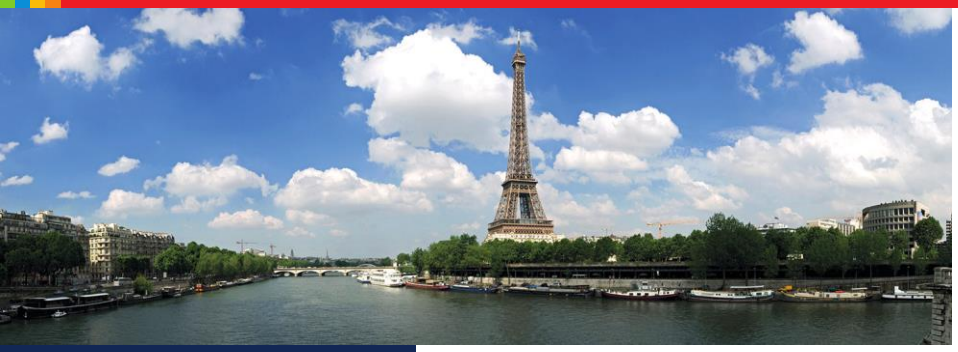
2012-2015 Triennium Work Reports



Gas Advocacy

Logbook of IGU's task force

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Executive Summary:

Due to several changes occurring during these years
in the natural gas industry, the lobbying activity for gas could play a crucial role.
For the triennium 2012 – 2015 International Gas Union decided to reinforce its gas advocacy activities creating a Task Force dedicated to this topic. This report has the purpose to travel through these last three years of IGU gas advocacy Task Force's activity. In this paper we are going to analyse aside of the topics that have been chosen for the lobbying activities, also the strength and weakness of the work done. The aim is to share the results of this experience in order to provide knowledge for future gas advocacy activities.

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Introduction

Natural gas is commonly recognized as the most environmentally friendly, affordable, reliable, efficient and secure fossil fuel. The present and potential role of natural gas has to be recognized accordingly in policy measures and debates.

With this aim the International Gas Union decided to create a Task Force on gas advocacy issues for the triennium 2012 – 2015. The aim was to further reinforce the characteristics of natural gas and to underscore its role as a fuel that promotes both growth and decarbonisation.

This report has the purpose to travel through these last three years of IGU gas advocacy Task Force's activity. The main idea is to collect the result and the weak points of this experience in order to share knowledge for the advocacy activities that IGU is going to start in the next triennium.

Acknowledgements

The acknowledgements are extended to all members of Task Force 2 Gas Advocacy who have contributed during the triennium with materials, knowledge, advice, comments, and personal attendance at the meetings of the group.

Special thanks to Ieda Gomez (Energix Strategy) and Roberta Stucchi (Eni) for their actual support.

Special thanks to Carolyn Pek (Petronas), Georges Bouchard (AFG), Alex Brunett (Shell), Nikita Ermakov (LLC Gazprom export), Yury Lavrov (Gazprom), Andrey Sapozhnikov (JSC Gazprom), Sergey Turkin (Gazprom) for their active contribution along the triennium.

Special thanks to the IGU Coordination Committee for their-its wise advices to the Task Force.

Aims

At the beginning of the triennium the energy sector was starting to facing increasing challenges that led to structural changes in the natural gas market. The mitigation of climate change became one of the most important political issues, as well as security of supply and access to energy at reasonable prices.

In this framework, the original mandate of Task Force 2 was to show and endorse the essential role of natural gas in the energy system's transformation.

Chaired by Michele Pizzolato (Eni), the Task Force 2 has been created as an high level platform with the purpose to maintain an active lobbying activity for gas advocacy in coherence with regional associations. The Gas Advocacy's TF had to coordinate and balance the efforts to endorse, to promote and to be the "voice" of natural gas in institutional and regulatory forums of interest at global, regional and local level.

This kind of Task Force was the first experiment of global gas advocacy issued by IGU and so it was not already in place any model of relationship between this kind of initiative and the already existing advocacy programmes followed by regional and national members of IGU. With particular reference to Europe, the example of GasNaturally[1] did not result as applicable. Indeed, this advocacy's initiative represent an association of associations, where natural gas companies are not directly involved.

In Task Force 2 the presence of associations, both regional and national, and companies added complexity at the work plan, taking also in account that some of the members had already an advocacy activity in place and some other not. For this reason, after deep discussions, we evolved towards the opportunity that the Task Force should have produced messages and advocacy's information to be utilized by national associations. At the beginning of the works, inside the Task Force emerged as fundamental the necessity to better define the IGU role to be played : alone, together with regional and national associations or through these associations.

Considering the relevance of this issue, the Chairman decided to put back the mandate of Task Force 2 at the Coordination Committee. During the Ottawa meeting of October 2012, it was agreed that, as a "voice" for natural gas, Task Force 2 should have had to support the Presidency in its lobbying activity and not to advocate directly.

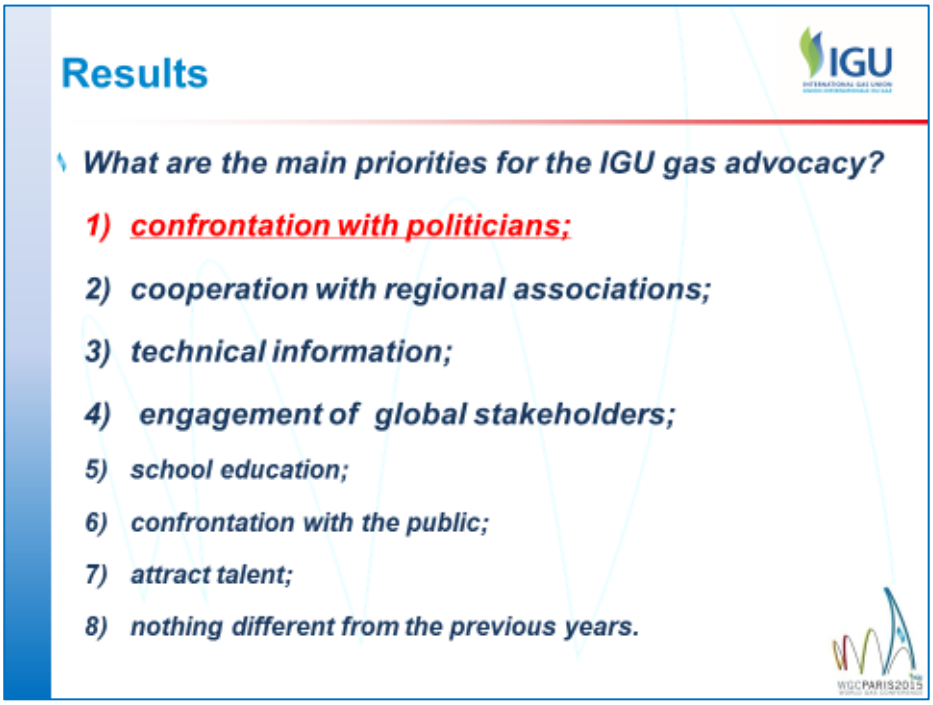
To deepen targeted its work, the Task Force decided further to prepare a little survey on gas advocacy issues. This survey, composed by 8 questions, has been launched in January 2013.

The document was sent first to Regional Coordinators and afterwards to all IGU members.

[1] GasNaturally is an association of associations that aims to showcase the essential role of natural gas in the European energy transition. http://www.gasnaturally.eu/

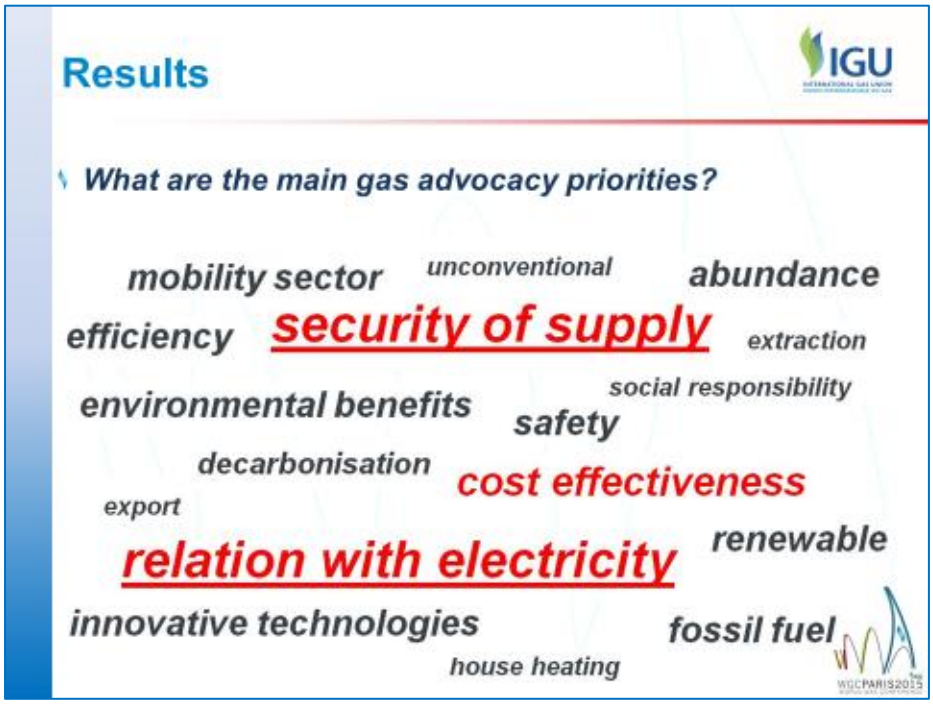
It explores what is the "gas advocacy" activity, what are the main priorities and also the players involved.

This last point has been touched both from the side of the targeted stakeholders as well as listing who are the most influent bodies.



From the responses received, the following capital points emerged:

- *Gas advocacy is **promotion***
- *The main issues for gas advocacy activities are: **relation with electricity**; **cost effectiveness**; **security of supply***
- *IGU's gas advocacy should be focus on: the **confrontation with politicians** (in particular from national governments)*
- *It's important to assure de collaboration with **regional associations***
- *Don't have to be forget the role of **mass media***



Moving from the results of this survey and the new mandate received, the Task Force Gas Advocacy started its path developing the topics that should have been deeply analysed in the following parts of the report.

Methods

This section of the report is dedicated to the analysis of the methodological aspects, starting from those elements linked to the structure and the functioning of the Task Force to those related to the topics subject of advocacy.

The structure

The Task Force Gas Advocacy is constituted by 37 members, coming from companies and associations, and representing 14 countries all over the world. Looking at the regional presence, since the creation of the group, the number of participants involved in activities outside Europe was really limited.

At the beginning of the triennium a lot of efforts had been done to increase the geographical composition of the task force. The Coordination Committee, with the advice of the IGU's Regional Coordinators, supported this effort directly contacting national associations of geographical areas not already represented in the task force.

Unfortunately, this activity was not fully successful, indeed about 60% of the members were from Europe and no representatives from African markets was present.

As it is going to be deeply analysed in the following pages, this element conditioned the outcomes of the Task Force during all the triennium.

The operations

In order to result as an efficient activity, the first proposal was to split the definition of the messages in two parts. Beginning with the elaboration of a general IGU vision on the role of natural gas and, subsequently, to modulate the messages for the different markets taking into account a framework based on the following elements:

- structure of the energy market, with particular reference to factors such as the maturity of the market, degree of regulation, gas to gas competition and inter-fuel competition;
- cultural evaluation of natural gas;
- kind of stakeholder (e.g. National Authorities, Governments, Financial Institutions).

With particular reference to stakeholders, it should be noted that one of the elements of the original mandate of the Task Force 2 was the reinforcement of IGU's relations with institutional stakeholders. The aim was to present the IGU vision on the role of natural gas in the energy mix to National Authorities, Governments, Financial Institutions, Regional Bodies and all the structures that, in each areas, play a role in the definition of the energy policy. Furthermore, Task Force 2 should have had to prepare positioning documents for the key moments of the decisional process (e.g. public consultations).

The aim of the Chairman was to identify three area representatives (for Americas, Europe and North Africa, Asia and the Middle East) in order to have "sentinels" to inform the Task Force about the crucial moment in which let IGU's voice to be heard. They should also coordinate the activities of the members indifferent areas.

This original idea of Task Force 2 had to face the constrains of the participation of IGU's members at the group. As mentioned in the previous paragraph, since the creation of the group the number of participants involved in activities Europe was really limited. This constrain resulted in the necessity to find a compromise between the segmentation and the concrete resources of the Task Force 2.

Further, several doubts emerged about the geographical segmentation proposed because it could have affected the fitting of the messages. It is a matter of fact that the strength of IGU is the link between different geographical area and different parts of the value chain. At the same time, it should be taken into account, the risk that if a position paper is too global could lose effectiveness.

The compromise reached at the end by the Task Force consisted in the production of unitary position papers that should cover, at the same time, global and regional aspects. Even if the Task Force decided to touch a topic that could have more relevance in one region, the IGU's position paper should not lose its global vision of the issue.

The approval

Achieving a consensus is not an easy job in every group and the Gas Advocacy's Task Force was not different. This lobbying activity could touch strategic matters on which the approach of the different companies could be various.

Introducing per capita vote rights in a group where companies are represented by a variable numbers of members, it could not be a suitable solution. Furthermore, the system one company/association one vote did not seem in line with the IGU vision.

For those reasons the solution adopted was do not approve the document through a vote procedures but reaching a general consensus. In order to obtain the wider r agreement, the Chairman –with the consensus of the Coordination Committee – decided to adopt a best practice for the approval of the position papers prepared inside the Task Force.

This operational scheme was established as follows: first of all presenting each initial draft of position paper to the members of the group in order to receive their comments and marks up by the following 30 days. Every further versions of the document should have to be pre- shared by the Chairman with the members of the Task Force in order to receive eventual comments at least in two weeks. Until no comments are received (of course minor revision are excluded), the Chairman and the Secretary should prepare further draft in order to reach a general agreement.

At the end of this process, the position paper could be classified as a final TF2 paper but not yet as an official IGU document that could be circulated outside the association. In other to obtain this status, the document should receive the approval of the Presidency under presentation by the Coordination Committee.

The selection of the topics

The mandate, described in the previous pages, under which the Task Force 2 started his work, consisted in an activity started from the following topics:

- The role of natural gas in the fuel mix. The characteristics of natural gas make this fuel an important player in the future fuel mix. Affordability and reliability are features crucial in those markets where access to energy is a main issue. Where competition is a central element, the flexibility of natural gas could be a strategic factor. Finally, natural gas is a viable fuel even in those economies that are going to face the challenge of decarbonisation, as natural gas represents the ideal partner for renewables.
- The role of natural gas for security of supply and, consequently, the centrality of upstream and infrastructural investments and proper regulation (with a particular focus on relations between bankability of investments and security of supply).
- The policies with direct and indirect impacts on inter-fuel competition. The design of incentives to RES and mechanisms for the evaluation and the trading of CO_2 emissions, as well as the policy on the technological research and the configuration of the fuel taxation, could have strong impacts on the natural gas market.
- Technological development. Investments in technologies such as carbon capture and storage, residential gas heat pumps and biogas are important for the forthcoming transformation of the market.

During the first meeting of the group, the members expressed also their interest to develop these topics:

- assessment of the risk connected to the use of renewable energies
- crucial role of gas infrastructure
- greenhouse gas emissions and other environmental aspects
- gas unconventional resources
- relationship between natural gas and power market - capacity remuneration mechanisms
- internal prices and development of regulation in Asia
- particular needs of Africa
- role of natural gas for a sustainable development

Looking at this huge list of topic, the Chairman of the Task Force had to select those that could be part of a shorter list. In particular, it had been taken into account the limits of the Task Force originated from its structure. As described in the previous paragraph, the restricted number of participants and their limited geographical segmentation represented a constrain.

Taking into account these elements and the more topical issues that were under discussion, the following proposal of activities had been presented to the Coordination Committee:

- a position paper on Capacity Payment / Capacity Remuneration Mechanism.
- list of stakeholders that could be interested in advocacy activities.
- identification of the most important moments in which the TF should present position papers or send letters to the stakeholders.
- elaboration of proposals on interregional emission trading schemes (ETS) ad green - house gases reduction in general.
- giving relevance at the IGU work on shale gas.
- analysis of the price regulation in Asia.

This list of priorities did not remain the same during all the triennium, as in each lobbying activity, the gas advocacy should change itself as a reaction to the movements of the markets, the aim of policy makers and the needs of the industry. A positive example of this attention to the topical issues could be the position paper "Natural gas in transport sector". Even if this topic was not included in the first list of the topics, it has been proposed by participants as an important aspect in the first part of 2013 and, at the end, it has been developed.

In reverse, the analysis of price regulation in Asia has not been developed. After the discussion with Petronas representatives of the group on the differences that characterize the Asian markets and the lack of a sufficient number of members expert of the functioning of this region, the topic has been rejected. Also the interregional trading of CO_2 emission's allowances at the end has not been developed. In this case the reason behind the bail out of this topic has been the limited interest expressed by the participants of the Task Force. More in details, the participants were interested in studying this topic (as it has been done in the 1st meeting of the Task Force) but they did not evaluate this matter as a possible subject for a IGU's position paper.

Results

Capacity Remuneration Mechanism: gas for power security of supply

Gas-fired plants are characterized by low emission and high efficiency levels. They use the cleanest fossil fuel technology in support of renewable energy sources to meet the balancing needs of power demand. Where markets do not recognize the value of flexible power generation capacity, they should recognize the strategic value of gas - fired generation plants. In particular, the differential in negative externalities originated by the power generation sector using coal instead of gas should be valorised as well as the flexibility that CCGT plants put at disposal of the power system in order to support variable renewable power generation.

This topic had been chosen as one of the first topic to be analysed because, in the second half of 2012, European Commission published a formal consultation on this issue. The original idea was to produce a position paper to be utilized as a formal IGU reply to the consultation. Further, the IGU President presented his needs to have at disposal a position paper to utilize in one of its institutional high level meetings.

In the light of this requirement, the Task Force 2 started his work on this issue. It was one of the first time that the Task Force applied its way of functioning, for this reason the approval process was not been fluid and the discussions on the contents of the document it had been stopped by the confrontation on the operational method of the Task Force. Another relevant constrain to the release of the document has been the fact that the topic has a different degree of relevance in the different geographical area of the world. It is a matter of facts that Capacity Remuneration Mechanisms were more relevant for Europe that for the less regulated Asian markets and the USA were gas was experiencing a true “golden age”.

At the end, in order to reach the final approval of the IGU Management Committee, the members of the Task Force agreed on the idea to produce a paper with a global view and not only oriented at the European market. The time taken to reach an agreement on the final test was long and the document was ready to be released in its final version only in June 2013.

The lack of “time to market” that characterized the production of this document represented a failure for the advocacy proposes of the Task Force. The position paper has been approved by the Presidency but not utilized for relevant high level meeting and, at the same time, also the opportunity to formal reply to the public consultation opened by the European Commission was missed.

At that stage the Global Gas Portal of IGU was not already in place and the only real opportunity to spread the document was to publish it on the IGU magazine. The article “Capacity Remuneration Ensures Security of Power Supply” was indeed published in the number of April 2014 and received various positive comments from the audience.

Capacity Remuneration Ensures Security of Power Supply

By Michele Pizzolato, Federico Mauri and Giulia Migueles Pereyra

Renewable energy – due to its intermittency – needs to be backed up to ensure that consumers have a constant supply of electricity. Power plants using combined-cycle gas turbines (CCGTs) provide the ideal back-up as they can be started up and closed down quickly and use clean-burning natural gas. But back-up capacity often lies idle so it cannot be financed solely by the sales of the electricity it generates. This is where capacity remuneration comes in.

Natural gas as a destination fuel

Clean, affordable, reliable, efficient and abundant. These are the characteristics which make natural gas a fundamental energy source for sustainable growth and for granting security of supply at a reasonable price. Natural gas is also identified as a fundamental energy source in those countries where decarbonisation issues are included as priorities in the energy policy agenda. It has been widely recognised as the best partner of renewable energy sources (RES), due to:

- Its environmentally-friendly footprint; and
- The technological characteristics of efficiency and flexibility of gas-fired power generation plants which are able to comply with security of supply requirements in a context of growing intermittency linked to the increasing role of RES.

As of now, natural gas plays a major role in the power generation sector, covering up to 22% of the total power output worldwide and, for the above mentioned reasons, it has to be considered, even in the long-term evolution of the global energy mix, a destination fuel, and not just a transition fuel.

▸ Intermittent renewable energy sources such as solar need to be backed up.

Natural gas in the power sector

In the past few years the power generation sector has experienced structural changes worldwide: the effects of the economic crisis, the global trend towards decarbonisation policies and – in some regions – the growth of RES. These structural changes are having significant impacts on the current economics and the future development of the natural gas industry.

In some countries, such as the USA, the so called "shale gas revolution" has resulted in a gradual switch from coal-fired to gas-fired power generation. In other markets, such as Europe, gas-fired generation has experienced a 24% drop in the last three years. This has been caused by a complex mix of factors. The most relevant ones, in particular in the European region, are:

- The fast growth of the share of RES – as a result of subsidy programmes – in the power generation mix;
- The abundance of coal, as an outcome of the USA shale gas revolution, which freed up coal volumes for other markets;
- The failure of CO_2 emission trading schemes to provide a sound price signal reflecting the differences of externalities associated with coal and gas consumption.

The most notable consequence of these phenomena is that, notwithstanding the tight policies put in place by many European countries and the conspicuous resources allocated to RES subsidy programmes, the carbon intensity[1] of the EU27 area has slightly increased since 2010 – after years of constant decrease – mainly due to the sharp and sudden growth of emissions by coal-fired power plants.

Market failure

A well-functioning market framework is the best way to promote an efficient and secure energy system: where the institutional framework allows the market forces to determine price and quantity, the environmental compatibility of natural gas and its highly flexible use should be fully recognised in the energy mix and, most notably, in the power generation merit order.

On the other hand, in the context of heavily regulated markets, market failure can easily be

1 The ratio between carbon emissions and the electricity produced, in terms of grams of CO_2 per kWh produced.

◀ Power plants using CCGTs such as this one in Ferrara, Italy are efficient and flexible.

Security of supply is a basic goal of the power generation sector.

exacerbated by the lack of a proper and balanced regulatory approach (regulatory failure). This seems to be the case of the power generation sector, which is often required to achieve conflicting goals in terms of environmental targets on one side and security of supply targets on the other.

It is noteworthy that a growing share of RES does not guarantee per se the security of supply for final customers, given their power output's intrinsic lack of predictability. A growing share of RES in the power generation mix implies a higher degree of intermittency in the system power output, leading to a higher need for flexibility and real-time balancing services. These services can be efficiently provided by gas-fired plants, thanks to the environmentally-compatible characteristics of natural gas and to the flexibility and the high technical standards of these plants (in particular CCGT plants).

In some markets a poorly designed regulatory framework may lead to potentially dangerous market distortions. In particular, where environmental regulatory targets (e.g. RES targets in the energy mix) are present, without a coherent regulatory framework on security of supply, the consequent market equilibrium may not be compatible with the economic and financial sustainability of those natural gas power generation plants which are necessary to support the overall security of the system. For example, this is the case with an asymmetric regulatory framework when:

- Environmental targets are sustained by strong regulatory interventions (e.g. support schemes for RES);
- The resulting growing level of intermittency and the consequent higher needs of back-up capacity are left to market forces.

A typical market failure may emerge when the market itself, under such an asymmetric regulatory framework, is not able to correctly evaluate the role that gas-fired plants play in supporting the security of the system.

This inefficient outcome is clearly evident in many European countries. The growing role of RES – sustained by support schemes and helping to meet important environmental targets – implies a significant reduction of the average load factors (i.e. the number of hours the plant actually operates compared to its technical maximum workload) of CCGT plants. Without appropriate market rules, this asymmetric regulatory framework could, in the near future, risk forcing many plants out of the market

(namely, CCGT plants), depriving the system of a cost-effective mechanism to deal with RES intermittency.

Capacity remuneration mechanism as a solution

These points are widely recognised by many energy regulatory bodies. It is a matter of fact that a growing number of regulators have started to discuss how to tackle this evident market failure – as the price signals emerging from the market are not sufficient to ensure the delivery of the needed amount of flexibility to the system – and the introduction of a capacity remuneration mechanism (CRM) is emerging as a policy option.

CRMs are essentially aimed at explicitly recognising the value of this security of supply service, where a regulatory asymmetric framework fails to grant it. CRMs can be a useful tool in assuring that a sufficient amount of flexible capacity is actually available for the system, both in the short- (maintenance of existing capacity) and in the long-term (investments in new plants).

The implementation of CRMs should promote the optimal use and valorisation of the entire natural gas value chain, from transportation infrastructures to generation facilities, aiming at delivering the least-cost solution for the energy system. It is a matter of fact that the underutilisation of already existing infrastructure would give rise to significant stranded costs.

Moreover, CRMs should be – as for any other major regulatory effort – aligned with regional environmental targets regarding CO_2 and other harmful emissions.

In those countries that are currently experiencing a market failure in power generation a well-designed CRM mechanism, based on a market approach, can be a useful tool to recognise the correct market value of secure, flexible and environmentally sustainable gas-fired power generation capacity and to balance environmental targets, costs and security of supply.

Michele Pizzolato of Eni is the Chair of Task Force 2 – Gas Advocacy, Federico Mauri is a power market specialist with Eni and Giulia Migueles Pereyra of Eni is TF 2's Secretary.

The European Commission's Views

Following the analyses and evaluations autonomously carried out by a relevant number of European regulators, transmission system operators (TSOs) and academic research centres over the possible implementation of a CRM, the European Commission started to develop a proposal for a common framework for such interventions, focusing on their relationship with the policy goal of further integrating the European market, up to the creation of a single energy market.

In the view of the Directorate General for Competition (DG COMP), CRMs are a fully legitimate tool to deal with generation adequacy and security of supply issues given that they do not interfere with the further integration and development of energy markets. Under this principle, a CRM should be run through competitive tenders, open to both existing and new capacity and designed to be non-distortive with respect to cross-border trade.

Finally, while the DG COMP states that any CRM should be technology-neutral, CRMs should not be in open contrast with other policy instruments. Therefore, support should be primarily targeted at low emission plants.

In a nutshell, a CRM can be identified as compatible with the European legal framework if it does:

- Not reduce incentives to invest in interconnection capacity;
- Not act against existing market mechanisms which contribute to the provision of capacity;
- Not undermine investment decisions on generation which predated the measure or decisions by operators regarding the balancing or ancillary services market;
- Not unduly strengthen market dominance;
- Give preference to low-carbon generators in case of equivalent technical and economic parameters.

In December 2014, after more than one year from the release of the final document, taking into account the ongoing situation, the Task Force 2' members decided to developed a new advocacy plan for the paper. Andrey Sapozhnikov (Gazprom) noted that outside IGU the paper was unknown from the majority of the stakeholders that was individuated as target.

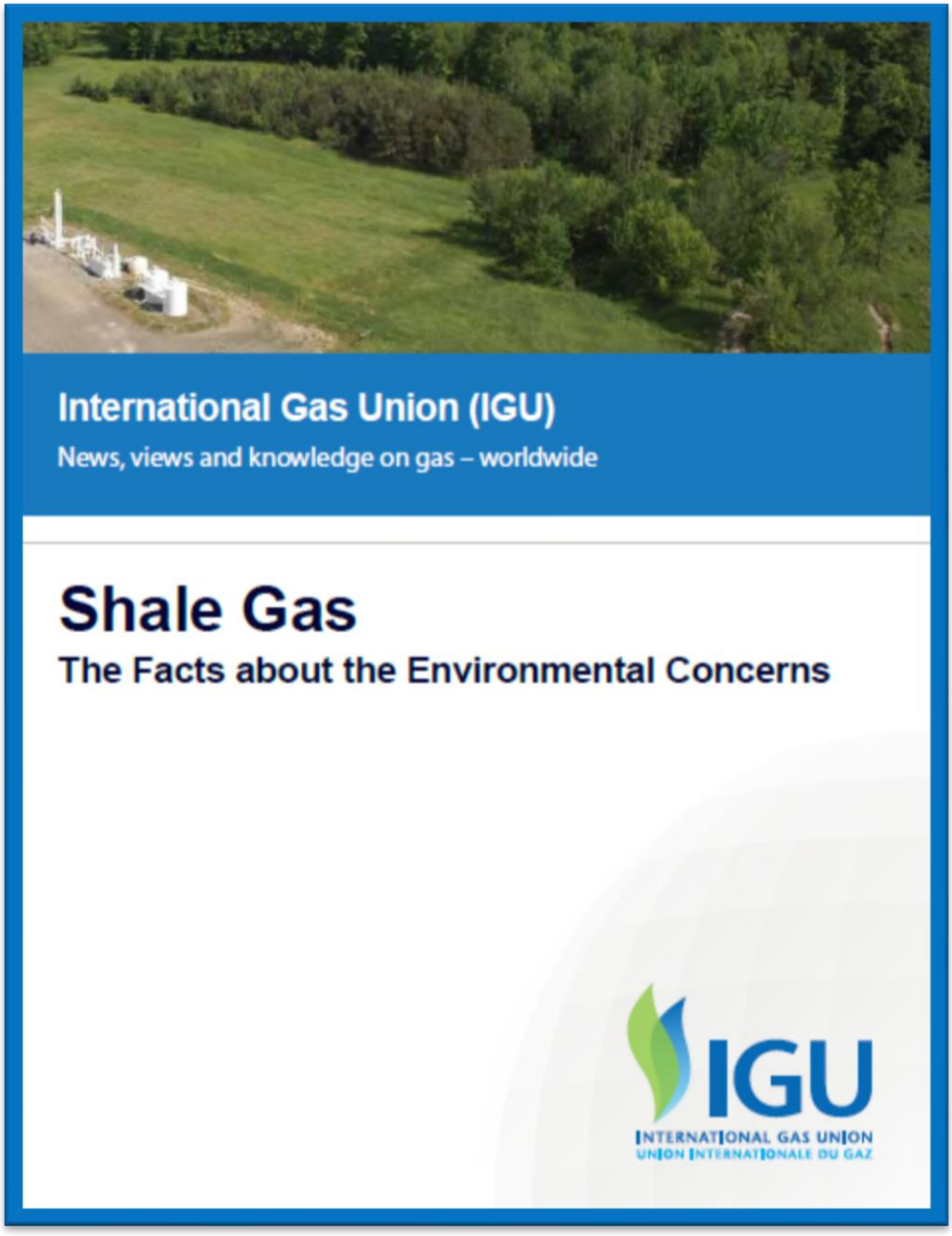
For this reason it has been decided to create a mailing list to the major stakeholders to which sent the document and to publish the document on the Global Gas Portal.

It has been decided to wait a couple of months for the publication in order to take advantage from the bustle of contacts that IGU's website were going to receive in the months before the WGC2015.

Shale gas

The mission of IGU is to advocate for gas as an integral part of a sustainable global energy system, and to promote the political, technical and economic progress of the gas industry. Technology has been a key factor in helping to unlock large amounts of unconventional natural gas around the world, particularly in North America, where shale gas literally transformed the global energy landscape. Given this rapid development, however, there have been recognized the existence of some misinformation circulating regarding the practices utilized during the extraction process, particularly hydraulic fracturing and wastewater management.

As such, the Task Force positively evaluated the opportunity to give an institutional spread to "Shale Gas: The Facts about the Environmental Concerns". This document has been prepared by IGU for the 25th World Gas Conference.



Recognizing the high educational value of this technical document, Task Force 2 accompanied the document with a side letter. The aim was that the selected stakeholders could use the document as a reliable and balanced reference tool regarding hydraulic fracturing and environmental considerations of natural gas development.

A lection learned from this initiative is the fact that the International Gas Union is a huge source of information and materials that not always are well communicated to stakeholders outside natural gas industry. Advocate for natural gas does not mean only answer to questions and critics or interact only with energy industry but also share vision and knowledge with all kind of stakeholders gaining credence also with them that are outside energy sector.

Competitive relationship between coal and natural gas

Even if natural gas is widely well known for its positive environmental performances, some markets are experiencing a growing role of coal in power generation. For this reason the Chairman decided to propose at the taskforce this topic.

In order to explore the interest of the IGU's associates to develop this topic, it has been organized a focus on it during the 3rd meeting of the Task Force. The different members of the Task Force prepared presentations focused on this relationship in the different part of the world. Ieda Gomes analysed the Atlantic perspectives, Carolyn Pek shared with the participants of the meeting her study on Asian markets and Giulia Migueles Pereyra presented the European market's perspective.

To analyze the topic also from a different prospective usually taken by the natural gas industry, has been invited to take part at the 3rd meeting of the Task Force the guest Massimo Tavoni (deputy coordinator of the Climate Change Economics research programmes at FEEM and CMCC). He presented his work "Aligning Energy Markets Dynamics and Climate Policy Targets in Europe" to the group.

As the best practice to produce documents, the Task Force worked on this issue sharing internally at the group different version of the position paper. Starting from a more regional approach, it has to be noted that the members of Task Force 2 have actively collaborated in order to reach a global view of the phenomena.

Once the group had fund an agreement on the content of the document, the confrontation moved to the point of the format: define the best layout to be more effective to reach the attention of the stakeholders. After a deep discussion during the 4th meeting, the participants agreed that the document should be finalized in a format different from the already prepared documents.

In January 2015 the group finalized a short position paper on the policy actions that could establish an equilibrium between natural gas and coal, taking into account the environmental aspects with reference to all the pollutants. The scope was to produce a position paper focused on policy actions that could be addressed in order to grant at natural gas to play its fundamental role in ensuring both security of power supply and environmental compatibility. All the detailed information that the members of Task Force collected to sustain their proposal were added in the form of hyperlinks in order to allowed the audience to examine in deep only the issues of their interest.

Coal vs Gas

The competing relationship between coal and natural gas

Background

Energy consumption is expected to double in the next 50 years, driven in particular by increasing population and economic growth in the developing world. Growth in power generation is set to outpace overall energy demand, increasing by more than two-thirds by 2035. The immediate challenge facing national leaders and the global energy industry is to cooperate in the development of energy systems that meet this anticipated demand growth in an economically efficient way, while still balancing concerns about climate change and local environmental conditions.

Increasingly, decisions to commit capital to the energy sector will be shaped by government policy measures and incentives. Government and industry have very different roles. But it is only by working together that we will secure a more prominent role for gas in a 'clean and green' energy mix and as the backbone for innovation in the energy system.

Policy makers will choose power generation portfolios based on a number of factors, including energy security, protection of the environment and the health of local populations, energy access, as well as cost and competitiveness. The reality is that there is no single 'silver bullet' solution to balance all of these concerns. We need cleaner fossil fuels; and we need options for the decarbonisation of fossil fuels; and we need non-fossil fuels. This points to a significant role for gas in the power mix. Over the next twenty years pairing flexible lower emission gas-fired power with renewables will be the fastest and cheapest way to secure emissions reductions, while maintaining power system reliability.

Reducing Greenhouse Gas Emissions

Accelerating the deployment of gas in the power sector allows the global economy to begin decarbonising today and it complements the development of renewables and other innovative low carbon energy technologies. From production through to use in generating electricity (well-to-wire) natural gas produces around half the Greenhouse Gas Emissions compared to coal.

It is a matter of fact that coal emits more greenhouse gases and other pollutants than natural gas. IHS CERA estimated that fuel substitution from high-carbon old technologies

1

to lower-carbon efficient technologies, like CCGT, can reduce emissions in the power sector by 58%, at relatively low cost, relative to 1990[1].

The greater operational flexibility and rapid cycle time of gas-fired power provides the lowest cost source of integration for intermittent renewable power generation technologies such as wind and solar, balancing continuously changing power loads. Designing power markets to encourage the inter-operability of natural gas and renewables also allows renewable power generators to progressively reach maturity and scale on a level playing field.

In the longer-term, natural gas with carbon capture and storage (CCS) will make a significant contribution to meeting CO_2 reduction targets. A combination of gas with CCS alongside continuing deployment of low cost solar and other renewables as they mature could provide the best opportunity to achieve the required emissions reductions while also meeting future power needs.

Despite all this positive characteristics, natural gas not always plays the most prominent role, in partnership with renewable energy, in the power generation mix.

The Threat of Coal

After years in which coal has shown to be progressively exiled by low carbon resources, some countries are experiencing **a new "golden age" of coal**.

In **China** and **India**, for example coal is the most important source in electricity generation and is expected to continue its role in the long term. The predominance of coal goes hand in hand with **significant pollution problems**.

In **Southeast Asia** the situation is similar due mainly to **low coal prices, the absence of any binding emissions targets and the lack of on-going price reforms**.

The situation is opposite in the **U.S.** where the **electricity mix is gradually shifting to lower carbon options**, with consequently a large drop in emissions. Low gas prices and regulatory measures have driven the reduction of coal consumption in the power generation market.

While cheap gas has allowed the U.S. to progressively switch from coal-fired to gas-fired power generation, **Europe** is experiencing the opposite: **coal-fired generation rose by**

[1] Source: *Sound Energy Policy for Europe: Pragmatic Pathways to a Low-Carbon Economy*, IHS CERA, 2011

12% while gas-fired generation recorded a decline of 24% on year basis. Despite massive investment and subsidies in renewable energy[2], since 2010 the European **power sector emission factor[3] has been flat after decades of constant reduction[4]**. A 'coal and renewables paradigm' has offset the benefits of the expanded renewables capacity at a high cost to both the economy and the environment.

Slowing the growth of coal is urgent. Robust and stable carbon policies are essential to ensure coal demand peaks this decade. Without political intervention there is a significant risk that the world will lock this high carbon, inflexible fuel into the world's long term power/energy systems. New coal-fired power plants typically have an operational life of more than 40 years. **The choices we make today will have far-reaching consequences for our future.**

Urbanisation and Air Emissions

Increasingly, meeting the challenge of energy supply means meeting the needs of cities. By 2050, the global population will increase from 7 billion to 9 billion people – two thirds of that growth will take place in cities. Rapid urbanisation is focussing attention on the health impacts associated with air emissions and pollutants from coal-fired power generation, as higher concentrations of people live near the source of pollution. The World Health Organisation estimates that in 2012, 7 million people died as a result of air pollution exposure. This doubles previous estimates and confirms air pollution as the world's single largest environmental health risk. Gas-fired power generation results in negligible emissions of sulphur dioxide, nitrogen oxides, mercury and particulates compared to coal and represents a significant opportunity for policy makers trying to tackle the adverse impacts of air emissions.

Cost and Competitiveness

When considering the cost of power generation, policy makers should consider the full cost of power generation. In 2011 researchers from the Harvard Medical School found that coal power generation results in economically quantifiable costs to health amounting to

[2] *"For the period 2008-2012 total subsidies for renewable energy equaled about €2012 157 billion (of which €2012 40.8 billion in 2012)"* accordingly to Ecofys 2014 report "Subsidies and costs of EU energy - An interim report" by order of European Commission

[3] i.e. the amount of CO_2 released in the environment per kWh of electricity

[4] According to BP Statistical Review 2014, German fossil fuel emissions climbed 5.5% in the four years to 2013 to 843 million tonnes.

USD $96/MWh, from the impact of coal emissions such as sulphur dioxide nitrogen oxides, mercury and particulates. In most regions Gas-fired power is competitive with coal on a limited technical cost basis, including capital, fuel and operational costs. Gas-fired power generation becomes increasingly competitive when the anticipated costs associated with climate change and the negative impacts of air emissions on human health are taken into account. This societal cost is almost two times the current fuel cost differential between LNG and coal in Asia, even when the spread between coal and Asia LNG prices are at a historical 10-year high.

The environmental impact of these trends is immense and should not be ignored

Realising the full benefits of gas in the broader economy will require robust and stable policies and regulatory structures. In setting energy policy frameworks, governments should establish environmental guidelines that support the emergence of gas plus renewables. In order to allow it, the IGU proposes the following policies:

- **establishing a robust price for CO_2 emissions and develop mechanisms for** interregional trading of CO_2 emission allowances
- **allowing for gas capacity payment mechanisms to** underpin flexible power generation capacity where strong subsidies policies to renewables exist
- **implement regulation to** encourage the use of natural gas to sustain energy efficiency
- mandate stronger air quality standards
- foster a reflection on incentives and subsidies to renewable energy sources
- **enforce more stringent** regulation on emissions standards in the power sector
- support for CCS technology as well for natural gas as coal

Natural Gas in transport sector

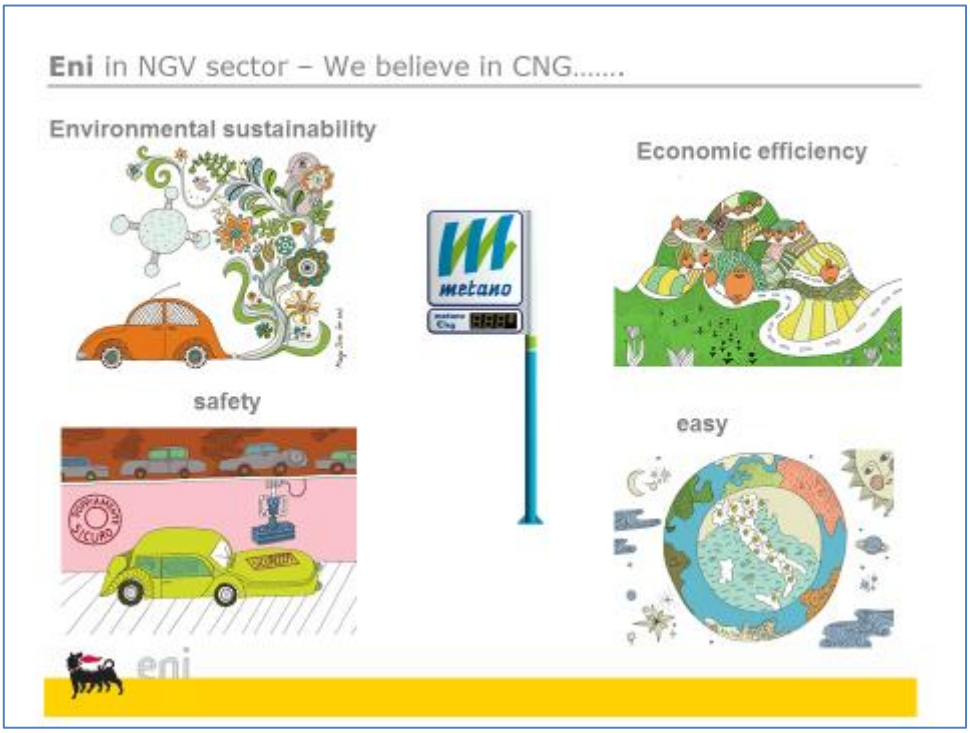
Natural gas has strong potentiality of development as a fuel for passengers vehicles and also for heavy duty vehicles. In those countries where there is a consolidated presence of this technology, natural gas could play an increasing role contributing in improving air quality also in those markets where it represents a marginal presence.

Furthermore, the potential offered by the use of gas in lorries and both inland waterway and maritime shipping should be fully recognised and reflected in the future policy measures all over the world. In particular, it should be acknowledged that LNG bunkering could concretely contribute in reducing CO_2 and SO_x.

Even this issue was not present in the first list of selected topics; the Chairman decided to propose it to the group in order to understand their interest and their willingness to develop a position paper on the use of natural gas in transport sector. For this reason during the 3rd meeting it has been decided to introduce tise topic with a presentation on the eni's Vice president Services sector and Methane for vehicles Customers – Francesco Santangelo. He presented some issues related to natural gas as a transport fuel:

- natural gas vehicles sector
- eni's experience
- existing technologies and new technological development

Given the interest showed by the members of the Gas Advocacy's Task Force in that occasion, the Chairman decided to start with the definition of a first draft of position paper on this subject.



In order to develop a global vision and agree on positioning elements, this topic has been the main subject of discussion of the 4th meeting.

During the meeting, likely what has been done with reference to the competitive relationship between coal and natural gas, the members of the Task Force prepared presentations on natural gas in transport sector in the different regions of the world.

Carolyn Pek shared her presentation "What's going on in Asia". The presentation was mainly focused on the NGV's sector in Asia Pacific and Carolyn, starting from the pollutions problems, underling the main role of China in the sector, the price issues and the competition with the EV.

Considering that the Italian natural gas vehicles sector has been presented during the previous meeting, Giulia Migueles Pereyra focused her presentation on LNG in Italy. The target of the contribution was to update the information provided during the previous meeting adding some news about the LNG national development plan that was under discussion at Ministerial level.

Yury Lavrov contributed at the analysis of the topic with a speech on the Russian's initiatives about natural gas in transport sector. The presentation focused on the wherewithal of the Russian market, the 8th market in the world, with a great potential of development for CNG and less for LNG.

Ieda Gomes prepared an analysis on "The South America Experience". From her presentation emerged that the NGV market is concentrated in Argentina and Brazil where unfortunately the market share is decreasing. The drivers of these developments are: price, pollution and economic innovation. The electrification of the transport sector has not a strong potential due to the fact that the electric sector is facing a crisis for the lower production of hydro power plants.

Further, three guests have been invited to present their experience in the field of natural gas in transport sector:

- Jean-Claude Girot - President of the Association Française du Gaz Naturel pour Véhicules (AFGNV);
- Lennart Pilskog - General Manager of NGVA Europe;
- Javed Kamran - Shipping specialist of RasGas and representative of PGC-D LNG.

Jean-Claude Girot focused his speech on the ongoing situation in France and the activities of advocacy done by the association itself. He also touched the topics of the biogas and of the European Directive on the development of alternative fuels.

Lennart Pilskog expressed the views of the European association of natural gas vehicles. He started his presentation from the facts that everybody depends from transport sectors and that European commerce is based on trucks. Moving from the benefits of natural gas, he touched the issues of biomethane, infrastructural developments and the importance of standards (in particular Euro VI regulation) and economic sustain.

Javed Kamran presented the results of the ongoing work of PGC-D on how LNG could be a key player for a clean transport sector. The PGC-D's study covers the topic from both technical and economical point of view in all the following sub-sectors: road, rail and maritime transport.

The participants agreed on the need to advocate for the development of natural gas in transport sector but they had to take in to account that already a subgroup of WOC 5 – Utilisation was working on the topic and was going to present at the World Gas Conference 2015 a report on natural gas in transport sector.

After an exchange of views among participants, it has been agreed that, with the support of the CC, that Task Force 2 were going to offer its collaboration to WOC 5 for the preparation of an advocacy paper composed by a couple of points that cover the tri/quadrilemma of the sector.

Natural gas in the transport sector

What is necessary from a gas advocacy perspective?

Natural gas is recognized as an environmentally friendly fuel that could contribute in reducing the environmental footprint of transport sector. In order to express its full potential, IGU estimates that the use of natural gas in the transport sector needs to be supported by policymakers.

Environmental benefits of natural gas in the transport sector

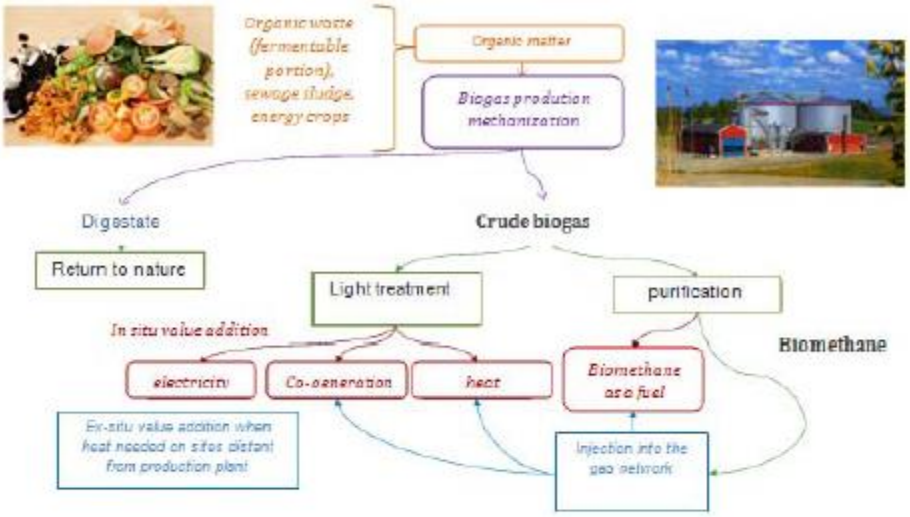
Natural gas as a fuel takes various forms:

- Compressed Natural Gas (CNG), mostly used for passenger cars, commercial light vehicles and also for urban Heavy Duty Vehicles (HDV) buses and trucks
- Liquefied Natural Gas (LNG) is mainly used for longer distances. It is the only option for long haulage HDVs, trucks, coaches, trains and the marine sector.

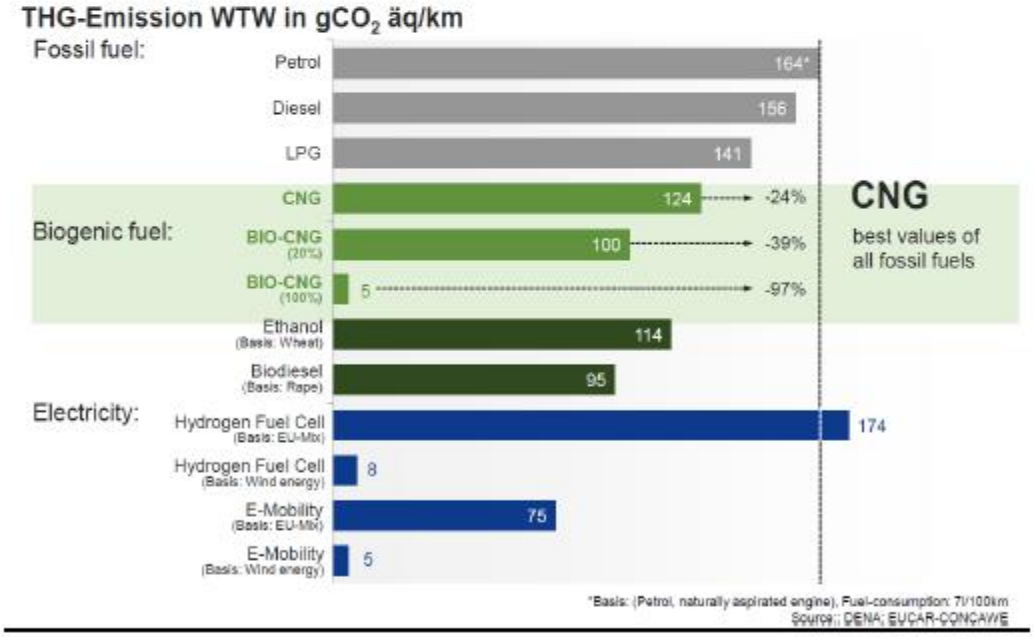
Natural Gas can be blended at any rate with biomethane which should preferably be produced from garbage, other wastes, sewage sludge, but can also be produced from energy crops. Additional pathways include blends with hydrogen, up to 2% and conversion of electricity from wind energy to synthetic methane, a power to gas route.
The increasing use of natural gas and biomethane, for their intrinsic qualities, will substantially reduce pollutants emissions and greenhouse gases (GHG) from the transport sector:

- -25% less CO_2 for natural gas, when compared with petrol,
- -95% less CO_2 when using biomethane, when compared to petrol
- -95% less particulate emissions,
- -50% less nitrogen oxides, when compared with diesel (Euro VI technology)
- -92% less sulphur emissions, when compared with heavy fuel oil (HFO marine fuel)

With reference to the European environmental target, biomethane can contribute to the target of 10% renewable energy sources in transport by 2020. Using a 20% blend of biomethane in natural gas, the CO_2 emissions can be reduced by 40% which correspond with the overall European target for 2030.



Moreover, natural gas/biomethane can be a complementary fuel to electricity. The autonomy of electric vehicles can be extended thanks to natural gas.



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Key drivers for developing the market

The experience of developed natural gas markets worldwide (such as Iran, Argentina, Brazil, China, Italy) demonstrates that the main drivers for developing the market are: price for the final consumer, environmental benefits and availability of the product and infrastructure.

Policy measures

The development of natural gas in the transport sector could be supported by measures that touch on one or more of the above mentioned market drivers.

The environmental benefits of natural gas in the transport sector and, in particular, the contribution that natural gas makes to improving air quality could be recognized through tools such as:

- public procurements, prescribing the use of Natural Gas vehicles,
- access rules to harbors and urban environmental zones (eg. dedicated traffic lanes, free parking…),
- extension of "Emission Control Area" regime,
- natural gas and converted to gas vehicles should benefit from environmental bonus on tax duties and other charges (eg. exemption from taxi access fee to airports),
- strategic location of filling stations to ensure availability of fuel similar to traditional fuels (it does mean for Europe the active implementation of the European Commission Directive for the deployment of the alternative fuel infrastructure),
- environmental certificates (like green certificates for biometane)
- acknowledgement of Well to Wheel Emissions, for biomethane.

With reference to the price for final consumers, direct and indirect taxes should be set in order to provide a premium for the positive characteristics of natural gas. The differential with the tax rate of the traditional fuels should be set in coherence with the environmental objectives.

In order to increase the number of filling points not only for vehicles but also for ships, a technical and safety regulation framework should be implemented and, as much as possible, harmonized worldwide. These are crucial aspects that should not represent a market barrier for a wide diffusion of natural gas in the transport sector. Natural gas should be able to compete on a level playing field with other fuels.

Last but not least, it should be noted that the development of this sector requires huge investments that need:

- a clear and stable regulatory framework.
- sharing of best practice and promotion of safety standards worldwide,
- no restrictive regulations (eg. like functional unbundling, that impose the separation of the retailers from the owner of the infrastructure),
- institutional support through pilot projects and industrial agreement,
- including natural gas (CNG/bioCNG, LGN/bioLNG) in institutional communication.

4

Conclusions

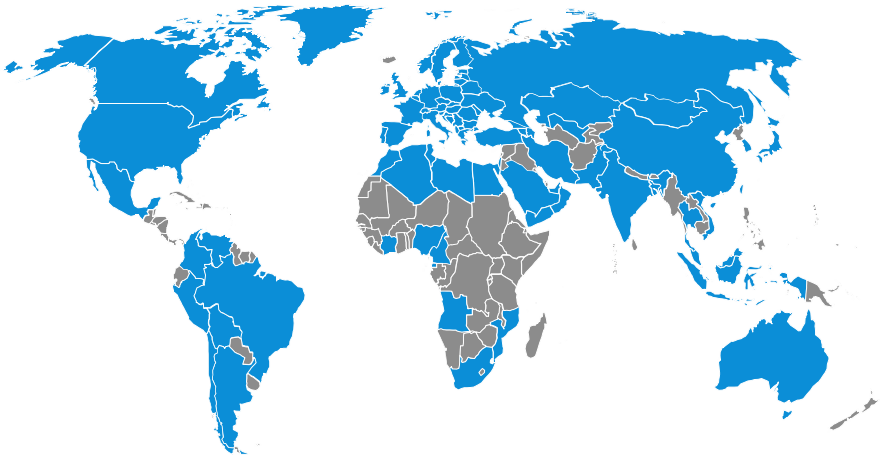
At the end of this long journey my personal opinion is that the Task Force has well done its job taking in account that this was the first experience of a Gas Advocacy activity in IGU. Of course, it has not been easy to find the right way of working in an association with a long history.

In IGU the work of the WOCs and PGCs is consolidated and has a tradition. For the Task Forces, that change their role and targets every triennium, is difficult to work in continuity. Their effectiveness is strongly influenced by the commitment of the delegates that are part of the group.

With particular reference to Gas Advocacy, I believe that the constrains faced by that the Task Force in this triennium are going to be over take during the triennium 2015 – 2018. The efforts done during the French Presidency to develop communication initiatives are going to produce results.

Global Gas Portal is already a reality and the choice to move further to a next level of Gas Advocacy, integrating this activity under responsibility of the Coordination Committee, for sure are going to improve the quality of the IGU lobbying initiatives.

NOTES



The International Gas Union (IGU) was founded in 1931 and is a worldwide non-profit organisation promoting the political, technical and economic progress of the gas industry with the mission to advocate for gas as an integral part of a sustainable global energy system. The IGU has more than 142 members worldwide and represents more than 97% of the world's gas market. The members are national associations and corporations of the gas industry. The working organisation of IGU covers the complete value chain of the gas industry from upstream to downstream. For more information please visit **www.igu.org**

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