

**Global Unconventional Gas Summit
Beijing, China, October 22nd 2013
*Shale Gas: a pathway for global economic growth
and energy security*
Jérôme Ferrier, President IGU**

Allocated time: 25 minutes

Mr Wu Yin, Vice President and Former Vice Director, *China Energy Research Society*;

Mr Li Yinghua, Deputy Director General, Department of Oil and Gas, *National Energy Administration*;

Mr David Carroll, President & CEO, *Gas Technology Institute*;

Mr Edward Johnston, Vice President of Research Operations, *Gas Technology Institute*;

Mr Vello Kuuskraa, President, *Advanced Resources International*;

Distinguished Panellists and Delegates;

Ladies and Gentlemen;

Slide 1

It is a great honour and privilege for the *International Gas Union* and his President to have been invited to present the views of the Organization at the opening session of the 2013 *Global Unconventional Gas summit*.

IGU is representing the worldwide gas industry, gathering 82 countries, among which 14 Asian nations, and covers 95 % of the natural gas and LNG global gas market. This conference is an event of outstanding importance for IGU, which believes that unconventional gas generally, and shale gas in particular, can transform the global energy landscape and contribute to nurturing a sustainable economic growth, as well as a more secure and environmentally friendly energy world.

Shale gas is more than a game changer, it is a revolution and its global implications and consequences are still far from being universally endorsed or even understood. However, the access to low prices of natural gas for enhancing the economic growth and employment level and fostering the location of new industries, as already evidenced in North America, should be regarded as a major challenge for the rest of the world.

Shale gas has dramatically transformed the outlook for US energy supplies and is also having a profound economic impact, reducing consumer cost of natural gas and electricity, trimming GHG emissions with a decreasing use of coal, creating an impressive number of new jobs, bolstering federal, State and local tax revenues and triggering large industrial projects in the petrochemical industry, fertilisers and LNG exports.

Slide 2

The implications and benefits of the shale revolution in the US can be illustrated by a series of simple facts and figures:

- Firstly, the comparative price levels of natural gas in the three major regional gas markets, the US price being, respectively, one third and one half of those prevailing in Asia and Europe;

Slide 3

- Secondly, the switch in the energy mix for power generation from coal to gas, with more than 40 GW of new CCGT and cogeneration units, which are planned for 2015. This will contribute significantly to improving the carbon print of the US economy in the coming years;

Slide 4

- Thirdly, the number of new jobs supported by shale gas is second to none: it exceeds 600 000 in 2010, a number that is projected to grow to nearly 870 000 by 2015;

Slide 5

- Fourthly, shale gas has significant impact on the US broader economy in terms of contribution to GDP, federal, State and local tax revenues, increased productivity and competitiveness of energy intensive industries, thus bringing incentives for their relocation in the USA.

Slide 6

A report published in last June by the U.S. *Energy Information Administration*, also prepared by *Advanced Resources International*, under the leadership of Vello Kuuskraa who will comment it in greater detail during this session, presents an updated assessment of the global technically recoverable shale oil and shale gas resources.

The report is based upon the evaluation of 137 geological formations covering 95 basins and 41 countries. It upgrades the global shale gas potential by 10 % compared to the 2011 survey and evidences, in particular, that:

- The regional distribution of unconventional resources is more even than in the case of conventional natural gas, which constitutes a favourable geopolitical factor;

Slide 7

- The global technically recoverable resources of shale gas amount to 7 200 Tcf, close to the 6 800 Tcf estimates of the proved conventional natural gas reserves. It is quite interesting to note that the top 10 countries with shale gas resources account altogether for 79 % of such

resources, but only for 30 % of the conventional proven natural gas reserves, which should strongly incentivize these countries to explore and develop their potential shale gas resources.

Slide 8

Each country is positioned differently on the spectrum of shale gas development, but all are expecting that it will serve energy security and independence, diversification of the energy mix and lower gas prices to foster economic development.

However, it is important, when considering resources estimates, to distinguish between technically recoverable reserves and economically recoverable resources, to which we have to add a third criterion, I mean environmental acceptability, in particular for Europe. Altogether, shale gas development is significantly influenced by local “above ground” factors, like land ownership rights, access to natural gas transportation and distribution infrastructures, availability of water and societal acceptance of hydraulic fracking.

Slide 9

The US experience clearly evidences that a comprehensive regulatory regime of shale gas extraction is key to the success of operation and public acceptance. In the US, the shale gas process is regulated across the board by a series of legal documents, among which the *Clean Water Act*, the *Oil Pollution Act* and the *Safe Drinking Water Act*.

IGU is quite active in gathering the feedback from the US and Canadian shale gas industry and assisting its fellow members in the process of setting up, in their own countries, a regulatory framework that will contribute to a safe and environmentally respectful development of their potential shale gas resources.

Slide 10

The main issue is not whether the US success will be replicated elsewhere, but actually when comparable results can be expected in other parts of the world.

The US success has been fostered by five main factors that do not always exist or applicable in other countries:

- An in-depth knowledge of the geology, after intensive drilling campaigns for conventional oil and gas down to the shale levels, for several decades, until such time when horizontal drilling and hydraulic fracking allowed to unlock and monetize such resources;
- A very dense, experienced and highly competitive oil and gas service industry that is developed at a scale driving down the costs of drilling and hydraulic fracking;
- A good water availability and a relatively low density of population in the areas of exploration and production;

- The ownership of the mineral rights beneath their lands by individual landowners, providing incentives for the development of shale oil and gas that may not exist in countries where such rights belong to the State;
- A comprehensive regulatory regime and the dedication and adherence of operators to best practices rules that are commonly applicable.

Slide 11

Some governments are hesitant, or even actively opposed to the development of unconventional resources, in particular shale oil and gas. However, the prize for the countries that will adopt a proactive stance is of such an importance, in terms of energy security, competitiveness and environmental merits, that IGU believes in a progressive lining up of policy makers and opinion leaders to emulate the US success.

In a November 2012 *Special Report on Unconventional Gas*, the International Energy Agency has set the scene for a scenario in which unconventional resources are actively developed in observance of a series of *Golden Rules* in which the best practicable standards of operation are adopted, gaining industry a “social licence to operate” and delivering the economic and energy security benefits while meeting public concerns.

Slide 12

Under IEA’s scenario, the share of unconventional natural gas in the world gas production reaches 32 % in 2035 against 1 % in 2010 and makes Asia, in 2035, a larger gas producer than the Middle East or Russia. Altogether, unconventional gas represents nearly two-thirds of incremental gas supply to 2035

Slide 13

China becomes a major gas producer under this scenario and the second-largest global producer of unconventional gas, after the US. Progress with developing unconventional gas resources is bolstered by the dual policy of increasing the share of natural gas in the energy mix and developing, where possible, the domestic resource base so as to mitigate reliance upon energy imports.

Similar policy objectives are assumed to drive an expansion in unconventional gas production in other Asian countries, notably in India where unconventional gas supply rises to nearly 90 Bcm (or 3.3 Tcf). Australia is also a country that has the opportunity to develop both conventional and unconventional resources, with a mix of coalbed methane, shale gas and tight accounting for 65 % of Australia’s production of 170 Bcm (6 Tcf) in 2035.

Latin America has large potential for unconventional gas development, with Argentina having the largest shale gas resource base, followed by Venezuela (mainly tight gas) and Brazil.

Slide 14

The development of shale gas resources will have major consequences on the international gas trade, markets and security of supply in the *Golden Age* scenario of AIE

The volume of gas trade between regions in 2035 is due to increase by more than 1 000 Bcm/year (35 Tcf/year), which is nearly 50 % more than in 2010. Three main structural trends in the flow of gas and LNG trade to 2035 should be noted:

- Firstly, we observe the emergence of North America as an LNG exporter, both from the East and West coasts, reaching some 40 Bcm/year (1.4 Tcf/year) in 2035. The influence of these exports on trade flows and pricing is larger than these volumes suggest. LNG from the US and Canada, if priced at the conditions prevailing on the North American trade hubs, can compete with oil-indexed gas in both European and Asia-Pacific markets, and the mere presence of this source of LNG should play an important role in creating a more competitive international market for gas supply;
- Secondly, we note the European Union's growing requirement for imported gas accounts for 40 % of the increase in global inter-regional trade, with total imports reaching 400 Bcm/year (14.1 Tcf/year), meaning a dependency on imports of gas and LNG in excess of 70 %. This should trigger a more positive stance from EU countries in favour of shale gas and more efforts for gaining public acceptance, failing which, as well pointed out by Professor Alan Riley of City University in London: *"Without shale gas, Europe could become the only industrially developed region without its own energy resources"*

Slide 15

- Thirdly, the positive effect of unconventional gas resources of China on its gas supply mix, with imports limited to 110 Bcm/ year (3.9 Tcf), or only 20 % of its consumption, which should bear a very significant effect on its energy independence and balance of trade;

IGU is actively advocating for a timely development of unconventional gas resources and for promoting all the possible synergies between fossil and renewable gas resources, like biogas that can be injected into the grids, as well as for the optimization of the electric and gas networks through hydrogen conversion and smart grids.

Once again, I would like to thank the Chinese government and the organizers of the *Global Unconventional Gas summit* for having invited me to address you this morning and I also take this opportunity to invite all of you to join us for the *WGC 2015*, which will take place in Paris in June 2015. I am pretty sure that shale gas will have written several new and positive pages in the meantime, for the benefit of our industry and the consumers.