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## THINKING OF THE NUCLEAR OPTION?

Thinking of the nuclear option? No, this is not a reference to a country adopting a nuclear weapons capability, but the more peaceful avenue of choosing an energy source, although the dividing line between both can sometimes appear to become somewhat confused!

Many countries continue to think about adopting nuclear power despite the accident at Fukushima Daiichi. Others, of course, are winding down their nuclear programmes. But what makes a country, particularly one which does not have nuclear at the moment, want to continue? And what do they need to put in place to ensure this can happen in a safe and secure manner? This series of blogs will examine these issues.

It is hard to believe that the accident at the Fukushima Daiichi nuclear power plant in Japan occurred almost five years ago on 11 March 2011. In the aftermath of the disaster, many countries reviewed the safety of their existing nuclear reactors and, where appropriate, upgraded them to make them more resilient against unexpected extreme events, such as flooding, earthquakes, terrorist attacks and aircraft impact. Many countries also took the opportunity to review their nuclear policy and some, notably Germany, Switzerland and Taiwan, decided to phase out nuclear altogether.

Some countries, such as China, Russia, the UK, US and UAE, have continued with their new build programmes. The accident at Fukushima Daiichi also does not seem to have deterred some non-nuclear countries from pursuing the option; these would include Turkey, Jordan and Vietnam, amongst others. These decisions will often be motivated by security of supply, energy diversity and climate change objectives.

Deciding to go down the nuclear route is a major commitment for any country and it takes years of planning to establish an appropriate infrastructure which will enable it to develop the programme in a sustainable way. Once that infrastructure is in place, which may take between 10 and 15 years, the lifecycle for a nuclear facility is upwards of 100 years taking into account its licensing, construction, operation, closure and decommissioning.

Add to that the waste management aspects, which in themselves add several hundred years for dealing with the low level waste, and potentially thousands of years for the spent fuel and higher activity waste management, and you can see that the decision as to whether to invest in a nuclear power programme is not to be taken lightly.

Over the next few months we will explore the building blocks countries new to Nuclear energy have to put in place. These will include:

- Regulation / legislation and the requirement to develop an independent nuclear regulator.
- Financing for new build – where does the money come from?
- The human resource dimension, where do the (right/trained) people come from?
- Decommissioning planning and financing.

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- Stakeholder engagement
- What types of reactor are available to the newcomer country, covering small and medium sized reactors (SMRs) and full scale power stations?
- Physical aspects such as the requirements for an adequate transmission and distribution grid.
- Waste management and disposal
- Fuel leasing and reliable fuel supplies
- Nuclear safety
- Nuclear security
- Nuclear safeguards

Please revisit this site for the first instalment, which will discuss the regulatory aspects.

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