

### **Monica Braw: Fukushima, the nuclear industry and Hiroshima**

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The largest earthquake and the highest tsunami known hit Japan on March 11. Exactly two months have passed. A still unknown number of people died, thousands are still missing and tens of thousands are still living in shelters with no possibilities to make plans for the future.

The impossibility to make plans for the future also includes tens of thousands of inhabitants who used to live on a perimeter of twenty kilometers around the nuclear power station of Fukushima Daiichi with its 6 reactors.

The main reason for the accident resulting in the imposition of the no go zone and many still unknown consequences seem mainly to have been the tsunami. The fact that generators to be used in an emergency were placed too low led to their destruction when the wave struck over the tsunami wall. The result was the stoppage of the reactors, the threatening meltdown of the fuel rods and the desperate attempts first to restart the reactors, later to limit the amount of radioactivity released, partly as a result of unsuccessful damage control.

After more than a month of vacillating, the power company Tokyo Electric Power, TEPCO for short, on April 18 released a timetable with hopes to stabilize the plant within nine months – that is not until January next year.

In view of the signs that the accident would result in a complete meltdown the plan was greeted by some as a positive sign, although there is no guarantee that it will succeed and doubts from some experts prevailed. International expertise has no surefire suggestions either. Aftershocks and new tsunami are still a danger to the plant.

It was not until May 4th that workers entered a Fukushima reactor to install ventilators to try to lower radiation levels in the building. Several workers have been hospitalized for radiation exposure, among them some who with ordinary rubber boots on their feet in the dark inside the plant stepped in radioactive water. The radiation exposure limits have been raised for these workers, but it is not known how many are engaged. Numbers hover around 700. Rumors say that deaths have occurred. One man who was working inside the reactors sent an email to a colleague at TEPCO in Tokyo saying:

“All my hometown and my parents have been swallowed by the tsunami. We who are inside work without sleep or rest to the limit of our strength. We do not know to whom we should turn to express our worry and our anger.”

As a consequence of the Fukushima accident, all of Japan’s nuclear industry is now under scrutiny.

The widespread criticism has gradually had a certain impact on the government, most notably the government order May 6th to another power company, Chubu Electric, to close the nuclear power plant Hamaoka until stronger earthquake protection and tsunami walls are built.

Hamaoka lies less than 200 kilometers southwest of Tokyo. It is situated on the fault that is expected to release an earthquake of magnitude 8 within 30 years, the dreaded Great Tokyo Earthquake. Prime Minister Kan Naoto gave as a reason for the closure that a major accident at Hamaoka would have “tremendous repercussions...on the entire Japanese society.”

The positioning of nuclear power stations on highly earthquake prone land has been questioned outside of Japan since Fukushima. The fact of course is that there is no

region, which can be called earthquake safe in the country except possibly Hokkaido, which is far from the main industrial and most populated areas.

On the other hand, Japan has a great demand for energy sources, underlined by the oil crises of the 1970's – when many of the older nuclear reactors, like the first reactors at Fukushima Dai-ichi, were installed – and by the growing need for power from industry as well as individuals during the last few decades. In addition, a further enlargement of the nuclear power capacity has been seen as desirable for environmental reasons.

According to the New National Energy Plan of 2006 Japan's reliance on 30 % of its energy needs from nuclear power will rise to 40% by 2017, with 9 more reactors by 2020, and 14 more by 2030 plus increased capacity of those existent. The plan also provides for the establishment of the nuclear fuel cycle. This includes, among other phases of power production, fast breeder reactors, which are still a dream like the eternity machine: they would use plutonium as fuel but produce even more plutonium than used when working. A not unimportant part of the New National Energy Plan is to promote nuclear energy emphasizing its safety.

These projects however have, already before Fukushima, run into an array of problems, including many accidents at existing nuclear power plants. They include accidents where hundreds of workers have been exposed to excessive levels of radiation and some have died, as well as serious technical malfunctions.

They also include the still unsuccessful plans to develop a fast breeder reactor. The prototype Monju was closed only few months after its opening in 1995 because of the release of sodium into the sea. It was not reopened until in May last year, after fifteen years, but had to close down again.

Not far north from the earthquake area of Tohoku, is the small town of Rokkasho. Here, Japan has worked on a reprocessing plant for spent nuclear fuel. In December last year it finally closed down indefinitely because of two decades of problems that have not been solved.

Among the accidents at nuclear plants, in 2007 a severe earthquake rocked the northwestern province of Niigata and Kashiwaki-Karima Nuclear Power Plant, the largest in the world, had to shut down for damage verification and repairs. This is a place where nuclear power is especially promoted: visitors are greeted like at a science park where all the benefits of nuclear power are presented as Physics Fun.

During a number of years, TEPCO, which now is heavily criticized in Fukushima, has been involved in large-scale falsification of safety reports on several occasions, in 2002 forcing company leaders to resign and, in 2006 and 2007, the temporary closure of all its 17 reactors.

The criticism now against TEPCO, the government, and the nuclear industry in general for its handling of Fukushima is massive. Prime Minister Kan has been on the receiving end to the extent that at one point he publicly complained that he had no information except what TEPCO told him. In other words, no independent or government employed resource.

However, when such an expert was called in, the results became even more damaging. Kosako Toshio was named as special advisor to the cabinet on his past merits of advising the government on nuclear issues, usually with views agreeing with the government. On May 1, in a press conference, this trusted advisor announced his surprise resignation and gave reasons, which conformed to what many less elevated critics had voiced earlier. Kosako pointed to "lack of government openness", "poor cooperation with international organization" and "a decision-making process that made political and administrative convenience more important than public health." He said that measures should be taken "according to law and justice" but also according to "common reason and humanism".

Kosako especially criticized a government decision to accept higher levels of radiation for children than earlier. The exposure limit for Fukushima school children has been raised twenty times, from 1 millisievert to 20, a level formerly allowed only for grownup in emergencies, now for children who attend school, meaning a continuous exposure for long time. The demands for removing topsoil, which could be radioactive, from schoolyards are only heeded in some places. The risk for cancer from radiation is greater for children than for adults.

The dangers of radiation have also resulted in interest in the nuclear workers and their working conditions. The employment terms for nuclear workers were already before Fukushima complicated, as companies like TEPCO use a large number of subcontractors. According to the Nuclear and Industrial Safety Agency, NISA, in 2009 there were 80 000 temporary workers compared to 10 000 regular employees at the nuclear power companies. Among the temporary workers are both highly skilled engineers and completely unskilled blue-collar workers. They can be moved from one nuclear power plant to the next, depending on where they are needed and are disparagingly called nuclear gypsies. The temporary workers often have extremely limited opportunities for health protection and possibilities for compensation if they get sick. According to the Ministry of Health and Labor, before Fukushima only 9 such cases had been awarded compensation for illnesses because of radiation.

An example is the Tokaimura accident in 1999 when two temporary workers died of radiation. The accident happened outside of the reactor itself when they mixed materials in ordinary buckets – they did not know that it would result in a reaction producing radioactivity – they had had no instructions.

In Fukushima day workers are now sought for and offered 10 000 yen, about 900 Swedish crowns, per hour for 3 hours of work per day. Such workers have often been provided by yakuza, the Japanese mafia, and are enrolled among the poorest outsiders in Japanese society.

How top leaders of nuclear companies are recruited is another subject of criticism. The practice of amakudari is prevalent within this industry – as within some others. Amakudari, stepping down from heaven, is the term for high bureaucrats who at an early retirement age in their fifties receive high positions within companies they earlier have overseen in their work at ministries and government institutions. The accusation of collusion is near at hand, and specific examples abound. These include persons who have worked both on the promotion of nuclear power within government and within the industry.

The fact is that opposition to nuclear power in Japan has been rather weak. The argument that this form of energy is unavoidable, and in addition clean, for a country with few energy sources of its own sounds reasonable to most. Also, a strong and proud reliance of technology, manifested in many manufacturing successes, has been of importance.

Locally, though, opposition has sometimes been stronger. There is also an umbrella organization of local nuclear power resistance, Genshiryoku Shimin Undo. The activists are personally very persistent and have often been so since the sixties, when nuclear power first became an issue. But they have worked against the wind. Their possibilities are limited compared to those of the combined resources of the government and large power companies. In addition, reasons like those mentioned earlier, plus concrete local generosity from the power companies in the form of for instance sports arenas, new train stations, roads and not the least employment opportunities, have most often been stronger than any grass roots movement.

Will this change now?

There is no doubt that Fukushima has shaken the Japanese people in general. Panic has been near even as far away as in Tokyo. The government is accused of not handling

the crises adequately, even widely suspected of keeping facts hidden. In blogs, protest lists and demonstrations, many Japanese are venting their fears and frustrations and demanding action from the government and power companies.

In spite of this, there is very little call for what appears to be an unrealistic demand to scrap nuclear power totally.

Rather, the lingering effects of Fukushima, even if the radioactive reactions can be controlled and the reactors sealed, will probably be fear and discrimination. This will especially concern all those who are from the areas around the nuclear power plant.

Radiation sickness, as it is popularly called, has a special meaning in Japan. When the American occupation of Japan ended in 1952, the Japanese people were for the first time allowed to see pictures of the victims of the atomic bombings of Hiroshima and Nagasaki in 1945. Before that, only a few personal accounts of the bombings and their aftermath had been published because of strict American censorship of atomic bomb material particularly. Since then generations of Japanese schoolchildren have visited Hiroshima, Nagasaki and the Peace Museums in the cities and heard about the frightening sicknesses which are a result of radiation.

The survivors of the atomic bombings, called hibakusha, have been thoroughly researched first by Americans then by joint American-Japanese scientists at what is now called the Radiation Effects Research Foundation. Many refused, feeling like laboratory animals. Because of this research it is established that many forms of cancer are caused by radiation.

No genetic damage in following generations has been found in spite of extensive research of particularly this issue. But the collected consequences, even for survivors and their children with no illness, has been discrimination, especially in connection with marriage and work. As they are thought to become easily sick and as the fear for illness in coming generations persists, they are often shunned in such situations. In Japan, it is quite accepted that presumptive marriage partners are investigated as to family and health and the same, at least for health, goes for employers too.

This is most probably what also Fukushima residents will encounter. Significantly, doctors in Fukushima have already contacted the university hospitals in Hiroshima and Nagasaki for advice regarding radiation sickness.

The first time the experiences of the atom-bombed cities were directly connected with nuclear power was after the nuclear power catastrophe in Chernobyl. In Hiroshima, this was at least partly welcomed, as it showed for once that the experiences of hibakusha could be of concrete use to other victims of radiation.

The hibakusha themselves have only to a very small extent opposed nuclear power. One case, which has engaged some of them, is the plans of the power company Chubu Electric, Chuden, to build a nuclear power plant on an island of great natural beauty not far from Hiroshima. The population there has held fast for twenty years, in spite of attractive offers, evidently including money, from Chuden. Recently, though, the work has begun.

The mayors of Hiroshima, who have always been in the forefront of the international antinuclear weapons movement, have never publicly opposed nuclear power.

On the other hand, an antinuclear activist like the Nobel Prize winner in literature Oe Kenzaburo, has not hesitated to connect the two. He has earlier written about Hiroshima, for instance in Hiroshima Notes.

By chance, at the time of Fukushima, he was engaged in writing about the effects of radiation, in the form of texts about on the one hand the atomic bombings and, on the other, Fukuryu Maru, The Lucky Dragon.

The memory of the Lucky Dragon is another reason why radiation effects are so well known in Japan. Many visit the ship, which is now moored in Tokyo and serves as a museum.

In 1954, The Lucky Dragon was a Japanese fishing boat trawling in the Pacific Ocean close to an island which nowadays is world famous, Bikini. Unknown to the crew the United States was testing the hydrogen bomb in the area at just that time. The ship was exposed to radioactive fallout, nobody of course having any idea what this was. After returning to Japanese port one crew member died.

It was a coincidence that this year, shortly before the Fukushima accident, one member of the Fukuryu Maru crew was interviewed, telling that more than half of his mates now had died in what he surmised was a result of the fallout, and that himself has cancer.

When the atomic bombings of Hiroshima and Nagasaki occurred, it was, maybe not surprisingly, almost overlooked by many in Europe, coming only a few months after the war here finally had ended. In the United States it was mostly seen as a justified attack against the Japanese enemy and the conviction that it led to the end of the Pacific war is still strong. Because of this, the fate of Fukuryu Maru nine years later was instrumental in spreading understanding of the effects of radiation on human beings. It was also made into a stirring drama, which was shown here in Sweden and in many other countries.

Let me finish with a quote from an interview Oe gave to Le Monde in April:

“The people of Japan, who have been burned by the nuclear fire, must not think of nuclear energy in terms of industrial productivity, they must not try to devise a ‘recipe’ for economic growth from the tragic experience of Hiroshima.”

As with earthquakes, tsunamis and other natural disasters, he said,

“Hiroshima must be engraved in our memories: It’s a catastrophe even more dramatic than natural disasters, because it’s man-made. To repeat it, by showing the same disregard for human life in nuclear power stations, is the worst betrayal of the memory of the victims of Hiroshima.”

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