

## GOT IA – FUTURE GAS VALUE CHAIN TASK AREA

In my opinion, the most important topics of this Task Area are:

### 1) ENHANCE EXPLOITATION OF ONSHORE UNCONVENTIONAL GAS

Natural Gas, as a primary energy has increased its production at worldwide level. This is expected to continue as demand for gas will increase its production in absolute terms and it is projected that the rate of growth will be higher than any other primary energies.

According to the World Energy Outlook 2013 (WEO 2013), gas demand will increase from 2.787 Mtoe in 2012 to 3.273 Mtoe in 2020 and to 4.119 Mtoe in 2035 and its share will grow from 21% to 23% of total energy consumption in the world.

Technically recoverable resources amount to 810 Trillion Cubic Meters, more than four times the proven reserves and equivalent to 235 years of production at the actual level of production (WEO 2013). It is important to point out the weight at worldwide level of the unconventional gas that is currently 343 Trillion Cubic Meters that can be compared with 468 Trillion Cubic Meters of conventional gas with a total of 810 Trillion Cubic Meters.

The following resources are considered unconventional gas: shale gas, tight gas, coal-bed methane and methane hydrates.

Global production of unconventional gas in 2011 is estimated to have been around 560 bcm (0,56 tcm) (232 bcm of shale gas, 250 bcm of tight gas and 78 bcm of coal-bed methane). For the period 2011-2020 in accordance with WEO 2013, it is expected that more than half of the growth in unconventional gas production is projected to come from the two main established producers, the United States and Canada, which accounted for 90% of total production in 2011. By 2020, their share in global unconventional gas production drops to 80%, as production in China and Australia starts to grow.

The productivity of natural gas wells is increasing in many basins across the United States because of the increasing precision and efficiency of horizontal drilling and hydraulic fracturing in natural gas extraction.

The geology of each natural gas resource play is diverse and individual rig or well performance can vary very much. However drilling activity in United States shale plays is now generally producing greater quantities of natural gas than in the past and this trend of increasing rig productivity is one factor helping to increase the United States natural gas production and the U.S. Energy

Information Administration forecasts that United States natural gas production will increase by 56% through 2040.

However concerns have been expressed in many countries about pollution of ground water, high consumption of water supplies, and leakage of methane into water distribution systems. There have been calls for increased transparency, a focus on best practices, and a sharing of experience regarding unconventional gas production.

The possible development of best practice guidance of unconventional gas might resolve a number of the challenges the industry faces and reconcile the environmental objections.

## 2) NATURAL GAS IN TRANSPORTATION

Natural Gas represents the easiest, most practical and more realistic way to reduce pollution coming from road transportation. Natural Gas with its environmental, economic and availability advantages, will remain the best alternative to gasoline and diesel oil in the short and medium terms and is the only fuel that is fully technically and economically applicable in any mode of transportation: on-road vehicles, heavy duty vehicles, ships, aircrafts, locomotives, etc...

Natural gas as a road transportation fuel is an important area for natural gas demand growth, with specific relevant benefits such as reducing environmental impacts (CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, fine particles), including local air pollutants.

The use of natural gas in vehicles does not produce fine particles emissions which cause respiratory diseases in many cities and the reduction of CO<sub>2</sub> emissions is 24% lower than the CO<sub>2</sub> produced by the gasoline or diesel engine vehicles.

Currently there are more than 17, 7 Million natural gas vehicles in the world. The share of Asia is 60%, America is 30%, Europe is 10% and the rest in Australia, New Zealand and Africa.

The annual growth of the number of natural gas vehicles is about 18% per year and it is important to remove the barriers to expand the use of natural gas as a transportation fuel in the world.

The development of natural gas vehicles will depend greatly on:

- Level of Government and regulatory support and funding
- Price of competitive fuels

-Development of competitive technologies (hybrid vehicles, electric vehicles, biofuels, LPG, etc...)

-Environmental constraints

-Political, economic and technical viability of the fuel compared to other vehicle/fuel CO2 mitigation options.

The LNG is a growth vector for natural gas as a fuel and a good example is the LNG Blue Corridors Project in Europe that is a demonstration of heavy duty vehicles running on liquefied natural gas. This project has a subsidy of 8 Million Euros from the European Union.

And finally, I have included a third item which in my opinion is also very important although it is not included in the Task Area Business Cases. It is:

### 3) ENHANCE THE ROLE OF GAS IN ENABLING THE PENETRATION OF RENEWABLES

There is a need to have a reliable source of energy and capacity when the wind is not blowing or the sun is not shining and there is a need for rapid-response capacity to maintain balance in power networks in light of oscillations in the output of intermittent energy sources.

Natural Gas could be such a source, but the owners of gas plants would need compensation for developing capacity for those roles. This activity would be based on a policy dialogue on the role of natural gas in enabling renewable energy policies. That dialogue could lead to development of best policy guidance on practices to enhance the role of gas in enabling the penetration of renewables. Relevant lessons could be learned from the development policies carried out by many countries in the past years.

For instance, by using Combined Cycle Power Plants as a backup to the renewable energies, electricity can be produced very quickly when the air or the sun are intermittent energy sources.