Outcomes of the 2011 World Energy Leaders' Summit Rio de Janeiro, Brazil

By Seijin Kim,
Senior Fellow, Global Agenda, World Energy Council

Organised in partnership with WEC's Brazilian Member Committee and supported by Eletrobras and Petrobras, the Rio World Energy Leaders' Summit (WELS) saw Global Energy Leaders engaging in high-level dialogue on the current and emerging issues affecting the energy world under the theme: "2011, a Year of Change for the Energy Industry?"

Co-hosted by Edison Lobão, Brazilian Minister of Mines and Energy, and Eduardo Paes, Mayor of Rio de Janeiro together with Pierre Gadonneix, Chairman of WEC, and Dr Christoph Frei, Secretary General of WEC, the forum took place in the historic Rio City Hall, Palacio da Cidade.

Nearly 100 energy leaders from over 26 countries, including Youcef Yousfi, Algeria's Minister of Energy and Mining, joined a series of round-tables held in "closed" session to encourage freer discussions and openness.

In his opening speech, Pierre Gadonneix welcomed the audience and highlighted the importance of such a meeting. In a time of ever-changing context, it is important to confront the fundamental long-term challenges of the energy sector:

energy security, climate protection and energy access for all. Mr Gadonneix invited energy leaders to consider the energy world beyond the confusion of the daily news and observed the need for the sector to create a governance system to pursue long-term objectives and to contribute to sustainable global growth. He prompted each leader to play a key role in the dynamic process towards clear energy leadership: encouraging industry leaders to support governments while delivering growth, and political leaders to deliver a clear framework for sustainable investment.

This dynamic process started with José da Costa Carvalho Neto, President and CEO of Eletrobras, and José Sergio Gabrielli de Azevedo, President and CEO of Petrobras stimulating the opening plenary debate around the implications of the major events: MENA (Middle East and North Africa) regime changes and Fukushima plus the implications of climate challenge and energy poverty, especially in the context of the International Year of Sustainable Energy for All in 2012.

The plenary was followed by three thematic round-tables focusing on key issues topping the current Global Energy Agenda, which are:

- Expanding the Frontiers: The Future of Unconventionals and Deep Water
- Policy Uncertainty: Challenging the Financing of Future Energy Infrastructure
- Smart Grids: The Journey Begins

Key Takeaways

- World Energy Council 2011 Issues Survey finds higher uncertainty around all the issues that were seen to be part of the solution including renewables, energy efficiency and nuclear. The top uncertainties are climate framework, nuclear and MENA.
- MENA has 60 per cent of total oil reserves and 45 per cent of gas reserves. The so called "Arab Spring" plays an essential role in energy security.
- The most significant impact of the Fukushima accident is that nuclear technology and experts have lost the trust of the public in a number of countries. To regain the trust of the people, global safety governance must be strengthened.
- Today we see 10 times more trade in paper than the physical trade of oil. Low interest rates and tight supply and demand provide a perfect context for speculation.
- Unconventional resources will be game changers. They are crucial to meet future energy demand increases. 50 per

cent of oil and gas reserves will come from unconventionals in the future.

- It will be a political decision whether and when the US will export LNG (from shale gas). Canada may well move before the US.
- Delay on a carbon tax decision has increased the electricity cost by over 10 per cent in some cases. (Policy Risk Premium)
- Some of the large global oil companies take US$ 40-50 per ton of CO_2 as a criteria to evaluate the profitability of future developments.
- Brazilian law requires companies to invest 1 per cent of turnover in R&D, which makes a leading Brazilian oil company most innovative.
- Smart grid is not an option, but a must. We need to convey a doubling of electricity supply with existing grids and we have to reduce CO_2 emissions.
- Most smart grid business cases are weak, because we overestimate the customer engagement and grossly underestimate the cost and benefit.

Session Summary Notes

Opening Plenary

MENA (Middle East and North Africa) has 60 per cent of total oil reserves and 45 per cent of gas reserves. It also has large potential for future expansion in the gas market. Analysts agree that the solution of MENA issues, i.e. the "Arab Spring", plays an essential role in energy security.

Concerning price volatility, there is no physical shortage in the oil market because OPEC members have increased their production and they have spare capacity. Speculation and psychology have caused the price volatility. Low interest rate and tight supply and demand provide the perfect context for the speculation. Today we see 10 times more trade in paper than the physical trade of oil.

We need to improve the recovery rate of the current wells with improved technology if we are to add new barrels of oil. One third of demand is being met from new discoveries. The new discoveries are in deep water and unconventionals and in the areas that need infrastructure. This may lead to a higher price of oil to meet the investment.

Japan is experiencing very heavy impacts as a result of the nuclear accident at Fukushima. Significantly, nuclear technology and experts have lost the "trust" of the public. The majority of people in Japan want to phase-out nuclear and want more renewables. However, the public do not recognise that this choice of energy mix brings with it instability and higher costs. To regain the trust of the people, global safety governance must be strengthened. Communication is vitally important.

According to the WEC 2011 Issues Survey, the absence of a global climate framework post 2012 and the lack of progress towards a significant agreement have kept the issue a dominant critical uncertainty. On the need for action front renewables and energy efficiency remain dominant issues with their perceived impact further increased this year.

1.5 billion people are without the benefit of electricity access, which is unacceptable. We should guarantee energy access for everybody. It is the role of state and every one of us to contribute so that this does not occur.

Brazil has huge potential and big opportunities. A third of all major discoveries in the past 10 years have come from Brazil. The current production of pre-salt in Brazil is over 150,000 b/d and it will be around 2.5 million b/d by 2020. Only 2 per cent of the agricultural land in Brazil is used for ethanol – sugarcane production. 90 per cent of new car sales are flex cars. Brazil has 260 GW of hydroelectricity potential and currently over 80 per cent of electricity is originated from hydro power. Wind power potential is 350 GW, which is even more than hydro potential. Brazil also continues to expand its nuclear capcity in order to maintain a diversified mix and thus long-term flexibility and lower vulnerability.

Expanding the Frontier: The Future of Unconventionals and Deep Water

Unconventional resources will be game changers. They are crucial to meet future energy demand increases. 50 per cent of oil and gas reserves will come from unconventionals in the future. Currently 3 per cent of oil comes from unconventional sources, but this will increase to 8 per cent by 2030. Unconventional gas production will increase to 30 per cent by 2030 and 70 per cent of this will come from the US and Canada.

Shale gas in North America is available in enormous quantities at a low cost and this could be reproduced in China and South America. The supply could last over a hundred years. The cash cost is US$ 2 per bcf (billion cubic feet) and net present value based break-even price is US$ 3-5. It will be a political decision whether and when the US will export LNG (from shale gas). Canada may well move before the US. Such exports will cause dramatic changes in the global gas market.

Oil shale has a huge potential in the US and it is estimated that the reserves have the potential to be 3-8 times bigger than conventional oil. Scaling up the technology will be the key issue as oil shale is not yet cheap enough. In the short term, it will have a limited impact on world energy supply, but in the long term, it has the potential to cause change.

The next question is whether the potential will be realised. Unconventional resources face several challenges: water requirements, energy conservation, mitigating CO_2 emissions and environmental impacts, improving political and public confidence, and risk management.

There are also tremendous opportunities with deep water. Technology is a key to success in this area. Deep water covers 8.5 per cent of world supply in 2010 and 90 per cent comes from just four countries: Nigeria, Angola, Brazil and US Gulf of Mexico.

Policy Uncertainty: Challenging the Financing of Future Energy Infrastructure

The size of the investments required for future energy infrastructure is most challenging. It is estimated that tens of trillion US$ will be required over the next several decades. Government funds are currently very limited and unable to meet this challenge. Private sector investments will be required to meet this challenging total. What policies make the difference? What are the financial options?

Policy is a major driver of energy markets and policy is still the single most important driver for clean energy. However, policy uncertainty has been increasing. There will be no significant private sector investment without policy stability. The problem is that policy risk is difficult to assess and to insure against. Delay on a carbon tax decision has increased the electricity cost by over 10 per cent in some cases. And some of the large global oil companies take US$ 40-50 per ton of CO_2 as a criteria to evaluate the profitability of future developments.

Market expectation of wind is quite significant, but there are risks, including technological and financial risk. Regulation has to provide a framework to unlock financing. Without regulation, investment will not follow.

Growth in production and reserve replacement has been the key challenge over recent years. Geopolitical risk is most difficult, but policy uncertainty also makes financing more difficult. We need more sophisticated insurance, consortiums and a rigorous definition of stress case. We also need incentives for R&D. Brazilian law requires companies to invest 1 per cent of turnover in R&D, which makes a leading Brazilian oil company most innovative.

The Cancun COP 16 meeting agreed to launch a new fund, the Green Climate Fund, which aims to raise US$ 100 billion per year by 2020 (and fast-track US$ 20 billion by 2012). But it is still unclear how the fund will be capitalised. Institutions need to work together to mitigate risks. And we need to develop public-private partnerships (PPPs).

Smart grids: the journey begins

According to WEC Issues Survey, smart grids are gaining increasing recognition. Why do we need smart grids? There are a lot of changes in power generation. We need to convey a doubling of electricity supply with existing grids and we have to reduce CO_2 emissions. Smart grid is not an option, but a must.

Smart grids include the technology of generation (whether centralised or distributed), transmission and distribution, IT and software for monitoring the system. With all of them, the smart grid will accept more energy from various sources and options and it will also enable more interactive participation of consumers.

There is a patchwork of diverse technologies spread across countries. Less than a quarter of countries have smart grid initiatives. The most visible technologies are Advanced Metering Infrastructure (AMI) and Distribution Management System (DMS). The smart grid industry is very risk-adverse. The utilities want 99.999 per cent assurance, but the technology is new and nothing yet has been proved to deliver such ubiquitous high performance.

In some countries, stakeholder opposition is a significant issue, and in some cases, there have been perceived issues of privacy. When the new digital meters replaced the old meters, the usage reading was more accurate and many people felt their utility bill increased. One piece of analysis shows that the smart technology could save US$ 3 billion for customers over 20 years. In one case, US$ 800 million invested in a smart grid would result in a benefit of US$ 2.4 billion.

Most utility business cases with smart grid are “weak” because we overestimate the customer engagement and grossly underestimate the cost and benefit. Rationalisation should be clear: better customer services and overall lower cost in the long run. ❑