs of the connected and potential customers? How can we develop and create Information & Communication Technology solutions (hardware and software) for establishing decentralized, integrated local producer and consumer markets? How can the gas grid be integrated with other grid and infrastructures?

Study Group 2:
Support Hydrogen Economy

New sources such as biomass, solar, wind and other renewable energies are currently under increased development. Guaranteeing access, reducing costs, and reducing environmental impacts are key drivers for this transition. Another permanent issue is how these energy sources integrate with one another and with the conventional ones.

Under a scenario which increases renewable energy use, the perspective of the growth of the use of the hydrogen in many countries is becoming a reality, particularly in Europe. The objective of the SG2 is to understand the impacts of the hydrogen scenario, exploring the interfaces with the gas distribution, trying to discover the possibility of a full integration of the hydrogen chain into the gas system (production, storage, distribution, utilization, consumption).

Study Group 3:
Expand Innovation Ecosystem

In some aspects the technology associated with the Gas Distribution industry can be considered mature and stable. This environment is propitious to form stable scenarios where no big transformations happen. It is reasonable to admit that “methane molecule cannot be transported via cloud”, the pipes are still necessary! Even recognizing this reality, evolution, new technologies and innovation that are fundamental for any industry, must be present in gas distribution as well.

The challenge is to discover how to do that effectively. How to create a culture focused on innovation. It is easy to spend resources, time and money, without having good results. The main objective of the SG3 is discussing how to intensify actions to be developed by DSOs to foster partnerships with innovators outside the utility sector. How to create methodologies focused on innovation that permits to obtain innovative solutions.
**Exploration and Production Committee**

**Introduction**

Natural gas enhances global energy security, improves air quality and reduces the effects of climate change. It is the most environmentally friendly, reliable and secure fossil fuel. According to IEA outlook there are enough technically recoverable gas resources (both conventional and unconventional) in the world. At current production levels there is over 200 years of supply. E&P activity is the first component in upstream business and plays a key role in the whole chain from gas production up to gas transportation and distribution. The world is changing – crises, environmental degradation, the fluctuation in oil prices. Exploration and development of available global gas resources requires the use of modern approaches which are both reliable and efficient.

Our mission is improving efficiency in E&P through innovation, cooperation and sharing. The main goal of the committee is to find the best ways for improving efficiency in E&P. Our key background points are that at the moment the border between conventional and unconventional resources is vanishing progressively. The active stages of most conventional gas fields are coming to the end. At the same time we can see a variety of possibilities for creating new strategies to increase efficiency in E&P.

Our principal focus is on combining the experience gained in the development of unconventional resources with that of conventional ones. To keep up with the present challenges we follow the latest technological advances and best practices. There are two research groups that are in charge of the two key fields of activity: strategies and advanced technologies for the E&P of natural gas. The activity of the research groups will be based on the study of global trends and best practices in ensuring sustainability of the gas industry. Case studies from the committee’s members will be included in each committee session as a compulsory activity.

**Study Group 1: Strategies**

SG1 will study the strategies for the E&P of natural gas. It will include the analysis of current reserves, resources, hotspots and wildcards; studying tendencies, contradictions, uncertainties and challenges and development of new strategies for the industry.

**Study Group 2: Advanced Technologies**

SG2 will focus on advanced E&P technologies for prospection and exploration of hydrocarbons, geological and geophysical data processing and interpretation, extraction and production of natural gas and technologies for extending the lifecycle of mature gas fields.

**Sub-Task Force**

Also several sub-task forces will explore among other things legal and statutory regulation for subsoil use, safety and the environment problems, and natural gas processing.

**Gas Markets Committee**

**Introduction**

The role of the gas markets committee is to evaluate the impact of environmental policies and regulations on global gas markets, identify and study market behaviors of influential gas players in a buyers’ market, and improve coordination and integration between gas markets and innovations.

**Study Group 1: The implementation of Paris Agreement and its impact on global gas markets**

- Analyze the measures taken by governments to achieve their commitment targets
- Conduct quantitative assessment of the impact that Paris Agreement imposes on gas demand
- Predict how global gas markets will evolve in the next decade in this environment
- Study and analyze policy changes and the investment needed on a global scale

**Study Group 2: Business transformation**

- Study the key trends in companies’ transformation and adaptation of strategies, the implications for global gas markets, and relationships across the value chain, assuming sustained low hydrocarbon prices
- Explore new business opportunities - new sectors, customers, markets and services
- Examine new operating models emerging with the shift to a buyers’ market
Introduction

LNG has become an increasingly important share of the global energy mix and this trend is likely to continue in the long term. This is mainly due to: 
• Demand: a significant rise in demand for gas in countries with limited access to domestic production and an increasing desire from countries to diversify their energy sources (relied gas supply). 
• Supply: large (excess) volumes of gas coming on stream in Australia and the US, suited for export. 
• Infrastructure: Rapid developments in LNG infrastructure (e.g. FSRUs, FIDCs) that make it easier and cheaper to connect supply and demand. In light of these long term trends, the LNG committee will work on three studies aimed at: (1) developing new LNG demand, (2) creating more efficient LNG markets and (3) maintaining competitiveness against other energy alternatives.

Study Group 1: Integrated LNG consuming projects

LNG demand is expected to grow but the potential of LNG could be even greater if technological challenges are addressed and the full benefits to users are made transparent. To address this topic, the study group suggests to focus on the following deliverables: 
• Assess the integrated downstream solutions to address niche markets (LNG supply, storage, regasification facilities, and emission footprint). 
• Describe and size the potential of new applications of LNG that are emerging because of regulatory and/or technological developments. 
• Describe how integrated LNG projects can add value to host markets, beyond simply delivering volumes. 
• Make transparent success factors that contribute to a liquid gas trading hub, including: physical infrastructure, pipeline network, liquefaction facilities, connection points to adjacent hubs, proximity to end users and local regulation (local tariffs, third party access regulation for transport and storage infrastructure). Through a case study on the rapid rise of the TT and a regional Dutch gas hub to the second most liquid hub in the world, the study group will assess the case study of emerging Asian hub and the challenges.
• Assess current initiatives to establish regional LNG trading hubs and price indicators.

Study Group 3: GHG emissions across the LNG Value Chain

Gas and LNG demand is still growing in line with global energy consumption. The lower carbon footprint of gas compared to coal also means that consumers looking to reduce their carbon emissions are incentivized to shift energy consumption from coal to gas. Despite the current growth outlook for LNG in the medium to long term, there is a significant downside to this outlook coming from emissions: non-renewable sources of energy, which are becoming increasingly cost-competitive relative to LNG. For LNG to remain competitive, GHG Green House Gas) emissions and costs will therefore need to be actively managed across the entire value chain. To address this topic, the study group suggests to focus on the following deliverables: 
• Analyze current and future cost position of LNG relative to renewable energies (wind and solar) in different parts of the world taking into account developments in cost. 
• Describe GHG footprint of the LNG value chain by including: 
  - Harmonized measurement methodologies to calculate methane emissions. 
  - Complete allocation of emissions from gas oil common fields. 
  - List mitigation measures to reduce GHG emissions. In different parts of the LNG value chain and the potential per measure.

Sub-Task Force: The IGU World LNG Report

The committee produces the annual IGU World LNG Report. This report provides a comprehensive overview of 10 LNG market developments that includes import, exports and pricing, liquefaction plants, LNG carriers, and LNG receiving terminals.

Marketing and Communications Committee

Chair: Harsh Vans der Velden
The Netherlands
Vice Chair: Akmal Zaghloul
Egypt

Introduction

In some regions, natural gas is being challenged as an energy source for the longer term. In these markets, we have a lot of convincing to do. We have to keep in mind that success is not a given, it needs to be earned. Public acceptance is at the heart of our vision that gas can power a sustainable future. We can only stay relevant when we respond to society’s needs: support economic prosperity, reduce greenhouse gas emissions, meet the need for clean air and clean water, satisfy the desire for low carbon energy solutions for homes, businesses and transportation; and honor the imperative to minimize our environmental impact and play a positive role for communities where we operate. Public acceptance requires constant dialogue with society. Solutions developed in isolation will fail. Building relationships and dealing with stakeholders effectively is key all over the world.

The IGU recognizes that public acceptance is crucial for the success of our business long term: both acceptance of our premise, as well as our operations. Therefore, for 2018-2021, the Marketing & Communications Committee will focus on four crucial areas of acceptance:
• Energy visions around the world: This topic of focus will look at the narrative we present on a future energy mix. We need a compelling vision if we want to be accepted as a serious future partner. This focus area will compare visions for energy and low-carbon strategies from around the globe, and assess how the role of gas is defined within them. 
• The media landscape: This focus area of focus will look at how the sector is interacting with media in order to promote public acceptance, we want to know what the issues and trends in public relations. It will also investigate the role of social media and online journalism and how this has changed media relations for our industry. 
• Marketing innovations: This focus area is about how we bring new gas solutions to the market (B2B or B2C). Public acceptance is only ever valid if our premise of a sustainable future gets translated into concrete gas applications. Therefore, we will look at the marketing of innovations in energy efficiency, green power, gas to gas, gas to power, clean transport, urban air quality, LNG in transport and other social or technical innovations of gas. 
• Clean air communications: Our Committee is the IGU Thematic Lead Committee for Clean Air. In this capacity, all three study groups will look specifically at clean air in their respective areas. The MCC will also assign the role of a special rapporteur among its members to look at clean air communications that has been rolled out by associations and companies across the globe, and coordinate clean air.

Study Group 1: Communicating a Compelling Energy Vision

Only with a compelling vision can gas show what we are for, not just what we are against. This is a vital part of public acceptance of new technologies and the value we bring. This study group will explore what companies and national associations are presenting as “Triergy Vision” in their respective countries. We want to find out what we say to policymakers and opinion leaders on the long-term energy mix, and how gas fits in.

Study Group 2: Engaging in the Media Landscape

This study group wants to develop insights into how to best engage with new media. Social media and the internet have forever changed the public arena, and with public acceptance it has tied media and social media together and changed the role of traditional media outlets. At the same time, it has made the world bigger and messier. The question is how we have adapted to this new reality in our press relations and media strategies.

Study Group 3: Marketing Innovations B2B and B2C

This study group looks further into how the gas industry is responding to a low-carbon future, by developing innovative gas technologies. Specifically, this study group will look at the B2B and B2C marketing needed to make these new technologies a success in the market, not just on the drawing board.

Special Focus: Thematic Lead Committee for Clean Air

The MCC has been assigned the role of Lead Committee on Clean Air. In this capacity, the Committee will look specifically at how our industry builds air quality and clean air improvements into our communications and stakeholder engagement. These insights help inform the IGU on the possibilities for more effective communications on the topic. As the Thematic Lead, the MCC will also look at work on clean air done in the other committees and how this can contribute to strengthening our communications and outreach.
Introduction

The Research and Development and Innovation Committee will conduct a comprehensive collection of information on a variety of technologies related to the entire natural gas value chain, exchange and share the information accordingly, and disseminate it throughout to the IGU members. The scope of this Committee is not limited to the conventional technologies but embraces all technical sectors including emerging & innovative technologies. The technical work of this Committee will contribute to expanding the business sector in the gas industry, by providing solutions to make the gas business more competitive, efficient, safe, with less environmental impact.

This committee will follow the policy of IGU and work closely with the other committees. After a thorough communication and discussion with the other committees, the output of this committee will be realistic and practical, and will lead to the pragmatic and efficient utilization and implementation of the technologies.

Another important mission of this committee is supporting the International Gas Union Research Conference 2020 by creating the conference program.

Study Group 1: Technologies in Upstream of NG value chain

The technical region in which this group focuses on is the upstream sector of the natural gas value chain such as exploration, production, LNG, storage, and transmission. Both innovative and long-established but still crucial technologies are the target subjects.

Study Group 2: Technologies in Downstream of NG value chain

The technical region in which this group focuses on is the downstream sector of the natural gas value chain such as, distribution and utilization. Both innovative and long-established but still crucial technologies are the target subjects. This group will collaborate with the other relevant committees especially the Utilization committee.

Study Group 3: Cross-cutting technologies

Cross-cutting technologies include subjects which act as a bridge between basic and applied researches by fostering developments of innovative systems for improving the availability, efficiency, and environmental performance of natural gas. This group is involved in cross-cutting technologies, and treats a wide variety of innovative topics. This group works closely with the other relevant committees such as Strategy and Sustainability committees.

Storage Committee

Introduction

Underground storage of natural gas is and will continue to be a critical component of the natural gas value chain. Underground natural gas storage is facing new opportunities and challenges from changing market situations to changing safety regulations to the expansion of traditional natural gas to include biogases and perhaps hydrogen. The committee will produce work products focusing on the technical and regulatory aspects of underground storage (UGS) of natural gas and will include the evolving role of storage particularly in the support of renewable energy.

Study Group 1: Gas Storage Database

Continued maintenance and improvements to the active database of UGS in operation and UGS projects.
- Improved data completeness
- Expanded data base
- Explore adding other storage sites / unconventional

Study Group 2: Best Practices in UGS Design, Operations, and Maintenance

Defining Best Practices in UGS Operations
- Safety Best Practices
- In Operations and Maintenance
- In Well and Reservoir Design
- In Risk Analysis
- Technology Innovations
- All areas of UGS
- Codes and Standards

Study Group 3: UGS to Today’s Markets and Environment

Operating UGS in today’s markets includes support for renewable energy, profitable operations, and new opportunities for UGS. This study groups goals will be flexible as UGS industry issue arise in the next two years. Anticipated study areas could include (and may have overlap with SG 2)
- Market Conditions for UGS
- Impacts of increasing levels of renewable gases in natural gas systems
- Interfacing UGS with Pipeline operations
- Renewable Energy Support
- CO2
- New Developments...
**Strategy Committee**

**Chair**
Gerald Linke
Germany

**Vice Chair**
Olga Shchekina
Russian Federation

**Study Group 1: Efficiency of gas**

This committee shall lead a study on the efficiency of natural gas. The Study Group will examine the overall efficiency of the entire gas chain from production, transport, energy balance and application. It will compare overall system efficiency under different criteria and demonstrate the cases where gas systems can serve policy needs in a better way compared to other forms of energy or other infrastructures being utilized. Cases in focus shall be: Comparison of the most cost-efficient strategies for the reduction of emissions from transport; assessment of the most cost-efficient way to lower emissions in big cities; comparison of transition strategies towards a quick development of areas with lack of energy; comparison of energy systems can serve policy needs in a better way compared to other forms of energy or other infrastructures being utilized. Cases in focus shall be: Comparison of the most cost-efficient strategies for the reduction of emissions from transport; assessment of the most cost-efficient way to lower emissions in big cities; comparison of transition strategies towards a quick development of areas with lack of energy; comparison of energy systems can serve policy needs in a better way compared to other forms of energy or other infrastructures being utilized.

**Study Group 2: Pricing of gas**

The IGU pricing survey is recognized as one of the most important IGU reports. SG2 will continue to produce and improve this report.

**Study Group 3: Long term strategy in environment-conscious markets**

The long term strategy for natural gas is quite an issue for the strategy committee: the entire energy industry is in a phase of change, and so are the perspectives of natural gas. The absolute optimism prevailing at mid-decade and being haled as the golden age of natural gas has been replaced with a more delicate view of the role of natural gas in the future energy mix. In particular in mature markets with a growing consciousness for environmental matters clients developed a fossil phobic attitude which also includes natural gas. This role of gas needs to be examined, and strategic solutions to return to an overall positive image of gas shall be developed. Thus, "gas" needs to be redefined, not only to cover natural gas, but including other, alternative gases, without fossil background. Some first results of these efforts show up by defining natural gas as the catalyst to numerous sources of renewable energy sources. The "greening of gas" not only asks for the inclusion of biogases into the portfolio, but addresses also issues as sector coupling, storage and fuel replacement for power production and transport. Therefore, natural gas, as the least climate damaging of all fossil energies, has a new role to bring humanity to a sustainable, climate-friendly future.

**Sustainability Committee**

**Chair**
Azrina Abdullah
Malaysia

**Vice Chair**
Andres Membrillo Bonilla
Spain

**Introduction**

The Sustainability Committee will continue the work conducted under the USA Triennium to support IGUs efforts in demonstrating the role of gas in the world’s future sustainable energy mix, including as a partner of renewable energies, and enhancing public acceptance of unconventional gas supplies. Public acceptance of gas development and delivery through HSSE (Health, Safety, Security and Environment) will be a focus of the Committee. The committee will discuss social and environmental challenges to identify opportunities and innovations in supporting a sustainable future powered by gas. In addition, a study on gas and renewable energies will be carried out.

**Study Group 1: Public Acceptance of Gas Development and Delivery through HSSE**

Role of HSSE in gaining public acceptance of gas development and delivery:
- Documenting good practices of HSSE in gaining public acceptance of gas development and delivery
- Identifying innovative practices of HSSE to strengthen public acceptance of gas development and delivery

**Study Group 2: Innovative practices in Environmental Management**

Identify practices and success stories by consolidating innovative solutions to overcome environmental challenges for:
- Reducing emissions - Meeting the challenges of emissions management
- Water management - Potential use of produced water (irrigation, recycle, recover)
- Soil and Groundwater Management - Well integrity: Protecting aquifer and groundwater
- Decommissioning - Rehabilitation

**Study Group 3: Gas and Renewables**

Focus on delivering one study report and one external publication on gas and renewable energies:
- Potential of renewable gases as a long term option
- Exploring the complimentary roles of gas and renewable energies
- Technological disruptions in gas and renewable energies impact to energy growth
Introduction
Gas transmission’s activity is a very capital intensive one with assets in place representing thousands of billion USD and millions of kilometres of pipe all around the world. This industry is very useful for delivering great quantities of energy towards cities and big consumers. It brings often development and employment but in a context where fossil fuel use is more and more being challenged, we wish to demonstrate that gas pipelines can contribute to a sustainable future powered by gas.

Our work during 2018-2021 triennums will bring cases for demonstrating:

- Gas transmission lines are safe, efficient, reliable and greener
- Transmission networks are key actors in energy hubs development for better gas prices and key actors in security of supply
- Gas transmission operators innovate to create value for whole gas industry and societies

Study Group 1:
Gas transmission lines in a strong environmental trend

Environmental leadership is necessary due to societal paradigm illustrated by the Paris agreement. For gas transmission activity, environmental leadership is unavoidable for public acceptance during operation and mostly for building new pipelines. It’s the reason why our Committee has to work on reduction of leaks (especially fugitive leaks), on how to safely transport renewable gases and on societal responsibility like preservation of biodiversity, knowledge of archeology from soils crossed by pipelines, safety of supply, integrity, etc.

Study Group 2:
Gas transmission networks for market vitality

Gas transmission networks bring first energy and economic development and therefore opportunities for creating new markets. Secondly, they bring optimization by giving the possibility to create hubs. But what is the situation in each area of the world? How is the synergy between gas and electricity in each area? What are the different ways to use gas pipelines in each part of the world?

Study Group 3:
Gas transmission companies’ methods go towards value creation

Innovation is a key factor for creating value for the whole gas industry and for the society. Our committee will show how digitalization is often a modern means to reinforce efficiency in smart pipeline networks, in advanced pipeline integrity management and with artificial intelligence in gas transmission activities.

Our committee will show also how gas transmission companies may reinforce value for Society in many fields.

Utilization Committee

Introduction
The Utilization Committee will focus on the new role of renewable gases in the industry, either in residential/industrial use or in the transport sector. During the energy transition, the use of renewable gases is expected to be a key factor, and new technologies will help insure a more efficient and safe utilization of gas. Thus more emphasis in renewable energies and new technologies will be required during the 2018-2021 trienniums. Coal and oil will come under increasing pressure from natural gas as more environmentally friendly energy in power plants and mobility, which will contribute decisively to the aforementioned energy transition.

Study Group 3:
Gas for Transport

- RNG in urban mobility as key factor for air quality improvement
- Biogas and RNG production for mobility and transportation
- Solutions for improving NG advocacy throughout renewable gases
- New technologies for maritime transport and other uses with NG
- Blockchain: solutions for mobility & smart energy contracts
- The GHG and air emissions benefits of gas in transport modes (CNG & LNG)

Study Group 2: Gas Utilization in the Commercial, Industrial and Power Generation

- Gas to Power
- Integration of renewable energies and NG
- Carbon footprint reduction and air emissions improvement
- Distributed power generation with NG as back up for intermittent renewable energies. The role of m-CHP
- Enhancement of energy efficiency

Study Group 1: The emerging role of gas in buildings

- Supporting renewable energies in residential heat (such as sector coupling)
- Smart metering, Big Data solutions for safety, energy poverty and discouraging gas theft
- New technologies to deal with Renewable Natural Gas(RNG) quality issues
- Integrating renewable-gases in the transition to COP21 in domestic utilization
- Smart gas grid integration (houses, metering, network, cities)
Introduction / Scope

Policy direction, stakeholder perceptions and public confidence are critical factors influencing the outlook for the natural gas industry. The Strategic Communications and Outreach Taskforce will support IGU strategic communications strategy and delivery, aiming to clearly articulate the critical role of gas in a sustainable energy future and position the IGU as the global voice of the gas industry.

Taskforce 1 will provide input to the design and delivery of the Strategic Framework, Delivery Model and Annual Plan for IGU Strategic Communications and Outreach and core materials, managed by the Public Affairs Director. Two full meetings of the Taskforce will be held each year of the triennium, including one meeting to review the annual plan before it is presented to the IGU Executive Committee. A subset working group of Taskforce 1 will work closely with the Executive Director Public Affairs and provide strategic input and support for the delivery of the Plan.

The Taskforce will seek to maximize the input and involvement of the IGU Taskforces, Committees, Regional Coordinators, National Associations and others, to leverage their experience and expertise.

Introduction / Scope

Access to a sustainable energy supply is essential to alleviate poverty and enable prosperous communities. However, 1.1 billion people in developing countries are unable to access power and larger numbers have access to intermittent power only or use polluting and unhealthy fuels with associated security and gender issues. As the world’s population increases so does the need for more energy and, correspondingly, larger quantities of cleaner energy are needed to meet rising demand and enable economic development, whilst addressing environmental and health issues.

IGU Task Force Energy for All aims to promote the critical role gas plays in providing access to cleaner, sustainable energy and in facilitating economic development, while contributing to UN SDG7: Ensuring Access to Affordable, Reliable, Sustainable and Modern Energy for All and assist in meeting COP21 targets. This will be achieved by establishing an IGU Gas Energy Access Platform that nations with limited energy access can utilise to promote and facilitate the development of gas infrastructure. The following work will underpin the Platform:

Phase 1

Collation of case studies (evidence-based and verified by credible institutes) that:
• Demonstrate the role that gas plays in supporting energy access;
• Compare the attributes of gas to alternatives, such as solar, wind and LPG;
• Show how energy access facilitates industrialisation and economic development.

Establish collaboration with NGOs that promote the use of gas to alleviate energy poverty, such as Sustainable Energy for All and others.

Phase 2

Production of IGU Energy Access Guidelines that provide, on a regional basis:
• Current and potential examples of where gas can provide access to sustainable energy;
• Guidance on the technology, policy, regulation and financing conditions that support the role of gas in enabling access to sustainable energy.

Members will come from major IOCs and global/regional gas associations and organisations (such as GIGNL and WLPGA) and research bodies. The Taskforce will meet twice each year during the IGU triennium, with the option for extra Working Group meetings as required.

Chair
Alex Burnett
United Kingdom

Vice Chair
Malcolm Roberts
Australia

Vice Chair
Alejandro Kowalski
Spain

Chair
Barbara Jinks
Australia

Vice Chair
Jiwon Oh
Republic of Korea

Task Force 1- Strategic Communications and Outreach

Task Force 2- Energy for All
Introduction / Scope

The Energy Policy Task Force will identify the good/best energy policies to promote the natural gas as an important part of the energy future, along the whole value chain, either at global or national level, while taking into consideration the current and new climate agreements and commitments.

This TF will try to continue with the interaction and cooperation with the ICER (International Confederation of Energy Regulators).

Approach

By developing cases studies for global, national and regional policies, in a structured way to allow their comparison and the identification and the sharing of good/best policies.

Team

Broad representation covering international, regional and local IGU members and, if feasible, other: institutions; academia; organizations; associations; companies.

Cooperation and coordination within IGU

Benefit from the experience, participation, interaction and collaboration with other Committees and Task Forces, avoiding overlaps.

Working closely with other important organizations, institutions, stakeholders and policy makers could allow IGU to contribute to develop energy policies.

Chair

Hedayat Omidvar

Iran

Vice Chair

Francisco de la Flor

Spain

Task Force 3- Energy Policy
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Venues of IGU Meetings
During the 2018-2021 Triennium

<table>
<thead>
<tr>
<th>Meeting Periods and Places</th>
<th>Coordination Committee</th>
<th>Executive Committee</th>
<th>Council</th>
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<td>2018 23-25 October</td>
<td>23 October</td>
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<td>Venezia, Italy</td>
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<td>2019 23-25 April</td>
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<td>Santiago, Chile</td>
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<td>8-10 October</td>
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<td>Yogyakarta, Indonesia</td>
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<td>2020 21-23 April</td>
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<td>Prague, Czech Republic</td>
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<td>6-8 October</td>
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<td>Vancouver, Canada</td>
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<td>2021 6-8 April</td>
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<td>Qatar, Algeria</td>
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<td>20-21 June</td>
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<td>84.</td>
<td>United Arab Emirates (Abu Dhabi Liquefaction Company Ltd. (ADGAS))</td>
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<td>85.</td>
<td>United Kingdom (The Institution of Gas Engineers and Managers)</td>
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<td>United Arab Emirates (Abu Dhabi Liquefaction Company Ltd.)</td>
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<td>Ukraine (Naftogaz of Ukraine)</td>
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<td>Turkey (BOTAŞ)</td>
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<td>Vietnam (Vietnam Oil and Gas Group)</td>
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<td>90.</td>
<td>Yemen (Yemen LNG)</td>
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**Associate members**

| 1. | Regional Association of Oil, Gas and Biofuels Sector Companies in Latin America and the Caribbean (ARPEL) |
| 2. | Energy Delta Institute (EDI) |
| 3. | Gas Technology Institute (GTI) |
| 4. | GIE (Gas Infrastructure Europe) |
| 5. | NGV Global (IANGV, International Association for Natural Gas Vehicles) |
| 6. | Gas Innovation Network (GIN) |
| 7. | World LPG Association |

**IGU Affiliated organisations**

1. Regional Association of Oil and Gas Business Sector Companies in Latin America and the Caribbean (ARPEL)
2. Energy Delta Institute (EDI)
3. Gas Technology Institute (GTI)
4. GIE (Gas Infrastructure Europe)
5. NGV Global (IANGV, International Association for Natural Gas Vehicles)
6. The International Group of Liquefied Natural Gas Importers (IGIL)
7. NPGA Europe
8. NGV Global (IANGV, International Association for Natural Gas Vehicles)
9. The International Pipeline and Offshore Contractors Association (IPCA)
10. Monostorg
11. Pipeline Research Council International, Inc. (PRC)
12. Russian National Gas Vehicle Association (RNGV/NI)
13. World LPG Association

**Premium Associate members**

1. Beijing Gas Group Co Ltd (BGEG) (PR of China)
2. China National Petroleum Corporation – CNPC (PR of China)
3. Enagas (Spain)
4. ENGIE (France)
5. Eni SpA (Italy)
6. GNL – Mandarin Gas Distribution Co (Turkey)
7. Korea Gas Corporation (KOGAS) (Republic of Korea)
8. PT Petamina (Indonesia)
9. Royal Dutch Shell (The Netherlands)
10. Equinor (Norway)
11. TOT SA (France)

**Associate members**

1. Abu Dhabi Natural Oil Company (ADNOC) Distribution (United Arab Emirates)
2. AGL Energy (Australia)
3. Anadarko Petroleum Corporation (APC) (USA)
4. Atilas Corp Gas and Process (USA)
5. Australian Petroleum Production & Exploration Association (APPEA)
6. Brazilian Natural Gas (BNL) (Brazil)
7. CONA (Dutch Gas Company) (Netherlands)
8. Enerdata (Spain)
9. Enagas (Spain)
10. Equinor (Norway)
11. ENI (Italy)
12. Eurogas (Italy)
13. Fagel (Italy)
14. GAZBIR- Association of Natural Gas Distribution Companies of Turkey
15. GAZCENTR (Russia)
16. Gazprom (Russia)
17. Gazprom Neft (Russia)
18. Gazprom Neftegaz (Russia)
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WELCOME TO WGC 2021
DAEGU, KOREA