

# **The Fukushima Disaster and the Future of Nuclear Power in Japan**

An Interview with Former Prime Minister Kan Naoto

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## **Introduction**

For more than two decades, the global nuclear industry has attempted to frame the debate on nuclear power within the context of climate change: nuclear power is better than any of the alternatives. So the argument went. Ambitious nuclear expansion plans in the United States and Japan, two of the largest existing markets, and the growth of nuclear power in China appeared to show—superficially at least—that the technology had a future. At least in terms of political rhetoric and media perception, it appeared to be a winning argument. Then came March 11, 2011. Those most determined to promote nuclear power even cited the Fukushima Daiichi accident as a reason for expanding nuclear power: impacts were low, no one died, radiation levels are not a risk. So claimed a handful of commentators in the international (particularly English-language) media.

However, from the start of the accident at Fukushima Daiichi on March 11 2011, the harsh reality of nuclear power was exposed to billions of people across the planet, and in particular to the population of Japan, including the more than 160,000 people displaced by the disaster, many of whom are still unable to return to their homes, and scores of millions more threatened had worst case scenarios occurred. One authoritative voice that has been central to exposing the myth-making of the nuclear industry and its supporters has been that of Kan Naoto, Prime Minister in 2011. His conversion from promoter to stern critic may be simple to understand, but it is no less commendable for its bravery. When the survival of half the society you are elected to serve and protect is threatened by a technology that is essentially an expensive way to boil water, then something is clearly wrong. Japan avoided societal destruction thanks in large part to the dedication of workers at the crippled nuclear plant, but also to the intervention of Kan and his staff, and to luck. Had it not been for a leaking pipe into the cooling pool of Unit 4 that maintained sufficient water levels, the highly irradiated spent fuel in the pool, including the entire core only recently removed from the reactor core, would have been exposed, releasing an amount of radioactivity far in excess of that released from the other three reactors. The cascade of subsequent events would have meant total loss of control of the other reactors, including their spent fuel pools and requiring massive evacuation extending throughout metropolitan Tokyo, as Prime Minister Kan feared. That three former Prime Ministers of Japan are not just opposed to nuclear power but actively campaigning against it is unprecedented in global politics and is evidence of the scale of the threat that Fukushima posed to tens of millions of Japanese.

The reality is that in terms of electricity share and relative to renewable energy, nuclear power has been in decline globally for two decades. Since the Fukushima Daiichi accident, this decline has only increased in pace. The nuclear industry knew full well that nuclear power could not be scaled up to the level required to make a serious impact on global emissions. But that was never the point. The industry adopted the climate-change argument as a survival strategy: to ensure extending the life of existing aging reactors and make possible the addition of some new nuclear capacity in the coming decades—sufficient at least to allow a core nuclear industrial infrastructure to survive to mid-century. The dream was to survive to mid-century, when limitless energy would be realized by the deployment of commercial plutonium fast-breeder reactors and other generation IV designs. It was always a myth, but it had a commercial and strategic rationale for the power companies, nuclear suppliers and their political allies.

The basis for the Fukushima Daiichi accident began long before March 11<sup>th</sup> 2011, when decisions were made to build and operate reactors in a nation almost uniquely vulnerable to major seismic events. More than five years on, the accident continues with a legacy that will stretch over the decades. Preventing the next catastrophic accident in Japan is now a passion of the former Prime Minister, joining as he has the majority of the people of Japan determined to transition to a society based on renewable energy. He is surely correct that the end of nuclear power in Japan is possible. The utilities remain in crisis, with only three reactors operating, and legal challenges have been launched across the nation. No matter what policy the government chooses, the basis for Japan's entire nuclear fuel cycle policy, which is based on plutonium separation at Rokkasho-mura and its use in the Monju reactor and its fantasy successor reactors, is in a worse state than ever before. But as Kan Naoto knows better than most, this is an industry entrenched within the establishment and still wields enormous influence. Its end is not guaranteed. Determination and dedication will be needed to defeat it. Fortunately, the Japanese people have these in abundance. SB

## **The Interview**

**Q:** What is your central message?

**Kan:** Up until the accident at the Fukushima reactor, I too was confident that since Japanese technology is of high quality, no Chernobyl-like event was possible.

But in fact when I came face to face with Fukushima, I learned I was completely mistaken. I learned first and foremost that we stood on the brink of disaster: had the incident spread only slightly, half the territory of Japan, half the area of metropolitan Tokyo would have been irradiated and 50,000,000 people would have had to evacuate.

Half one's country would be irradiated, nearly half of the population would have to flee: to the extent it's conceivable, only defeat in major war is comparable.

That the risk was so enormous: that is what in the first place I want all of you, all the Japanese, all the world's people to realize.

**Q:** You yourself are a physicist, yet you don't believe in the first analysis that people can handle nuclear power? Don't you believe that there are technical advances and that in the end it will be safe to use?

**Kan:** As a rule, all technologies involve risk. For example, automobiles have accidents;

airplanes, too. But the scale of the risk if an accident happens affects the question whether or not to use that technology. You compare the plus of using it and on the other hand the minus of not using it. We learned that with nuclear reactors, the Fukushima nuclear reactors, the risk was such that 50,000,000 people nearly had to evacuate. Moreover, if we had not used nuclear reactors—in fact, after the incident, there was a period of about two years when we didn't use nuclear power and there was no great impact on the public welfare, nor any economic impact either. So when you take these factors as a whole into account, in a broad sense there is no plus to using nuclear power. That is my judgment.

One more thing. In the matter of the difference between nuclear power and other technologies, controlling the radiation is in the final analysis extremely difficult.

For example, plutonium emits radiation for a long time. Its half-life is 24,000 years, so because nuclear waste contains plutonium—in its disposal, even if you let it sit and don't use it—its half-life is 24,000 years, in effect forever. So it's a very difficult technology to use—an additional point I want to make.

**Q:** It figured a bit ago in the lecture by Professor Prasser, that in third-generation reactors, risk can be avoided. What is your response?

**Kan:** It's as Professor Khwostowa said: we've said that even with many nuclear reactors, an event inside a reactor like the Fukushima nuclear accident or a Chernobyl-sized event would occur only once in a million years; but in fact, in the past sixty years, we've had Three Mile Island, Chernobyl, Fukushima. Professor Prasser says it's getting gradually safer, but in fact accidents have happened with greater frequency and on a larger scale than was foreseen. So partial improvements are possible, as Professor Prasser says, but saying that doesn't mean that accidents won't happen. Equipment causes accidents, but so do humans.

**Q:** Today it's five years after Fukushima. What is the situation in Japan today? We hear that there are plans beginning in 2018 to return the refugees to their homes. To what extent is the clean-up complete?

**Kan:** Let me describe conditions on site at Fukushima. Reactors #1, #2, #3 melted down, and the melted nuclear fuel still sits in the containment vessel; every day they introduce water to cool it. Radioactivity in the vessel of #2, they say, is 70 sieverts—not microsieverts or millisieverts, 70 sieverts. If humans approach a site that is radiating 70 sieverts, they die within five minutes. That situation has held ever since: that's the current situation.

Moreover, the water they introduce leaves the containment vessel and is said to be recirculated, but in fact it mixes with groundwater, and some flows into the ocean. Prime Minister Abe used the words "under control," but Japanese experts, including me, consider it not under control if part is flowing into the ocean. All the experts see it this way.

As for the area outside the site, more than 100,000 people have fled the Fukushima area.

So now the government is pushing residential decontamination and beyond that the decontamination of agricultural land.

Even if you decontaminate the soil, it's only a temporary or partial reduction in radioactivity; in very many cases cesium comes down from the mountains, it returns.

The Fukushima prefectural government and the government say that certain of the areas

where decontamination has been completed are habitable, so people have until 2018 to return; moreover, beyond that date, they won't give aid to the people who have fled. But I and others think there's still danger and that the support should be continued at the same level for people who conclude on their own that it's still dangerous—that's what we're saying.

Given the conditions on site and the conditions of those who have fled, you simply can't say that the clean-up is complete.

**Q:** Since the Fukushima accident, you have become a strong advocate of getting rid of nuclear reactors; yet in the end, the Abe regime came to power, and it is going in the opposite direction: three reactors are now in operation. As you see this happening, are you angry?

**Kan:** Clearly what Prime Minister Abe is trying to do—his nuclear reactor policy or energy policy—is mistaken. I am strongly opposed to current policy.

But are things moving steadily backward? Three reactors are indeed in operation. However, phrase it differently: only three are in operation. Why only three? Most—more than half the people—are still resisting strongly. From now on, if it should come to new nuclear plants, say, or to extending the licenses of existing nuclear plants, popular opposition is extremely strong, so that won't be at all easy. In that sense, Japan's situation today is a very harsh opposition—a tug of war—between the Abe government, intent on retrogression, and the people, who are heading toward abolishing nuclear reactors.

Two of Prime Minister Abe's closest advisors are opposed to his policy on nuclear power.

One is his wife. The other is former Prime Minister Koizumi, who promoted him.

**Q:** Last question: please talk about the possibility that within ten years Japan will do away with nuclear power.

**Kan:** In the long run, it will disappear gradually. But if you ask whether it will disappear in the next ten years, I can't say. For example, even in my own party opinion is divided; some hope to do away with it in the 2030s. So I can't say whether it will disappear completely in the next ten years, but taking the long view, it will surely be gone, for example, by the year 2050 or 2070. The most important reason is economic. It has become clear that compared with other forms of energy, the cost of nuclear energy is high.

**Q:** Thank you.

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