

Nuclear after Fukushima

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It is common knowledge that the world is set to go from six to nine billion people in the next 20-30 years. In order to cope with the energy challenges encompassed in this daunting thought, there are three questions which many nations must face.

1. Energy security – do we have enough energy?
2. Energy independence – where is the source of that energy located?
3. Climate change – are we changing our climate to the detriment of our children and our children's children?

The only type of energy that answers all of these three questions is nuclear.

1. With respect to energy security, if a country builds a nuclear power plant, it can build it according to its own current and future specifications and needs, and it will have a source of base-load generation which will provide energy 24 hours a day.
2. Energy independence – if a country builds a nuclear power plant within its own borders, it will not need to deal with any other country with respect to the price, quantity or transmission of energy across any national boundaries.
3. With respect to climate change, it is fairly well-known that nuclear energy emits very little carbon, and is one of the best sources of clean energy currently available.

Accordingly, it ought to be self-evident that nuclear energy should be part of most any country's energy mix.

The accident at Fukushima has, however, made many nations rethink their tentative steps towards building nuclear power plants. Before Fukushima, both Three-Mile Island and Chernobyl were nuclear accidents that had to be considered when rethinking the return to nuclear power, but informed people understood that Chernobyl was an accident waiting to happen. It was the result of old technology, badly maintained with operators who were not responsible.

Then there was Three-Mile Island which was not a failure but a success. When there was a problem in the reactor, everything turned off, no one died, indeed no one was hurt.

Fukushima itself was a case of 40-year old technology, and other unfortunate circumstances which have been thoroughly described elsewhere.

Even without the advent of Fukushima, however, there are certain policy issues which any country must consider in order to determine whether to build nuclear power plants at this time.

These issues are as follows:-

1. Politics – nuclear is political.
2. Planning – correct siting of nuclear power plants is of paramount importance as Fukushima has graphically shown us.
3. Skills shortage – there is a dearth of nuclear scientists, physicists and operators which needs to be addressed.

4. Financing – nuclear power plants are expensive and financing is difficult because of the long term nature of the finance.
5. Parts – if all of the nuclear plants that are being discussed, are actually built, there will be a queue for certain heavy forgings and other important parts.
6. Proliferation – operating a nuclear power plant is not proliferating in itself but there are issues with respect to the front-end (enrichment) and the back-end (reprocessing).
7. Waste – the common belief is that the best way to deal with nuclear waste is by deep geological storage. Until sites are chosen, however, and construction is completed, dry cask storage on site will be often used.
8. The Press – reporting on a good story about nuclear does not sell newspapers.
9. Radiation – fear of radiation is difficult to educate against, as it is irrational and unscientific.

Notwithstanding the difficulties posed by some of the issues set forth above, many countries in the world are choosing to continue with their nuclear plans. Some countries, however, that were hesitant to begin consideration before Fukushima (especially those with strong green parties) are using the opportunity to withdraw, so that, whereas China, India, Turkey, Abu Dhabi, Finland, the Netherlands and the UK, among others, are continuing with their nuclear plans, countries like Germany, Italy, Switzerland and Sweden are withdrawing.

It appears that the developing world understands that it needs nuclear energy and will not be deterred, whereas the developed world is more cautious.

From my own point of view, I believe that nuclear is not the answer but it is an important part of the answer. The world needs a bouquet of energy sources. We need oil, gas, coal, renewables and we need nuclear, and without all of them, we will not be able to deal with the difficult energy questions we will all sooner or later be forced to face.

Lady Judge's career. ([PDF](#))