

While the press is reporting doom and gloom in Japan, progress is being made.

Over the summer we talked about Pandora's Promise, where 5 prominent environmentalists had changed their mind from being against to being supportive of nuclear power. They visited Chernobyl and Fukushima, explored the realities of the technology, sought the scientific truth and came away supportive.

That being said, looking at the news over the past few weeks, it would appear that the crisis at the Fukushima nuclear plant in Japan is getting worse, not better. But is this really the case?

In late August, TEPCO reported a contaminated water leak from storage tanks for water used to cool the reactors. Articles with headlines like *"Fukushima operator reveals leak of 300 tonnes of highly contaminated water"* start off with *"Frantic efforts to contain radioactive leaks at the wrecked Fukushima Daiichi nuclear power plant have been dealt another blow after its operator said about 300 tonnes of highly contaminated water had seeped out of a storage tank at the site."* *"With regard to TEPCO's handling of contaminated water, it has been just like whack-a-mole,"* said industry minister Toshimitsu Motegi, in reference to the anarchic fairground game in which players bash creatures that pop up from random holes. And finally Japan raised the severity level of the event from INES 1 to INES 3. The inference is that the situation at the plant remains grave and that we should continue to be afraid of potential consequences to the environment and most of all to the Japanese people.

Then in mid September we saw headlines such as *"Japan to be*

nuclear free again as last reactor goes offline" reporting that Ohi 3& 4 the only two reactors to be restarted after the Fukushima accident are now down for routine maintenance. Again, implying that Japan is going down a path to no nuclear for the foreseeable future.

And finally, only a week or so ago, Prime Minister Abe visited the Fukushima site to provide assurance to the world that the situation is under control. To achieve this objective, he said *"I've urged Tokyo Electric Power Company to deal with the contaminated water leakage as its priority. I gave them three demands. These demands include earmarking discretionary funds that managers on site can use to implement necessary safety measures. It also includes a deadline to complete the purification of waste water stored in tanks at the plant and decommissioning the idle No 5 and 6 reactors and concentrate efforts to solve problems"*.

Looking at the above press stories, it is hard to see a silver lining in what is going on in Japan. But progress is being made.

The new regulator, the NRA, is closely monitoring progress at the site. In a presentation to the IAEA this month, they reported that on August 14, TEPCO's implementation plan for clean up at Fukushima was approved and that Fukushima Daiichi is now under the systematic regulatory system with NRA oversight going forward. With respect to the recent water leaks, yes, there have been issues containing the large amount of contaminated water. As for the 300 tonne leak reported in August, it was stopped and cleaned up. And there is a plan to reduce the risk of new leaks. The volume of water to be managed is large and the issues are not trivial. But while there was a significant reporting of the leak and its apparent radioactivity, there was little reporting that most of all the sampled sea water remains under the detection limits for radiation and where there has been some detection, the levels have not changed following the leak – and that they remain

well below allowable limits.

Fukushima is not the only lingering issue following the earthquake and tsunami of March 2011. Remember the tsunami killed more than 19,000 and displaced over 300,000 (about half those displaced were due to Fukushima the rest due to their homes being destroyed by the tsunami). Recovery from such a natural disaster of this magnitude has been slow and painful.

But while the press continues to feed the fear, in reality, nobody died from radiation from the Fukushima accident and no one is likely to die in the future from radiation. It is the fear that is most damaging to people and their health and the continuing dramatic reporting of potential danger without context is not helping. As a result of such reports a South Korean airline cancelled flights to the area, Tepco's stock price plunged and Tokyo's bid for the Olympic Games in 2020 was put in jeopardy (although they did succeed but only after Prime Minister Abe gave assurances as to the safety of Fukushima). Unfortunately it also leads to governments making decisions not based on the scientific realities but to appease the fear – which usually does the opposite as it confirms the need to be afraid.

Unnecessary fear was addressed recently by a number international radiation protection experts who have written messages to the Japanese people to explain the health impacts of the Fukushima accident. These are posted on the web site of Prime Minister Abe. Of importance, the United Nations body, UNSCEAR, expects that no resident of Fukushima prefecture would be exposed to more than 10 milliSieverts over their entire lifetime. This is far below any possible threshold for potential future cancers. As stated by Gerry Thomas of Imperial College in London, *“Worrying about what might happen can have a very bad effect on quality of life, and can lead to stress-related illnesses. All scientific evidence suggests that no-one is likely to suffer damage from the radiation from Fukushima itself, but concern over what it*

might do could cause significant psychological problems."

But in spite of the fear, in spite of the ongoing challenges at the site, Japan continues to move forward. Whereas one year ago, it was reported that the previous Japanese government was looking to eliminate all nuclear power from Japan by 2040, there is now recognition of the importance of nuclear power to Japan and its economy. Plans are now in place to restart most if not all of the remaining nuclear plants over the next two to three years. Japan is doing its best to learn from this event and now plans to have the safest nuclear program in the world. To that end, the new regulator, the NRA, has issued its new safety standards in July of this year. Already 14 units have applied for restart under these new standards. This includes two of the most advanced BWR units owned by Tepco. It will take months to review these applications but we can expect to see restarts as early as later this year and certainly early in the new year. Back to the gloom and doom news about Ohi 3&4 going down. It should be understood that when their operation was approved following the accident it was under the old rules. Now they will have to show compliance with the new rules before they go back up and this will take some time – but they will return to service.

The Japanese people are still suffering after the great earthquake and tsunami of March 2011 and the subsequent effect of the resultant accident at Fukushima. Most of all the suffering is a result of fear – fear of the unknown – and fear fueled by the fact that people have lost trust in their government. The Japanese people trusted the authorities to safely manage their nuclear program and now feel this is not the case. Not knowing who to trust increases the fear – and the psychological impacts that comes along with it.

Our last blog was mostly about Germany. The contrast with Japan is stark. The Fukushima accident happened in Japan – not Germany. The people are suffering in Japan, not Germany.

Prior to the accident both countries had about 30% of their electricity generated by nuclear power. Japan went to zero as it struggles with the aftermath. Germany shut down about half its fleet immediately and still has nuclear providing much needed power as they work to transition. Japan is an island where all other forms of energy have to be imported at high cost to the people and their economy. Germany is part of the European grid and can easily import power and fossil fuels – and in fact are building new coal stations to cope.

But most of all, the German people have decided they don't want nuclear in the future believing it is an unsafe technology although they have had no negative experience in Germany with their plants. Yet, in spite of ongoing issues at Fukushima the Japanese government is pragmatic and supportive of restarting reactors.

It is certainly not easy for Japan or the nuclear industry to recover from the events of March 2011. A lingering distrust of authorities remains and that is the industry's biggest problem everywhere. I admire Japan and I hope that they can progress to reduce the public fear while rebuilding their nuclear program to have a strong electricity system for the future on a foundation of safety and transparency.