Nuclear power

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What can we learn from Australia?

Dr Peter Greenwood, WFEO and Engineers Australia

My topics will include

1. The critical need to mitigate climate change.
2. The impact of COP-21.
3. The Environment Movement.
4. Forecasting, construction and urgency.
5. The key role of nuclear power.
6. Informing Governments and Civil Society.
7. WFEO and its role.

Australia, which provides much of the world's uranium, has a virtual embargo on:

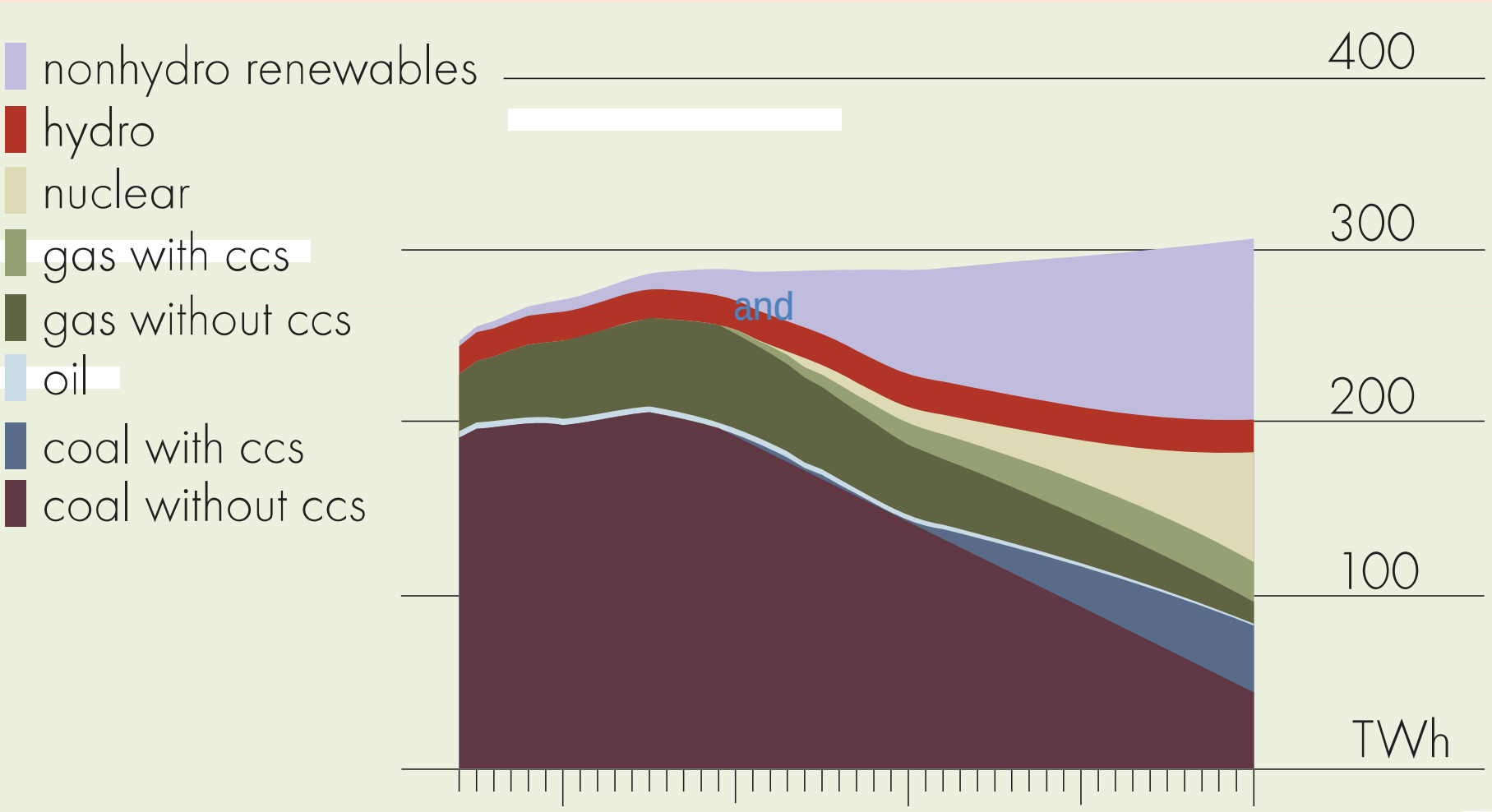
1. Learning about nuclear engineering
2. Policy discussions about nuclear issues and
3. Government consideration of nuclear energy for generation, particularly in the context of climate change mitigation.

Malcolm Wicks, UK Minister of State for Energy

"Some of these environmentalist who have good hearts but confused minds are almost a barrier to tackling climate change."

The main thrust of the environmental group supporting the use of nuclear power is that there is insufficient time to develop non-polluting sources of energy to replace polluting fossil fuel generation. Nuclear power can also be both safe and cost effective and benefits biodiversity by using less land than other power sources.

Figure 1. ABARE 2007 enhanced technology



“ We have a clear conclusion that non-solar renewables may be ‘huge’, but they are not huge enough.

To complete a plan that adds up, we must rely on:

1. One or more forms of solar power.
2. Or use nuclear power.
3. Or both.”

Mackay in “Sustainable enregy without the Hot Air”

Conclusions

The accident at the Chernobyl nuclear power plant in 1986 was a tragic event for its victims, and those most affected suffered major hardship. Some of the people who dealt with the emergency lost their lives. Although those exposed as children and the emergency and recovery workers are at increased risk of radiation-induced effects, the vast majority of the population need not live in fear of serious health consequences due to the radiation from the Chernobyl accident. For the most part, they were exposed to radiation levels comparable to or a few times higher than annual levels of natural background, and future exposures continue to slowly diminish as the radionuclides decay. Lives have been seriously disrupted by the Chernobyl accident, but from the radiological point of view, generally positive prospects for the future health of most individuals should prevail.

UNSCEAR

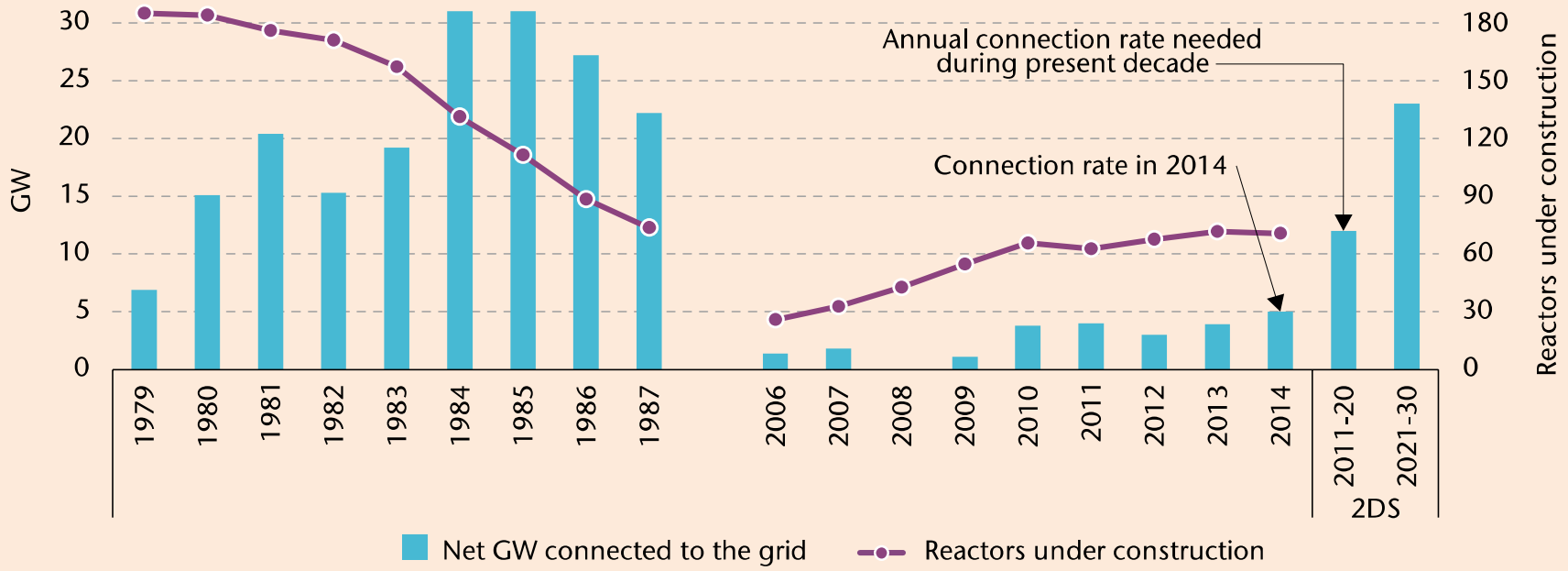
In Australia, the Royal Commission on the nuclear fuel cycle reported to the South Australian Government in May 2016 :

“The Commission looked closely at reactor safety and the major accidents associated with nuclear power plants. While acknowledging the severe consequences of such accidents, the Commission has found sufficient evidence of safe operation and improvements such that nuclear power should not be discounted as an energy option on the basis of safety.”

The 2016 Australian Royal Commission findings included the following comments on emissions and nuclear technology:

"there will in coming decades be a need to significantly reduce carbon emissions and as a result to decarbonise Australia's electricity sector. Nuclear power, as a low-carbon energy source comparable with other renewable technologies, may be required as part of a lower-carbon electricity system."

Figure 8. Grid connection rates & required rates to reach the 2DS target



Source: IAEA PRIS Database, IEA and NEA analysis.

WFEO's position on nuclear energy can be described as follows:

The use of all feasible energy resources will be required in order to meet the world's huge growth of energy demand, and this will include not only technologies for energy efficiency and conservation, and advanced renewables, but also for cleaner, less carbon-intensive fossil fuel energy techniques, as well as safe and secure nuclear energy systems.

We must:

1. Work with the UN Sustainable Development Goals
2. Work with national engineering organisations, WFEO and nuclear societies such as the French Nuclear Energy Society (SFEN), NEA and IEA.
3. Prepare appropriate unbiased material.

4. Place the material with appropriate leaders and organisations, nationally and internationally such as the UN, UNESCO and its national committees.
5. Seek sympathetic governments, all government advisors and other civil society sector opinion leaders.
6. Work with approachable environmentalists.
7. Brief the specialist media.
8. Consider how to influence legislation, in the case of Australia and maybe other countries.