
Fukushima and the Future of Nuclear Energy in Japan: The Need for a Robust Social Contract (ARI)

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Theme: The Fukushima accident in March 2011 calls for the reassessment of the nuclear regime in Japan, especially as regards to public safety.

Summary: The serious accident that occurred in Fukushima Dai-ichi nuclear power plant caused by the 11 March earthquake (M. 8.9) has been a hard and costly lesson for Japan's obscure and corrupted nuclear energy regime, the so-called 'nuclear village', that grew during the long era of rapid economic growth that had little regard for public safety; crucially missing in this past policy to promote nuclear energy was the proper social contract between the State and society. In a highly-industrialised democracy, the accident's social and economic impact weighs heavily on the decision-makers, but Japan needs to re-think nuclear energy first from the perspective of rebuilding and then by honouring the public's trust in the State.

Key words: Japan, nuclear energy, nuclear crisis, Fukushima, public safety, regulations.

Analysis: The future of nuclear power in Japan as well as around the world is in peril after the Fukushima Dai-ichi nuclear power plant was seriously damaged by the massive earthquake (M. 8.9) and the tsunami that hit the Pacific Coast of north-east Japan on 11 March 2011. Touted as the clean and efficient energy, nuclear power was seen as an effective means to address global warming. After three meltdowns in Fukushima's six reactors, however, many countries, including China, have reviewed their energy policies. There is also heightened international interest in controlling and tightening safety standards for nuclear power plants around the world. Chernobyl of 1986 is certainly alive in the minds of many, but Fukushima is likely to be the benchmark in safety standards for future generations for an energy choice that could be deadly.

While improving the safety of existing and future nuclear power plants is an important objective in itself, Fukushima has also highlighted the gravity of the political responsibility to society when managing nuclear energy. Japan is a highly industrialised, densely populated, democratic country whose economy depends very much on trade: a profile that fits many countries, especially in Europe. The accident's social and economic impact thus weighs heavily on decision-makers with regards to the future of nuclear energy policy in these industrialised democracies, where public opinion matters, as already apparent in what has happened in Germany, Italy and Switzerland, for instance.

For Japan, Fukushima has been a hard and costly lesson for the State whose obscure and corrupted nuclear-energy regime, created during the long era of the Liberal

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Democratic Party's (LDP) single-party rule that had little regard for measures for public safety. As the present government under the Democratic Party of Japan (DPJ) battles the crisis, questions are being asked about the fundamentals of relying on nuclear energy as a State policy, including reviewing the government's nuclear energy policy as part of the social contract between the State and society.

The Accident's Impact

The 80,000-strong population living in the communities around the nuclear plant have been forced to evacuate and there is as yet no knowing when the evacuees will be able to return to their homes and communities. The level of anxiety-related stress in the evacuees still living in temporary evacuation facilities, such as school gyms, is extremely high; adults are unable to find new homes or new jobs and children cannot attend school under normal conditions. The plight of the farmers is particularly acute, as a vast area of land has been contaminated by radiation. There have already been two cases of farmers committing suicide, in despair at the thought that there might be no future in farming. The suicides have occurred in areas that are slightly outside the radiation-contaminated zones officially designated as 'planned evacuation areas' (a 30km radius around Fukushima Dai-ichi) that are, as of now, able to receive compensation. The government has been slow to come up with a compensation plan for the other 'grey' areas, although there are many 'hot spots' of higher radiation levels outside the evacuation zone. In fact, the government's disclosure of accurate information regarding the spread and level of radiation has been notoriously slow, and it has also failed to act speedily to remove and treat the accumulating contaminated soil and water, a job that local authorities are unable to carry out under the basic law on nuclear energy.

The damage to the Japanese economy as a whole has also been incalculable. Nearly 7,000 businesses, many of them manufacturers of highly specialised materials, are inside the no-entry zone (a 20km radius around Fukushima Dai-ichi). While they cannot resume normal operations (and these also include factories destroyed by the earthquake and tsunami), Japan's industrial supply chain remains crippled. Export industries, agriculture and fishery were also heavily affected as many countries imposed bans on *all* imports from Japan for fear of radiation contamination. The number of tourists to Japan also dropped sharply in the first two months, even in Kyoto, which is more than 800km from Fukushima.

In the wider Tokyo metropolitan region, with 36 million inhabitants, power shortages have become a serious issue and forced adjustments to the modus operandi of all activities, economic and social. Commuter trains are still running at 80% capacity, shops, restaurants, and offices are dimming their lighting and setting higher temperatures for their air conditioning in order to save energy by 15% to 25%. To save further energy in the coming hot summer months, many offices, including the Tokyo Metropolitan government, have adopted summer time (which Japan no longer does) independently; in the meantime, the central government backed off from the opportunity to reintroduce it nationally since it was dropped in 1952 (when the occupation ended).

These are, of course, just snapshots of the social and economic impact of the Fukushima accident on life in Japan. However, mention should also be made of its impact on the Tokyo Electric Power Company (Tepco), the owner and operator of Fukushima Dai-ichi, whose market value plunged after the accident. Once a behemoth that virtually controlled Japan's energy policy, its very survival now depends on the government backing its compensation payments. It faces an astronomic sum in the form of damage claims from

farmers, fishermen and other parties whose livelihoods have been threatened by the spread of radiation. While bankruptcy is unlikely on account of its potential negative impact on the market, there is nevertheless public pressure to bring Tepco to account.

This leads to the crux of the issue. It does not need to be stressed that the management of nuclear power comes with attendant domestic and international responsibilities, first and foremost to safeguard those working on the plant, those living around the plant and the countries that might be affected by radioactive material released into the air and sea. While Tepco must be held accountable for the accident, the burden of social responsibility and economic and security costs are clearly beyond the scope of a single commercial operator to bear. What has been lacking in Japan until Fukushima erupted has been the State as the highest authority in the nuclear energy regime and guarantor of public safety. Fukushima was a rude awakening, not only to the dangers of nuclear power plants but also to the dismal state of the country's nuclear energy regime in managing the crisis.

A Man-made Disaster

While Fukushima Dai-ichi was damaged by the earthquake and subsequent tsunami, the nature of the on-going nuclear crisis is better understood as a man-made disaster resulting from the systemic failure of Japan's nuclear energy regime for safety than an inevitable consequence of unforeseen forces of nature.

Earthquakes, tsunamis and volcanoes erupting are Japan's geological condition and natural disasters play no small a part in shaping the Japanese outlook on life and death. Moreover, Japan is the only country to have been the target of an atomic bomb, with two having been dropped on Hiroshima and Nagasaki in 1945, and the dangers of radiation are not alien to the Japanese public consciousness. Therefore, it is only natural to presume that Japan's nuclear energy policy would be sensitive to such an issue. It is also natural for the Japanese public to assume that its nuclear power plants are built to very high safety standards.

However, despite the assumption, there was no one to be held to account, with safety turning out to be just a myth. The Japanese people felt shocked –and betrayed– when they heard Tepco explain the cause of the accident as *soteigai* ('beyond expectations'). Tepco explained that the tsunami that had destroyed the emergency electricity generator crucial to cooling down the reactor was 14-metres high while the facility had been built to withstand only a five-metre-high tsunami (the 2004 Sumatra earthquake gave rise to a three-to-seven-metre high tsunami).

Then, the absence of an accident-control mechanism was a further shock in the ensuing days and weeks as no one seemed to be in charge or in control of the situation. Tepco was reportedly said to have been unwilling to share technical information even with the US, which was naturally concerned from the outset about the critical situation developing in Fukushima and was ready to offer assistance.¹ Washington officials were extremely frustrated by the slowness and inaccuracy of the information from Japan in the early days of the crisis and were especially puzzled by the Japanese government's initial refusal to

¹ Although the facts concerning the first three hours are not yet fully known, television interviews of the Director of Fukushima Dai-ichi, past and present members of the Cabinet's nuclear safety commission and other specialists all suggest that Tepco clearly had no functioning command structure to respond swiftly to the situation. Even the engineers from Toshiba, one of the builders of Fukushima's six reactors, were shut out of Tepco's emergency meeting in the initial hours even though they had rushed to Tepco's headquarters.

accept the US offer of 'special means' (as yet unspecified).² According to Tachibana Takashi, one of Japan's best investigative journalists, Tepco rejected US assistance on the assumption that the US was interested in information about nuclear power plants because it had not built one in 30 years.³ Moreover, there is no doubt that neither the government nor Tepco understood the critical importance of sharing information on what they knew of the state of the reactors, the level of radioactive emissions and the spreading of contamination as a matter of the Japanese State's responsibility to society and the international community. The clear absence of such recognition severely undermined both domestic and international trust in Japan as a major operator of nuclear power plants.

In fact, the government's handling of information was, and indeed still is, deplorable. In the first few weeks, when the country was in a state of collective despair after the treble disaster, confusing and inaccurate information from multiple sources –such as the government, Tepco and the Nuclear Industrial Safety Agency (NISA)– regarding radioactive emissions was a further cause for social anxiety and needless panic. An independent assessment from the US Nuclear Regulatory Commission (NRC) warning US citizens to evacuate beyond the 80km radius from Fukushima Dai-ichi also worried the Japanese, as they became unsure about whether the Japanese government's 30km radius warning was at all reliable. The government's failure to provide accurate information to the foreign press about radiation also led to the exodus of 240,000 foreign residents working in Japan, many of them being called back by their worried families, suggesting that the whole of Japan was contaminated.

The technical details of the accident aside, for the Japanese people Fukushima was a rude awakening, not only to the dangers of nuclear accidents but also to the dismal state of the country's nuclear energy regime that failed at every stage to be prepared for and respond to the catastrophe. By the time the government announced in June that meltdown had actually occurred by 14 March in three of the reactors, the people had already ceased to believe official sources and were taking safety into their own hands by buying Geiger counters.

The Defective 'Nuclear Village'

Without doubt, the wilful neglect of safety regulations and lessons by those responsible for nuclear energy since the plant was built 40 years ago has had a huge part in making Fukushima a social disaster. The *soteigai* syndrome prevailed throughout the nuclear regime –not just at Tepco but also in the case of the State regulators–,⁴ that had turned into a 'nuclear village' controlled by the Ministry of Economy, Trade and Industry (METI,

² Yukio Satoh (2011), 'Joho no kyoyu koso ga shinrai no kiso [Sharing information is the foundation of trust]', *Shukan e-World* [Weekly e-World], 24/IV/2011. Satoh, Vice president of the Japan Institute of International Affairs (JIIA) was visiting New York and Washington DC on security policy talks at the time and experienced first-hand the initial worries in the White House from American journalists and officials. He writes on the point about the initial offer: 'On the 15th when I had breakfast with a well-known journalist of a major US newspaper I was told that Washington was confused with the Japanese government's refusal to accept the offer to dispatch special means to deal with radiation, a decision that was taken immediately after the crisis by President Obama. I still do not know what really happened. The story I was told, in any case, might be that of a personal reaction of a US official who felt deeply frustrated by the Japanese government's failure to reply immediately [to the offer]'.

³ Interview with Tase Yasuhiro, a *Nikkei* columnist, in *Shukan News Shinsho* (TV Tokyo, broadcast on 21/V/2011). Evidently, the Japanese side were unaware of the likelihood that America's unmanned surveillance aircraft Global Hawk had already detected a meltdown in Fukushima Dai-ichi at the earliest stage.

⁴ The nuclear power regime includes the Nuclear and Industrial Safety Agency (NISA) under the Ministry of Economy, Trade and Industry (METI, formerly the Ministry of International Trade and Industry, MITI), the Nuclear Safety Commission of Japan (NSC) and the Japan Atomic Energy Commission (JAEC).

formerly the Minister of International Trade and Industry, MITI), the vortex of nuclear energy policy.

The major cause of the neglect was the corrupt nature and dispersed structure of the 'nuclear village' where no one appears to be accountable. The 'village' has no independent watchdog appointed by METI or any overriding authority comparable to America's NRC to ensure commercial interests do not override public safety concerns. This point has been criticised in the IAEA's preliminary report. For example, NISA, the main 'official mouthpiece' that supposedly regulates the operators, is part of METI and even exchanges personnel with Tepco. The emergency system to monitor radioactive emissions,⁵ on the other hand, is controlled by the Ministry of Education and Science and, as such, has no inclination to share information with NISA. The basic function of the government's Nuclear Safety Commission (NSC) is to discuss and recommend –as in the case of many cabinet commissions– on issues concerning nuclear safety, but it has no power of enforcement and has been largely invisible in this accident.⁶

The root of the neglect of public safety measures –including an accident management system– can be traced to the prevailing logic of the political economy of the post-war, developmental economy State. The primary purpose of the post-war State was to pursue economic gain at all cost. In their effort to catch up and overtake the industrially-advanced West, State and society operated like a single massive corporation, 'Japan, Inc.', and its political system, the 1955-regime of single-party rule by the LDP, allowed complacency to reign over prudence in promoting nuclear energy as part of the country's economic and industrial policies, which, in turn, only served the interest of large businesses. An angry Japanese blogger has written: 'Japan's "elites" in politics, bureaucracy and the business world had been ignoring warnings and only stressing the safety of nuclear power plants to build them left and right. They propagated the view that Japanese nuclear power plants are trouble-free because they are built to very high safety standards'.⁷ In fact, communities around nuclear power plants were/are essentially bought into accepting the safety myth propagated by the government and commercial operators by paying government-subsidised, lower rates for electricity.

Tepco's corporate culture of obfuscation, hubris and highly questionable operational ethics as a public utility company grew in this corruptive political economy that began to unravel in the 1990s. Its monopoly on electricity generation and distribution has gone unchallenged, resulting in internal corruption, namely the habitual falsification of operational data and cover-up system of malfunctions of their nuclear power plants for decades, the full extent of which was only revealed in 2002.⁸ In 2006 the Diet discussed the dangers to the backup electricity supply in the event of a massive earthquake but

⁵ The System for Prediction of Environmental Emergency Dose Information (SPEEDI) is managed by the Ministry of Education and Science's nuclear safety division as part of its nuclear disaster prevention network.

⁶ The Nuclear Safety Commission was set up in the Cabinet Office in 1978 as a separate body from the Japan Atomic Energy Commission (JAEC), set up in 1955. The JAEC's mission statement is revealing of the NSC's role: 'The Atomic Energy Commission is set up in the Cabinet Office together with the Nuclear Safety Commission, which is responsible for assuring safety of nuclear research, development and utilization activities'.

⁷ From 'Bloggers Today', 31/III/2011 in *Asahi Shimbun-WebRonza*, <http://webronza.asahi.com/bloggers/2011033100002.html>, accessed 1/IV/2011.

⁸ In 2002 Tepco was found to have covered up system trouble in one of its nuclear power plants. In 2007, Tepco reported the results of the internal investigation on its past cover-ups and falsifying data to NISA. It was revealed in the report that Tepco had been repeatedly falsifying data since 1979. Hoshi Yoshitaka (2007), 'Juncho na gyoseki ni mizu wo wasu deta kaizan [Data falsification that spoils good business]', *Nikkei Business Online*, 18/II/2007.

nothing was done. Moreover, Tepco had already had to shut down the Kashiwazaki-Kariya nuclear power plant (the largest nuclear power plant in the world) after it was damaged by the Chuetsu offshore earthquake (M. 6.6) in 2007; later, it was revealed that Tepco had ignored past warnings that the site was located above an active fault and that, according to a *Reuters* report, Tepco was even aware that Fukushima was vulnerable to tsunamis that exceeded a certain height.⁹ As William Overholt describes: 'Notwithstanding heroic engineers, Tokyo Electric Power Company, the heart of the nuclear crisis, exemplifies the politically coddled corporations that cause Japan's malaise. No other nuclear company in the industrialized democracies has been allowed such a history of bungling, cover-ups, and systematic disregard of security recommendations'.¹⁰

Now What?

Japan now has 54 commercially-run nuclear reactors, 19 of which are currently operating. On 7 May, Prime Minister Kan Naoto ordered the temporary 'cold shutdown' of Hamaoka nuclear power plant near Nagoya –a city 300km west of Tokyo– as a precaution to prevent another Fukushima in the event of another 3.11, this time hitting the Tokai area that lies between Tokyo and Nagoya. The Nagoya area is a major industrial centre that is home to companies like Toyota, Honda and Yamaha. The likelihood of a Tokai earthquake is believed to be very high in the next few years. Kan has also announced plans to increase the percentage of renewable energy in the future, although he has not ruled out the nuclear option. Currently, nuclear energy produces around 40% of Japan's total electricity generation; in the Kaisai region –which includes Osaka, Kyoto and Kobe– the reliance on nuclear power is even higher, at 50%.

METI announced on 18 June that all 54 reactors have undergone new safety inspections to be prepared for severe accidents. The METI Minister, Kaieda Banri, asked for the co-operation of the local authorities to resume operations at the 35 reactors because 'if we cannot run the nuclear power plants industrial production will slow down and would cause anxiety to the peoples' lives'. Kaieda also announced to the IAEA ministerial-level meeting that started on 20 June that the entire nuclear regime would be reformed, including separating NISA from METI. The local authorities are, however, sceptical of METI's safety guarantee for good reasons. The plans for new safety measures were left to the electricity companies that operate nuclear plants, and upon receiving their reports NISA carried out on-site inspections on 15 and 16 June, for only two days. Commercial interests again seem to be lurking behind METI's assurance of safety.

Conclusion: Nuclear power plants are a massive State project whose security as a responsibility to society is arguably of the highest order in peacetime. Be it under authoritarian rule or a democracy, running nuclear power plants is a high-security risk operation with high collateral damages. Nuclear scientists might say that the risk is controlled by the most advanced scientific knowledge, technology and high-level security precautions. Or, at least, that is what ordinary people have no choice but to believe. Moreover, the possession of nuclear technology is also an international security concern because it can lead to the possession of nuclear weapons. As a member of the Nuclear Non-Proliferation Treaty (NPT) regime, Japan is open to regular IAEA verification and its nuclear programme is transparent to the extent that there can be no 'secret' plans to

⁹ According to a *Reuters* report, Tepco's nuclear specialist team was aware by 2007 of a vulnerability of the nuclear facilities to tsunamis that exceeded the height which the plants were designed to withstand, and had even used Fukushima as its case study.

¹⁰ William H. Overholt (2011), 'Japan: Don't Waste the Crisis', *PacNet Newsletter*, nr 18A, CSIS-Pacific Forum, 26/III/2011.

develop nuclear weapons. That is, however, a different kind of guarantee from the basic concern about radiation that defies borders. Protecting the lives and livelihoods of the people is a State-level matter that concerns the country's foreign relations.

Japan's nuclear energy regime until Fukushima had clearly failed these domestic and international responsibilities, if not in hardware terms, then definitely in software terms. For the technical details of the meltdown are not yet fully known; for example, just how much the reactors withstood the quake awaits a full-scale investigation. But it will take years until the reactors have been completely cooled down. It is known, however, that accident management procedures were not in place and that the lack of oversight played a part in causing extensive damage to the plant. It is also understood that the Japanese nuclear authorities habitually hide information, apparently to avoid causing 'needless' social panic. It is also shocking to know that Tepco failed to consult the government in advance of its decision to release low-level radiation-contaminated water to the ocean. The government, in turn, failed to inform the neighbouring countries: South Korea, China and Russia.

Unfortunately, Japan's present political leaders and those in the 'nuclear village' are as yet unable to see that restoring public trust –domestic and international– in the Japanese State is just as important, if not more, than improving the technical safety of nuclear power plants. In the meantime, an international standard for safety and a system for compensation, discussed at the IAEA ministerial meeting in June 2011, would be very much welcomed as the best option when the establishment of a robust social contact for nuclear power in Japan still seems far off.

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