

A risk too big to calculate: against the resumption of nuclear power

Lecture by Hiroaki KOIDE at Crayonhouse Kichijoji, January 22, 2023

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1. Nuclear power plants generate not only electricity, but masses of radioactive substances, which they also store.

An ordinary nuclear reactor generating one million kilowatts uses one ton of uranium per year as fuel. In comparison, the atomic bomb that destroyed Hiroshima in 1945 used 800 grams of the substance. That means one normal-sized reactor generates more than 1,000 times the fission products that contaminated the environment in and around Hiroshima.

2. Accidents are inevitable with machines.

Any kind of machine can fail and cause disasters. Human error can never be eliminated. It is wishful thinking to believe nuclear power plants can be accident-free.

Both the Japanese government and electric power companies understand that nuclear power involves risks of enormous proportions. That's why they have decided not to build nuclear plants close to major cities, especially Tokyo, Osaka and Nagoya. All of Japan's 57 reactors were approved under Liberal Democratic Party administrations. The LDP-controlled government has forced remote regions to live with the potentially fatal consequences of nuclear power — while allowing major cities to monopolize its benefits. Such inequality and injustice is unacceptable in the first place.

3. The 2011 disaster at the Fukushima Daiichi plant is ongoing.

In the wake of the 2011 nuclear disaster, the Japanese government submitted a report to a ministerial meeting of the UN nuclear watchdog, the IAEA, which said the accident released into the atmosphere (not counting soil or water) 1.5×10^{16} becquerels of cesium 137, a major contaminant among the toxins. This quantity of cesium 137 is equivalent to that which would be present in the fallout from 168 Hiroshima-class atomic bombs.

The government declared a state of nuclear emergency and evacuated residents of regions polluted by more than 600,000 becquerels per square meter of cesium. But it abandoned others, including children, who are more vulnerable to the effects of radiation, in other heavily contaminated areas, although the amounts of cesium there were higher than the legally permitted maximum. Japanese law has designated as "radiation management zones" those areas where more than 40,000 becquerels per square meter of cesium is detected. Activities such as producing or consuming food and using toilets have been restricted in those areas. This same level of cesium was also found to have been released over an area of 14,000 square kilometers, including the prefectures of Fukushima, Iwate, Miyagi and seven others including Tokyo.

4. Recovering from the 2011 Fukushima nuclear accident will take more than 100 years.

Efforts now underway inside and outside the damaged nuclear plant must continue after everyone who is alive now has died. Even 12 years after the accident, no one can say where in the reactors the radioactive debris lies. And no one knows its actual condition. It will be impossible to remove this debris within 100 years.

The authorities are considering high-tech robots to do the job. But with current technology, such machines are ill-suited to this task, because radiation can easily corrupt the semiconductors within them. That's why most of the robots tried in the reactors so far have had to be abandoned.

Cesium-137 has a half-life of 30 years. This means one-tenth of the amount discharged in the accident will remain in the affected regions 100 years from now. In other words, cesium will continue to pollute wide areas up to the legal maximum or higher for another century or longer. The nuclear emergency declaration, which has been in place for the past 12 years, must continue for at least another century.

5. Japan chose nuclear power as a basic electricity source, despite knowing the risks.

As well as providing power, Japan's nuclear plants have produced a huge amount of fission by-products. From 1966, when Japan's first reactor was put online, through 2020, fission by-products have accumulated to the amount equivalent to the fallout from 1.3 million Hiroshima atom bombs. That's enough radioactivity from one Hiroshima bomb for every 100 people in Japan. And as I mention population: ultimately, it is we Japanese people who are responsible for allowing our governments to create this dire threat.

6. Japan is shifting toward a full return to nuclear power.

The government gave indications after the Fukushima meltdowns that it was moving away from nuclear energy. But it has made a U-turn under Prime Minister Kishida Fumio, even though his predecessor, Abe Shinzo, didn't dare to continue promoting nuclear energy in the aftermath of the accident.

The Kishida administration now plans to resume operations of suspended power plants, lift the cap on the operating period of old reactors, and promote the introduction of newer reactors. He claims the policy change is to reduce carbon dioxide emissions.

7. Does Prime Minister Kishida mean carbon dioxide is bad and radioactive fallout is all right?

Efforts to fight global warming have shifted attention from the dangers of nuclear power. Of course, burning fossil fuels generates carbon dioxide, but burning uranium in reactors produces potentially deadly fission products. The claim that carbon dioxide is bad and fission is clean is a misrepresentation.

If carbon dioxide emissions are truly the most serious cause of the ongoing climate change, nuclear power generation should be one of the first things to be eliminated because it is also a major emitter.

Massive amounts of carbon dioxide are discharged when uranium is mined, enriched and processed for use in electricity generation and when power plants of concrete and steel are built. The gas is also emitted while they are being operated.

The process of decommissioning the Fukushima plant alone will generate incalculable carbon dioxide emissions. On top of this looms the energy consuming task of dealing with nuclear waste from power plants across the country, which must continue for thousands of years.

8. The most critical issue regarding climate change lies not in carbon dioxide emissions but in our massive energy consumption.

Our planet faces many threats, including radioactive contamination, atmospheric and marine pollution, deforestation, acid rain, desertification, industrial and household waste, hormone-disrupting chemicals, micro-plastics, poverty, war and so on. All these are consequences of our lifestyles of mass production and mass consumption, the result of modern humanity's endless greed. Climate change is indeed a danger to the planet, with carbon dioxide as one of its causes. But I believe a preoccupation with carbon emissions is blinding us to the real problem, which is the way we live, and our continuous abuse of resources including energy.

9. Damage caused by the destruction of reactors would be tremendous.

At the time of the Fukushima Daiichi nuclear accident, a volume of cesium 137 equivalent to 7,900 Hiroshima atom bombs was held in the cores of the three reactors that melted down. The Japanese government says cesium was one of the major contaminants discharged into the air. The scale of this dispersion was estimated to be equal to 168 Hiroshima-class bombs. Even so, this was only two percent of the cesium held in the reactors. Most of this 2 percent was blown over the Pacific Ocean by high-altitude westerly winds, and only 20 percent of it fell to land. This means that even though only 0.4 percent of the cesium 137 in the reactors fell to Earth, this was enough to contaminate a wide swathe of land, including the entire northern region of Tohoku and the central region of Kanto, with at least maximum allowable levels. If the entire volume of cesium in the reactors had been released, the damage would have been unfathomable.

Japan was fortunate the meltdowns were relatively contained. If the reactors were destroyed in a war, however, there would be no way to deal with the consequences. At present, Russian forces have occupied Europe's largest nuclear power plant in Zaporizhzhia, southeastern Ukraine. The plant has six reactors that can each generate one million kilowatts of power. The plant stores lethal fission products equivalent to several thousand Hiroshima A-bombs. The release of such radioactivity would be apocalyptic. At a news conference on 9 March 2022, following Russia's invasion of Ukraine, the head of Japan's Nuclear Regulation Authority, Fuketa Toyoshi, said the Authority's new regulatory standards do not require the structures of nuclear power plants to be resistant against military attacks. He said it was for the government, and not his regulatory body, to

consider the possibility of such assaults ahead of new plant construction. He said his body had no way to make a decision on this, because it had never studied or discussed the potential dangers of missile strikes.

However, Fuketa admitted that if Japan suffered a wartime attack, there would be no way to protect its nuclear plants from incoming missiles.

Such facilities may be ideal targets for enemies. Their destruction could cause as much damage as a nuclear bomb. And such attacks are far from hypothetical. Japan's LDP-led government frequently issued alerts last fall when North Korea repeatedly test-launched projectiles, including intercontinental ballistic missiles. If the government was so concerned about the North's missiles, its first response should have been to suspend operations at all nuclear reactors. Nuclear power generation cannot continue uninterrupted during a war.

10. Reasons why nuclear energy continues to be supported by the Japanese government and others despite its risks.

Blinded by its hunger for profit, Japan's atomic energy industry marches ahead with its pro-nuclear schemes. This powerful grouping is made up of pro-nuclear political parties, bureaucrats, electric power and related companies, major construction firms, smaller businesses, labor unions, academics, media outlets, advertising agencies and others. It presents nuclear power to the Japanese people as absolutely safe. None of its members took responsibility for the disaster that struck Fukushima Daiichi. The loose-knit consortium had already pocketed huge amounts of cash from the plant's initial construction. When the meltdowns occurred, they profited massively again by taking charge of what they called "decontamination" work, and they made money again out of projects in the name of "reconstruction".

From my point of view, the accident proved that any nuclear power plant could cause a catastrophe at any time, due to a single incident, and such facilities therefore should be scrapped as soon as possible. But the consequences for the nuclear mafia were virtually nil. Almost every one of its members successfully evaded responsibility, in spite of the seriousness of the disaster. Plant operator Tokyo Electric Power Company also escaped bankruptcy, which would have been a logical outcome if it had shouldered the blame.

Some regional governments also support nuclear energy. An increasing number of financially ailing administrations have become dependent as their last resort on these "nuclear funds". The cash comes in state subsidies offered as compensation to poor regions for hosting dangerous nuclear power plants and related facilities. The dependency shows how all values in Japan may be measured in terms of money. Regions outside major cities are getting poorer and suffering from the impact of shrinking populations as workers and funds continue to flow out to the major cities. Unprofitable railways in rural regions have had to terminate their services, accelerating the demographic decline. Once municipalities start taking nuclear money, they cannot escape the vicious circle of seeking yet more facilities to host and requesting the continued operation of aging reactors, in order to keep open the spigot of public cash.

Besides resuming nuclear power generation, the Kishida administration aims to step up the country's military capabilities by increasing taxes and doubling the defense budget. The aim is to make Japan a country capable of waging war under US leadership.

The LDP-led government has another concrete reason for retaining nuclear power generation: it wants to possess nuclear weapons. Nuclear power plants can provide materials for them.

On the TV Asahi news program "Hodo Station" on 16 August 2013, senior LDP lawmaker Ishiba Shigeru said candidly: "Nuclear power generation started as a source of electricity for submarines. All countries except for Japan treat the issues of nuclear weapons and power generation as a set. I don't think Japan should have nuclear weapons. At the same time, it's a fact that Japan could produce such weapons at any time within the space of one year if it wishes to. This serves as a deterrent. The question here is, is it really all right for Japan to abandon the possibility of making nuclear weapons altogether? I think the nation needs to have an in-depth debate on the matter. I personally don't believe we should give up that possibility. Japan is surrounded by Russia, North Korea and the United States, and they are all nuclear powers regardless of whether they are our allies or not. We also must not forget they all have the technology to develop and produce ballistic missiles."

11. We must not make war.

Scare tactics over national security have misled many Japanese to believe the country needs to further boost its defense capabilities and intensify its military alliance with the United States, because of the impending risk of invasion by foreign rogues.

If this successful campaign by the current government encourages the further spread of such thinking, many other countries may race to arm themselves more heavily than their supposed enemies. War will eventually break out in the world again.

Warfare is hating and killing each other. We must not wage war.

What we Japanese people really need to do is eliminate war itself. Such a goal is, of course, utterly antithetical to the policies of the Kishida administration. We must continue working toward the abolition of the country's military forces and defense alliances, and ensure domestic industries are banned from producing weapons.

I hope in this speech I have laid out the objective basis of my opposition to nuclear power. Our desire to manipulate the uncontrollable fallout of atomic reactions is not only foolhardy and dangerous, but within our present political and security environments, the inseparable links between the nuclear power industry and the military complex moves us closer to annihilation.