

# Nuclear Power is the best, not least worst way to generate clean reliable economic baseload electricity

Since the Fukushima accident earlier this year, it has become clear that the nuclear industry has a fundamental problem. As so eloquently said in the introductory session of the WNA Annual Symposium in London last month by WNA Executive Director John Ritch there is a common belief that while nuclear power may be safe; we are ***safely managing doomsday machines***. Or in other words, the fear is always there about the small risk of an extreme catastrophic event.

Consider what politicians who support nuclear are saying – *of course we would rather not use nuclear power but we have no choice*. They continue that if we had better options we would not use nuclear power due to its inherent risk. In the extreme this is the German position. The Germans are actually abandoning an important source of their current electricity generation because in their view it's simply not worth the risk. So what is this risk? I expect that many in the public would say that, while generally safely managed, a nuclear disaster that kills many, contaminates vast land areas and results in huge numbers of long term health effects to the population, primarily cancer, even for those living far away from the accident is not only feasible but in fact somewhat likely, i.e. yes these are indeed doomsday machines.

This is of great concern. As we have seen from the recent accident at Fukushima, the public at large is afraid. And why are they afraid? Over the years we have taught them they should fear nuclear.

The final session of the London symposium was absolutely brilliant on communications. Of particular interest was the talk by Malcolm Grimston. In his presentation, Malcolm stated that the public believe what they believe, in large part as that is what the industry has inadvertently taught them to believe over the past 40 years. He argues that our constant focus on communicating safety has taught the public that since we talk about it so much it *must* be dangerous. We feed the dragon and then wonder why it breathes fire.

And yet the truth is just the opposite. We know that nuclear power has killed by far the fewest number of people per TWh of any other generation type (see my blog of May 7). And it has a very small impact to the environment with effectively zero emissions of any kind.

But our detractors will say, yes, that may be true. But what about the one accident that will impact us all? This is the great fear. And again, we have the data. We know that Chernobyl was the world's worst nuclear disaster, yet it only killed 52 people. The primary impact beyond the severe impact to the first responders or "liquidators" as they were known was about 6,000 thyroid cancers in children, of which 15 died. This is indeed terrible, but we also know how to avoid it in the future. We also know that to date we cannot attribute even one single cancer in the longer term to Chernobyl – and this is for the most studied industrial accident in history. Try and tell that to people, your friends, and others who know you and trust you – and even they will say they really don't believe it. And that is why the biggest effect of the accident was the psychological impact. People were afraid and fear caused significantly more illness than radiation. And this fear is what we must tackle.

The same will go for Fukushima. A terrible nuclear accident. Radiation releases. Contamination in some communities. And yet – there have been no radiation deaths and there will be no radiation deaths in the future. And this is with the worst

nuclear disaster in 25 years.

But once again, the naysayers will say, can you **guarantee** that there will be no cancers in the future from Fukushima? And of course, the answer is no, we cannot guarantee this outcome. But what we can guarantee with absolute certainty is that many Japanese people **will** get cancer from many other sources over the coming years. This is guaranteed. So it would be best to focus on those things in society that we know will cause cancer. I read an article that I had to read twice – it proudly proclaims there is no radiation in Japanese cigarettes following Fukushima, so not to worry, the cigarettes are still safe to smoke!

A few days ago, the IAEA issued its “Summary Report of the Preliminary Findings of the IAEA Mission on remediation of large contaminated areas off-site the Fukushima Dai-ichi NPP 7 – 15 October 2011, Japan ‘.

In this report, the IAEA lauded the Japanese government on its plans for remediation of so called contaminated areas outside of the 20 Km evacuation zone. There were 9 acknowledgments and 12 points of advice given in this report. Without going into detail, and as a good example, the first point is well worthy of discussion.

*“Acknowledgement 1: The team appreciates that Japan has been going forward very quickly and with the allocation of the necessary resources (legal, economical and technological) to develop an efficient program for remediation, and therefore to bring relief to the people affected by the Fukushima Dai-ichi nuclear accident, with the priority being given to children and those areas where they typically spend most of their time.”*

The above clearly demonstrates the Japanese commitment to resolving issues affecting the lives of people who live in these areas. But it is also important to note Advice 1.

*“Advice 1. The Japanese authorities involved in the remediation strategy are encouraged to cautiously balance the different factors that influence the net benefit of the remediation measures to ensure dose reduction. They are encouraged to avoid over-conservatism which could not effectively contribute to the reduction of exposure doses.”*

Or more simply stated, don't spend time decontaminating just to appease the public. Make sure what is being done is effective in managing dose and public risk. Deal with the science and don't let fear guide the cleanup activities. This is better illustrated looking at a recent article in the Economist about the need and plan to decontaminate large areas of land after this accident. An important article for sure, but the last paragraph shown below makes clear the real view of the author, it concluded,

*“One way to help overcome these problems would be to persuade people to accept relaxed safety standards. A government panel is due to propose lifting the advisory dose limit above one millisievert per year (average global background doses are around 2.4 mSv/year). This week in Tokyo, Wade Allison, a physics professor at Oxford University, argued that Japan's dose limit could safely be raised to 100 millisieverts, based on current health statistics. Outside Mr Sato's house (Mr Sato is chief of the village council interviewed for this article), however, a reading of the equivalent of 150 millisieverts a year left your correspondent strangely reluctant to inhale.”*

This paragraph is a good way to illustrate in a few sentences, our fear of radiation, distrust of authorities who say we are safe – and ultimately that the science suggests there may not be much to worry about since some believe we can tolerate an allowable limit 100 times the current limit without health effects.

So where does this leave us?

We need to better communicate the advantages of nuclear power without scaring the heck out of people in the process. The world needs huge amounts of energy and nuclear power is a form that will last for centuries and provide safe and reliable electricity to feed this energy hungry world. In fact it is safer than most other forms of energy, and while yes, there WILL be more nuclear accidents in the world – NO, these accidents will NOT destroy the world as we know it.

As stated by Thomas Friedman in his new book "That Used to be US", the world has a four key challenges, the fourth being...." *the threat of fossil fuels to the planet's biosphere, it is a direct result of the surge in energy consumption, which, in turn, is a direct result of the growth that has come about through globalization and the adoption (especially in Asia) of free-market economics. If we do not find a new source of abundant, cheap, clean, and reliable energy to power the future of all these "new Americans," we run the risk of burning up, choking up, heating up, and smoking up our planet far faster than even Al Gore predicted.*

*This means, however, that the technologies that can supply abundant, cheap, clean, and reliable energy will be the next new global industry. Energy technology–ET– will be the new IT.*

*A country with a thriving ET industry will enjoy energy security, will enhance its own national security, and will contribute to global environmental security. It also will be home to innovative companies, because companies cannot make products greener without inventing smarter materials, smarter software, and smarter designs. It is hard to imagine how America will be able to sustain a rising standard of living if it does not have a leading role in this next great global industry. "*

Well, this industry is already here – It is nuclear power! And to end by quoting one of the world's great innovators who passed away this month,

***“We don’t get a chance to do that many things, and every one should be really excellent. Because this is our life. Life is brief, and then you die, you know? And we’ve all chosen to do this with our lives. So it better be damn good. It better be worth it.” (Steve Jobs)***

...The nuclear industry once had the passion similar to that of Apple as we developed the energy technology of the future. Today this passion is being reinvigorated in Asia and for the new young people currently joining the industry around the globe ....be prepared to be damn good because yes – it’s worth it!!