

IPS Roundtable, 4 April 2011:

**“The Competitive Forces of New Nuclear –
Economics and the Challenges of Delivery”
Speaker: Dr Timothy Stone**

By Rachel Hui
IPS Research Assistant

IPS organised a roundtable on 4 April 2011 featuring Dr Timothy Stone, Chairman of KPMG’s Global Infrastructure and Projects group. Dr Stone, an experienced senior advisor and expert on nuclear development, spoke on why “new nuclear” had an important role as countries sought to transit to a low-carbon energy policy.

Dr Stone believed that there was a need to examine nuclear policy as part of a rational energy policy. As a result of the radiation leaks at the Fukushima Daiichi nuclear power station in Japan, public opinion towards the industry had been somewhat adversely affected, in large part through lack of clear explanation in the media of the true consequences of the earthquake and the true associated levels of risk from radiation. Explaining that his position was very specifically “pro-electricity” and not “pro-nuclear”, Dr Stone believed that many countries must consider nuclear policy rationally if they

were committed to addressing climate change and more competitive low-carbon electricity generation. In the case of the UK, which faced legally binding carbon dioxide reduction targets – 80 percent reduction by 2050 – and faced little potential for hydropower, nuclear energy was necessary in restructuring the electricity market as it was the lowest cost source of low-carbon power generation. This would also allow the UK to potentially double its electricity supply and decrease its dependence on fossil fuels.

Providing a comparative analysis of different energy options, Dr Stone explained some of the limitations associated with renewable energy options. For example, Dr Stone noted that while many people believe that “the sun is free” and thus advocate the pursuit of solar energy, the real cost structure of using existing photovoltaic (pv) solar energy was far more expensive than such a simplistic analysis suggests. The harnessing of



The Competitive Forces of New Nuclear—Economics and the Challenges of Delivery, Rachel Hui, *IPS Update*, May 2011

offshore wind to generate electricity would also have to be backed up by heavy system costs due to the scale of wind farms, which could take 20 to 30 years to break even. In addition, offshore wind could only provide intermittent energy generation because wind was impossible to control yet the electricity systems had to remain stable – a difficult task in the absence of large scale storage.

To illustrate how public perceptions on the risk of pursuing nuclear energy were often misplaced, Dr Stone also provided a picture of the relative risks associated with different energy options, expressed in deaths per terawatt hour. Nuclear energy in fact had the lowest risk compared to hydropower, wind and solar energy as those industries experienced a high frequency of construction accidents. However, these risks were far lower than in the coal industry, making a part of the compelling case for a swift transition to non-fossil fuel energy sources. By contrast, Dr Stone noted that the official figures from United Nations agencies for total deaths genuinely attributed to the Chernobyl nuclear disaster in its immediate aftermath was somewhere in double figures but may ultimately turn out to be very low. He reminded the group that the data associated with almost all epidemiological studies on cancer clusters that were said to be related to radiation exposure were extremely controversial when analysed rigorously, noting that many studies were statistically problematic and provided no clear evidence.

“Do everything you can once and up front”, was Dr Stone’s advice on how the government should ensure the best returns on their investment into nuclear energy. By effecting a generic design assessment of reactors, later planning inquiries would then focus on purely local issues at individual sites. The government should also act to facilitate radical reform of the planning system of nuclear sites and principles, credible progress on waste management, and a comprehensive system of insurance, among other factors which would reduce needless risk. The

issue of risk allocation was also brought up during the roundtable discussion. Looking at the case of Japan, some were concerned that the consequences of a nuclear accident had profound effects on the wider economy: not simply hurting the manufacturing and agricultural sectors, but also causing uncertainty in markets if for instance, the Tokyo Electric Power Company (TEPCO) were to be nationalised. Dr Stone replied that the governments must always be involved and responsible through properly independent safety regulators to ensure that rational defences exist in the safe design of reactors.

In the case of the forty-year old Fukushima Daiichi power plants, Dr Stone said that their specifications would be very different from the capacity and design of newer nuclear reactors but that the older reactors should be capable of being maintained in a safe condition. Safety assessments must be fully and properly built into the cost of nuclear energy policy and with the new risk standards following the Fukushima disaster, even countries with low seismic activity would have to bear these costs. However, Dr Stone believed that there was a low likelihood that the Fukushima experience would radicalise the cost structure of risk in the nuclear industry, which presently imputed exceptionally high safety standards already. He believed that engineering against disaster was a far better option than a complete shunning of nuclear energy, and that most countries had a high degree of transparency where peer reviews were routinely undertaken on the safety of nuclear power plants. Nevertheless, if the safety of nuclear power plants were considered unsafe by the independent safety regulators, properly free from political pressure, they must be shut down.

Undoubtedly, nuclear energy has become a controversial hot topic following the radiation leaks in Fukushima. As Japan seeks to stabilise the Daiichi nuclear power plants, concern and fear over nuclear energy has reverberated

internationally, with pressure mounting on several governments to phase out their original plans to build nuclear plants. Yet, Dr Stone emphasised that a public debate based on facts and not emotion was critical for the future of energy policy. A “no” nuclear policy without serious public debate would not be prudent if it was emotional and not rational – and emotional decisions could add more than 40 percent to low-carbon electricity prices.

If you have comments or feedback, please email ips.eneews@nus.edu.sg



You are welcome to reproduce this material for non-commercial purposes and please ensure you cite the source when doing so.
© Copyright 2011 National University of Singapore. All Rights Reserved.