

## **IEA Releases A Special Report on “Golden Rules for a Golden Age of Gas”**

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On May 29, the International Energy Agency released a report titled “Golden Rules for a Golden Age of Gas” in London. It is positioned as a special report for the IEA’s World Energy Outlook 2012 to be published in November. The IEA has used the concept of a “Golden Age of Gas” since the WEO 2010, focusing its analysis on natural gas that has been growingly expected to play a greater role in the world energy market. The latest special report analyzes principles and conditions for the Golden Age of Gas to be realized.

As is well known, the U.S. shale gas revolution has triggered a wide range of large-scale changes in the United States as the world’s largest gas market, including a far looser supply-demand balance, natural gas price drops, the disappearance of liquefied natural gas import demand, the emergence of LNG export plans and the utilization of natural gas for chemical and transportation industries. The U.S. changes have spilled over to not only the Atlantic market but also the Asian market including Japan. While Japan’s LNG imports have expanded fast since the March 2011 Great East Japan Earthquake, the global market has had a surplus supply capacity to meet the extra Japanese demand thanks to the looser global LNG supply-demand balance resulting from the U.S. shale gas revolution.

Under this situation, there are two key questions to be asked: (1) How long will the U.S. shale gas revolution sustain and develop? (2) Is a great change similar to the U.S. shale gas revolution likely to emerge in the other parts of the world? In a sense, the latest IEA special report attempts to answer these questions. This is because a substantial expansion of uses of unconventional gas including shale gas is expected to hold the key to the Golden Age of Gas. Regarding the substantial expansion of uses of unconventional gas, the ongoing U.S. shale gas revolution has brought about such problems as water pollution through shale gas development and how to coordinate and harmonize gas development with local and regional communities.

Chapter 1 of the IEA special report focuses on an analysis of the abovementioned environmental risk problems and solutions and proposes Golden Rules for sustainable development of unconventional gas resources. I would like to refrain from detailing the report because of limited space for this bulletin. In summary, the IEA report states that the technologies and know-how exist for unconventional gas to be produced in a way that satisfactorily meets these environmental challenges, that it is important to secure the social acceptability of unconventional gas development, and that appropriate policies and regulations hold the key to securing the acceptability.

The report points out that important relevant measures include securing the transparency of relevant policies and the industrial sector's responses, monitoring environmental effects, enhancing gas developers' relations with local communities, preventing and monitoring environmental pollution through gas leaks from drilling wells, minimizing gas flare, and managing projects and relevant regulations properly.

The IEA forecasts that global gas demand will expand 1.5-fold from the present level by 2035 in a Golden Rules Case where the abovementioned principles and conditions are met. The growth will be the largest among energy sources, allowing gas to account for 25% of global energy demand and replace coal as the second most important energy source after oil. In this case, unconventional gas output including shale gas is estimated to almost triple from the present level to 1.6 trillion cubic meters by 2035. Unconventional gas output growth is expected to cover half of the overall gas production increase, with unconventional gas boosting its share of global gas output from 14% at present to 32% by 2035. While the United States is destined to lead unconventional gas production, China is interestingly expected to sharply increase shale gas output particularly from 2020. Unconventional gas output growth is thus viewed as a key factor to support China's gas demand growth.

In the Golden Rules Case, the IEA report states that gas supply growth and progress in the development of various gas resources in the world will help improve the reliability of gas supply and the stability and affordability of gas supply and prices, making great contributions to a global expansion in gas consumption. Such situation may amount to what the IEA calls "a Golden Age of Gas."

The IEA report also gives the Low Unconventional Case where unconventional gas development will fail to make progress with "Golden Rules" failing to be realized. Global unconventional gas output in 2035 is expected to remain unchanged from the present level in this case. As gas supply growth is limited with gas prices being relatively higher, gas demand growth is estimated to be restricted. In 2035, gas is thus expected to account for 22% of global energy demand, failing to eclipse coal.

As indicated by the above discussions, the future course of unconventional gas will greatly affect global gas utilization and the entire world energy market. In this sense, the latest IEA report gives an important implication about global energy market perspectives from a very interesting, significant and most contemporary viewpoint. In early May, I had the opportunity to attend a scenario planning meeting in the United States on the future course of natural gas. At the meeting as well, a scenario branching point was discussed and chosen whether or not the successful development of unconventional gas resources in the world would be materialized. I then participated in discussions on the scenarios based on the branching points. A conclusion based on the discussions is that great expectations are placed on the future course of natural gas in Japan and the world, with various uncertainties existing about the future course. How to analyze and address the uncertainties has become one of the most important challenges for energy experts in the world.