WM2008 Conference Panel Reports

Session 3A
Panel: Nuclear Renaissance and a Sustainable Fuel Cycle

Panel Reporter: John Mathieson, Nuclear Decommissioning Authority, (UK)

This panel focuses on the potential nuclear renaissance in a number of countries. Associated with new nuclear build is the requirement for front-end fuel supply and back-end waste management. There are once-through and recycling options to be considered, with key factors relating to sustainability, and environmental health and safety.

Panelists:

David Hayes, Special Projects Director, Nuclear Decommissioning Authority (UK);
Sylvain St-Pierre, Director for Environment and Radiological Protection, World Nuclear Association;
Arizona Public Service;
Piero Risoluti, Assistant to the Director of Nuclear Technology, ENEA (Italy);
Hans Codée, Managing Director, COVRA (The Netherlands)

Following introductions by the Chairman, David Hayes opened up the session with remarks concerning the global renaissance of nuclear power, particularly in the US, Europe and Asia, linking this to the twin drivers of climate change and energy security. With respect to the latter he reminded the audience of the reliance and vulnerability of Western Europe on Russian gas supplies. This was one reason why the UK had just announced it was in favor of new nuclear build, although it had clearly stated that these should be financed by private sector and cover their share of decommissioning and waste management costs.

He also mentioned the positives the nuclear had to offer such as low carbon footprint, cheap, well-proven and dependable technology. Effective regulation and oversight meant it was also safe. Nuclear also provided energy diversity and independence.

However, despite the benefits nuclear had to offer there were still issues in the minds of the public and NGOs. Given the Chernobyl accident and concerns about terrorism, safety and security, of both nuclear plants and the transport of nuclear materials were of prime concern. Dependence of a country on a single fuel supplier from another may be an issue for security of supply.

Building new power stations in several countries also gave rise to concerns about the capabilities of the supply chain and the implications for developing and maintaining the skills required to do the job. The costs of new build, and the associated costs of waste management and decommissioning were also an issues as in the minds of the public and others, these were very significant. Implementation of final disposal was also proving difficult in many countries with related questions concerning reprocessing or direct disposal.

The APS representative spoke about the new build initiative in the US and again echoed many of the positive messages about the benefits of nuclear but again reminded the audience of the potential manpower difficulties.

Sylvain St-Pierre echoed many of the messages of the UK speaker, reinforcing these with several facts and figures on climate change, noting that some 20% of global CO_2 emissions were from energy generation. He stressed this was now a time to act if we were to have a sustainable future. The world environment was impacted by a number of "drivers" including climate change, air and water pollution, urban development and intense industrial activities; compared to these, radiation exposure and nuclear waste management was relatively inconsequential.

He further made the point that it was not just the more advanced countries that were considering new build, but also emerging countries which need CO_2-free energy, which could be achieved through mutual help. A further point was that nuclear was the only clean energy source that could be provided on a large scale.

Dr St-Pierre took the opportunity to introduce to the audience the WNA's new policy statement on best practice in uranium mining and processing which was supported by the IAEA and ICMM. This statement held special relevance for emerging U-producing countries that do not have fully developed regulation.

Dr. Risoluti spoke of the Nuclear Renaissance being the exiting (real or apparent) the Nuclear "Dark Ages". It was "dark" because of challenges to economic competitiveness and negative perception by the public and the press. However, the word "renaissance" was only applicable to western countries, as new build was already taking place in many Asian countries. There were signs of a renaissance though in the US which was supplemented by GNEP.

Dr. Risoluti likened the public fears for nuclear in certain countries with the fear of the devil in the Middle Ages. This in turn meant there was no political backing for nuclear which was more important than loss of economic competitivity. According to Dr. Risoluti the cause of the fear was the safety of nuclear waste disposal.

However, he referred to the more positive perception of nuclear that was emerging, indicating that even prominent "greens" appeared to see the logic in nuclear. Moreover, with the progress on implementation of geological disposal in many countries, this too would help change public perceptions. However, this was still a real challenge and would need to be addressed if we were to have a renaissance.

Dr. Risoluti referred to the GNEP initiative which, *inter alia*, provided for the wider-scale use of nuclear through providing reliable fuel services worldwide and providing nuclear fuel and taking back spent fuel for recycling without spreading enrichment and reprocessing technologies. A further feature was to reduce the "repository burden": Repository capacity would be increased through recycling methods. Given this why not have regional or shared repositories as one for each nuclear country ("a rather ephemeral notion") would be expensive. He highlighted this issue by referring to the fact that Europe would require about 24 repositories –this was an area the size of the US which required just Yucca Mountain and WIPP.

The international solution to waste management was a theme continued by Hans Codée. He noted that mining, enrichment, fuel fabrication, electricity production, reprocessing and some waste management were international industries. However, so far geological disposal was viewed strictly as a national objective.

Dr. Codée referred back to the original Brundtland definition of sustainable development emphasizing the intergenerational equity aspects of it and noting also that the sentiment had been adopted by the IAEA in its principles of waste management. Sustainability implied taking account of use of resources the effects on the environment, cost effectiveness, public health, and safety and security. All of these could be applied to all aspects of the fuel cycle, including disposal.

Attendance at the session was good (about 90) and there were several questions covering GNEP and international repositories in particular.