Public Opinion on Nuclear Power in Japan after the Fukushima Disaster

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Asia-Pacific Journal: Japan Focus

Course Reader no. 5
2013

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Introduction

These articles explore public opinion on nuclear power from a variety of perspectives, emphasizing the change in attitudes among Japanese following the March 11, 2011 Great East Japan Earthquake, the subsequent tsunami, and the Fukushima Daiichi nuclear disaster.

Only Japan has experienced four major nuclear disasters, giving the society a unique perspective. The first two were the 1945 atomic bombings of Hiroshima and Nagasaki. Then, in 1954, a U.S. Hydrogen Bomb test near Bikini Atoll accidentally contaminated fishermen aboard the Japanese ship Lucky Dragon 5, resulting in injuries and one death. Although the number of people directly affected by the Bikini bombing was small, their plight had a major impact on public opinion at the time. In the 1940s and 50s, then, Japanese public opinion was predominantly anti-nuclear.

The most recent nuclear disaster occurred when the March 11 earthquake severely damaged the Fukushima nuclear power plant; three of the six reactors melted down and huge amounts of radiation were released into the environment. One significant difference between Fukushima and the previous disasters is that the atomic power at Fukushima was generated for peaceful purposes, while the first events were intentionally destructive. Yet the scale of the disaster was huge; the Fukushima accident is only the second in history, after Chernobyl, to be rated a 7 on the International Nuclear Event Scale, the highest rating possible.

This set of articles traces the changes over time of public opinion about nuclear power, particularly since the Fukushima disaster. For decades, most Japanese were comfortable with using nuclear power for electricity, although Japan has been firmly anti-nuclear weapons since 1945. After a slow start in the 1950s, Japan became one of the most nuclear-energy-dependent nations in the world, and was one of the few places to step up its nuclear energy investment after the Chernobyl meltdown in the Soviet Union. The Fukushima disaster, however, has now forced a new reassessment of nuclear power.

There is a significant conflict in Japan between public opinion and government policy regarding atomic power. In 2011 and 2012, surveys showed huge margins (often close to 80%) opposing nuclear power.[1] However, the "nuclear village"—a term used to denote the combination of forces that support nuclear power—is still a very potent force in Japan, promoting pro-nuclear policies; to this day, the national government, the pro-nuclear business elite, local governments, major media outlets, and some scholars continue to work together to support atomic energy.

In contrast to the Japanese pro-nuclear establishment, the writers of these articles are almost all opponents of nuclear power, some long-standing and some who have recently changed their minds. Each author asks whether the world should continue to use this source of energy; they offer a variety of reasons and justifications for their positions, ranging from humanitarian to economic, but the consensus is that nuclear power should be phased out. The articles provide examples of people changing their minds about nuclear power and throwing their support to alternative energy policies, usually deriving power

[1] For one example, see the *Asahi Shimbun* Regular Public Opinion Poll from 3/13/2012: http://mansfieldfdn.org/program/research-education-and-communication/asian-opinion-poll-database/listofpolls/2012-polls/asahi-newspaper-public-opinion-poll-march-poll/

from renewable sources. The one exception is Paul Scalise, who continues to support nuclear power even after the Fukushima disaster; he sees it as a reliable and economically efficient source of energy.

This course reader begins with a short history of Japan's decision to adopt nuclear power by Ran Zwigenberg. He describes the international enthusiasm, particularly in the United States and Japan, for what was seen as a futuristic source of energy in the 1950s. Next, Gavan McCormack, who represents the voice of anti-nuclear scholars, introduces the huge swing in public opinion away from nuclear power following the Fukushima catastrophe. The articles that follow explore the sweeping changes in opinion among various groups of Japanese and further develop McCormack's arguments. ANZAI Ikuro writes from the perspective of a nuclear specialist and ex-government employee. Aileen Mioko Smith represents both long-time anti-nuclear activists and victims of the Fukushima disaster. David Slater discusses the authority that women can mobilize from their roles as mothers and caretakers. Makiko SEGAWA interviews local residents one year after the Fukushima disaster, and HIROSE Takashi represents the informed layperson who uses common sense to see the dangers of nuclear power. Justin Aukema's analysis of HAYASHI Kyoko's writing reveals the thoughts of one of the *hibakusha*, survivors of the atomic bombings. Finally, SON Masayoshi comes from a corporate perspective; he speaks with particular force because he is a former member of the "nuclear village" whose business interests lie in access to abundant cheap energy.

The reader concludes with an article from the opposing viewpoint; Paul Scalise provides an argument in support of nuclear power. He believes the economic benefits of nuclear power outweigh its risks. He analyzes the current political situation in Japan, and outlines the challenges facing Japan's future energy policy, many of which are inevitable whether Japan maintains its reliance on nuclear power or not.

"'The Coming of a Second Sun': The 1956 Atoms for Peace Exhibit in Hiroshima and Japan's Embrace of Nuclear Power"

Ran Zwigenberg

February 6, 2012
http://www.japanfocus.org/-Ran-Zwigenberg/3685

"Atoms for Peace" was a U.S. government policy in the 1950s promoting nuclear power around the globe as a safe source of energy. The U.S.A. sponsored an "Atoms for Peace" museum exhibit for Hiroshima in 1956 as part of this immensely successful effort to convince the Japanese public of the benefits of nuclear power. The effectiveness of this initiative is remarkable, considering the three previous nuclear disasters and the anti-nuclear movement they sparked. The exhibit was able to accomplish the transformation of public opinion by stressing the differences between nuclear power and nuclear bombs. Zwigenberg condemns the "Atoms for Peace" project for making the world lose sight of the dangers of nuclear power. He contends that the exhibit's festive and fashionable atmosphere misrepresented nuclear power, since it ignored the problems of nuclear waste and potential malfunctions.

Zwigenberg identifies key Japanese individuals whose endorsements of nuclear power swayed Japanese public opinion to accept the new technology. One was the Liberal Democratic Party's NAKASONE Yasuhiro, who witnessed the bombing at Hiroshima and was later Prime Minister (1982-1987). Another was SHŌRIKI Matsutarō, the owner of the major newspaper *Yomiuri Shinbun*. Shōriki believed Japan should cooperate with America as much as possible as a way to resist communism, which is why he supported using America-endorsed nuclear power. Further, atomic power also gained support because it was compatible with the image of a "modern" nation. Many media outlets and public figures proclaimed nuclear power to be the way of the future.

Zwigenberg notes that some Japanese people feared the "irresistible momentum" to adopt nuclear power. For example, American proposals in 1955 to build a nuclear power plant in Hiroshima were initially rejected by the city. Even so, the "Atoms for Peace" exhibit stayed in Hiroshima until the mid-1960s, much longer than expected. Enough city residents changed their opinions that the adoption of nuclear power became a popular idea. Zwigenberg suggests that only in Hiroshima could people have stopped the atomic-energy juggernaut, because only Hiroshima had both the moral authority of the *hibakusha* (atomic bombing victims) and the political influence to sway national public opinion against nuclear power. When Hiroshima enthusiastically supported nuclear power, the Japanese anti-nuclear movement focused on banning atomic weapons much more than atomic power.

"The Coming of a Second Sun": The 1956 Atoms for Peace Exhibit in Hiroshima and Japan's Embrace of Nuclear Power[1]

Ran Zwigenberg

In November 2011 when asked about the Tokyo Electric Power Company's (TEPCO's) deteriorating finances, a Japanese official commented, "This is a war between humans and technology. While that war is being fought, we should not talk about bankruptcy."[2] The unnamed official, perhaps inadvertently, alluded to something more than the financial issues here; the fact that technological fixes are no longer an option and that Japan, sixty-six years after the bomb and fifty-five years after it welcomed atomic energy, finally is beginning to come to terms with the true cost of over-reliance on nuclear power.

Following the March 2011 Fukushima disaster, a host of commentators, in Japan and internationally, decried the corruption, smugness and shortsightedness that led Japan to choose nuclear power in the fifties. These critics more often than not draw a picture of Japan's entry into the atomic age as a combination of American imposition and elite (conservative) complicity.[3] On the other side of this picture stand the *hibakusha* (A-bomb victims) and other activists who resisted this move. Drawing on the historically powerful symbolism of Hiroshima, Ōe Kenzaburō talked about Japan as becoming a fourth time victim of the atom, alluding to Hiroshima, Nagasaki, and the Bikini victims aboard Lucky Dragon # 5.[4] Speaking of Japan's postwar history in these familiar black and white terms of the people falling victim to the machinations of powerful Japanese politicians in collusion with American imperialism, though not without credence, obscures the balance of forces of the fifties moment in which Japan went nuclear.

Nothing demonstrates this better than the reaction of the city of Hiroshima to the introduction of the Atomic age.[5] On the 27th of May 1956 the Atoms for Peace exhibition opened in the peace memorial museum in Hiroshima. The exhibit was a key component of the American plan to present the atom as a positive force for progress and overcome the Japanese "nuclear allergy." The exhibit proved to be an enormous success, drawing well over 100,000 visitors and enthusiastic press reception. Significantly, the museum, which hosted the exhibit, one year earlier, had hosted the equally successful World Congress Against A- and H-Bombs, and it was also the museum that exhibited the horrors of the bombing.[6]

The Atoms for Peace exhibit was not accepted without some debate and resistance from activists. But opposition was overcome. When a few months later Hidankyō, the principal *hibakusha* organization, was formed, it enthusiastically embraced nuclear energy.[7]

The Atoms for Peace exhibit serves as a lens through which Japan's nuclear energy policies can be examined. The exhibit was instrumental in solidifying the dominant Japanese view that atomic energy was a legitimate, indeed essential, source of energy in a Japan that relied heavily on imported oil and natural gas. This was especially clear in light of the fact that a similar initiative to use Hiroshima as a symbolic site for domesticating and repackaging of the atom, in the shape of a proposal to build an American-financed nuclear power station in Hiroshima, had failed only a year earlier. In the wake of the exhibit, opponents of the introduction of atomic power faced an uphill battle against an overwhelming political, economic and media campaign in support of atom power. If in 1955 opponents, at least in Hiroshima, could draw on the experience of Atomic victimhood, it was much harder to do so in 1956 when the exhibit came to Hiroshima.

As Yuki Tanaka recently demonstrated, many hibakusha supported nuclear energy, calling it "energy for life" (in contrast to the deadly energy of the bomb).[8] In fact, not only did the experience of Hiroshima and Nagasaki failed to prevent Japanese from embracing nuclear power, on the contrary, it was seen by some contemporaries as a justification for Japan to accept this technology.

Fight Poison with Poison: Atoms For Peace Comes to Japan

Following the 1954 Lucky Dragon # Five incident and the radiation scares that came in its wake, the anti-nuclear movement in Japan received a tremendous boost.

Millions of Japanese signed petitions, marched and showed solidarity with Hiroshima, Nagasaki and the Lucky Dragon victims. The sudden rise and the massive size of the anti-nuclear movement came as a surprise to many in Japan and outside of it. Some on the Japanese right, and within American diplomatic circles worried about the incident's impact on US-Japan relations. The United States was already engaged, following President Eisenhower's December 1953 "Atoms for Peace" United Nations address, in a worldwide campaign to present the atom as a force for good.

Pres. Eisenhower's "Atoms for Peace Address" to the General Assembly of the United Nations

The incident seemed to wreck these efforts in Japan and beyond. Louis Schmidt, then head of the United States Information Agency (USIA) in Tokyo recalled, "All the effort we painstakingly put into it seemed to get lost…[as] The Lucky Dragon Five incident turned the Japanese against the program."[9] It was, Schmidt concluded, a "very unhappy time."[10] In Washington the incident prompted NSC adviser E.G. Erskine to write a memo to the NSC's Operations Coordinating Board (OCB) on march 23rd warning of Japan Communist Party (JCP) propaganda benefiting from the incident.[11] Erskine proposed to build a reactor in Japan (and another in Berlin)."A vigorous offensive on the non-war uses of atomic energy," he concluded, "would appear to be a timely and effective way of countering the expected Russian effort and minimizing the harm already done in Japan."[12]

A number of official initiatives followed culminating in a proposal on April 28th 1954 that the USIA organize exhibitions on the peaceful uses of atomic energy and promote contacts with Japanese scientists and engineers as well as with media figures and politicians who held favorable views of the United States.[13]

The U.S turned to a coalition of Japanese politicians and media people, which included the LDP's Nakasone Yasuhiro and Shōriki Matsutarō, owner of the Yomiuri Shinbun newspaper, who were trying to promote nuclear power in Japan, and who were also worried. These figures already had a history with nuclear energy. As Evan Osnos has observed, nobody in Japanese politics was more inspired by nuclear power than Nakasone. Nakasone, who had witnessed the Hiroshima blast, wrote: "I still remember the image of the white cloud...That moment motivated me to think and act toward advancing the peaceful use of nuclear power." Nakasone believed that if Japan did not participate in "the largest discovery of the twentieth century," it would "forever be a fourth-rate nation."[14] Even before Eisenhower's speech, in mid-1953, Nakasone visited Berkeley's nuclear labs and cultivated political and economic connections in the U.S. In March 1954, Nakasone proposed in the Diet Japan's first budget for nuclear research and cooperation.[15] The Lucky Dragon # Five incident, however, risked the success of the measure which had passed the Diet but not yet been implemented.

Nakasone's move faced serious resistance from the left and from some Japanese scientists who feared Japanese dependency on the United States. This did not mean that the scientific community opposed nuclear energy. Many scientists did, however, oppose Nakasone's preference for importing technology, thereby denying budgets (and prestige) for domestic research and assuring technological dependency.[16] The vice chairman of the Japan Science Council (JSC) Kaya Seiji, who was in contact with Nakasone, proposed as early as July 1952 that Japan form its own atomic energy commission, modeled on that of the U.S.[17] (During the occupation the Americans had explicitly prohibited nuclear research.) This and other proposals were opposed by some scientists. Mimura Takeshi a physicist and a *hibakusha* argued, drawing on his experience, that "Japan should not embark on nuclear research until the tension between the U.S. and the USSR is eased... If that meant there is a delay to Japanese civilization, so be it."[18] Supporters of nuclear energy, however, could also use the experience of victimization. A leading scientist, Taketani Mitsuo, wrote "the Japanese being the casualties of atomic warfare are entitled to have the strongest say in the development of atomic power…[and] possess the greatest moral right to carry out research. Other nations are obliged to help Japan's effort."[19] Eventually it was Taketani's rather than Mimura's argument that won the day as the JSC endorsed the pro-nuclear agenda. A delay in civilization was out of the question for most scientists and, it turned out, for most Japanese as well.

Indeed, the JSC had little choice in the matter as government and industry quickly moved to forge ties with U.S. industry and government circles that made the introduction of nuclear power almost inevitable. The first nuclear cooperation agreement was signed in November 1955 and Japan moved ahead to build its first reactor. Opponents were also facing a huge public campaign to promote nuclear energy. Shōriki Matsutarō, who would soon become responsible for nuclear power development in the Hatoyama administration, led this campaign. Shōriki's principal interest in promoting nuclear power was to resist communism. Shōriki had a long background of

anti-communist activity and, as Yuki Tanaka and Peter Kuznick have demonstrated, anti-communism was at the core of his cooperation with the Americans and the worldwide campaign. Shōriki had previously cooperated with American industry and government in importing Television technology to Japan for similar reasons. As Simon Partner has argued, Shōriki brought American television technology to Japan, like nuclear power, despite the fact that it made little technological or economic sense and overrode domestic technology.[20]

Shōriki's main lieutenant in promoting both technologies was Shibata Hidetoshi. Shibata, who started his career by successfully breaking a strike at the *Yomiuri Shinbun*, first became involved with nuclear power when visiting the U.S. as part of the television campaign. The head of General Dynamics, Vernon M. Welsh, introduced Shibata to William Halstead, who in turn introduced him to John J. Hopkins of General Electrics. Hopkins called in December 1954 for an "atomic Marshall plan to counter soviet advances into Asian countries."[21] These connections, and the U.S government's own campaign through the USIA, led to a meeting between Shibata and Daniel S. Watson, an alleged NSC operative in Tokyo. According to Shibata's memoirs, he told Watson that "nuclear power is a double edged sword. We have a saying in Japan *doku wo motte doku wo sei suru* (to control poison one must use poison); we can use the good side of nuclear power to smash anti-nuclear sentiment."[22]

Watson and Shibata, with Shōriki's blessing, invited a high level delegation of leading scientists, headed by Hopkins, to Japan. Shōriki agreed to launch a campaign to promote the visit in conjunction with USIA efforts to launch the Atoms for Peace exhibit.[23] This gave the USIA a powerful ready-made local PR network.[24] Meanwhile, the power industry had formed five main groups for developing nuclear power; all were connected to former *zaibatsu* conglomerates. The groups had contacts with General Electric and Westinghouse dating to the prewar period. These connections led smoothly to the adoption of the American light water reactor (LWR) type despite serious safety concerns. That reactor was the one that failed in Fukushima.[25] When in mid-1955 the USIA and Shōriki launched their Atomic energy exhibit, the combination of powers that backed Atomic power seemed to possess almost irresistible momentum.

A Dramatic Christian Gesture: Hiroshima (almost) gets a Nuclear Plant

The Atoms for Peace campaign opened in Japan in April 1955. Prime Minister Hatoyama Yukio and MITI minster Ishibashi Tanzan formally endorsed it. Ishibashi, in what became a mantra, spoke of Japan's right to nuclear technology "as the country which was baptized by the ashes of Bikini."[26] The campaign was notable for some of the biggest exhibitions and PR campaigns in Japan to that time. It received the backing not only of Shōriki's *Yomiuri* and *Nihon Terebi* (TV station) but also of many major regional and national newspapers. The result was over 2.5 million visitors nationwide. The media blitz presented nuclear energy as a source of "unlimited energy and the most modern of technologies," which "will open the way for a new industrial revolution" and supply "unlimited possibilities for mankind."[27] This tapped long-held fears among Japanese about being poor in resources. Many commentators used language reminiscent of the thirties campaign to present Manchuria as a treasure trove of unlimited resources and a lifeline. The campaign also played on the general fifties fascination with science and futuristic technology. Almost daily newspaper articles in the Yomiuri and other papers spoke of atomic planes and trains, space travel and of the atom as "another sun."[28] This did not mean that the campaign was accepted without debate. The momentum was almost irresistible, but the debates

in Hiroshima also reveal Japanese anxieties. Even supportive writers wondered, "Whether there is a hint of evil fire mixed with this force which will enable Japanese to make a bright future."[29]

These anxieties were illustrated by the fierce debates over an earlier proposal, unrelated to the USIA-Shōriki campaign, to construct a nuclear reactor in Hiroshima. This proposal was made by Congressman Sidney Yates in the form of a motion introduced in the congress in January 1955.[30] Yates explicitly connected the bomb and nuclear energy, calling for: "using atomic energy for life rather than death."[31] He called for "giving preference for Hiroshima, which was the first victim of the atomic bomb in access to the resources of the peaceful atom."[32] Yates also proposed to construct a special hospital for the thousands of citizens of Hiroshima who were exposed to the bomb and had medical issues as a result.[33] Yates was not the first to make this connection. In October 1954 the Atomic Energy Commission's (AEC) Thomas E. Murray, in almost identical terms, called on the U.S to give a reactor to Japan . . .

"The only land which has been engulfed in the white flame of the atom. Now, while the memory of Hiroshima and Nagasaki remains so vivid, construction of such a power plant in . . . Japan would be a dramatic and Christian gesture . . . a lasting monument to our technology and our good will. We would demonstrate to a grim, skeptical and divided world that our interest in nuclear energy is not confined to weapons."[34]

According to Asahi journalist Kanari Ryūichi, a similar proposal was made by Lewis Strauss, chairman of the U.S. Atomic Energy Commission, and by Representative Sterling Cole of New York, in mid-1955.[35]

Although the Eisenhower administration did not support these offers, they produced heated debates in Hiroshima. On January 29th two days after Yates' proposal, Hiroshima's mayor Hamai Shinzō, said, "the fact that Hiroshima will become the 'first nuclear power city' will comfort the souls of the dead. The citizens themselves, I think, would like to see death replaced by life."[36] In a symposium organized by the local newspaper, Hamai's stance was supported by leading scientists from Hiroshima University as well as by other leading Hiroshima figures. It gained the support also of some in the city assembly, who hoped to get a share of Japan's nuclear budget, and the support of Hiroshima's new mayor Watanabe Tadao.[37]

The acceptance of the offer by major Hiroshima figures was not an aberration. Rather, it was a continuation of the city's deep relationship with the U.S. and its self-portrayal as a modern city. The commemoration of the bomb, from very early on, emphasized Hiroshima's urban transformation and the discourse of science. From the end of the war, American and Japanese elites actively directed Hiroshima's gaze toward the future. This culminated with the 1949 Hiroshima Peace City law that equated building a city of peace with building a rational metropolis. Much of Hiroshima's message was about change and transformation. In its most extreme form, Hiroshima politicians spoke of the city of Hiroshima "being born anew on August 6th 1945."[38] The message of renewal was embedded in the very shape of the city by the architects and city planners who re-built Hiroshima as a new modern city. Kenzō Tange, who was responsible for Hiroshima's city plan, as well as the building of the Hiroshima memorial museum, saw his work as one of spiritual transformation. Spiritual renewal would come through "the making of Hiroshima into a factory for peace" (*heiwa wo tsukuridasu no tame no kōgyō de aritai*).[39] Hiroshima's wide avenues (some as wide as one hundred meters) and rational city plan, with the peace museum's modernist design of exposed concrete, was an expression of this ideal

drawn from Le Corbusier and high modernism. Accepting nuclear energy, which was presented as a "key to the future" was a natural extension of this trajectory.

Many *hibakusha* embraced this message of peace as progress and modernity. This was true for leading *hibakusha* and peace activists, such as Osada Arata who welcomed the idea of nuclear power, though not without some reservation. Osada stated, "I hope for a peaceful people's nuclear power research which is not connected to the U.S."[40] In addition, as Yuki Tanaka noted, Mayors Hamai and Watanabe and many other politicians, who were *hibakusha* themselves, fully embraced nuclear power.

Not all activists agreed. The Hiroshima branch of Gensuikyō (The Japan Council Against A- and H-Bombs) almost immediately came out against the proposal.[41] Moritaki Ichirō, in the aforementioned symposium, voiced his concern about radiation. Both sides in the debate claimed to speak in the name of Hiroshima's citizenry and, furthermore, both used the experience of the bombing to justify their position. Moritaki stated that, "the opinion of the people of Hiroshima who were baptized (*senrei shita*) by the world's first nuclear bomb is that nuclear power should not be used without proper consideration." Hiroshima Gensuikyō sent a memorandum to the press listing five main objections to the nuclear plant. What most concerned the activists was the possibility that the reactor would be used for military purposes and that it might become a target of a nuclear strike in a future war. Radiation concerns came second. Interestingly, the organization listed "danger to the prospects of Japan's electric power industry" as one of the grievances.[42] The local media was also divided on the issue. The local paper featured a series of articles by scientists and doctors who warned against the dangers of radiation and nuclear waste.[43]

As it became clear, however, that Yates' proposal was not endorsed by the Eisenhower administration, the whole initiative became a non-issue. The anti-nuclear camp had won. Yet within a year, Hiroshima was experiencing a nuclear energy boom following the USIA exhibit of May 1956.

The Exhibit in Hiroshima

What led to this change in Hiroshima was a combination of factors. At the national level, Yomiuri and the USIA launched their formidable campaign. Locally in Hiroshima, almost all major players, Hiroshima's main paper the *Chūgoku Shinbun* (where critical articles disappeared), Hiroshima City, Hiroshima Prefecture and Hiroshima University, endorsed and sponsored the exhibit. This endorsement may be credited in part to the tireless work of American diplomat Abol Fazl Fotouhi. Fotouhi was an Iranian immigrant to the United States and a former Marine. Like many of the principal actors in the Hiroshima drama he embodied many contradictions and ambivalences, which make casting the story of nuclear energy in Hiroshima as a black and white morality play impossible. Although he actively promoted the exhibit, Fotouhi was clearly uncomfortable with some aspects of the State Department's approach. Fotouhi served from December 1952 as the head of the American Culture Center in Hiroshima. Together with his wife and daughter, who attended a Japanese public school, he immersed himself in Japanese culture and became immensely popular in Hiroshima.

Abol Fazl Fotouhi, Agnes Fotouhi, and Farida Fotouhi (Age 6) in front of an American Cultural Center exhibit (circa.1953): photo courtesy Farida Fotouhi.

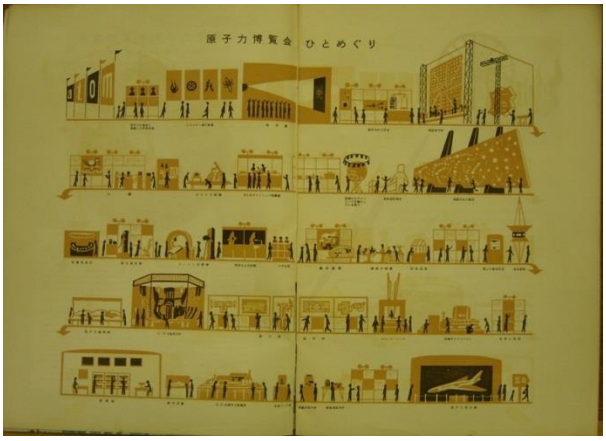
Fotouhi's papers reveal that the USIA first contemplated the Hiroshima exhibit in December 1954.[44] The idea was rejected, however, as "there were compelling reasons against both showing it in 1955 and its inauguration in Hiroshima. We felt that in any case the exhibition might be closely identified with the bomb, thus defeating the real purpose of President Eisenhower's atoms for peace program."[45] The real purpose was of course to disassociate the bomb from nuclear energy. The Yates' and other proposals were rejected for similar reasons. Even before 1954, Fotouhi, working with another American institution the Atomic Bomb Casualty Commission (ABCC), brought materials pertaining to medical uses of the atom into the peace museum.[46] This, and the larger exhibit, met no resistance initially. Nagaoka Shogō, the director of the peace museum – where the city planned to hold the exhibit – told the press, "until now the exhibit was only about the suffering [brought by the bomb] but now I am really delighted that with the cooperation of many we can have a proper world level exhibition on the benefits of nuclear power."[47] Fotouhi's main difficulty with sponsors was financial. They feared losing money on the exhibit (the USIA and *Yomiuri* paid only part of the expenses).[48]

Suddenly, however, "all hell broke loose in Hiroshima."[49] Local residents and the Hiroshima Gensuikyō expressed alarm as the city, against Nagaoka's wishes, removed over two thousand articles from the atomic bomb museum to make room for the exhibit. The city explained that the museum was the only place big enough to accommodate the exhibit and that the removal of the items was only temporary. Gensuikyō explained, "we are not against the exhibit as such [but against the use of the museum for that purpose]. Behind these a-bomb artifacts there are the 200,000 victims…these are more important than the exhibit and should not be moved."[50] Others were more indignant. Fotouhi reported the main grievances quoting newspaper reports. "The energy which destroyed the city," claimed one survivor, " is now used as a tool to remove our most sacred relics from their permanent home with the possibility of never putting them back again." Another resident declared, "We cannot sit idly by and let the Americans contaminate our city." The most prevalent complaint, however, voiced by Moritaki and others, was, "if the city and prefecture have funds for this they should pay for *hibakusha* welfare."[51] At no time did the United States provide funds for *hibakusha* relief. At the time these were being provided exclusively by the stricken cities themselves. The Japanese national government did not recognize hibakusha needs until 1957.

Responding to critics, the exhibit sponsors organized a public symposium in March where the issue was debated. The editor of the *Chūgoku Shinbun* spoke first, saying, "hundreds of thousands of people have seen the exhibition which depicts the miraculous use of the destructive atom in many peaceful ways," and urged Hiroshima residents not to lag behind. Fotouhi then similarly told the meeting that, "as a friend of the Hiroshima people and as a member of the community I felt that the Hiroshima people should not be deprived of the opportunity to see the

many benefits that the atomic energy is now providing the mankind (sic.) My government therefore agreed to include Hiroshima in the scheduled showings." These conciliatory statements were followed by a representative from the Hiroshima mothers organization which voiced concerns over radiation. These were met by a Professor Fujiwara from Hiroshima University, who, unaware of the historical irony of his words, said "it is absurd to think that an advanced nation like America would knowingly bring unprotected fissionable material to any country." When another resident spoke of the items in the museum as relics, Fujiwara protested, "What is the museum? Is it a shrine? Is it a place like our Miyajima? If that is so, why then don't you have the marking of a shrine? Why should our ancestors object to anything if it means the future welfare of mankind? ... We need to understand the basic principles of peaceful living. We must see what the future promises..."According to Fotouhi, following this exchange, survivor organizations removed their objections.[52] This was only partially true at the time, but survivors' organizations soon formally endorsed nuclear energy.

The USIA did all it could to promote nuclear power along the lines of the discourse of peace as modernity. The words "peace" and "modern" are repeated again and again in the professional literature, interviews with experts, and pronouncement by politicians. In the official brochure for the exhibition, a remarkable document, Joseph Evans the head of the USIA Tokyo branch told visitors, "[I] would like to show Japanese and make them understand the true role of the atom in tomorrow's world… How [the atom] can contribute for economic development increased leisure, the welfare and lengthening of human life… [and] contribute to the achievement of peace." The brochure went on to explain the uses of the atom in agriculture, medicine, industry and transportation with splendid illustrations of futuristic looking machines, never once mentioning the word *genbaku* (atomic bomb).[53]

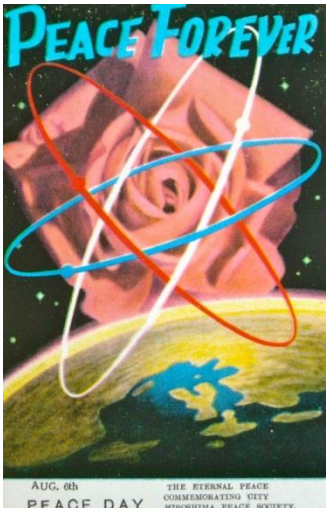


The layout of the exhibit as depicted in exhibit official brochure. Visitors walked through the futuristic exhibit examining the application of the atom in agriculture, medicine, space travel and other fields. Source: *genshiryoku heiwa ryo no shiori* (Tokyo: USIS, 1955).

The local media praised the exhibit on its opening day, speaking of "a new human civilization," and, echoing the *Yomiuri*, on man gaining control over "a second sun."[54] Local dignitaries interviewed after a VIP preview of the Atoms for Peace exhibit were equally ecstatic. The head of the prefectural chamber of commerce told the papers, "we are entering a splendid era (*subarashii jidai*)…it is good that I achieved old age [to see it]. [This era] is full of wonder and [we are laying] the infrastructure to make it happen."[55] Others, especially scientists, again stressed the importance of understanding the atom. Nakaizumi Masanori, from the ABCC, commented, "the region of Hiroshima has an inseparable relationship with nuclear power and thus should have a correct understanding [of it]." Former (and future) Mayor Hamai took a similar approach. "I heard much about this. It is good to see it firsthand…it is the first step that people should talk of deepening our understanding of nuclear power."[56] The equation of American science and ideas of progress with neutral or positive values was, of course, a peculiar

cold war notion. Susan Lindee has shown how these notions played out in another Hiroshima context, that of medical research performed by the ABCC.[57] To judge from the local media and other reports, the majority of visitors to the exhibit accepted this ideology, albeit not without some major reservations. On the second day of the exhibit another group of high profile visitors was interviewed. An education adviser for Fukuyama prefecture was typical, "we all had quite a bias towards atomic power but now that we see it concretely we have bright hopes for it and [it left a] strong impression. I recommend that everyone see it, even if they are critical."

Many were indeed critical. Tanabe Koichirō, from the Japan Pen Club, a liberal writers group, responded, " I am fundamentally in agreement with atomic power… it will bring human civilization to a new stage. It is highly advantageous. But," Tanabe added, " there is also one problem: radiation. After being used for electricity, there is a lot of residual radiation. I heard that in the US they bury radioactive material deep in the earth. There is also the idea of dumping it at the bottom of the sea…[where] it is a danger to water and ocean life…[the exhibit] does not dispel my unease over the problem of the ashes of death." Fujii Heiichi, the head of the prefectural *hibakusha* organization, was cautious: "if used for peace, nuclear power can bring us closer to a future of happiness and peace for human kind… if used properly, atomic power could promote human welfare. But," Fuiji added, "we who saw atomic power first manifested as evil, and knowing many people who are still ill because [of it], think that the priority should be on prevention and treatment of A-bomb disease…[and] complete eradication of nuclear weapons." Moritaki, interviewed again, was even more adamant: "the people of Hiroshima are especially sensitive to effects of radiation…[thus] before we have atomic power we should better understand radiation. [Furthermore] how will they treat the waste? Why is there no explanation of it…They do not show what they will do in case of a malfunction in the reactor, or what they will do with the waste (*kasu*)…[and] the ashes of death. I would very much like them to address these issues." These critical views show that not all in Hiroshima were convinced. However, these views were the minority. And as the exhibit progressed they were heard less and less. These reservations and criticism notwithstanding, most survivors accepted nuclear power, at least in principle.



Peace Forever: Hiroshima City's poster for the 1949 August 6th peace day.

The Atoms for Peace exhibit was quite an event for Hiroshima. In the fifties when most Japanese still lived in poverty (Fotouhi recalled driving through mounds of rubble in 1954, almost ten years after the bomb) the exhibit brought color and a view of another world to the city. The papers reported women's particular attraction to the event, "which looked like a fashion show." They were especially attracted to the guides who were dressed in the latest American fashions.[58] The visitors saw what they were told was the latest technology, and were showered with information and brochures, all with futuristic imagery and bright colors. The big banners for the exhibition, and the flags of many countries (who were part of the atoms for peace program) above it, lent the museum "a festive atmosphere."[59]

The newspapers magnified the celebration with daily features (including cartoons) on the exhibit, visitors' reactions, and various items on it. The items on display included, among others, a full-scale model of an experimental nuclear reactor, a model illustrating a nuclear fission reaction that used electric lights and panel displays that

introduced nuclear physics. Significant attention was given to the role that atomic power would soon play in revolutionizing daily life and leisure for the Japanese. Another theme was the atom's medical benefits and its uses in the space race. A special hit was the "magic hands" display, a type of mechanical arm. Visitors operated the device, which was originally designed to handle dangerous materials, to pick up a brush and write "heiwa" (*peace*) and "*genshi ryoku*" (nuclear energy) with the arms.[60] Kawamoto Ichirō, a noted peace activist, wrote in his diary that the magic hand display was "indeed impressive" and that the exhibition as a whole really "impressed me."[61] A group of atomic bomb maidens, another symbol of Hiroshima and the peace movement, who visited the museum, was similarly moved. The women, who had been brought to the United States for plastic surgery at American expense, wrote that, "At first, as we were victims of the bomb, we were anxious about [the exhibit]…but after going through the exhibit we understand that Atomic Power can be used not only for war but also can be useful for the advancement of mankind."[62]

"Magic Hands" Demonstration in Berlin. September 26 1954.

Perhaps the most dramatic evidence of transformation came when the millionth visitor (in all Japan) was to visit the exhibit in Hiroshima. The lucky visitor, who was a schoolboy – organized groups were the bulk of the visitors – was to receive a television, a precious gift at the time. This was another reference to the modernity of the exhibit and, unintentionally, also a very fitting gift given the involvement of the principal actors with television. The TV set, however, did not come from the *Yomiuri* or *Nihon Terebi*, but from a local merchant, a hibakusha, who contacted Fotouhi. He told Fotouhi, "My parents and children were all killed by the bomb. I have seen the exhibition and am thrilled with what atomic energy can do for the future welfare of mankind. I wish therefore to offer a large television set to be awarded the millionth visitor."[63] This was more than the Americans and their local supporters could have dreamed.

The exhibit was so successful that Hiroshima City chose to continue presenting atomic energy materials in the museum even after it finished. This presented an opportunity for some Americans and others who were critical of the museum content. Visiting Americans constantly harassed Fotouhi about it. Tourists and officials complained about the place "being a horror museum…[which] aimed at shaming America." "One group of visitors," he wrote, "even went so far as to tell me that it was my duty to see to it that the entire collection was removed and replaced by more appropriate material related to the peaceful uses of the atom."[64] Fotouhi had little patience for these arguments. "Can we let Germans or British," he wrote, "tell us to remove our monuments because they put them in unfavorable light?! So how can we ask it of the Japanese?"[65] Still, when the nuclear power exhibit ended, Fotouhi, together with Mayor Watanabe, forced the reluctant museum director, Nagaoka, to accept it as permanent. Nagaoka protested, "this is a place to show the history of Hiroshima's suffering…. [not] to sing the praise of peaceful nuclear power."[66] But Watanabe made clear to him that this is what the city wanted

and he was forced to accept the order. Nuclear power would continue in the museum making the "Atoms for Peace" agenda an official part of Hiroshima's own quest for peace.

Conclusion

In 2009, during the early stages of this research, what had become of the formidable exhibit remained a mystery. Almost no one at the museum had ever heard of it and the museum's official history did not mention it either.[67] After all the fanfare of 1956 (and even more of it in a second run of the exhibit as part of the 1958 Hiroshima Recovery Expo), a single line from a 1967 article simply reported, "the city decided to take the atoms for peace [exhibit] materials out of the museum as the first step in making it a place to learn about peace and Hiroshima's suffering, and in line with the museum character."[68] What made the exhibit suddenly "out of character" was not explained. Further research later revealed that the model nuclear airplane and ship ended up in a Hiroshima playground.[69] Subsequently, the whole affair was consigned to oblivion. This did not mean that Hiroshima suddenly turned anti-nuclear power. If anything it became ambivalent, but no more. The anti-nuclear power movement, as Yuki Tanaka pointed out, only began after Three Mile Island and Chernobyl, and even then many *hibakusha* refrained from taking part in it.[70] By that time Japan had constructed dozens of nuclear reactors and the industry became firmly entrenched as a central element of Japanese energy policy.

Much of the failure of the anti-nuclear movement to rally against nuclear power can be attributed to Hiroshima's support. Perhaps the major coup for promoters of nuclear energy came when even the newly formed *Hidankyō*, the main *hibakusha* organization came out strongly for nuclear energy. Even Moritaki Ichirō came around and, in Nagasaki in August 1956 proclaimed, "Atomic power…must absolutely be converted to a servant for the happiness and prosperity of humankind. This is the only desire we hold as long as we live." (Moritaki later regretted this statement and came out against nuclear energy.)[71] This was partially politics. *Hidankyō* was campaigning for compensation for *hibakusha* and could not afford to alienate the conservative backers of nuclear power. But as the difference between reactions to the reactor proposal and the exhibit show, there is good evidence to support a change of heart following the campaign by many former opponents of atomic power. This, as we saw, came after heated debates and not a little friction. These debates show how complex this moment was. But the logic of nuclear energy as progressive and beneficial eventually won. Japan went nuclear.

The USIA, Shōriki, Nakasone and the other backers of nuclear energy of course had enormous resources at their disposal. More than just money, however, what promoters of atomic power had was the confidence that they were marching with the time. The Atoms for Peace exhibit was part of a much larger effort by elites in both Japan and the United States to present the horrors of World War II, the atomic bombings, the fire bombings of 64 Japanese cities, and Japan's Imperial Army's atrocities being the chief ones, as an aberration. The path Japan took, the argument went, its embrace of modernity (even more so after the war) and Western ideas of progress, were fundamentally good. This was true for both left and right. As Sheldon Garon wrote, "So powerful was the Japanese belief in modernization and progress that neither the contradictions of the wartime campaigns nor the nation's disastrous defeat in 1945 rent [it]…For all the contention in Japanese political life most progressive groups joined forces with the conservatives in the modernization of Japanese daily life."[72] Indeed, with its focus on the modern, and especially the promise of the coming improvement in daily life (Television sets being a fitting example), and as a solution to Japan's lack of resources, the campaign hit all the

right spots with Japanese. Other motives for the exhibit like fighting communist propaganda and promoting the fledging nuclear power industry's economic interests, not to speak of radiation issues, were, of course, concealed behind the shiny façade of the energy of the future with its promise to send man to space and cure diseases. In presenting Atoms for Peace as the wave of the future, the organizers of the exhibit utilized the very logic that underlined Hiroshima's own message. As Fotouhi commented, in an uncharacteristically blunt remark, "was not Hiroshima boasting for being the 'peace city', so why not Atoms for peace?"[73] When the atom came to Japan, Japanese were, supposedly, presented with a rational choice between the "bad" atom and the "good" one. The reasonable, modern liberal – the kind of person Hiroshima appealed to in its numerous campaigns for peace – could only choose the latter. As Japan learned in Fukushima this choice was false.

Recommended citation: Ran Zwigenberg, '"The Coming of a Second Sun": The 1956 Atoms for Peace Exhibit in Hiroshima and Japan's Embrace of Nuclear Power,' The Asia-Pacific Journal *Vol 10, Issue 6 No 1, February 6, 2012.*

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Notes

[1] I thank Miriam Intrator and Samuel Malissa for reading and commenting on this paper. I want to also thank Mark Selden for his editorial and substantive suggestions. I wish to thank Koide Madoka and Shimosaka Chikako for their valuable help with translation of sources.

[2] "Japan's nuclear conundrum: The $64 billion question," The Economist, November 5th 2011. Accessed November 22, 2011.

[3] Criticism of nuclear energy turned into a cottage industry after Fukushima. One can enter any Japanese bookstore and find a whole corner devoted to it. See, for instance, Takagi Jinzaburō, Hangenpatsu demae shimasu: genpatsu jiko eikyō soshite mirai wo kangaeru – Takagi Jinzaburō kōgiroku (Tokyo, Nanatsumorishokan Shinsō Han, 2011).
An earlier example, much quoted, is Arima Tetsuo, Genpatsu, Shōriki, CIA: Kimitsubunsho de yomu Shōwa rimenshi (Tokyo: Shinchōsha 2008).

[4] Kenzaburō Ōe, "History Repeats," in The New Yorker, March 28, 2011. The address of Hiroshima's mayor, Mitsui Kazumi, in the August 6th ceremony after Fukushima followed similar lines, accessed December 30th 2011

[5] I will deal here almost exclusively with Hiroshima. The Nagasaki case is slightly different.

[6] The museum, established in 1955, served as the central exhibition space and was situated on Nakajima Island, which was turned in the early fifties into the Peace Park, Hiroshima's main commemorative space. The park was also the symbolic center for the post 1945 anti-nuclear and peace movements that came out of the reaction to the Lucky Dragon # Five incident, discussed below.

[7] Hidankyō declaration.

[8] Tanaka Toshiyuki, "Genshiryoku heiwa ryō to Hiroshima: senden kōsaku no tāgeto ni sareta hibakushatachi," in *Sekai*, No. 25 (August 2011), p. 257.

[9] Interview for NHK documentary Genpatsu dōnyū shinario (1994) text and German translation here, accessed December 10th 2011

[10] Louise Schmidt interview in The Association for Diplomatic Studies and Training, Foreign Affairs Oral History Project Information Series (1988) accessed November 20th 2011.

[11] President Eisenhower created the Operations Coordinating Board (OCB) to follow up on all NSC decisions. The OCB met regularly on Wednesday afternoons at the Department of State, and was composed of the Under Secretary of State for Political Affairs, Deputy Secretary of Defense, the Directors of the CIA, the United States Information Agency, and the ICA.

[12] Yamazaki Masakatsu, "Bikini jikogo no genshirō dōnyūron no taito,"in Kagakushi Kenkyū, Vol. 43 No. 280 (2004).p. 84. The directive is reproduced in "Japan and Atomic Tests" accessed October 25th 2011.

[13] Ibid.

[14] Quoted by Evan Osnos, "The Fallout" in The New Yorker. 87.32 (Oct. 17, 2011): p.49.

[15] Yoshioka Hitoshi, "Nuclear Power Research and the Scientist's Role," in Yoshioka Hitoshi (ed.), A Social History of Science and Technology in Contemporary Japan: Vol. 2 Road to Self-reliance 1952 - 1959 (Trans Pacific Press, 2005), p. 110.

[16] Ibid., p. 104.

[17] Morris Low, Shigeru Nakayama, and Hitoshi Yoshioka, Science, Technology and Society in Contemporary Japan (Cambridge University Press, 1999), p.72.

[18] Yoshioka, "Nuclear Power Research," p.109.

[19] Low et al., p. 71.

[20] See chapter 3 in Simon Partner, Assembled in Japan: Electrical Goods and the Making of the Japanese Consumer (University of California Press, 1999).

[21] Yamazaki, "Bikini jikogo," p. 85.

[22] Shibata Hidetoshi, Sengo masukomi kaiyūki (Tokyo: Chūō Kōronsha, 1985), pp. 346-347. See also Yamazaki, "Bikini jikogo,"p. 83. Yamazaki doubts the meeting was as dramatic as Shibata portrays it, but ascertains, using NSC documentation, that Watson did work in Japan at the time and had a role in the USIS campaign. Watson himself talked of the meeting and Shibata in the '94 documentary.

[23] Shibata, p. 377.

[24] Schmidt Interview.

[25] Nakayama Shigeru, "Forming a Nuclear régime and Introducing Commercial Reactors," in Yoshioka Hitoshi (ed.), A Social History of Science and Technology, pp. 86-87. Along the way, GE and Westinghouse disregarded safety concerns to sell the LWR as the safer option. See the BBC documentary Atomic States (2011) accessed December 15th 2011.

[26] Yomiuri Shinbun, April 29 1955.

[27] The industrial revolution quote is from *Chūgoku Shinbun*, November 26 1954. Similar, if more hyperbolic sentiment (and the second and third quotes) can be found in Yomiuri Shinbun, April 291955.

[28] *Chūgoku Shinbun*, May 31 1956.

[29] Editor's introduction to the special edition, "Kaimaku shita nihon no atomiku eiji," in *Ekonomisuto* (June 1955), p. 8.

[30] *Chūgoku Shinbun*, January 27 1955.

[31] Ibid. Also Hiroshima shi (hen), *Hiroshima shinshi*: *rekishi hen* (Hiroshima: Hiroshima shi, 1984).

[32] Quoted in Tanaka, "Genshiryoku heiwa ryō," p.251.

[33] *Chūgoku Shinbun*, February 5 1955. Also cited in Tanaka, *Genshiryoku heiwa ryō*, p. 251.

[34] Time Magazine, October 4 1954.

[35] Link accessed January 3rd 2012

[36] Hiroshima Shi, p. 208. Also *Chūgoku Shinbun*, January 29 and January 30,1955. As Tanaka noted, Hamai had also already accepted a similar offer by Bern Porter, a nuclear scientist who visited Hiroshima in January 1954. By the time these deliberations took place, Hamai was replaced by Watanabe Tadao who was also a survivor and a fervent supporter of nuclear energy.

[37] *Chūgoku Shinbun*, January 29 1955.

[38] Hamai Shinzō et. al. to President of Carroll College, June 30 1950, Letter attached to Hiroshima Rehabilitation and Reconstruction Committee., *Hiroshima* (Hiroshima City Japan: The Committee c/o Hiroshima Chamber of Commerce and Industry, 1948). Carroll University library, Waukesha, Wisconsin

[39] Kenzō Tange, "Hiroshima heiwa kinen tōshi ni kankei shite," in *Kenchiku zasshi*, (October, 1949), p. 42. Le Corbusier famously used the phrase a "machine for living."

[40] Quoted in Tanaka, "Genshiryoku heiwa ryō," p. 252.

[41] The all Japan Gensuikyō was formally founded in September 1955. The Hiroshima organization, which went by the same name, was founded earlier. Similar organizations were formed all around Japan following the Lucky Dragon incident.

[42] The major power companies came together in March and drafted a request for more details, which was sent to Yates. See *Chūgoku Shinbun*, March 3 1955.

[43] See for instance the covering of the special symposium about the issue on in the January 29th and 30th of the *Chūgoku Shinbun*.

[44] I thank Farida Fotouhi for her generous cooperation and, especially, for giving me access to her fathers' unpublished papers (Hereafter, Fotouhi papers).

[45] Fotouhi papers, p.194.

[46] Ibid., p.186. The ABCC donated a film and a projector as well as other materials.

[47] *Chūgoku Shinbun* December 11 1955.

[48] Fotouhi papers, 196.

[49] Ibid., p. 197.

[50] *Chūgoku Shinbun* February 8 1956.

[51] Fotouhi papers, p. 198. See also *Chūgoku Shinbun*, February 14 1956 and Hiroshima Shi, p. 209

[52] Fotouhi papers, p. 200. See the *Chūgoku Shinbun*, March 22 1956 for the full text of the meeting

[53] The quote is from the exhibit's official brochure *Genshiryoku heiwa ryō' no shiori* (Tokyo: USIS, 1955). The brochure can be found in Hiroshima Peace Museum library, at the *Genbaku shiryō hozon kai* collection.

[54] *Chūgoku Shinbun*, May 26th 1956.

[55] Ibid.

[56] Ibid.

[57] Susan Lindee, *Suffering Made Real: American Science and the Survivors at Hiroshima*, 1st ed. (University Of Chicago Press, 1994).

[58] *Chūgoku Shinbun* June 10 1956. Moritaki and Fuji responses are also quoted by Tanaka.

[59] *Chūgoku Shinbun* sha, *Honō no hi kara ni jū nen* (*1966 nen*), (Hiroshima: Miraisha, 1966), pp. 263-264.

[60] *Chūgoku Shinbun*, June 19th 2011.

[61] Kawamoto Nikki, Hiroshima Peace Memorial Park Archive (HPMA), Kawamato Collection, Folder 9, No. 8.2.03.

[62] *Chūgoku Shinbun*, May 29 1956. Also quoted by Tanaka.

[63] Fotouhi papers, p. 201.

[64] Ibid., p. 187.

[65] Ibid., p. 188.

[66] *Chūgoku Shinbun* sha, *Honō no hi kara ni jū nen*, p. 265

[67] The museum's librarian Kikuraku Shinobu however was very knowledgeable and proved very helpful in this research. The museum director, Steve Leeper, as well, was very supportive of my research. I thank them as well as other members of the museum's staff for their help.

[68] *Chūgoku Shinbun*, May 7, 1967.

[69] Author's interview with Ogura Keiko, 28 January 2010.

[70] Tanaka, "Genshiryoku heiwa ryō," p. 260.

[71] Ibid., p. 256. Also Hidankyō, "*Message to the World*," 10 August 1956, accessed 29 October 2011.

[72] Sheldon Garon, "Rethinking Modernization and Modernity in Japanese History: A Focus on State-Society Relations," in *The Journal of Asian Studies*, Vol. 53, No. 2 (May, 1994), p 357.

[73] Fotouhi papers, p. 201.

"Hubris Punished: Japan as Nuclear State"
Gavan McCormack
April 18, 2011
http://www.japanfocus.org/-Gavan-McCormack/3517

McCormack, an Australia-based expert in East Asian studies, neatly sums up his position in the title to his article: Japan's belief that nuclear power was a sustainable, safe source of energy was nothing but "hubris," arrogance and pride. He extends his criticism to include other countries that rely on nuclear power.

McCormack explains some of the problems inherent in relying on nuclear power in its current form. Despite the frequency of strong earthquakes in places like Japan and California, nuclear power plants are not being built to withstand such catastrophes. Further, there is still no suitable, long-term solution for disposing of nuclear waste. In addition, the plutonium required to run nuclear power plants can be used for nuclear weapons, making the world less safe in a different way. Even so, power companies in Japan are lobbying to expand exploration of risky methods of creating plutonium (in "breeder" reactors) despite an accident in Japan that resulted in multiple deaths in 1999.

McCormack also compares the Fukushima disaster to the 1945 nuclear bombings. For example, in each case, the emperor made an historic address: the first radio address in 1945, and the first TV address in 2011, demonstrating how important both events were for the Japanese state. However, one key difference that McCormack emphasizes is that the Fukushima disaster was caused by nature but exacerbated by human error; the bombings were disasters caused only by humans.

Most of this article was written prior to the 2011 earthquake, although it was published a month after the Fukushima disaster. After it occurred, McCormack added his assessment of the significance of the tragedy. He explains that not only will the catastrophe define Japan's energy policy for years to come, but also that Japan's decision on whether to continue to use nuclear power has the potential to shape energy policies around the globe. If Japan, damaged more than any other nation by nuclear power, once again determines that nuclear energy is safe enough to use, other nations will likely adopt the same conclusion.

McCormack's message is clear: the costs of nuclear power—to humans, the environment, and the economy—are too great. He hopes that the Japanese public and nuclear establishment will come to recognize this and switch to a renewable energy policy.

Hubris Punished: Japan as Nuclear State

Gavan McCormack

Introduction

The following paper, which draws on and updates a 2007 Japan Focus article, was written for Le Monde Diplomatique, where it was posted online in French early in April 2011.[1]

This article offers a general overview of the nuclear era that began in Japan less than a decade after the destruction of Hiroshima and Nagasaki and may well have been brought to its close by the events at Fukushima six and a half decades later. The Hirohito imperial broadcast of 15 August 1945 announcing the Japanese surrender and calling on the Japanese people to unite to "endure the unendurable" is now matched by the Akihito imperial television address of 16 March, calling on people to unite in the face of catastrophe and help each other through the crisis. Two days after the Akihito address, the government announced that the "Great East Japan Earthquake" disaster was to be elevated from level 4 to level 5, on a par with Three Mile Island, and three weeks later, on 12 April, it raised it again, to level 7, the maximum on the international scale for nuclear incidents, alongside Chernobyl.[2]

Does the first imperial address on television match the first on radio in signifying radical change? Those at the centre of the Japanese state, on both occasions facing deep crises, seem to have deployed the emperor to similar ends: to soothe public fear and desperation, deflect anger from the pursuit of those responsible into a national sentiment of unity, and confirm the emperor's own place as healer, restorer, and axis for change.

The Akihito address used form and content that subconsciously linked the two occasions in listeners' minds. Through it, the Japanese state implicitly called on the people to appreciate that, beyond the disaster unfolding in northeastern Japan the country itself faces a shift in direction comparable to that of 1945. Then, Hirohito's role was to shift Japan from militarism and war to the acceptance of defeat and drastic change; now, Akihito's address may be construed as a concession that the nuclear path chosen by post-war Japan, like the militarist path of his father's generation, has ended in catastrophe.

1945

2011

Successive generations of Japan's bureaucratic, political, corporate, and media elite have insisted that Japan pursue the nuclear power path at all costs. In retrospect, they drove the country forward, as the elite of the Kwantung Army drove it in the pre-war era, towards disaster, ignoring, coopting, or crushing all opposition.[3] Only now, facing the costs—human, environmental and economic—the long-postponed debate opens.

The problem is not just the cluster of reactors in and around Fukushima, but the nuclear system, and the mentality that underpins it; Fukushima is far from being exceptional. Seismologists have long said that the fault lines on which the Hamaoka cluster of reactors at Omaezaki in Shizuoka prefecture rest are unstable and at least as

prone to disaster. The Hamaoka design contemplated a maximum earthquake of 8.5, which means it could no more be expected to cope with one of 5.6 times greater force (480 M tons of TNT) than was Fukushima. Seismologist Ishibashi Katsuhiko notes that the impact of such an event would be huge: "the US military will also be affected – a disaster at Hamaoka will mean bases in Yokosuka, Yokota, Zama and Atsugi will all be of no use."[4] A Fukushima-type collapse would force the evacuation of 30 million people, signalling the collapse of Japan as we now know it.

Even though no existing reactor has been designed to withstand a level 9 earthquake or its likely accompanying tsunami and therefore all *should* be closed, it would be unrealistic to demand that. However, to stabilize not just Fukushima, but Japan itself, the disastrous and irresponsible decisions taken by governments over the past half-century to pursue nuclear energy as a sacrosanct national project, have to be reversed. The immediate priority must attach to close the Fukushima and Hamaoka (and other extreme high-risk sites including Kashiwazaki-Kariwa in Niigata prefecture, the world's largest nuclear generation complex);[5] to secure, stabilize, and remediate the Fukushima sites, resettling and compensation the refugee population and rebuilding shattered infrastructure; to cancel all planned and under construction reactor works (including Hamaoka Number 6 and Kaminoseki in Yamaguchi prefecture); to suspend all existing and experimental projects for uranium enrichment, plutonium accumulation, use, and fast-breeding; to stop the planned export of nuclear plants to countries such as Vietnam (personally promoted by Prime Minister Kan as late as October 2010); and to adjust public and private investment priorities to a completely different vision of energy production and consumption.

What is called for, in short, is the reversal of a half century of core national policies and the switch to a renewable energy system beyond carbon and uranium.[6] Such a strategic decision, turning the present disaster into the opportunity to confront the key challenge of contemporary civilization, amounts to a revolutionary agenda, one only possible under the pressure of a mobilized and determined national citizenry. At this crucial juncture, how Japan goes, the world is likely follow. The challenge is fundamentally political: can Japan's civil society accomplish the sovereignty guaranteed it under the constitution and wrest control over the levers of state from the irresponsible bureaucratic and political forces that have driven it into the present crisis?

On such a trajectory, instead of a subordinate and secondary role in the current (now stalled) global "nuclear renaissance," and the continuing feeble presence on the world political and diplomatic stage as a US "client state," Japan could become a world leader. It is the sort of challenge to which Japan's best and brightest might rise, and around which its people might unite.

March 2011 is set to mark a caesura in Japanese history comparable to August 1945: the end of a particular model of state, economy and society, both marked by nuclear catastrophes that shook the world (even if the present one seems likely to be slightly muted and the meltdown kept to partial, the regional consequences may be broader, the number of people disastrously affected greater). Where the mushroom clouds over Hiroshima and Nagasaki signalled the end-point of the path chosen by the young officers of the Kwantung Army in the 1930s, the chaos and apocalyptic apprehension of post-quake and tsunami Fukushima in 2011 is the end-point of the path chosen by senior state bureaucrats and their corporate and political collaborators in the

1950s and steadily, incrementally, reinforced ever since then. Their legacy is today's nuclear state Japan. 1945 was a purely human-caused disaster. 2011 differs in that it was occasioned by natural disaster, but human factors hugely exacerbated it.

Japan's "Hiroshima syndrome" of fear and loathing for all things nuclear meant that cooperation with US nuclear war-fighting strategy had to be kept secret, in *mitsuyaku* or "secret treaties," especially in the 1960s and 1970s that have only become public in the past two years. The nuclear energy commitment, also pressed by the US, had likewise to be concealed, never submitted to electoral scrutiny, and continually subject of manipulation (extensive advertising campaigns), cover-up (especially of successive incidents), and deception (as to risk and safety levels). The extent of that too is now laid bare.

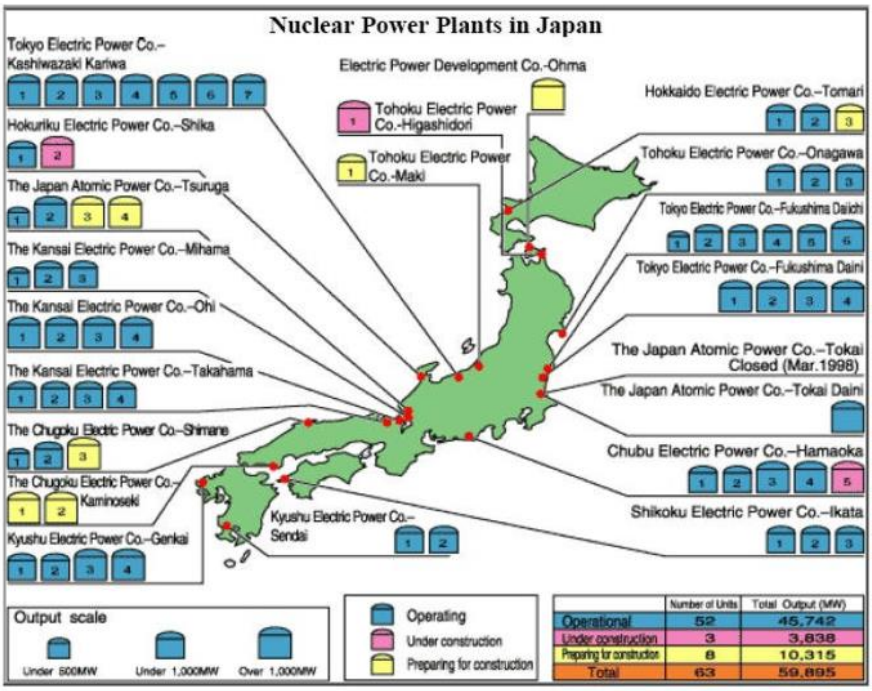
The way forward out of the current disaster remains unclear. The debate over Japan's energy and technology future will be long and hard, but what is now clear is that Japanese democracy has to rethink the frame within which this elite was able to overrun all opposition and push the country to its present brink. The crisis is not just one of radiation, failed energy supply, possible meltdown, the death of tens of thousands, health and environmental hazard, but of governability, of democracy. Civic democracy has to find a way to seize control over the great irresponsible centres of fused state-capital monopoly and open a new path towards sustainability and responsibility. A new mode of energy generation and of socio-economic organization has to be sought. Ultimately it has to be a new vision for a sustainable society.

Emperor and Empress speak with town mayor of Kazo, Saitama on April 8 while visiting a makeshift shelter. On April 15, TEPCO announced that it would provide "provisional compensation" of approximately $12,000 to tens of thousands of households ordered evacuated, perhaps permanently, from the 13-mile exclusion zone.

It is of course a paradox that nuclear victim Japan should have become what it is now: one of the world's most nuclear committed, if not nuclear obsessed countries. Protected and privileged within the American embrace, it has over this half-century became a nuclear-cycle country and a plutonium super-power, the sole "non-nuclear" state committed to possessing both enrichment and reprocessing facilities, and to the fast-breeder reactor project. Its leaders chose to see the most dangerous substance known to humanity, plutonium, as the magical solution to the country's energy security. While international attention focused on the North Korean nuclear threat, Japan escaped serious international scrutiny as it pursued its nuclear destiny. One bizarre consequence is the emergence of Japan as a greater nuclear threat to the region than North Korea.

Just over a decade from Hiroshima and Nagasaki, at the time of Eisenhower's "atoms for peace," Japan's Atomic Energy Commission drew up its first plans. The 1967 Long-Term Nuclear Program already incorporated the fuel cycle and fast breeder program in them. By 2006, the Ministry of Economics, Trade, and Industry (METI)'s "New National Energy Policy" set the objective of turning Japan into a "nuclear state" (*genshiryoku rikkoku*). Nuclear power generation grew steadily as a proportion of the national grid, from 3 percent of total power in

1973 at the time of the first oil crisis to 26 percent by 2008 and around 29 percent today. The country's basic energy policy calls for the ratio of nuclear, hydro and other renewables (nuclear the overwhelming one) to be nearly 50 per cent by 2030. Under the Basic Energy Plan of 2010, 9 new reactors were to be built by 2020 (none having been built since the 1970s in the wake of Three Mile Island and Chernobyl), and 14 by 2030, while operating levels of existing reactors were to be raised from 60 percent as of 2008 to 85 percent by 2020 and then 90 percent by 2030.[7]



The dream of eternal, almost limitless energy has inspired the imagination of generations of Japanese national bureaucrats. In the words of a panel at the Aquatom nuclear theme-park-science museum in Tsuruga, close to the Monju plutonium fast-breeder reactor,

"Japan is a poor country in natural resources … therefore Monju, a plutonium burning reactor, is necessary because plutonium can be used for thousands of years."

Trillions of yen were channelled into nuclear research and development programs and additional vast sums appropriated to construct and run major nuclear complexes. If the Federation of Electric Power Companies estimate is even roughly correct, that the Rokkasho complex in northern Honshu will cost 19 trillion yen over the projected forty-year term of its use, that would make it Japan's, if not the world's, most expensive civil facility in history.

Japan is alone among non-nuclear weapon states in its pursuit of the full nuclear cycle, building plants to reprocess its reactor wastes, burning plutonium as part of its fuel mix (as at the Fukushima Dai-ichi's No 3 Plant since late 2010), storing large volumes of "low-level" wastes, and desperately struggling to chart a way forward to fast-breeder technology, something so prodigiously difficult and expensive that the rest of the world has set it aside as a pipe-dream. At all stages: fuel preparation, reactor construction and operation, waste extraction, reprocessing,

storage, its nuclear system was problematic long before the tsunami crashed into its Fukushima plant on March 3, 2011.

There are 54 reactors currently in operation, or were till March. At Fukushima the reactor cores may have survived intact, but the management practice of leaving highly toxic and long-lived wastes in ponds beside the actual reactor, has proven a terrible mistake. According to atomic specialist Robert Alvarez, such pools contain radioactivity between five and ten times greater than that of one reactor core, with one pond holding "more cesium-137 than was deposited by all nuclear weapons tests in the Northern Hemisphere combined" and "a major release of cesium-137 from a pool fire could render an area uninhabitable greater than that created by the Chernobyl accident."[8] Whether because of sloshing under the impact of the quake or leakage from structural collapse, the rods at several of the Fukushima plants were partially exposed for unknown periods, fires did burn, with unknown consequences, and the resumption of cooling using sea-water by fire-hose or helicopter bombing and ultimately by the reconnection of pumps has proven immensely difficult.[9]

Once the immediate crisis passes, these plants will have to be decontaminated and dismantled, an expensive, difficult, and time-consuming task that will take decades, while the electricity they once provided must be somehow substituted. Whether they can or will simply be cased in concrete like Chernobyl remains to be seen, but they will surely become a monument to the disastrous mistakes of the post-war Japanese nuclear plan.

Of the major complexes other than Fukushima, the most notorious are those at Kashiwazaki in Niigata and Hamaoka in Shizuoka. Kashiwazaki, with 7 reactors generating 8,000 MW, is the world's largest nuclear generation plant. The 6.8 magnitude quake it experienced on 16 July 2007 was more than twice as strong as the design had allowed for and the site proved to be on a previously undetected fault line. Catastrophic breakdown did not occur, but multiple malfunctioning did, including burst pipes, fire, and radioactive leaks into sea and air. The Hamaoka complex, 190 kms southwest of Tokyo, has five reactors, which, like those at Kashiwazaki, sit on fault lines where the Eurasian, Pacific, Philippine and North American plates grind against each other and where experts predict a strong chance of a powerful quake some time in the near future. Company officials say the plant is designed to withstand a magnitude 8.5 earthquake, since that was believed to have been the most powerful ever known in the area. After Fukushima's 9.0, however, the preconditions on which Hamaoka was based have collapsed. A Fukushima-level event here could force the evacuation of up to 30 million people.

Perhaps most controversial of the planned new reactor plants is that for two reactors to be built at Kaminoseki, population: 3,700, an exquisitely beautiful, national park site at the southern end of the Inland Sea about 80 kms from Hiroshima, one to commence operation in 2018 and the other in 2022. After nearly 30 years of attempts to start these works, blocked by fierce local resistance, especially on the part of the fishing community of Iwaishima, the island that faces the reactor site across about four kilometres of sea, preliminary forest clearing and sea refilling works began late in 2010. With fierce confrontation continuing at sea between fishing boats, canoes and kayaks on the part of the protesters and the power company's ships, however, it is hard to imagine that after March 2011 the government will find the will to move in and crush the protesters. Indeed, the Governor of the prefecture has demanded work be halted (and in the wake of 11 March they have indeed been halted, at least temporarily).

Nuclear reactors generate large quantities of irradiated waste, which has to be either stored or reprocessed. Since 1992, high-level wastes have been reprocessed at plants at Sellafield in England and la Hague in Normandy in France, each shipment equivalent to about seventeen atomic bombs-worth of plutonium. The former Director-General of the International Atomic Energy Agency (IAEA) Mohammad Elbaradei saw reprocessing as so dangerous that it should only be done under the strictest of international supervision and appealed to Japan for a five-year freeze on all enrichment and reprocessing works. Japan dismissed his appeal, arguing that such a moratorium was applicable only to "new" projects, while Japan's had been under way for decades.

Rokkasho, north of Fukushima in Aomori prefecture, is the world's most intensive concentration of civilian nuclear energy facilities, including fuel processing, waste reprocessing, enrichment and waste storage. Its reprocessing unit is designed to convert eight hundred tons of spent fuel per annum, yielding each year about eight more tons (1,000 warheads-worth) of pure, weapons-usable plutonium. After many delays, reprocessing was conducted on a trial basis in 2006 but the facility has yet to commence full commercial operation. A second reprocessing plant at Tokaimura has been shut since 1999 when an accident at its experimental fast breeder showered hundreds with radiation and killed two workers. Consequently reactor wastes accumulate, much of them stored, like those at Fukushima, around the reactors from which they have been extracted.

Rokkasho Nuclear Fuel Reprocessing Plant, 2008. Photo: Kyodo

Even if Rokkasho's reprocessing plant were to commence operation some time soon, it would make little more than a small dint in Japan's accumulated and accumulating wastes, estimated at approximately 12,600 tonnes as of 2006. So Japan's wastes, including separated plutonium (Japan possesses roughly one fifth of the world's civil plutonium stocks), accumulate steadily, and will continue to do so even if or when the reprocessing proceeds according to plan.

Under current (to March 2011) plans, fluids containing low levels of radiation were to be piped several kilometres out into the Pacific Ocean for discharge, the standards for effluent control having been relaxed so that Rokkasho could discharge the equivalent of the nuclear wastes of 1,300 power stations, sending tritium into the sea at 7.2 times the levels of the recently closed Sellafield plant in Northern England or 2,800 times the level permitted for conventional reactors. Wastes from the infamous Sellafield plant are blamed for the devastation over decades of fish stocks across much of the Irish Sea and leukaemia levels in children 42 times the national average as far away as Carnarvon in Wales.

Other low-level wastes are held in 200-liter drums, both at nation-wide reactor sites and at the Rokkasho repository. Rokkasho's projected eventual capacity is for three million drums in forty vast repositories, each containing 10,000 drums, destined eventually to be covered in soil, with something like a mountain built over them. After that, they must be closely guarded for at least

300 years. These repositories spread like giant poisonous mushrooms across the once beautiful backwater of rural Aomori prefecture.

Nuclear Wastes

High level wastes, vitrified and put in canisters, are returned to Rokkasho where they are to be stored initially for 30 to 50 years while their surface temperature slowly declines from around 500 degrees centigrade to 200 degrees centigrade, at which point it is planned to bury them too, in deeper (300 meter) underground caverns where their radiation will further dissipate over millennia.

The burning of mixed plutonium-uranium oxide fuel, as at Fukushima's No 3 plant, constitutes another way to divert plutonium from "waste" into active use as part of the "eternal" energy cycle. Fast-breeder reactors are another part of the solution to plutonium accumulation. They "breed" (i.e. produce more than they start with) very pure, "super-grade" plutonium. But the risk and the cost associated with this unproven technology is so great that Japan is among the few nations that now pursues it, at prodigious expense and with very limited success. The Monju prototype fast-breeder reactor (at Tsuruga, in Fukui Prefecture on the Japan Sea coast) had to be shut down in 1995 after a sodium leak and fire followed by evidence of negligence and cover-up. After ten years, the Supreme Court ruled in 2005 that it could proceed, and a contract was awarded to Mitsubishi, but technical difficulties mean that it has yet to do so. Under current plans, the fast breeder would be commercialized by 2050, 70 years behind its original schedule, with Monju being replaced by an additional plant, at a cost of "about 1 trillion yen" around 2030.

For the country whose scientific and engineering skills are the envy of the world to have been guilty of the disastrous miscalculations and malpractices that have marked the past half-century - including data falsification and fabrication, the duping of safety inspectors, the belittling of risk and the failure to report criticality incidents and emergency shut-downs – and then to have been reduced to desperate attempts with fire hoses and buckets to prevent a catastrophic melt-down in 2011, raises large questions not just for Japan but for humanity. Could the rest of the world, for which the US government holds out the prospect of nuclear renaissance, do better?

The "nuclear state Japan" plans have plainly been shaken by the events of March 2011. It is too much to expect that they will be dropped, but the struggle between Japan's nuclear bureaucracy, pursuing the chimera of limitless clean energy, global leadership, a solution to global warming, the maintenance of nuclear weapon defences (America's "extended deterrent"), on the one hand, and Japan's civil society, pursuing its agenda of social, ecological and economic sustainability, democratic decision making, abolition of nuclear weapons, phasing out of nuclear power projects, and reliance on renewable energy, zero emission, material recycling, and non-nuclear technologies enters a new phase after March 2011.

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Pushing North Korea to the Brink of Nuclear Catastrophe *(New York, 2004, Tokyo and Seoul 2006).*

This article appears as a chapter in the Japanese volume *Nihon Bijuaru janarisuto kyokai* (Japan Visual Journalists Association), ed. *JVJA shashinshu - 3:11 merutodaun* (The 3.11 Meltdown), *Gaifusha*, June 2011. Nitta Jun, who translated the article into Japanese, is the publisher of *Gaifusha*.

Notes

[1] "La maison Japon se fissure - Le Japon nucléaire ou l'hubris puni," *Le Monde Diplomatique*, Online, April 2011, link.

[2] Meaning it was responsible for a major release of at least tens of thousands of terabecquels of radioactivity that was likely to cause "acute health effects" over a wide area.

[3] Ishibashi Katsuhiko is one Japanese critic who has consistently made this criticism. See, most recently, his essay, "Masa ni 'genpatsu shinsai' da," *Sekai*, May 2011, pp. 126-133.

[4] Jun Hongo, "World right to slam nuke program mismanagement: expert," *Japan Times*, 14 April 2011.

[5] Shut down for nearly two years following damage in the Chuetsu earthquake of July 2007.

[6] For a Japanese newspaper editorial in similar vein: "Shinsaigo 'tei-ene' shakai Nihon moderu wa kano da," *Mainichi shimbun*, 16 April 2011.

[7] The DPJ government announced on 29 March 2011 that the existing "Energy Basic Plan" would now have to be fundamentally reviewed, and that green sources of energy, including solar, would be part of the review. ("14 ki no genpatsu zosetsu, minaoshi, taiyoko nado jushi e," *Yomiuri shimbun*, 29 March 2011. The debate, of course, is just beginning.

[8] Robert Alvarez, "Meltdowns grow more likely at the Fukushima reactors," Institute for Policy Studies, 13 March 2011.

[9] For a catalogue of TEPCO's and the Japanese government's technical and other errors in handling the Fukushima disaster and earlier nuclear accidents, see Vaclav Smil, "Japan's Crisis: Context and Outlook," *The American*, April 16, 2011.

"An Agenda for Peace Research after 3/11"
ANZAI Ikuro
November 14, 2011
http://www.japanfocus.org/-Anzai-Ikuro/3647

Following Zwigenberg's historical take and McCormack's scholarly "snapshot" of the situation nearly simultaneous to the Fukushima disaster, the rest of the articles in this reader illustrate some of the changes in Japanese public opinion on nuclear power since March 2011.

Anzai brings two important perspectives to the conversation. First, he is a nuclear power engineer who has extensively studied ways to protect against radiation while teaching at major universities, including the University of Tokyo, a national university (making him a former government employee). Second, he is a self-described former member of the "nuclear village," albeit someone who left that village four decades ago. Anzai "has been criticizing governmental nuclear power policy since 1967," and for this reason, he claims, he was "ruthlessly ejected" from the nuclear village. That is, the University of Tokyo slashed his research budget and he was harassed in other ways in his work, as he describes below. This article is an abbreviated version of a keynote speech he gave at the opening session of the 2011 International Conference of the Asia-Pacific Peace Research Association, in which Anzai frames the continued use of nuclear power as an ethical issue.

Over the years, Anzai frequently visited communities that were considering accepting a nuclear power plant. He would answer their questions about nuclear power, and his interactions with the locals indirectly provide another perspective on nuclear power, that of the people who are most affected by reactors but probably know least about them. Anzai's information heightened their concerns about the safety of nuclear reactors. He says that he was not always effective in relaying the dangers of nuclear power because misconceptions about nuclear power, which provided false reassurances, often settled locals' fears.

Ethically, Anzai says that nuclear power is not worth it in the long run and therefore should be phased out; it will create a financial and environmental debt for future generations. Anzai stresses most of all promoting safety and peace, whether in building new nuclear plants in the future or cleaning up after Fukushima now.

An Agenda for Peace Research after 3/11

Anzai Ikuro

Professor Anzai sampling contaminated soil near Fukushima Nuclear Power Plant on 16 April 2011

At 14:46 on 11 March 2011, a tremendous earthquake occurred in Japan's northeast (Tohoku), depriving approximately 28,000 people of their lives. More than 300,000 people took refuge from the quake, the following *tsunami*, and radiation originating from damaged nuclear power stations in the area. The magnitude of the quake was estimated to be 9.0, the biggest in Japan's modern history "The Great East Japan Earthquake" was more than 11,000 times greater than the New Zealand Earthquake in Christchurch on 22 February 2011, and 45 times greater than the 1923 Great Kanto Earthquake in the Tokyo area which killed approximately 140,000 people.

When I learned about this serious nuclear accident that evening, I regretted not having been able to prevent such a catastrophe, although I am a specialist in radiation protection who has been criticizing governmental nuclear power policy since 1967. As a scientist involved in nuclear science and technology, I was ashamed of my incapacity to persuade the government and people of Japan of the risks of nuclear power generation, such as the Fukushima accident.

Hydrogen Gas Explosion

Fukushima Devastation caused by Tsunami

I graduated from the University of Tokyo in 1964 as one of the first students in the Department of Nuclear Engineering in Japan. My graduation paper was an investigation into preventive measures against severe nuclear accidents although there were no nuclear power plants in Japan at that time. As a result of the revised U.S.-Japan Security Treaty of 1960, Japan became deeply involved in the Vietnam War through military bases throughout the nation and especially in Okinawa. In addition to various new types of weapons such as the pineapple bomb, the ball bomb, the nail bomb, and defoliants, the U.S. military even had a plan to use hydrogen bombs, named B43, in Vietnam. Training to drop these bombs took place in Okinawa. One of the mock-up B43 bombs used for training is now exhibited at The Kyoto Museum for World Peace, Ritsumeikan University.

In 1965, the Japan Scientists Association was established to promote science based on the principles of independence, democracy and harmony. The association brought together researchers and educators not only in the physical and natural science but also in the social sciences and humanities. I joined the association in 1966, and became a board member responsible for monitoring nuclear power policy. I learnt comprehensively about nuclear issues, not only about the scientific and technological aspects but also the political, economic, social and cultural aspects of nuclear power policy. I was also educated by people in local communities who invited me to their meetings on nuclear safety, and posed numerous questions that were far outside my scientific expertise but were vital to the life of the community. These questions were extremely difficult for me to answer. In 1972 I was invited to deliver a keynote speech at the first symposium on nuclear power generation organized by the Science Council of Japan (JSC), which is sometimes referred to as the parliament of Japanese scientists. JSC is in effect the official representative organization of Japanese scientists. Two hundred and ten members of JSC, 30 scientists in 7 different fields, were elected by a direct vote of some 300,000 scientists from all over Japan. I was 32 years old at that time, and it was exceptional for a young scientist to deliver a keynote address on such a critical issue.

I proposed six fundamental check points concerning the health of Japanese nuclear power policy. These were (1) the independence of national energy policy; (2) development that placed safety above economic growth; (3) a national nuclear power policy that would not devastate local communities; (4) the prevention of military use of nuclear energy; (5) safety assurances to protect nuclear power plant workers and residents, and proven safety measures to prevent severe accidents; and (6) democracy of nuclear power administration. These points became leading principles for the anti-nuclear power movement in Japan in the 1970s.

In 1973, I was one of ten specialists invited to address the National Diet on nuclear science and technology . I took this opportunity to sharply criticize government policy on nuclear power. I was then an assistant lecturer in the Department of Radiological Health, in the Faculty of Medicine at the University of Tokyo, which is a national university. I was a national government

employee who nevertheless criticized national nuclear policy. This resulted in academic harassments, which I will mention below.

In September of 1973, I became deeply involved in the anti-nuclear power movement in Fukushima together with people living in the vicinity of the nuclear power plants. The Government held a public hearing on Fukushima Nuclear Power Plant No. 2. It was the first official public hearing on nuclear power generation ever organized in Japan. But it was a typical example of *"yarase"*, meaning fakery or insincerity. The majority of speakers and the audience at the public hearing were proponents of bringing nuclear power plants to Fukushima. Nevertheless, I worked with scientists, lawyers and local residents to send delegates to the hearing to raise questions about the risks of nuclear power and to clarify the dangers of the national nuclear policy. Through the efforts of anti-nuclear residents, I was nominated as a delegate to speak on their behalf. The most astonishing thing was a speech made by a pro-nuclear woman who was sent from the local community in the vicinity of the Fukushima Nuclear Power Plants which are now in crisis. She said, "We need not fear bad effects from nuclear radiation because the 1973 champion in the All Japan Senior High School Baseball Tournament was from Hiroshima, the A-bombed city, where, it was once said, no grass or trees would grow for 75 years." She seemed to suggest that radiation is not so harmful as feared by referring to the remarkable vitality of the young people who had grown up in an area devastated by a nuclear weapon. Unfortunately, such unscientific storytelling had some effect on the public acceptance of nuclear power.

Let me provide a brief history of nuclear power development in Japan. Immediately after the Pacific War, electric power in Japan was primarily generated by hydro-electric power plants, and the sole electric power company was "Japan Electric Power Generation and Supply Company". While Japan was virtually ruled by the U.S. Occupation Army, it acted indirectly through the Japanese Government with Emperor Hirohito as a nominal symbol of the unity of the Japanese people. In 1951, the U.S. divided the state-run Japan Electric Power Generation and Supply Company into nine regional power companies including Tokyo Electric Company and Kansai Electric Company. Many of the new companies, such as Kansai Electric Company which served such big cities as Osaka, Kobe and Kyoto lacked sufficient hydro-electric power resources to provide for the rapid development of the time. This made the company dependent upon thermal power plants. These plants initially relied on coal produced in Japan, but the fuel soon shifted to petroleum, which rendered Japan dependent on U.S. energy strategy. Nuclear power development in Japan likewise was based on accepting the offer of nuclear technology from the U.S. and introducing nuclear power plants developed in the U.S.

Yet Japan is the only nation that has experienced nuclear holocaust as a result of the U.S. atomic bombing of Hiroshima and Nagasaki in 1945. More than 300,000 people died as a result of nuclear weapons. But U.S. censors suppressed information about the terrible toll and after effects of the atomic bombings. On March 1, 1954, a Japanese tuna fishing boat, named Lucky Dragon # 5 was exposed to lethal levels of radioactive fallout produced by a U.S. hydrogen bomb test carried out on the Bikini Atolls. The detonation yield of that bomb was 15 megatons, five times as great as the total yield of bombs used in World War II including the two atomic bombs dropped on Hiroshima and Nagasaki. In 1961, the U.S.S.R. conducted a hydrogen bomb test nicknamed *"Tsari Bomba"* of 50 megatons. The 1950s and 60s were the peak periods of the U.S.-U.S.S.R. nuclear arms race based on the strategic policy of nuclear deterrence and the

acquisition of a balance of power, which finally resulted in a policy known as "Mutually Assured Destruction" or MAD.

The Japanese anti-nuclear movement was ignited in 1954 in response to the March 1 U.S. hydrogen bomb test in Bikini. Two days later, at the initiative of *Nakasone Yasuhiro*, later Prime Minister, the Diet passed a budget of 235 million yen to build a nuclear reactor. The figure 235 came from uranium-235. The preceding year, Nakasone had taken part in a seminar held at Harvard to promote the "Atoms for Peace" project within the framework of U.S.-Japan cooperation. At that time, *Shoriki Matsutaro*, owner of the Yomiuri Newspaper Company, organized a series of traveling expositions to popularize the peaceful uses of nuclear energy. In 1959 I saw one such exposition in Tokyo. It included an actual nuclear reactor.

But it is worth recalling that the first practical nuclear power plant of 5,000 kws was built and went into operation in 1954 not in the U.S. but in Obnisk near Moscow. The U.S. Atomic Energy Act prohibited private enterprises from taking part in nuclear energy exploitation until its revision two months after the Soviet success in nuclear power generation. The U.S. then hastily developed nuclear power generation by making use of a nuclear reactor system developed for submarines, and opened the Shippingport Nuclear Power Plant in 1957. In that year, a report named WASH-740 and titled "Theoretical Possibilities and Consequences of Major Accidents in Large Nuclear Power Plants" indicated the possible effects of a "maximum credible accident" as 3,400 deaths, 43,000 injuries and property damage of 7 billion dollars, more than double the size of Japan's national budget in those days. About half a year later, The Price-Anderson Nuclear Industries Indemnity Act decreed that private companies would be indemnified for any claims above 12.6 billion dollars (as of 2011). The Act was an essential incentive for private nuclear power. Four years later, a similar "Act for Indemnification of Nuclear Damage Compensation" was enacted in Japan. It is obvious that the nuclear power industry cannot survive such catastrophic situations without such support.

In Japan, the connection between government and the electric power companies was further strengthened by involving local government. "The Act on Tax for Promotion of Power Resources Development" generated vast subsidies, up to several billion yen for 3 years, for local governments that accepted a plan to build an electric power plant. Every contractor must pay about 5 dollars (375 yen) per 1,000 kw-h of electric power consumed, creating approximately 50 billion dollars in tax income for local governments. The local community can be blessed with a special subsidy for three years, but the infrastructure constructed subsequently requires costly maintenance. In this way, a cycle begins in which more nuclear power plants are apt to be invited.

Likewise, local residents were mobilized to promote nuclear power. For example, in Futaba District, Fukushima Prefecture, where nuclear disaster is now occurring, an "Organization to Building a Bright Futaba" was formed in the early 1970s. Its poster said "Let's Promote Construction of Nuclear Power Plant by Our 'Power' and Open the Way to an Affluent Futaba". People in the local communities thus joined a national mobilization for nuclear power.

Needless to say, many nuclear engineering specialists were pressed to support the government's views on the safety of nuclear power. Journalism, rather than playing a critical role, disseminated illusions and myths that nuclear power generation is safe and economical.

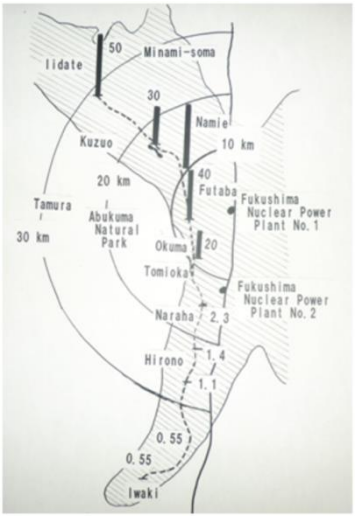
It is sometimes said that nuclear power generation in Japan has been promoted by a "pentagon" consisting of the central government, the nuclear power industry, local governments, specialists and journalists. I personally feel that residents' organizations inviting nuclear power plants to local communities should be added to this "pentagon", thereby forming a "hexagon" that is akin to the national mobilization structure constructed during the war. This hexagon forms a "nuclear village" which is closed, exclusive and relentless. I myself started student life as a member of this "nuclear village" in the early 1960s, but I was ruthlessly ejected from the village in the 1970s when I was identified as a dangerous critic of its policies.

After openly criticizing government nuclear policy in the early 1970s, I experienced extraordinary harassment at the University of Tokyo. I was excluded from the education system, and my research budget was eliminated. During lecture tours to various parts of Japan I was often tailed by a power company staff in charge of watching me. No one was permitted to talk to me from morning till evening. I experienced various types of obstruction in applying for a position at other colleges or universities.

I narrowly survived this very difficult time, first by my personal belief in life with dignity, second in solidarity with understanding people in the fields of science and public movements, and third, perhaps most importantly, through the support of my partner. Interestingly, the relationship with my boss slightly improved after the Three Mile Island accident in March 1979. He seemed to have understood that my warnings about the risks of nuclear power generation were not entirely false. But my position as an assistant lecturer remained frozen for 17 years until 1986, when I moved from the University of Tokyo to Ritsumeikan University.

Now I would like to comment on the situation in the radiation disaster area of Fukushima. I visited the area three times (mid-April, early May, and early August) after the accident of March 11th to visit friends with whom I have been working for a nuclear-risk-free community for about 40 years, to deliver several lectures for educators, citizens, workers, young

Posters of a pro-nuclear organization in Fukushima promote nuclear power. The first is a poster made by the Science and Technology Agency in 1970 criticizes anti-nuclear people for having an "energy allergy."



Radiation levels in different locations in Fukushima. Figures are radiation exposure rates expressed in micro-Sieverts per hour. The ordinary level in Tokyo is 0.06~0.07 micro-Sievert per hour. Shaded portion signifies the area where internal radiation dose between 6 a.m. (March 12) and 0 a.m. (March 24) may have reached 100 milli-Sievert according to an estimate by the System for the Prediction of Environment Emergency Dose Information (SPEEDI).

mothers and specialists, to offer advice on radiation protection, and to measure radiation levels and sample soils contaminated with radioactive substances.

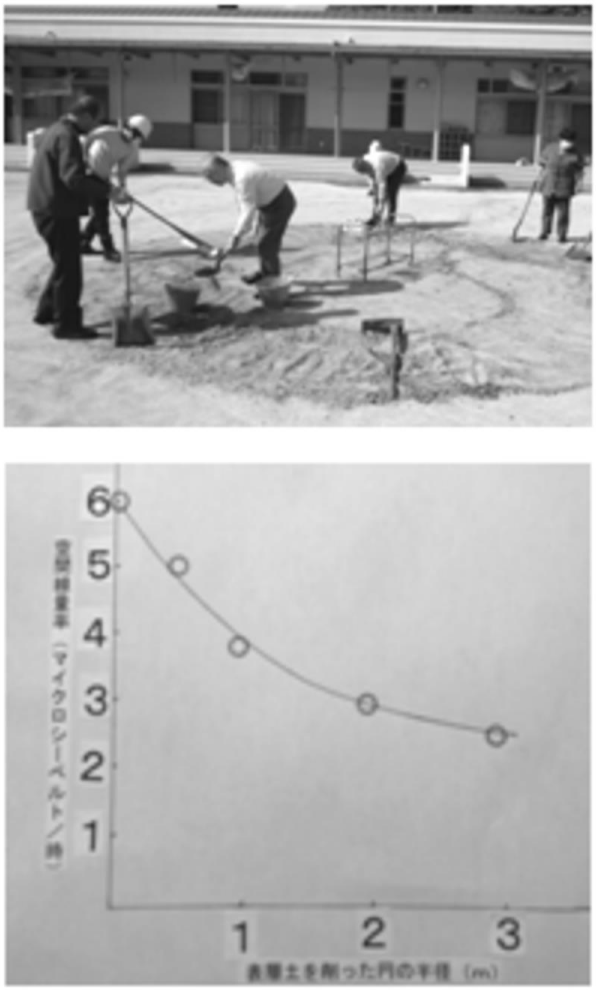
Donating a survey meter to an NGO

The radiation levels have been and still are very high in nearby areas and within so-called hot spots, even in Fukushima City populated by about 280,000 residents some 60 km from the nuclear power plant. I conducted a radiation survey between Iwaki City and Namie Town, about 80 km apart, whose results are shown below. The radiation exposure rate was about 0.5 μSv/h in Iwaki, but it gradually rose up to 20, 30, or even to 50 μSv/h northwest of the nuclear power plant.

Radiation levels in Fukushima City differ from place to place, but, on average, the current exposure rate is about 1 micro-Sievert per hour at a height of 1 meter above ground, which is roughly equivalent to 150-200 chest X-ray examinations per year.

The major cause of external radiation exposure is radioactive cesium-137 deposited on the ground. The total amount of cesium-137 released from the Fukushima Nuclear Power Plants has been estimated to be about 168 times greater than that released by the Hiroshima A-bomb, according to the evaluation by the Ministry of Economics, Trade and Industry (METI). Most of these radioactive substances now deposited on the ground were released during the first week after the hydrogen gas explosions in the plant, with quite small amounts of radioactivity freshly coming down in recent days. It is noteworthy that radioactive cesium is highly absorbed in several centimeters of surface soil. In cooperation with Ms. Tanigawa Yoshiko, in early August I verified that cesium-137 does not easily dissolve in water, even when contaminated soil is washed with large quantities of water. This property is peculiar to the clay-like soil in Fukushima. This soil quality is the main reason why the levels of radioactive contamination of rice cropped this autumn in Fukushima were quite low. It also suggests that rainfall will not easily wash out radioactive cesium, and why sunflower may not effectively decontaminate the soil in Fukushima.

Therefore, in order to reduce radiation levels above the ground, it is quite effective to remove only a few centimeters of the surface soil layer. During my second visit to Fukushima in May, I conducted an experiment in a kindergarten in Fukushima City to demonstrate the effectiveness of surface soil clearance. The radiation level was remarkably lowered by removing just 2~3 centimeters of surface soil. The administrators of the kindergarten removed the contaminated surface soil thereafter, making it possible to have an outdoor event for children in early October.



Professor Anzai removing surface soil in a kindergarten. The graph shows a sharp reduction in radiation exposure rate by soil clearance. (horizontal axis: radius in meter)

We must carry out every possible measure to protect people, especially young children, from harmful ionizing radiation nuclear power accidents. In Kyoto, electric power is generated by nuclear power plants only 60 kilometers from this conference venue. There are 14 nuclear power plants in Fukui Prefecture just adjacent to Kyoto, and vast amounts of high-level radioactive waste has already been accumulated. Future generations will have to isolate such dangerous nuclear waste over thousands of years. They will be required to expend huge resource to dispose of nuclear waste, which will produce no value for them. Even as we enjoy the fruits of nuclear power today, we are going to leave a tremendous "negative fortune" to our children, grandchildren, and future generations over tens of thousands of year. We must ask ourselves whether this is ethically justifiable.

I will conclude by raising several agenda items for peace researchers after 3/11. Based on my personal experience as a nuclear scientist specializing in radiation protection over 45 years and also as a peace researcher who has been confronting these unprecedented difficulties, I would like to suggest the following 5 points:

(1) Regarding the definition of peace, I fundamentally agree with Dr. Johan Galtung, and understand peace not only as an "absence of war" but also as an "absence of violence" which can be categorized into direct violence, structural violence and cultural violence. Although the enormous scale of the earthquake itself and the accompanying tsunami were of natural origin, we still observed a number of incidents of structural and cultural violence which aggravated the damage and pain of the sufferers in the devastated areas. It is the role of peace researchers to explain how the effects of an original natural disaster are further aggravated by interconnections of structural and/or cultural violence.

(2) An urgent agenda for several decades to come is to construct a comprehensive aid system for the people in disaster areas by integrating useful potentiality in politics, administration, economics, science, technology, and culture, including efforts toward decontamination of the living environment, adequate control of radioactive contamination of foods, dissemination of literacy about radiation and radioactivity for eradicating social discrimination and prejudice against sufferers, and establishment of a health check system to find and treat stochastic effects of radiation such as cancers and leukemia in the earliest stages. In order to integrate individual efforts into an effective total system, a peace-oriented coordination system must be established.

(3) An agenda for peace research suggested from my personal experience in academic life is to develop a method to sense dangerous social signs in the earliest stage, including signs in the fields of structural and/or cultural violence such as academic harassment, irrational policy execution without sincere attitude toward science, and destruction of democracy,. It may be helpful to develop some indicators such as the Global Peace Index, which was originated by the Institute for Economics and Peace (UK), or the Universal Human Rights Index of the UN Office of the High Commissioner for Human Rights. Such an indicator may help to warn people of this latent danger.

(4) Another peace research agenda is to elucidate the story of the Fukushima tragedy not only from the short-term point of view but also from a long-term perspective in world history. Efforts should be made to clarify the direct and indirect reasons why such a catastrophic nuclear disaster occurred in Japan by comprehensively analyzing and synthesizing historical facts in the light of, for example, subordination of Japanese politics to U.S. strategy in the postwar period and old-fashioned Japanese politics involving a taxation system for promoting nuclear power while manipulating public opinion. Lessons from such research may contribute to a more peaceful and safer future.

(5) Finally I propose an agenda that relates to the peace of future generations. This concerns radioactive waste disposal. How can we deal with consensus building about the acceptability of technologies, which may leave a massive "negative legacy", such as the very long-lived nuclear waste which involves tremendous cost but produces no value for future generations? Peace researchers should be expected to answer the question: Is it ethically acceptable for us to enjoy nuclear energy in our lifetime while leaving behind hard-to-estimate risks to future generations with no possibility of obtaining their consent?

Anzai Ikuro authored a number of books on nuclear power in the 1970s and 1980s, including Nuclear Power Generation in Japan *(1974),* Nuclear Power and the Environment *(1975),* Radioactivity in the Body *(1979),* Handbook of a Nuclear Power Plant Accident *(1980). His recent books on nuclear energy issues include* Fukushima Power Plant Accident, *published by Kamogawa Shuppan in 2011.*

This article is an abbreviated version of a Keynote Speech at the Opening Session of the 2011 International Conference of the Asia-Pacific Peace Research Association.

"Bringing the Plight of Fukushima Children to the UN, Washington and the World"
Aileen Mioko Smith with Mark Selden
October 10, 2011
http://www.japanfocus.org/-Aileen_Mioko-Smith/3615

Aileen Mioko Smith is the executive director of Green Action, a Japanese citizens' organization (NGO) working to end nuclear power in Japan. Following the Fukushima disaster, governments and international organizations became more receptive to the message of Green Action and other anti-nuclear groups (like Stop Tomari and Beyond Nuclear). This article explains the mission of these groups, which is typical of anti-nuclear activists in Japan. It profiles several individuals who traveled to the U.S.A. to spread their message, arguing that nuclear power must be phased out around the world.

Anti-nuclear groups are outraged, in particular, by the risk of radiation from nuclear power plants, by the abundant misinformation disseminated about these risks, and by Japanese government irresponsibility about needless exposure to radiation at Fukushima. For instance, anti-nuclear groups compare the evacuations of Chernobyl and Fukushima. In 1986 an explosion and fire in a nuclear power plant in Chernobyl, Ukraine released large amounts of radiation into the atmosphere. Although the Soviet government evacuated residents near Chernobyl when radiation levels reached 1-5 millisieverts (mSv) per year, as this was the level determined to be dangerous to humans, Japan has only ordered evacuations in areas where levels exceed 20 mSv/year. The anti-nuclear groups maintain that much of the public remains misinformed about the continuing danger they face, and they are striving to remedy this. Smith explains several of the health dangers of radiation exposure, including cancer, heart disease and birth defects. Smith and her colleagues argue that not only is a wider evacuation area necessary, but also, to prevent future disasters, all nuclear reactors must be shut down.

Bringing the Plight of Fukushima Children to the UN, Washington and the World

Aileen Mioko Smith with Mark Selden

Aileen Mioko Smith of Green Action Kyoto speaks with Mark Selden in New York about recent developments in Fukushima and the US tour by anti-nuclear activists from Fukushima and other parts of Japan.

"75% of Fukushima's 300,000 children are going to schools that are so contaminated they would be radiation control areas in nuclear plants where individuals under 18 are not legally allowed. The Japanese government won't evacuate people unless radiation levels are four times what triggered evacuation in Chernobyl," Aileen Mioko Smith pointed out.

The Fukushima earthquake tsunami nuclear power meltdown of March 11 opened the way for a far-reaching debate in Japan, the US and globally that could lead to rethinking the risks of radiation, the viability of nuclear power, and even to its elimination in some countries.

When UN Secretary-General Ban Ki-moon announced that the UN would convene a high-level meeting on nuclear energy and security, Aileen Mioko Smith was meeting in Hokkaido with Izumi Kaori of Stop Tomari, the citizens group campaigning to prevent reopening of the dangerous nuclear power plant. They decided on the spot:

"We've got to go to Washington and New York to tell the world about the urgent threat of nuclear contamination unleashed by the Fukushima nuclear power plant meltdown, the special danger to children, the lies told by the nuclear power industry and the Japanese government, and the urgent need to close the world's most dangerous nuclear power plants."

Together with organic farmers Sato Sachiko of Fukushima and her two children, Anzai Sachiko, an organic farmer near Tomari, and Kevin Kamps, radioactive waste specialist at Beyond Nuclear who visited Fukushima, they have carried the urgent message that nuclear power plants must be closed in light of the disasters from Three Mile Island, Chernobyl and Fukushima. And that the Fukushima disaster presents an extraordinary opportunity to halt nuclear power not only in Germany and Italy where governments have taken prompt action, but in Japan, the United States and elsewhere.

Arriving in Washington on the six month anniversary of the March 11 Fukushima Daiichi meltdown, they have addressed the National Press Club, the US Nuclear Regulatory Commission, and the United Nations Human Rights Commission, as well as participating in an action at the Indian Point Nuclear Power Plant just 38 miles north of New York City. Their central messages to the American and to the Japanese people:

- Save the children of Fukushima and Northeast Japan
- End nuclear power everywhere drawing on the lessons of Three Mile Island, Chernobyl and Fukushima
- Asylum for Fukushima refugees: help both in Japan and abroad.
- UN stop promoting nuclear power.

Given American and global concern about the Fukushima disaster and the future of nuclear power, they were able to gain attention in Washington. Media ranging from CNN as well as NHK and Kyodo News of Japan carried the messages they delivered first to the National Press

Club and subsequently to the Nuclear Regulatory Commission where they also received briefings on nuclear safety. The latter was particularly important since the NRC had called on all US citizens living within 50 miles (80 kilometers) of the Fukushima Daiichi nuclear power plant to leave. The Japanese government concerned about the costs of evacuating Fukushima city limited its evacuation to 20 kilometers with only additional evacuation of areas with expected annual dose of radiation of 20 millisievert or higher, including some hot spots outside that limit. In Chernobyl, citizens living in areas contaminated between 1 and 5 mSv/year received government aid if they wished to resettle.

Precisely the cavalier attitude of the Japanese government, above all its decision to risk the health of infants and children by limiting evacuation to 20 kilometers, has led campaigners to call for learning from the people of Fukushima, not the Japanese government. And its corollary, pointedly expressed by organic farmer Sato Sachiko: "the lesson is that once it happens, it's too big for anyone to deal with. The only solution is to prevent it from happening by closing nuclear power plants." In August, the Fukushima Network for Saving Children from Radiation, Green Action and four other Japanese NGOs submitted a report to the UN Office of the High Commissioner for Human Rights describing the Japanese government's violation of the human rights of Fukushima children and urging the UN come to Japan to investigate the situation.

Sato Sachiko (left) with Smith

In New York City they carried their message to the United Nations and demonstrated in Dag Hammerskjold Plaza. As Japan's Prime Minister Noda Yoshihiko emerged from his speech on nuclear safety and security, where he stated his expectation that Japan would complete cold shutdown of all the reactors that continue to spew radiation into the air and sea, Sato Sachiko, who was addressing a rally outside shouted: "Save the children! You must not lie to the world about things getting better. How can you talk about safe nuclear power when the Japanese government can't even protect the children of Fukushima!"

The group's next stop was the Indian Point Nuclear Power Plant just 36 miles from New York City. "When we met with US officials," Ms Sato commented, "they said they would learn from the lessons of Fukushima. They talked about taking necessary measures out to 50 miles in the event of disaster. But now that I've been here, I realize that there is no possible evacuation plan for the 20 million people within 50 miles of the Indian Point plant.

Indian Point Nuclear Power Plant

As the Japanese delegates pointed out, the most urgent issue concerns the 300,000 children of Fukushima, above all those living in radiation hot spots both in Fukushima and beyond. The heart of the matter is the Japanese government's evacuation policy. Following the meltdown, Japan established a twenty-kilometer evacuation zone from the plant, evacuating approximately 36,000 people out of Fukushima's total population of just over 2 million. Including those who evacuated within the prefecture but outside the twenty kilometer zone, the number is still only a little larger than ten percent of the 400,000 plus evacuated from Chernobyl after the 1986 disaster which turned 2,000 villages into ghost towns. [See Fujioka Atsushi, Understanding the Ongoing Nuclear Disaster in Fukushima: A "Two-Headed Dragon" Descends into the Earth's Biosphere.]

To minimize the number of evacuees, the Japanese government arbitrarily raised the permissible level of annual radiation exposure from one millisievert to twenty mSv, a figure that is being applied not only to adults but to infants and pregnant women, those most vulnerable to radiation. By contrast, following Chernobyl, the Russian and Belorussian states evacuated everyone in localities with five mSv. A quarter of a century later, the evacuated areas remain uninhabitable, a prospect that could confront Fukushima if recent official projections prove accurate.

How high a radiation level is twenty mSv/year? The Japanese government has legally compensated Japanese nuclear power plant workers who contracted cancer from as low as 5.2mSv exposure and higher. Now a substantially higher level of supposed safety (20 mSv) is to be applied to citizens, including infants and children in Japan. Indeed, the Japanese Ministry of Education (MEXT), choosing a strategy of reassurance over one of protection, produced a guide for teachers and parents in Fukushima which claimed that "weak" radiation doses such as 250 mSv over a number of years will have no health effects, and increased cancer risk was not recognized with cumulative doses of under 100 mSv. [Say-Peace Project, **"**Protecting Children Against Radiation: Japanese Citizens Take Radiation Protection into Their Own Hands."]

Much of the discussion of the risk of radiation has centered on cancer. That is indeed an important concern. But the effects of cancer are played out over decades and it is frequently difficult to conclusively pinpoint the cause. What have been the short-term health effects of the Fukushima Daiichi meltdowns?

"With the Japanese government in general, and the Fukushima medical establishment in particular providing no comprehensive statistical health data, indeed, insisting that there are no health concerns, it is presently necessary to rely on evidence provided by Fukushima residents," Smith explains. "These include numerous examples provided by parents who have challenged MEXT and Fukushima authorities demanding evacuation for the children. For example, there have been numerous reports of serious nose bleeding and of diarrhea that cannot be stopped . . . and not just in children. There have also been numerous examples of symptoms of atopic skin diseases and asthma getting worse after the accident."

We know, moreover, that the immediate effects of the Chernobyl disaster included elevated levels of numerous diseases including heart disease as well as birth normalities and stillbirths. [See introduction to Chris Busby, "Fukushima Children at Risk of Heart Disease."]

While the people of Fukushima and Japan's Northeast face serious problems of health, evacuation, and long-term economic disaster, the potential for positive change in the wake of the multiple disasters and especially the Fukushima meltdown now exists. Today just 11 of Japan's nuclear power plants are operating and those that are closed require stress tests before they can reopen. [Note: Following the interview, one more plant was closed pending testing. This presently leaves just 10 in operation.] Since March 11 just one of the closed plants, the dangerous plant at Tomari in Hokkaido has reopened, and it is the subject of an active campaign to Stop Tomari.

Most important, the entire public dialogue has shifted with growing criticism of nuclear power and support for rapid development of renewable energy in the wake of passage of a renewable energy law which establishes a Feed-in Tariff system requiring power companies to purchase locally produced energy. Moreover, Japanese capital, led by businessman Son Masayoshi, has awakened to the potential of renewable energy as the next major frontier for Japanese industry. Finally, the fact that Japan succeeded in conserving energy to avert a serious power shortage with the majority of its nuclear plants closed makes clear the possibility for moving beyond nuclear power to renewable energy in future.

Aileen Mioko Smith, Executive Director, Green Action based in Kyoto, has been working to eliminate Japan's nuclear power reactors since 1983. See this link for updates on the Fukushima Nuclear Power Plant earthquake and tsunami crisis. This interview was conducted in New York City on September 24, 2011. Smith is co-author with W. Eugene Smith of Minamata: Words and Photographs.

Mark Selden is a coordinator of The Asia-Pacific Journal.

"After The Media Has Gone: Fukushima, Suicide and the Legacy of 3.11"
Makiko SEGAWA
May 7, 2012
http://www.japanfocus.org/-Makiko-Segawa/3752

This article focuses on two groups of people most affected by the Fukushima disaster, the local residents of nearby cities and the nuclear power plant workers. The interviews discussed here show citizens who are still skeptical of nuclear power plants and wary of returning to their homes; others have decided to return but are concerned about their safety.

One nuclear worker, describing the Tokyo Electric Power Company's (TEPCO's) position on contaminated water, invokes the longstanding concept of "honne" (honest feelings) and "tatemae" (polite face), suggesting that he feels conflicted about the story being told to others. This is reminiscent of Aileen Mioko Smith's observation that the Japanese Ministry of Education employed "a strategy of reassurance over one of protection" in the pamphlet it created to guide teachers' discussions of the disaster in their classes. But while some locals are concerned about the widespread denial about the dangers of low-dosage radiation exposure, others are reassured that the plants are safe simply because people are working there without visible harm. Further, public officials continue to suggest that conditions are safe in areas where this is likely not the case. In some schoolrooms, the danger of radiation exposure has become a taboo subject although it was freely discussed before.

Segawa begins the article by tracing changes in media coverage of the region. The Fukushima disaster was unsurprisingly followed by a flood of media coverage, which waned in the latter half of 2011, but renewed as the one-year anniversary of the catastrophe approached. After March 2012, there was a dramatic drop-off in media coverage; a significant increase now is unlikely, although they will continue to acknowledge the anniversary every March. The decrease in news about the Fukushima area has lowered scrutiny of local governments; as a result of this diminished oversight, Segawa argues, the mandatory evacuation zone was radically reduced in size. One city that reopened as a result of this change was Minami-soma, the focus of the article.

The daily lives of citizens are affected in various ways. Local people argue that the incidence of crimes such as rape has risen since March and they believe the temporary workers brought in to work in the stricken nuclear plans are to blame. Segawa also discusses suicide; while the official figures show no dramatic increase since the disaster, Segawa brings up the possibility that information has been suppressed to prevent panic.

Segawa implicitly raises the theme of the responsibility of the media to keep an eye on public safety and to discover and report the truth, as the mere skepticism of the public, rampant as it may be, is not enough to shape public policy.

After The Media Has Gone: Fukushima, Suicide and the Legacy of 3.11

Makiko SEGAWA

For the media, time is of the essence in a news story. The March 11, 2011 disaster attracted thousands of reporters and photographers from around the world. There was a brief deluge of Japanese and international media coverage on the first anniversary, this spring. Now the journalists have packed up and gone and by accident or design Japan's government seems to be mobilizing its agenda, aware that it is under less scrutiny.

The press pack has disappeared like a ghost since this April. The influx of foreign media has suddenly stopped, as I can attest since I worked as a translator and aid to many foreign journalists in the year up to the 3.11 anniversary in 2012. Using the keywords 'Fukushima' and 'nuclear plant' in Japanese to scour the Nikkei TELECOM 21 search engine shows 9,981 domestic news items in April 2012, just over half the 17,272 stories the previous month.

As if to take advantage of the precise timing of the media evacuation, the municipal government of Minami-soma city, Fukushima Prefecture began implementing a blueprint planned some time earlier. In the dead of night on Monday April 16th, the city lifted the no-entry regulations and changed evacuation zone designations that had stood since March 12, 2011. The decision allowed people to return to the district of Odaka and some parts of the Haramachi district.

Map showing 20 kilometer evacuation zone and neighboring towns

Watanabe Ichie, a volunteer from Tokyo who witnessed the scene near the roadblock into the zone observed that: "several police vehicles with flashing red lights arrived after 23:00 on April 15th. By 0:15, all the vehicles had gone". "After that, all that remained was the light from the traffic signals." The following morning, cars moved freely inside the once-prohibited area.

Mayor Sakurai's Drive to Reopen Minami-Soma

The home of Minami-soma's mayor, Sakurai Katsunobu, is located in the newly reopened part of Haramachi. He has often complained about what he calls the irrational policy of the government, calculating the exclusion zone by distance rather than the spread of radiation. A former dairy farmer and a passionate booster of the region, he is attached to his land and desperate to quicken the reconstruction of his devastated city, despite the risks.

The 56-year-old mayor has been single all his life and has no children. In interviews, he tends to downplay the risk of radiation. In the first week of May 2011, he even joked: "Fukushima is not the same as Hiroshima or Nagasaki. No one even knows for sure how many people died as a result of the Chernobyl disaster. Regardless of radiation, the cancer rate in our world is quite high. Yet people appear to be afraid of radiation, which is like a ghost that never appears."

The city reopened the no-entry zone in May, insisting that radiation levels in Odaka and some parts of Haramachi had fallen enough to be safe. However, some residents are unhappy with this decision. Shibaguchi Takashi (42), a former acupuncturist and the father of a 6-year-old daughter Nana, refuses to return to his home inside the former exclusion zone, preferring his temporary accommodation. “The city says that the radiation level is completely safe, but when my neighbors checked the radiation level under the eaves of my house, it was over two microsieverts.” (henceforth, μSv) He added: “I am sure that radioactive materials released immediately after the explosion are unchanged on the leaking roof. I believe it is too dangerous to go back there.”

Even if it were safe, Odaka has other problems: “There is no reconstruction of public facilities and infrastructure, and I wonder how we can make a living there.” There is also growing anxiety over the compensation process among evacuees inside the newly liberated zone. Does this mean that compensation is going to be halted, as many fear?

On April 21st, with cherry blossoms in full bloom in Minami-soma, I was shown around Odaka and parts of Haramachi by 73-year-old Otome Takao, the head of a group of local volunteers and owner of a business hotel called “Rokkaku” near a former security check point. The roadblocks were gone and I saw many cars going back and forth inside the area. Lots of police cars were patrolling – neighbors said that as soon as the security check points were lifted, thieves began sneaking into houses.

Cherry blossoms in Minami-soma

The area is like a wasteland. There is almost no life, most facilities are closed, the shopping street is dead and everything has basically frozen in time since March 11, 2011.

Odaka under mountains of debris one year after the earthquake

In many places, water is leaking as the tsunami and earthquake shifted the ground. Debris from the disaster is scattered everywhere, and houses, shrines and infrastructure are badly damaged. By contrast, the cherry trees were in full bloom as if nothing was wrong, regardless of the chaos caused by contamination and radiation.

Some residents, including small children who looked to be under 10 years old were cleaning up the streets in front of their houses from the mud and vegetation washed up by the Tsunami. Near the coastline, others were clearing out the mud from houses that had been partially swallowed up by the water.

April is a symbolic month in Japan because thousands of students enter new schools. Some public schools in the city that were closed amidst fears of high radiation are now able to reopen, based on the results of the local governmental reports on decontamination.

But Miura Bansyo, a Buddhist priest and anti-nuclear activist, has disputed government claims that schools are safe. He and other members of his NGO confirmed radiation of 2 – 9 uSv per hour at a number of spots on the school route around the Ishigami Daiichi Elementary School in February 2012. Disregarding his warnings, the elementary school was reopened on February 27th, accommodating hundreds of pupils.

Odaka-Shrine--deformed by the earthquake

Growing concern about the health risks for children aside, residents of the city appear to be leading ordinary lives. At Yonomori Park, the most popular site for "Hanami" viewing in the city, about a dozen children played in the sand under the beautiful cherry blossom on April 21th – admittedly a much smaller number than usual.

Children at play at Yonomori Park, April 21, 2012 at the peak of cherry blossom viewing

Suzuki Tokiko (64), who lives near the park, detected 0.97 uSv per hour there with her own dosimeter on April 20th. When she informed the city, she says they responded that "The radiation level is low and you can enjoy cherry blossom viewing without problems."

After the crisis began on April 19th, 2011, the Ministry of Education, Culture, Sports, Science and Technology announced that the amount of radiation a child can be exposed to in one year is 20 millisieverts. This figure is 20 times higher than the former exposure ceiling of 1 millisievert per year.

Despite growing concern about the health of children, an experts-panel commissioned by the Cabinet last December 15th rubber-stamped the 20-millisievert cap for exposure per year. The report said, "the risk to health, compared to other cancer-promoting factors, is low. Smoking contains a risk equivalent to 1000-2000 millisieverts, obesity 200-500 millisieverts, and lack of vegetables and passive smoking is equal to 100-200 millisieverts."[1]

Dr. Koide Hiroaki, assistant professor at Kyoto University's Nuclear Reactor Experiment Research Center, criticized those standards in a discussion with the author in January: "Japan is supposed to be a law-abiding country. So, legally, we should not expose ordinary people to more than 1 millisievert a year", he said. He explained, "I am considered 'a radiation worker' since I work at a radiation research laboratory at Kyoto University. The upper limit of radiation exposure per year for me is 20 millisieverts as I am paid in accordance to my exposure to

radiation. Only those with such specialized jobs are allowed exposure to that level of radiation and if they exceed the cap, they have to leave their jobs."

"The government is pushing this standard on ordinary people, including children. That is a very high exposure level that goes beyond the imagination," he said angrily.

A fifth grader (age 11) at Haramachi Daisan Elementary School, alluded to the fact that, among those who remained in the city, radiation has become the elephant in the room. "Now, no one talks about radiation. Teachers used to talk about it but it has stopped since 3 months ago. I no longer hear anything about it."

He reported that 21 students have returned to his class, down from 30 before March 11. He lives in the city with his father, his mother having fled to Hiroshima with his 1-year-old sister. The boy innocently disclosed that his parents' marriage is probably on the rocks because his mum has found a new boyfriend in Hiroshima. Indeed, marriages have been strained by the divisions since 3.11.

Apart from lifting the no-go zone in Odaka and parts of Haramachi, the city government plans to start "disaster area reconstruction support tours", as early as June. The city wants to bring back tourists and is even planning to allow people to experience nuclear hazards by providing them with dosimeters, a city official said.

Spring, Sakura and Suicide

In the beautiful season of spring, under a bed of Sakura petals, there is a hidden facet of life here that the Japan media and the state do little to publicize — the surging suicide rate among evacuees.

Local counselors in northeast Japan agree that suicide cases among the evacuees in temporary houses is rising due to their isolated and hopeless situation after being evacuated from their communities.

The National Police Agency (NPA) announced in January, however, that the three disaster-affected prefectures of Iwate, Miyagi and Fukushima boasted a record-low suicide rate in the decade until 2011. Citing the NPA, the Mainichi newspaper on January 11th reported suicide figures for the year 2011: Iwate (400), Miyagi (483) and Fukushima (525). The national average for the year per prefecture was 652. In 2010, the figure for suicides in Iwate was 467, in Miyagi 620 and in Fukushima 540.[2]

However, many people in the devastated areas are suspicious of the official statistics. Has the government fabricated the figure to avoid panic? Why is the suicide rate in Tohoku so low despite the fact that articles even in the mainstream media have highlighted the problem of suicides in temporary housing?

Domae Syogo, who heads a local NGO called "Kyodo-No-Tsudoi Net" in Iwaki city, 40 kms from the radiation exclusion zone, does not believe the government's figure. He reports that at least 50 people have taken their own lives in temporary houses in Iwaki city. The elderly are the most vulnerable. "In most cases, the evacuees live in isolation and lack communication with others. They choose to die by starvation, refusing to eat." Domae himself has been a witness to inspections conducted after the suicide of an evacuee.

Domae says that the official suicide figures have been fabricated to save face. “Nobody in the bureaucracy wants to take responsibility for the deaths of these people. In order to conceal their fault, police and city officials press hard for cover-ups, such as by classifying the suicides as accidents or death from sickness.”

Suicide cases are expected to grow. Dr. Noda Fumitaka, a psychiatrist at Yotsuya Yui Clinic in Tokyo, explains why. “In the first year after the disaster, people do not have enough room to consider their own psychological health as they are striving so hard to restore their material lives to where they were before the disaster. What they lost returns to them with the strongest impact at around the first-year anniversary.”

“Mental care, especially during this crucial period is vital and we need to take care of these people,” he stresses. At the same time, the number of volunteers coming to Fukushima and northeast Japan has plummeted and many volunteer groups face bankruptcy and the shutdown of their activities for want of donations and staff.

A Crime Wave in the Wake of Disaster

Behind the doors, in Iwaki city, there is another story that rarely appears openly in the media. Violent crimes conducted by nuclear workers at the Fukushima Daiichi nuclear plant.

Iwaki city is the staging area for workers from the plant. Every three months, hundreds of new faces have been coming to the city in rotation; the average period that a worker can work on site is about three months due to the cap on radiation exposure.

Local people near Iwaki’s downtown area complain that the atmosphere and security in their district has changed dramatically for the worse because of these workers. On January 12th, when I tried to tour the entertainment areas of the city’s downtown at around 9 p.m., three female high school students stopped me. “Never go there alone,” they warned. There have been so many rapes in the Tamachi district because stressed-out nuclear workers have been attacking girls!”

One of the girls, 16-year-old Kikuchi Maki, told me the story about an incident involving her 19-year-old friend last April. She said her friend was raped by a man who looked like a nuclear worker in a back alley when she was alone after saying goodbye to her friends downtown between 1:00-2:00 a.m. Although she reported the rape, a policeman in his fifties refused to accept her complaint and sent her home. The three girls said that such rapes were unheard of before 3.11. They have become very cautious even during daytime, avoiding visiting the downtown district alone.

That story is likely the tip of the iceberg. In Iwaki’s entertainment district, there are many similar stories and rumors of rape by nuclear workers whose victims include young hostesses and even the elderly manager of a bar. Alongside the rape cases, Mr. Saito a local resident in his early thirties who works at the Fukushima Daiichi plant tells of a friend who was beaten up by four or five unfamiliar people who spoke the Kyushu dialect. He said the assault, which took place one late night last August after a friend’s wedding, was carried out with a wooden sword and required hospitalization. Saito is sure that the assaulters were nuclear workers.

According to the testimony of residents in the downtown area, nuclear workers have become quieter since last August partly because their companies have slapped a curfew at their hotels after 21:00 and also because temporary houses were built last August to accommodate them.

When I searched for articles on “Rape” and “Iwaki” from the period of March 11th, 2011 to today, I found not a single result. Yet local people claim that these crimes have occurred. Fujinami Keiko, a mother of a high school girl, explained why journalists have not publicized these cases: “The Japanese media do not want to escalate the confrontation against TEPCO, a major sponsor, by picking up on the crimes of their subcontracted workers.”

In Hirono, which hosts the J-Village temporary crisis center, some residents believe that nuclear workers were responsible for a string of thefts inside the red zone. The owner of an inn that accommodates dozens of these workers confided: “I am sure that the thefts have been done by the nuclear workers. In my inn, I see many suspicious people with tattoos and so on.” Rumors are also rife about yakuza who enter the red zone to steal new cars and even expensive pets.

” A nuclear worker who was in charge of supervising the construction site under Kajima Construction company commented: “The thieves are ‘nuclear workers’. Putting the entry-permit issued by TEPCO on the front window of a car means that any nuclear worker can easily pass the security checkpoint. It is very hard to catch them.” In fact, there has not been a single news story about the arrest of nuclear workers for theft within the prohibited zone.

On the one hand, such charges may express the inclination of local people to blame crime on outsiders. On the other hand, we know from places like Okinawa that a concentration of men constrained to tough discipline and stressful working conditions might provoke such crimes. And Fukushima Daiichi has indeed become another war front.

Young Nuclear Workers at Risk

Another aspect of the Daiichi story has not been adequately discussed: the growing number of young nuclear subcontract workers. Approximately half of the workers at the plant since last August are aged 19-35. A radiation expert who has checked hundreds of workers for a major construction company told me that young workers are favored because they can endure physically demanding tasks like lifting heavy objects and climbing heights.

"Older laborers are not useful at all,” a radiation expert said. A 33-year-old nuclear worker in charge of treating the contaminated water at the Daiichi plant indicated that the number of young workers from across Japan has rapidly increased since last summer. “It is double the pay of a normal construction job,” he said. “They make themselves believe that everything will be all right since others the same age are already there".

High unemployment in rural areas appears to be playing a role in boosting the numbers of young nuclear workers. Last December, at newly constructed temporary houses in J-Village, Hirono town, I met dozens of young nuclear workers aged 19-23, originally from Niigata prefecture. They said that they came to Fukushima Daiichi because there was no work at home.

Since the 3.11 memorial event in March, newspaper and TV coverage of nuclear issues and nuclear workers have sharply declined. Will they too be forgotten as the government and TEPCO align their agenda?

Continuous Dumping of Contaminated Water

Possibly angry at this situation, on April 21st a 62-year-old nuclear worker broke the silence on the continued leakage of contaminated water from Fukushima Daiichi. Speaking to me, he requested anonymity for fear of losing his job. He supervises a construction site aimed at

building a new facility to extract radioactive materials such as cesium and strontium from the contaminated water used to cool the plant's crippled reactors. He revealed that the current facility removes only cesium and that other radioactive materials such as strontium cannot be cleaned up.

He expressed astonishment at the scale of the cleanup operation. "You know how much contaminated water is stored at the Fukushima Daiichi site? It is 200,000 tons. It is an enormous amount!" "In reality," he said, raising his voice, "it is impossible to store that much water on site. So, it is obvious that some of the contaminated water has been leaked into the ocean."

TEPCO announced on March 26th, 2012 that approximately 120 tons of water had leaked from a treatment pipe, forcing them to halt operating the treatment facility. Thi was the second time in two weeks that contaminated water leaked from the nuclear power plant.[3]

After being used to cool the reactors, the water contains massive amounts of radioactive substances and is put into the water-processing facility so it can be recycled for use as a coolant. "Everyone there knows that the amount of water is huge but does not speak about it. Anyone who works there understands that nothing can be done except to leak the water!" he stressed. "Everyone criticizes North Korea for its missiles. But what about Japanese morality? The contamination will spread all over the world, reaching to Kamchatka, Hawaii and the U.S. soon," he added.

Toward the end of our conversation, he said, "You know, in Japan, there is 'honne' (honest feeling) and '*tatemae*' (polite-face). "Our *tatemae* is that we are doing our utmost to stop the leakage of contamination, and our *honnne* is that we are dumping massive amounts of contaminated water into the ocean."

After hearing his testimony, on April 25th I watched Japan's Nippon TV special program, "Continued Days of Inspection: The Safety of Tap Water." The program focused on the efforts made by the Water Bureau of the Tokyo Metropolitan Government to deal with concerns over radioactive materials in the water. Officials spoke while the screen showed TV crews at the bureau's site examining the cleanup of radioactive materials. A mother of small children who refuses to drink tap water and instead buys bottled water appeared as a consumer representative. The water official held a lump of soil taken from the water facility and said: "Even though we found 38 becquerels of cesium per kilogram, this is below government standards. So, we can safely drink the water." The announcer stated that the Tokyo Water Bureau updates its water examination every day on their website.

The Ministry of Health, Labor and Welfare in December announced a new standard for safe drinking water of 10 becquerels of cesium per kilogram. The ministry had previously set a provisional standard of 200 becquerels per kilogram (cesium), 300 bec (iodine), 20 bec (uranium) and 1 bec (plutonium) for drinking water, according to the official press release on March 17th.[4]

At the end of the program, a young male announcer concluded saying, "I have an impression that there is still a gap between the endeavors of the water bureau and the mentality of consumers. Today, also, no radioactive materials were detected in the water."

Reflecting on the nuclear whistleblower who warned about the Daiichi cleanup, we must ask whether this assurance of the safety of Tokyo's tap wateris 'tatemae' or 'honnne'?

Makiko SEGAWA is a freelance journalist based in Japan, as well as a translator and guide to overseas media. Her clients include France 24, *The Wall Street Journal* and other European television production companies such as RAI TV, the U.K Performgroup, AB International and Seven Saint Production.

Notes

[1] See here (http://www.asahi.com/national/update/1215/TKY201112150613.html)

[2] NPA Statistics: see here (http://www.npa.go.jp/toukei/index.htm) and here (http://www.npa.go.jp/safetylife/seianki/H23jisatsunojokyo.pdf).

[3] See here (http://www.yomiuri.co.jp/science/news/20120326-OYT1T01018.htm).

[4] See here (http://sankei.jp.msn.com/life/news/111220/trd11122023060015-n1.htm) and here (http://www.mhlw.go.jp/stf/houdou/2r9852000001558e-img/2r9852000001559v.pdf).

"Fukushima Women Against Nuclear Power: Finding a Voice from Tohoku"
David H. Slater
November 9, 2011
http://www.japanfocus.org/events/view/117

This article focuses on the politicization of women following the Fukushima disaster. Slater argues that women are the most "effective anti-nuke spokespersons" because their role as mothers gives them moral authority on issues relating to the safety and health of children. Women from the Tohoku region (which contains Fukushima prefecture) have influenced political conversations all around Japan by organizing protests and issuing statements criticizing the Japanese government. Their actions have inspired more protests in other regions of Japan. One woman, SATO Sachiko, who was mentioned in Smith's article above, travelled to the U.S.A. to extend her message beyond Japan's borders.

The article states the "Fukushima woman" is a powerful symbol because she can unite people from diverse backgrounds by exploiting her role as a mother and caregiver. For instance, safe food and uncontaminated land are vital for rearing children; with neither available in Fukushima, women speak with great moral authority about the future. Thus, it is harder to oppose the "Fukushima woman" than other protestors, such as those who might focus on the corporate and economic disadvantages of nuclear power. Women are also better able to appeal to emotions than men, using "fear,… frustration… and exhaustion" to heighten the impact of their arguments.

The article highlights several protests organized primarily by women who were directly affected by the disaster. The online version of the article also includes a video (with English subtitles) from a protest.[2] The article concludes that although the authority of female protestors originated in their role as caregivers, women from all backgrounds are expressing concerns on a broad range of issues; they are among the most potent voices in Japan.

[2] As of October 19, 2012, the video was available at http://www.youtube.com/watch?v=fnnloSF1ZqQ.

Fukushima Women Against Nuclear Power: Finding a Voice from Tohoku

Introduction by David H. Slater

From the very first, it has been quite difficult to politicize earthquake and tsunami hit Tohoku, despite the poor planning, the slow and uneven response, the failure to provide aid in a timely way in the days and weeks afterward, and the often poorly organized evacuation centers—an issue which resulted in a number of unexplained deaths. Now, the temporary housing facilities virtually insure that communities, or what is left of them, will stay dysfunctional for a while, even as their residents are often the ones called upon to manage their own relief. While the silences of fatalism and the shock of such a terrible disaster have been noted, anyone who has been to the Northeast on a regular basis is aware that the frustration and anger erupt in different ways almost every day. The point, however, is that rarely does it emerge in the unified voices of protest, rarely in coherent demands for systematic help, almost never in anger expressed in a way that the rest of the nation can hear.

In contrast, the threat of nuclear radiation and critiques of the nuclear industry have been skillfully politicized in ways that have led to the largest set of demonstrations in Japan (with the exception of Okinawa) since the US-Japan security treaty protests of the 1960s and 1970s. These protests have been based in Tokyo, utilizing urban networks of activists who have provided the digital framework for organization that has brought together an older generation of anti-nuclear activists, young families, hip urbanites, office workers and union protesters. This is, perhaps ironic, considering that many of the protesters and marchers rarely have contact with Tohoku. The nuclear threat, organizers say, extends beyond Tohoku, even beyond Japan. And indeed, this is the message that has been heard around the world, as the anti-nuke protest and politics were staged with specific reference to Fukushima (sadly, rarely with respect to the wider ‘Tohoku’ region).

Bridging voices

Women, and in particular, mothers, have been quite active in radiation measurement, calls for contaminated soil removal, and efforts to secure safe food since the early months of the crisis. Today, perhaps more than any other group, they have emerged as particularly effective anti-nuke spokespersons. Of course, there is nothing new in women being at the front of social shifts, as seen in work as diverse as Sheldon Garon's *Molding Japanese Minds* and Robin LeBlanc's *Bicycle Citizens* illustrate.

The movement of “Women from Fukushima Against Nukes” (Genptasu iranai Fukushima kara no onnatachi”) is positioned to express a range of issues that respond to and exploit this particular position. The logic of political potency, now as then, relies on the privileged position of women as the core of Japanese society and polity. The eternal maternal role of producer and reproducer of Japanese society and culture has taken an even sharper edge in this age of demographic decline. Today, women as mothers are charged with a more specific and often overtly political task: to do their job of having and nurturing babies to maintain the dwindling population (usually, while also doing part-time jobs). Secondarily, we hear of women in their role as wives, supporters of their husbands, who are off working, not marching. These shifts have positioned woman with an even stronger foundation from which to speak, at least on some nuclear issues. DS

In many of these protests, it is as mothers that women speak out against corporate interests and government policy. They speak as they protect their children, their families; in this capacity, they are forced but also entitled to protest nuclear threats. They have been charged with something more fundamental than capital accumulation, more important than the postwar protection of corporate heath. Feeding children healthy food is more important than feeding the energy demands of a hungry urban popular. In this respect, they are unlike other protesters (compare the stalled anti-poverty movement of the last five years and the "Occupy Tokyo" groups of the last few weeks) who must position themselves outside of society and culture in order to critique politics, running the risk of charges of selfishness when they are expected to suffer in silence. Mothers protesting nuclear contamination (and thus the nuclear power industry) critique politics from within, at the core of public perceptions of Japanese society and culture, and indeed, from the perspective of the 'natural' obligation of reproduction and nurturing another generation. They cannot suffer in silence; they cannot accept some collateral damage as inevitable; to do so would be irresponsible to their children's and to Japan's future.

This broad appeal of Fukushima woman as a symbol has provided common ground across often divided constituencies. As mothers and wives, they are not a threat to men. From Tohoku, they are not pitting a rural backwater provider of energy against a voracious urban consumer. The vaguely NIMBY-odor from the early anti-nuke protests, coming from urban protestors who were more intent on marching and chanting than on conducting relief work in Tokuku, is also at least obscured for the time being; the women's demands begin with the most immediate concerns—safe food, air and play areas for their children—such that opposition to nuclear industry is repositioned as means to that end (rather than the much more abstract fear of an urban population sitting at some remove from Fukushima).

Emotional Response

Women, unlike men, are able to address another range of issues through the recognition and demonstration of the high emotions that confront us all, but is rarely expressed in polite company and serious discourse. Remember when DPJ Economics Minister Kaieda Banri began to cry, on TV? Rather understandable from the pressure and confusion of the moment, as the scope of the tragedy was revealed, and the frustrations of not being able to respond appropriately to it mounted. And yet, there was an outpouring of negative reaction to this performance. Men should not cry, particularly not those in leadership positions. But women who are caught in interviews and on camera addressing governmental or corporate groups are often crying or on the verge of crying. They are doing what their male counter-parts cannot, and when they do it, it means different things. We see the fear (of the nuclear threat), frustration (at the lack of government and corporate cooperation) and exhaustion (from living with uncertainty) as the immediate response to their being mothers, to mothering under intolerable conditions. Note that it is beside the point to try to privilege the "expressive" function of tears against their "instrumental" function, making one more or less authentic and significant. The point is that these are both, at once, authentic, and it is this unity that makes them so powerful. It also transforms the expressions of anger—the politically correct emotional response to injustice—into something that is grounded in a woman's body, in a family, in a community, and maybe, for these reasons, all the more accessible for a nation. It transforms individual anger into collective sentiment that viewers from all over Japan and beyond can feel, can identify with, and can share as the basis of a platform for collective action.

Women's Protests in Action

The ongoing Fukushima disaster has brought attention to earlier studies showing that women and children face a much greater risk of radiation-induced cancer than men.

According to a US National Academy of Sciences study of 2006, the threat to women of radiation-induced cancer is 50% higher than that for men. The results were identical both at legally permitted levels of exposure and at ten times higher levels. Infants and unborn children of either gender are at higher risk than either men or women.

As the NIRS report notes, the differential risk is not limited to cancer. "Radiation harm includes not only cancer and leukemia, but reduced immunity and also reduced fertility, increases in other diseases including heart disease, birth defects including heart defects, other mutations (both heritable and not). When damage is catastrophic to a developing embryo spontaneous abortion or miscarriage of a pregnancy may result."

While anti-nuclear protests held since April have brought together a cross-section of Japanese citizens to oppose nuclear power and helped to sway public opinion – a June public opinion poll indicated that over 80% of Japanese favored at least a gradual phase-out – some of the most consistent and specific demands have come from women's groups which work to draw attention to issues such as the exposure of children to radiation as well as food safety.

Women's groups have been particularly scathing and effective in condemning the government's casualization of exposure – the increase of the permissible exposure rate from 1 to 20 mSv, its inadequate attention to "hotspots" outside of the official evacuation areas, its calculation only of external radiation while ignoring internal radiation, and its spotty food supply oversight.

Sato Sachiko, a 53 year old Fukushima farmer and mother of four is one example of a local woman who has worked tirelessly to get the message out. She reports, "I was able to evacuate my four children out of Fukushima. However, for economic reasons or because of job circumstances and things like that there are lots of people who say 'I want to evacuate but just can't.' There are many places in Fukushima City such as the Oonami and Watari areas where high levels of radiation are being detected. If they don't give immediate support to those who wish to evacuate, children, who are the most vulnerable to radiation, will suffer more and more exposure." There are indeed areas of Fukushima City beyond the official 20 kilometer evacuation zones where radiation levels exceed those of Minami Soma and other localities directly adjacent to the stricken Fukushima Daiichi plant. Women like Sato have campaigned tirelessly to ensure that more are aware of these blindspots in the official stance and to pressure the state to accept responsibility for the safety of children..

Female protest leaders have helped to maintain the momentum of the September 19 protest in Tokyo that attracted 60,000. Hundreds of women, many of them from Fukushima, organized a sit-in protest at the Ministry of Economy, Trade and Industry from October 30-November 5 (poster here)

They call on the government to evacuate children from areas with consistently elevated radiation levels. The group includes women who have long participated in protest against the Fukushima TEPCO plants and many others who have come forward recently. Now, in the wake of 3.11, they have a chance to have their views aired nationwide. Greenpeace has reported on their efforts in a blog entry and has posted a video of the demonstration:

The September 19 Tokyo protest also expanded to include a march on TEPCO.

Supporting protests were organized in other areas such as Osaka, Sapporo, Hiroshima, and other major cities, indicating the national scope of the movement.

As this video of the discussions leading up to the sit-in movement of October 30-November 5 demonstrates, female protestors are not speaking only as mothers or grandmothers. They are engaging in meta-level discussion about Japan's energy future, the role of energy alternatives in post-disaster reconstruction, and similarly broad themes at a time when Japan's energy policies are under critical review.

Fukushima has been the focus of the crisis, but as many reports have documented, radiation dispersion is difficult to predict and certainly does not stop at prefectural or even national boundaries. The need for wide-scale and multifarious testing and measurement seems obvious, but there has been resistance. In Ibaraki Prefecture, one of the regions outside of Fukushima that has seen the highest spikes in radiation level, for example, despite a statement by Health and Welfare Minister Komiyama Yoko that a system of health checks for children should be put in place, the prefecture has called this "unnecessary" because radiation "is at a very low level compared to Fukushima."

While this may be true, it fits with a tendency since March on the part of both central and local governments to label low rates of exposure "safe" that has outraged many members of the public, and particularly mothers in the effected regions. Ibraraki mothers are now stepping up their calls for comprehensive health checks for their children. Whether participating in protests in Tokyo or demanding testing and accountability at the local level, Japanese women have been a powerful presence in post 3.11 civil society.

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November 9, 2011

"Japan's Earthquake-Tsunami-Nuclear Disaster Syndrome: An Unprecedented Form of Catastrophe"

HIROSE Takashi

September 26, 2011
http://www.japanfocus.org/-Hirose-Takashi/3606

Hirose is the author of several books, including *Nuclear Reactor Time Bomb* (2010), which predicted a Fukushima-style disaster. Hirose, like several others included in this reader, represents the voice of the knowledgeable layman; he is not an expert/scholar on nuclear power, but the meticulous research he has done and his own common sense have earned him wide respect. This article is an excerpt from Hirose's new book, *Fukushima Meltdown*.

In the 1990s, Hirose predicted the *genpatsu shinsai* event, or a "Nuclear-Power-Plant-Earthquake Disaster." Hirose is frustrated that even now most Japanese seem to be failing to grasp the significance of the Fukushima disaster: if it happened once, it could happen again. He is particularly upset by the response of the media, the experts they interview, and the government, blaming them for deliberately underestimating the seriousness of the Fukushima crisis, particularly in regard to the human damage it is causing.

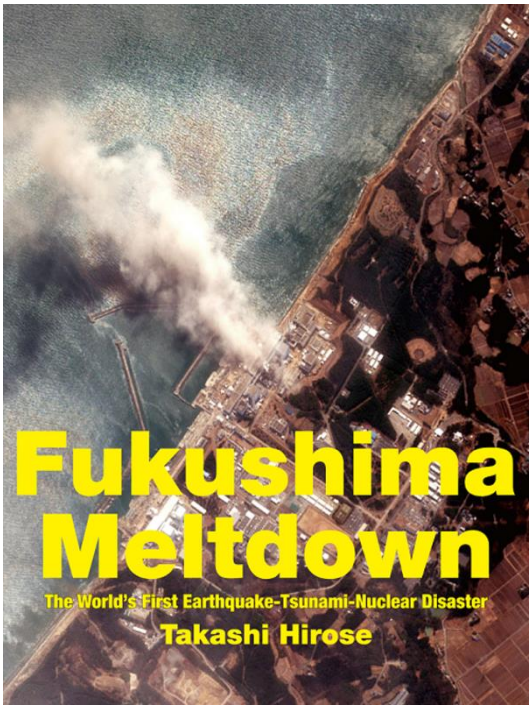
As Hirose explains, there is evidence that the media is deliberately publishing underestimates of the amount of radiation at Fukushima. He strengthens his argument by drawing comparisons between Fukushima and Chernobyl; for instance, one report (from the Nuclear and Industrial Safety Agency, a division of the Japanese Ministry of Economy, Trade and Industry) stated that the radiation released at Fukushima was one-tenth of that at Chernobyl. If this statement is true (and Hirose believes that this estimate is too low), Fukushima would *still* be a huge crisis, based on the effects of the Chernobyl accident. He argues that current policies to protect citizens are woefully inadequate and warns that if nuclear power is not phased out, more *genpatsu shinsai* accidents are inevitable.

Japan's Earthquake-Tsunami-Nuclear Disaster Syndrome: An Unprecedented Form of Catastrophe

Hirose Takashi

Translated by C. Douglas Lummis

The seismologist Ishibashi Katsuhiko (presently Emeritus Professor at Kobe University) predicted that a nuclear power plant accident like the present one was possible, and issued warnings from the late '90s. People had been warning of the danger of earthquake-caused nuclear accidents since the 1970s, but Ishibashi, from the specialized standpoint of seismology, proposed a new concept, which he called *genpatsu shinsai* [Translator's note: this expression literally means Nuclear-Power-Plant-Earthquake Disaster. As there is no English expression for this (the phenomenon itself is new) in this work we will render it as genpatsu shinsai syndrome.]. By this he meant a situation in which, as the damage from the earthquake widens, the situation is made doubly worse by nuclear radiation damage. It was in the hope of preventing this that he was issuing warnings. Ishibashi wrote many books on this, including *Daichidouran no Jidai (The Age of Shifting Earth)* (Iwanami Shinsho) and he is a very well-known scholar, so it is impossible that his warnings were unknown to the officials of the Tokyo Electric Power Company (TEPCO).



I myself published in August of last year (2010) *Genshiro Jigen Bakudan – Daijishin ni Obieru Nihonretto (Nuclear Reactor Time Bomb – The Japanese Archipelago under the Danger of Great Earthquakes)* (Diamond) in which I tried to give the warnings of Ishibashi and others a wider audience, and to call for preventive measures to be taken against a genpatsu shinsai syndrome. Though as for earthquakes and tsunamis I am no more than a layman, I forecast the possibility of such a catastrophe, and wrote about nuclear contamination. It is a terrifying subject. Nevertheless, on the possibility of a genpatsu shinsai syndrome I wrote as follows.

"If you ask, "Will Japan still be here in ten years?" I have the evil foreboding that the answer might be, "There is a very strong chance that it will not" . . . . In the future there awaits an unknowable, vast dark age. I don't want to contemplate its form, but it is the fear of a genpatsu shinsai syndrome brought about by movements of the earth that no human knowledge can control."

Today this evil foreboding has become a reality, and is getting worse day by day. If I, neither a scholar nor a specialist, was able to foresee this, and the nuclear power specialists from TEPCO and from the government's nuclear-related agencies were not, then for what do they exist?

A Mass Media that Reports Neither Facts nor Predictions

When I finished writing *Nuclear Power Plant Time Bomb*, I was hoping deep inside that my assertion that a genpatsu shinsai syndrome was possible would prove to be a mistake. I was praying that nuclear power would be abolished, and the things that I had written would not come to pass. At the same time I resolved within myself that if things did occur as I had described, I would say nothing further.

However, even though now that the genpatsu shinsai syndrome has actually occurred, the people of Japan seem not to have grasped the nature of the crisis. Unbelievably, though anyone who looks can see that the situation is getting worse day by day, television and the other media keep repeating "there is no crisis", "There's nothing to worry about" over and over, and show no inclination to report the critical nature of what is happening at Fukushima Daiichi. The obfuscations such as those I mentioned above, "The tsunami was beyond our expectation", "Such small amounts of radiation have no effect on health", and other statements by government people that obscure the dangers of exposure to radiation step outside the realm of the permissible.

In the past, on television only scholars who are proponents of nuclear power have given commentary as "experts". We listened to them telling their fantastic lies and offering their impossibly optimistic predictions, and as a result the people, having been given none of the facts, have gone on living as normal right up to the edge of the collapse. Now everything the "experts" told us has proved wrong, and the worst has happened. What is remarkable is that these people who failed to predict the genpatsu shinsai syndrome are shameless enough to put on their "expert" masks, reappear on television, and give their commentaries on the accident. The people responsible for the horror of this nuclear accident are the people who promoted nuclear power. The people in the TV stations who brought in this criminal gang and put them on the air day after day are equally responsible. Has there ever been even once that a television station warned the public that a nuclear power plant might be destroyed by an earthquake? Or a station that warned of the danger of a tsunami? After it has happened, even a child can do it.

Their ignorance and incompetence is proved day by day. I will treat this in more detail in Chapter 1, but on 12 March, 2011, when the No. 2 reactor at Fukushima Daiichi underwent a hydrogen explosion and it was clear that the worst had happened and a large amount of radioactive material had escaped outside, the commentators were at pains to persuade us that the crisis was very slight. The mainstream media not only did not warn the people about the danger of a genpatsu shinsai syndrome before it happened, but even after it had, went on broadcasting as if it hadn't. This is going on right now. This is as terrifying as what is happening at the actual site.

Then a month after the accident, on 11 April, the Nuclear Safety Commission (NSC, the Government agency that oversees the nuclear power industry) announced that the Fukushima Daiichi Power Plant "in the first hours after the accident, was emitting as much as 10,000 terabecquerels of radiation per hour (one terabcquerel = one trillion becquerels – bq)", and the Nuclear and Industrial Safety Agency (NISA, an agency of Ministry of Economy, Trade and Industry – METI) acknowledged that the accident was at the same level as Chernobyl. According to data taken between 11 March, the day of the disaster, and April 5 the total amount of radioactive iodine 131 and cesium 137 released into the atmosphere, as of 23 March, was more than 100,000 terabecquerels, several tens of thousands of terabecquerels above the standard for a

Level 7 accident. From the first days after the earthquake I had been saying that huge amounts of radiation were sure to be escaping, but people only pointed their fingers at me as a rumor monger. A month later, the government acknowledged that the "rumor" was true. From day one the situation had reached the highest level for nuclear accidents, Level 7, and from day one the government knew this, but it concealed that information from the people, thus causing far more people to be irradiated than otherwise would have been the case. Or if they were unable to know this from the beginning, this only proves that they have neither competence at measurement nor sound judgment, which is more serious still.

Next, the television stations that announced the news about Level 7 all followed that with repetitions of the NISA statement that still, "the amount of radiation released at Fukushima was only one tenth of that released at Chernobyl".

If Fukushima released one tenth of the radiation released at Chernobyl, what would happen? How many people know how many radiation victims there have been in the three countries that resulted after the demise of the Soviet Union – Russia, the Ukraine, and Belarus? In 2004, 18 years after the accident, the Welfare Ministry of the Ukraine released documents indicating that the Chernobyl accident produced 3,200,000 radiation victims, and that 2,300,000, including 450,000 children, were under government care. The following year the Russian Ministry of Healthcare and Social Development announced that there were in Russia more than 1,450,000 people whose health had been damaged by the Chernobyl accident and 226,000 children born after the accident, and thus under 18, whose health had been damaged by the accident. Among the victims, 46,000 had been certified as physically disabled. In March, 2006, 20 years after the accident, the people whose health had been damaged in Russia, the Ukraine and Belarus numbered 7,000,000. On 26 April, 2009 a memorial was held for the Chernobyl victims in the Ukraine, where more than 2,300,000 people have been officially recognized as radiation victims, and 4,400 who were children or youths at the time of the accident, were irradiated by radioactive iodine, and have been operated on for thyroid cancer. From this we can understand what is going to happen in Japan, whose population density is far greater than that of Russia, the Ukraine and Belarus.

It is people like these, who are unaware of these historical facts, and who remain unabashedly ignorant of the dangers of radiation, who control Japan's mass media. To say that "the radiation released is only one tenth that of Chernobyl", which means that hundreds of thousands of people have been exposed to serious levels of radiation, is to take the shameful position that you are not interested in learning what is going to happen, but only in protecting yourself. This is not easy to forgive.

In the event, I find I am not able to remain silent. When Asahi Shinsho contacted me, I decided that I did have to write one more book. I realized that, to try to save our children and young people, I must make known to as many people as possible, and as soon as possible, the things that the television "experts" refuse to deal with, even though the crisis is upon us: the essential, common-sense facts about nuclear power plants, and the likely form that the next genpatsu shinsai syndrome will take.

If we do not understand the seriousness of the Fukushima Daiichi Power Plant accident, we will certainly be hit by the #2 and #3 genpatsu shinsai syndrome before long. I am positive of this. We absolutely must prevent that from happening. If a genpatsu shinsai syndrome surpassing

Fukushima does occur – then I will surely fall silent. I will write no more books about nuclear power. Writing such books will no longer have any meaning.

Excerpted from Chapter One of Hirose Takashi's newly translated e-book, Fukushima Meltdown: The World's First Earthquake-Tsunami Nuclear Disaster *(Kindle Books). Translated by a team headed by C. Douglas Lummis. The e-book is available from Amazon at $9.99.*

In Japan, one of the loudest, most persistent and best informed of the voices with common sense questions about nuclear power has been that of Hirose Takashi. Mr. Hirose first came into public view with a Swiftean satire he published in 1981, Tokyo e, Genpatsu wo! (Nuclear Power Plants to Tokyo!) *(Shueisha). In that work, he made the argument that, if it is really true that these plants are perfectly safe ("accidents never happen") then why not build them in downtown Tokyo rather than in far-off places? By putting them so far away you lose half the electricity in the wires, and waste all that hot water by pumping it into the ocean instead of delivering it to people's homes where it could be used for baths and cooking. The book outraged a lot of people – especially in Tokyo – and revealed the hypocrisy of the safety argument.*

In the years since then he has published volume after volume on the nuclear power issue – particularly focusing on the absurdity of building a facility that requires absolutely no accidents whatsoever, on an archipelago famous as the earthquake capital of the world. Again and again he made frightening predictions which (as he writes in Fukushima Meltdown*, he was always praying would prove wrong. Tragically, they did not.*

A review of the book by Roger Pulvers is available here (http://www.japantimes.co.jp/text/fl20111023rp.html).

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"A Problem for all Humanity: Nagasaki Writer Hayashi Kyoko Probes the Dangers of Nuclear Energy"
Justin Aukema
December 26, 2011
http://www.japanfocus.org/-Justin-Aukema/3670

Aukema explains that renowned author and atomic-bomb survivor HAYASHI Kyoko is expanding her long-time criticism of nuclear weapons to include nuclear power. Survivors of the atomic bombs, such as Hayashi, are known as *hibakusha*. They often had to struggle to obtain assistance, or even recognition, from the government for their radiation-induced suffering. The voices of the *hibakusha* are an important addition to the discussion of nuclear power; their experience in 1945 give their statements a large impact in the twenty-first century.

Hayashi sees the dangers of radiation as something that affects all humanity, regardless of its source. To her and many others, atomic weapons are too destructive ever to use, and because nuclear power plants have the potential to create the same kind of destruction, such energy should be avoided as well. Building nuclear power plants in Japan's periphery is far from an adequate solution, and is certainly not a moral solution, she believes.

Aukema provides a literary analysis of Hayashi's texts, illustrating the ways in which the atomic bombings and nuclear power are connected in her mind. Her stories depict various reasons why nuclear power should not be Japan's primary source of energy. For example, a 2002 work, *Harvest*, is eerily prescient of the Fukushima crisis. The main character in the story is misinformed by higher authorities about the dangers of radiation following a nuclear accident, and has insufficient information to make good judgments about what action to take. The story warns that when nuclear power plants fail, the government does not keep Japan's citizens safe. Hayashi represents a growing segment of the population that is demanding that dependence on nuclear power be reduced, if not eliminated entirely.

A Problem for all Humanity: Nagasaki Writer Hayashi Kyoko Probes the Dangers of Nuclear Energy

Justin Aukema

Recent works have found renowned author Hayashi Kyoko and A-bomb survivor expanding her criticism of nuclear weapons to include nuclear power. This article looks at her criticisms of the nuclear disasters at Tokaimura in 1999 and Fukushima (ongoing), and her emphasis on the dangers of radiation as one which affects all humanity.

Hayashi Kyoko (1930 -) was fourteen and working at the Mitsubishi arms factory in Nagasaki – less than a kilometer and a half from the epicenter – when the atomic bomb struck. The experience would forever change her life and, eventually provide the central theme during her later career as a writer. Although wishing to sever her ties with what she has called "the worst of fates," Hayashi has also stressed the impact of the bombing on her, writing "there was no way to live, other than by confronting August 9th."[1] Since the publication of *Matsuri no Ba* (The Site of Rituals) in 1975, Hayashi has striven to encourage later generations to think of problems of the legacy of the bomb as their own.[2] One important way in which she has done this, is to highlight the lingering effects of radiation. For Hayashi, the problem of radiation damage does not end with the atomic bombing of Hiroshima and Nagasaki. Rather, it has consequences that affect all humanity.

Writers of atomic bomb literature including Hayashi have long focused on the dangers of nuclear weapons, including the ongoing suffering of Hiroshima and Nagasaki hibakusha. Few have directly criticized nuclear power. American propaganda efforts such as the Atoms for Peace program during the Eisenhower administration were highly successful in winning support for nuclear power in Japan, and even many hibakusha actively supported its "peaceful" uses. Because of this, many hibakusha including, until recently, Nippon Hidankyō (the Japan A-Bomb Victims Association) have been reluctant to speak out concerning disasters at nuclear power plants and the emergence of new waves of radiation victims.[3]

While Hayashi was no exception to this, her attention to the lingering dangers of radiation as a problem that can affect people and the environment for generations to come, is applicable to problems of nuclear power as well. Furthermore, in more recent works Hayashi has turned her attention to nuclear power. In linking nuclear power with nuclear weapons she has created a powerful critique of all forms of atomic energy. Her words in 2011, after the disaster at Fukushima, that "radiation damage is not just the individual experiences of hibakusha, it's a problem for all humanity," reflect the two new insights in her work – an emphasis on the dangers of all forms of atomic energy and the realization that we are all now potential hibakusha.[4]

From Trinity To Trinity (1999 -2000)

While the disaster at the Fukushima TEPCO nuclear power plant in March 2011 put the dangers of nuclear power in the world spotlight, Japanese nuclear plants had experienced earlier disasters including the 1999 accident at a JCO nuclear fuel conversion plant in Tokaimura, Ibaraki, an incident which had a large impact on Hayashi. While she was writing *From Trinity to Trinity*[5], a mishandled nuclear fuel conversion procedure at a JCO processing plant for nuclear fuel exposed three workers to deadly amounts of radiation and made more than 100 other workers hibakusha. Approximately 310,000 residents over a 10 kilometer radius were told to remain in their homes

after radioactive particles, as well as neutron and gamma rays, leaked out of the plant. Ultimately at least 667 people were dangerously exposed to radiation.[6] In *Trinity* Hayashi writes that she saw the news of this incident on television during her visit to the Trinity Site in New Mexico. This prompts her to write a letter to her friend Rui,

Just about an hour ago when I returned to my hotel room, I overheard news of the Tokaimura incident on television. I'm very anxious to know how big the accident was. Tomorrow I depart for Trinity. I can't seem to relax with all the time I have, so I'm writing this letter to you.[7]

Tsukui Nobuko, a writer and interpreter who traveled with Hayashi to New Mexico, notes the impact of the event on Hayashi's work, writing "of course the terrible amazement that we, in the midst of a trip to the very origin of the bomb, felt over the accident at the nuclear plant – a byproduct of nuclear weapons – is dealt with in *Trinity*."[8]

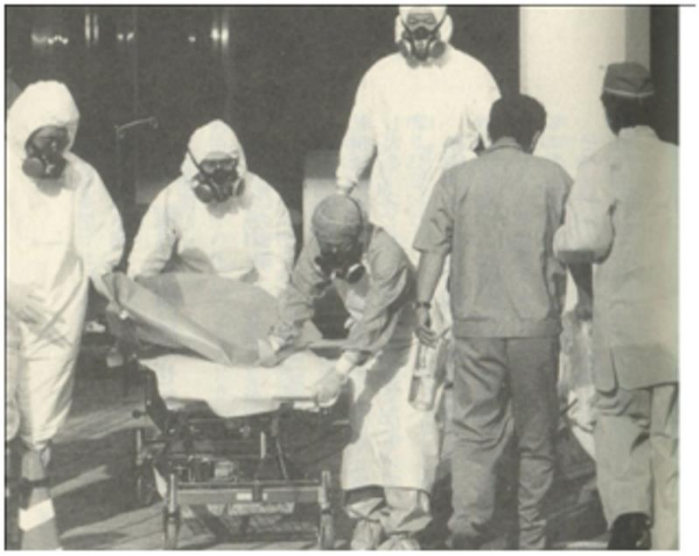

Figure 1: One of the three workers exposed to high-level radiation is carried by stretcher from the JCO plant. (9.30. 1999)

From Trinity to Trinity, written in 1999 and published in the compilation *Nagai Jikan o Kaketa Ningen no Keiken* (Human Experiences Over a Long Time) (2000), is based on Hayashi's trip to the Trinity Site where the first atomic bomb was tested on July 16th, 1945. The narrator of the story mentions that she had wanted to visit the site for some time and, elaborating on her motivations, writes "Trinity is the departure point for my August 9th. It is also the terminus for me as a hibakusha – from Trinity to Trinity."[9] In other words, the path of the atomic bomb that affected the rest of Hayashi's life, started at Trinity. The trip also serves to give a sense of closure to her constant wish to "cut her ties to August 9th."[10] Thus, by coming full circle, Hayashi comes face to face with the tragic history which has resided in her for more than half a century.

In the story, the narrator describes a number of places in New Mexico, including The National Atomic Museum, the Los Alamos National Laboratory, and finally the Trinity Site at the White Sands missile test site. The narrator reflects on American attitudes toward the atomic bombings and nuclear power, and atomic power's relationship with nature. The narrative is broken at many points as she recalls stories from the past, or reflects on things she has read. Much of the story is written as a letter to Rui, who is described as a younger, female friend.

Hayashi expands her focus in *Trinity* to include nuclear power in her criticism of nuclear weapons, and to move beyond the experiences of atomic bomb victims to include victims of other nuclear disasters. While in the past she often used more literal descriptions, such as glass shards embedded in a survivor's body, to describe the lingering effects of radiation, Hayashi

approaches her critique of atomic energy in *Trinity* more subtly and through a greater use of linguistic techniques, metaphor and parable.

One example of this occurs in the language with which Hayashi frames nuclear weapons and nuclear power. In Japanese, the word typically used for atomic bomb is *genshibakudan* (原子爆弾) and for nuclear power *genshiryoku* (原子力). Eschewing these terms however, in *Human Experiences Over a Long Time*, Hayashi often opts for the third term, *kaku* (核) which implies an "atom" or "nucleus" and is best translated into English as nuclear or atomic energy. In *Trinity* when Hayashi stands at Ground Zero of the Trinity Site in New Mexico, she reflects on atomic energy's lasting effects and extends the concept of hibakusha to the natural world, including plants and animals, writing "until I had stood at the Trinity Site, I had thought that the first victims of nuclear energy (kaku) had been humans. This was not the case though, the first hibakusha had been right here." It is not just the nuclear bomb that has the potential to create hibakusha, but all nuclear energy.[11]

Additionally, there is the use of the word *hibaku*. This can be written two ways, 被爆 or 被曝. The first refers to being bombed, especially by an atomic bomb, and contains the nuance of receiving radiation damage. Similarly, *hibakusha* (被爆者) refers to victims of bombings, especially the atomic bombings, and is occasionally defined as one who holds certification from the government as having been exposed to radiation in Hiroshima or Nagasaki. The second writing, 被曝 is defined as being exposed to radiation and includes all victims of radiation damage whether of bombing or radiation associated with nuclear power.[12] In *Human Experiences Over a Long Time*, Hayashi uses this second writing when she talks about internal radiation exposure (*naibu hibaku*) from inhaling radioactive particles. The issue of internal radiation exposure has been of the greatest concern for Hayashi. Many of her works were written as victims of the atomic bombs suffering from radiation sickness were attempting to gain recognition from the government. Ultimately, Hayashi writes, the Japanese government refused to recognize the link between radiation sickness from internal exposure and the atomic bombs.[13]

Hayashi's final example of language in *Trinity* to emphasize the threat of radiation from nuclear energy is through the character Rui. The name Rui is written in katakana (ルイ), the Japanese script used mostly for foreign words or when the author wishes to direct emphasis toward a particular term. Katakana can also be used when the writer wishes to delineate certain boundaries or insert ambiguity around a meaning which might otherwise be implied were the word to be written with Chinese characters. In the case of Rui, it would be apparent to a Japanese reader that the sound "rui" could also be expressed by the character 類, the same character used in the word *jinrui* (人類), or "humanity."[14] In his introduction to Vol. 6 of *The Complete Works of Hayashi Kyoko*, Prof. Kuroko Kazuo of Tsukuba University highlights Hayashi's use of the character "Rui" as symbolic of the larger themes dealt with in *Trinity* and *Human Experiences Over a Long Time*.

The novel depicts the character Rui as a younger friend, however, it is natural to think that the author also implies that Rui represents humanity. When the story is read in this way, the link between Hayashi Kyoko's visit to the Trinity Site and the critical incident that occurred at the JCO nuclear processing plant in Tokaimura, Ibaraki on Sept. 30th, 1999 becomes clear. One strongly thinks that atomic energy versus human beings and the earth is a larger theme than that

dealt with in her previous works, which were based on personal experiences as an A-bomb victim.[15]

Read in this way, Hayashi's message becomes clearer. In the beginning of the story, the narrator recalls a time when she inquired about Rui's age. Avoiding the question, however, Rui responded "I want to be just like you when I grow up."[16] This line could be understood as humanity's fascination with atomic energy – a fascination which threatens the danger of becoming a hibakusha like the narrator or even our own destruction. Later, Rui questions the narrator's intent in visiting the Trinity site, asking if she is "an atomic bomb maniac," a statement reminiscent of criticism that Hayashi has faced throughout her writing career for focusing so single-mindedly on the atomic bombings.[17] Ending both *Trinity* and her letter to Rui, the narrator says, "the world needs not your tests," in reference to the atomic bombs. Then in the very last line, the narrator asks, "what are your thoughts, Rui?"[18] The effect of this line is to force readers to break whatever sense of objectivity might have been felt toward the story and to contemplate Hayashi's message as their own problem.

In *Human Experiences Over a Long Time* Hayashi illustrates the danger of radiation with an increased sense of urgency, reflective of the magnitude of a problem such as nuclear energy versus human beings, a danger illustrated in a number of different scenes in *Trinity*. This ever present danger is wonderfully illustrated through the metaphor of the intruder. Just after a visit to the Science Museum in Los Alamos, the narrator relates an "incident" that occurred shortly before she left Japan. Awakened by a sound during the night, she glimpses the outline of a man outside the door to her garden. The man walks away, but the narrator is terrified and checks to see that all of the doors are locked. In the morning, she is unsure of whether she really saw him, but when she finds something the man had left behind, she is sure. She mentions that, after this event, she installed a security system and was more careful to lock the doors. However, she is unable to regain her previous sense of safety and mentions that the incident made her realize her "own loss of the sense of crisis."

> I had been embracing a groundless sense of security, thinking that our daily peace was protected. On hot summer nights, I would leave the glass door in the hallway open a crack to let the wind blow in and sometimes would forget to lock the door. Danger is always within close proximity. …I don't want an innocent child that I've raised to be touched by violence. When I repeatedly cautioned thus, Kei said, 'If we take appropriate measures and there's still a break in, then that's that.' Yes, yes. But somehow it sounded wrong. Was it alright to be so complacent?[19]

The metaphor of the attempted break in again reflects Hayashi's feeling that, by being exposed to the bomb, a crime had been perpetrated against, not just her, but her children as well, and all who could be susceptible to the effects of radiation. "There are particles of radiation from the atomic bombing in my body," she stated. "That's not just a problem that ends after the bombings of Hiroshima and Nagasaki, that's a problem of genes."[20] In addition, Hayashi speaks of society's complacency in the face of the dangers of radiation. While some of this is addressed to the false sense of security that many are lulled into in presuming that they are safe from attack by nuclear weapons, Hayashi's incorporation of the Tokaimura incident into the story suggests that this same complacency can be displayed toward nuclear power as well.

Harvest (2002)

Two years after writing *Trinity*, Hayashi again returned to the Tōkaimura disaster with *Shūkaku* (Harvest) (2002). This short story depicts an elderly farmer and his son who live right next to the nuclear processing plant. In scenes that eerily anticipate the tragic events later to unfold at Fukushima, the reader witnesses a nuclear disaster unfolding only meters away through the eyes of the main character. Uninformed about the details of the plant next door to his farm, the main character – 74 year old Yamada – goes about his day in typical fashion until the faint sound of sirens within the plant walls begins to sound. Learning about the accident only after watching the news on television, Yamada is eventually told to evacuate along with the rest of the surrounding area. However, unwilling to leave his farm right before the harvest, he decides to stay.

Harvest is significant for Hayashi's writing in that it is one of the first instances in which she focuses in detail on victims of radiation not from the atomic bomb but from nuclear power disasters. What is both striking and tragic in the story is the lack of knowledge of the characters about nuclear power – so much so that the nature of the accident is almost completely beyond their comprehension. Coupled with this is the fact that the language used by the characters could equally be addressing an atomic bomb explosion as another form of nuclear disaster. Here again, Hayashi breaks through the boundaries between nuclear weapons and nuclear power. "What should we do if it's a nuclear explosion," Yamada asks his son in desperation. "A nuclear explosion," his son replies incredulously, "you make it sound as if they're making bombs over there."[21]

Later, however, Yamada's son displays the same desperation and concern when he attempts to convince his father to evacuate with him.

Suppose they're dealing with nuclear fuel over there, then any kind of accident has got to mean that there's radiation involved. And if it's anything like a nuclear explosion, then we're being pierced by radiation stronger than an x-ray.[22]

Yamada and his son's lack of information about nuclear power is in no small part the product of the plant's failure to educate the surrounding populace of its dangers. Near the beginning of the story, Yamada reflects on the wall which was erected right next to his field, to block off the plant.

Although he couldn't see through the wall which blocked one side of the road, it was apparently a plant which manufactured nuclear fuel. At least that's the explanation he had been given before the plant was built. …Since none of his land had been bought up [by the plant] for use though, he hadn't been given any other information. All he knew was that, after the wall had been put up, one part of his potato field had been cut off from sunlight.[23]

After the disaster, Yamada and his son are in danger. Although they hear sirens inside the plant, they receive no warning and are forced to get their information from the television news. This, however, proves to be of little help as

. . .each station simply repeated the same information in a calm, orderly fashion. There was no room for groundless rumors or gossip and no materials with which to compare how things really were.[24]

Eventually, Yamada chooses to remain in his home and complete the harvest of his sweet potatoes. After most of the surrounding area has been voluntarily evacuated, news crews begin to move in right next to his home and scientists come to monitor the level of radiation in his fields. Here again though, Yamada is given conflicting information about the levels of radiation. Radioactive particles are detected in 33 different soil samples from the surrounding area, but he is told that the levels are much lower than normally found in nature. Salt – an indicator of radioactivity – is taken from his house, but the results of this test are never returned to him. One week after the accident, Yamada and his son harvest the potatoes, unaware of whether the fields have been contaminated by radiation. Yamada states that he, "didn't want to ask" if any of the 33 soil samples were taken from his field. Even if it was contaminated, he "couldn't just leave potatoes that were ripe to be harvested" and the 30,000 yen (around $285USD in 1999) compensation being offered "wouldn't make up for anything."[25] At the end of the story Yamada is confronted by a succession of reporters, all of whom convey a sense of disbelief that he had not evacuated. It is this disbelief that strikes a nerve with Yamada, who had never been informed that he was in danger.

The nuclear disaster that Hayashi depicts in *Harvest* through the Tokaimura incident of 1999 takes on new meaning following the 2011 nuclear meltdown at the TEPCO-operated nuclear power plant in Fukushima. The dangers of nuclear power and people's complacency in assuming that it is safe, as well as authorities and the media withholding information, are directly confronted in *From Trinity to Trinity*, *Harvest* and other works in *Human Experience Over a Long Time*.

Figure 2: Officials monitor radiation levels at a radish field, 1km away from the Tokaimura plant (12.2.1999)

Hayashi's linking of radiation poisoning associated both with the bomb and with nuclear power alerts readers to nuclear dangers. Unfortunately however, as American University History Prof. Peter Kuznick has noted in discussing the relationship between the atomic bomb and nuclear power, "the public allowed itself to be convinced that nuclear power was safe and clean. It had forgotten the lessons of Hiroshima and Nagasaki."[26]

Hayashi addresses the crisis at Fukushima

Genbaku o Ikite: Sakuhin to Shogai ga Kataru (Living the Bomb: Speaking from a Life and Works) was published in July 2011 as a booklet by Iwanami Shoten and is written as an interview between Hayashi and Ferris University professor Shimamura Teru. Reflecting on her wartime experiences and career as a writer, Hayashi elaborates on the background behind *From Trinity to Trinity*, and ties together the dangers of radiation from bombs and nuclear power, especially in light of the disaster at Fukushima.

Hayashi again confronts nuclear energy as the combined danger of nuclear weapons and nuclear power through her use of the word *kaku*. In speaking of her trip to the Trinity site, she reflects on the problem of radiation for the modern age.

The Ground Zero monument that stands at the Trinity site is the warning sign that humans have plunged into the nuclear (kaku) age. Damage from radiation isn't just a special right of victims of the atomic bombings, but is a problem for all those with an awareness of the dangers of nuclear energy (kaku).[27]

Later, she reflects further on how her visit to the Trinity site was intended to bring closure to her personal journey fighting against nuclear weapons, and to break away from August 9th. However, seeing the damage that nuclear power caused to the animals and environment at the test site, and observing the lingering effects of radiation, she was led to think of the effects of radiation on humanity and nature in larger terms than before. This led her to state in *Living the Bomb* that "as one hibakusha, I clearly came to understand that humans and nuclear energy cannot coexist."[28] Linking her criticism of nuclear energy (kaku) to the March disaster at Fukushima, Hayashi states:

People today think of nuclear energy only as a fuel source. There are still many hibakusha from August 6th and 9th alive in Japan. Although it comes in different forms, we're supposed to have learned what kind of effect atomic energy (*kaku*) has on humanity. At least politicians and experts are supposed to understand this. I'm simply astounded that this country still hasn't learned from our experiences. Why don't such intelligent people understand that, no matter what the situation, atomic energy (*kaku*) is never beneficial?[29]

Hayashi also uses both writings of *hibaku* and refers to all victims of radiation damage as *hibakusha* (被曝者) as well. Interviewer Shimamura states that "nuclear power plants are, by their very nature, a structure that produces *hibakusha* (被曝者). Even if there are no more incidents with explosions, in order to continue maintaining the plants, the workers will continue to be exposed to radiation (被曝)."[30]

Once again, it is internal exposure (*naibu hibaku*) that concerns Hayashi. "For me," she writes, "the issue of the 'internal' has been much more important. The 'internal' can cause all sorts of illness."[31] After Fukushima, internal radiation damage became a great concern amongst the public, and the terms *hibaku* and *hibakusha* to refer to all victims of radiation damage came into much greater use. In August 2011 Japanese author Oe Kenzaburo quoted Hida Shuntaro, a Hiroshima hibakusha and doctor also often quoted by Hayashi, urging the government to conduct research into treatment for "victims of internal radiation damage" (*naibu hibakusha*) as well as "establish a system to deal with the possibility of new hibakusha (ヒバクシャ).[32] Oe took the universality of "hibakusha" even further, by writing the word in Japanese *katakana* script, without any Chinese characters. This removes the previous linguistic boundary that distinguished A-bomb victims and victims of other radiation damage.

After Fukushima, Hayashi spoke with renewed urgency, and at times abandoned metaphor to speak more directly. In a June, 2011 interview with Japan's leading business newspaper, the *Nihon Keizai Shinbun*, she addressed the connection of nuclear weapons and nuclear power as follows:

Atomic bombs are different from what powers nuclear plants. Yet, at their core, they are the same nuclear matter. When you carry this line of thought to connect August 9th and Fukushima, it is apparent that both pose problems of how one thinks about human life.[33]

The value of human life is fundamental for Hayashi and it runs through all of the works examined here. As an atomic bomb victim, she has witnessed and shared the history of hibakusha, from their struggle to gain recognition from the government, to their discrimination in society and lifelong suffering from radiation. In 2011's *Living the Bomb* Hayashi further explains some of the metaphors used in *From Trinity to Trinity* and *Harvest*, tying them to the concept of the value of human life, and its relation to the disaster at Fukushima. Through these examples, we see that some of Hayashi's most pointed criticisms of nuclear power were made as early as 1999, well before Fukushima.

One of these examples is the metaphor of the Spanish conquistadores in *Trinity*. The narrator uses the story to transition between her time just after visiting the National Atomic Museum and just before traveling by car through the New Mexico countryside. "It's written in the *History of World Exploration*" she begins, "that Spaniards began colonizing New Mexico in 1598." And she continues,

Santa Fe is interesting in the history of conquest. Any land that people set their eyes on seems to have an enticing charm before it has ever been trodden… Enticed by the native American legend, exploration parties passed through Santa Fe as they made their way east and west in search of the city of treasure and gold. … Most of the explorations ended in failure. The explorers either suffered from internal divisions or became entangled in local disputes that ended in bloodshed.[34]

Beneath the surface of this critique of European expansion, these words touch on a more fundamental issue for Hayashi – the concept of center versus periphery. The nuclear power plants in Japan, such as those at Tokaimura and at Fukushima are located far from the hub of empire – Tokyo. When accidents happened, it was not the people of Tokyo who were threatened, but the people who lived near the plants – the farmers, and members of other rural communities.

This is something that Shimamura, in his discussion with Hayashi, elaborates on in *Living the Bomb* where he exposes the harsh reality of the power politics involved in the Japanese nuclear industry. Speaking first to the origin and connection of the Trinity Site with the European colonizers, he points out,

The European colonizers chased the Native Americans out one after another and snatched up increasingly large portions of their land. It was on that land that they conducted the nuclear test. In other words, it was built upon the plunder and cheap purchase of lives. I think that nuclear power plants are the same – they are founded upon lives which are looked down upon and cheaply bargained for. Whether in Fukushima or Aomori or Fukui, nuclear power plants are located where there is a bounty of nature. In other words, none are located in urban areas or industrialized areas.[35]

The issue of discrimination of center against periphery, central to both *Trinity* and *Harvest*, is one on which Hayashi elaborates on in *Living the Bomb*. Relating a story of a conversation with her friend, a doctor who had worked with hibakusha since the end of the war, Hayashi asks why the United States would set an 80 kilometer evacuation zone, while the Japanese Government only set a mandatory 20km evacuation zone around the crippled nuclear plant in Fukushima.

"It's a matter of human life," the doctor explains, "a difference of the extent to which basic human rights are recognized."[36]

Hayashi states that only from one other person – a doctor who had worked with patients of the Chernobyl disaster and urged mandatory evacuation 30km around the plant at Fukushima – did she hear similar words used in the mainstream media. "It was only from this one doctor," Hayashi says, "from whom I heard the words 'human life.'" This leads her to conclude that "in this country, the weak are discarded."[37]

In return for accepting nuclear reactors, struggling rural economies like those in Fukushima received subsidies from the central government, and the promise of jobs and prosperity. Like nuclear power plants, U.S. military bases in Japan are also located in the periphery, with an overwhelming amount in Okinawa. Vancouver Peace Philosophy Centre director Satoko Oka Norimatsu has noted that the national government's positioning of nuclear power plants and U.S. military bases far from Tokyo is rooted in policies which discriminate "against the periphery to assure the protection of the state and guarantee the energy needs of the metropolis."[38] Norimatsu cites the use of the word *kimin*, or "abandoned people," to describe the plights of the people in Fukushima and Okinawa.

When Hayashi speaks of discrimination and the value of human life to lament the actions of the government after the disaster at Fukushima, she speaks from a lifetime of living with the damaging effects of radiation as a hibakusha, and out of concern for future generations. Recalling the struggles of Nagasaki and Hiroshima hibakusha to gain recognition from the government, she worries about how the long term human effects of radiation from Fukushima will be dealt with, stating:

Amongst my hibakusha friends, many have repeatedly been in and out of the hospital. However, even if they submitted the forms to gain recognition as suffering from radiation sickness, their claims were continually rejected on the grounds that there was no connection between the atomic bomb and their sickness, or that the cause was unclear.[39]

Recognition based on the often invisible effects of internal radiation damage, the issue that has been most important for Hayashi, was repeatedly denied by the government. After the disaster at Fukushima, however, the issue of internal radiation damage (*naibu hibaku*) was raised publically for the first time. "As soon as I heard these words, I broke into tears," Hayashi said. "So they had known about internal radiation damage all along."[40]

Through metaphor and language in *From Trinity to Trinity*, *Harvest*, and other stories in *Human Experience Over a Long Time*, Hayashi directs her lifelong message about the dangers of radiation and the struggles of hibakusha to encompass atomic power in general. In this way, she effectively directs comment and criticism that speaks to contemporary issues of nuclear power—both the atomic bomb and nuclear energy. Hayashi has long sought to shake readers out of complacency over the dangers of atomic energy and, as John Whittier Treat has written in his comprehensive study of atomic bomb writers, endeavored to "make the bombing a present-day problem for a world that only looks as if it is at peace."[41] Drawing on her lifelong experiences with the atomic bomb, Hayashi seeks to assure that humanity will no longer have to have to face tragedy at the hand of the atom, whether atomic bombs or atomic power.

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Images

Image 1: Shimizu Shuji and Noguchi Kunikazu. *Rinkai Hibaku no Shougeki: Ima aratamete tō genshiryoku*. (Tokyo: Liberta, 2000),13.

Image 2: Rinkai Jiko no Taiken wo Kiroku Suru Kai. *Tokaimura Rinkai Jiko no Machi kara: 1999nen 9gatsu 30nichi Jiko Taiken no Shōgen*. (Tokyo: Morimoto, 2001), 51.

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For further information on and works by Hayashi Kyoko in English, please see Kyoko Selden's excellent translations, the following of which are available at Japan Focus.

Notes

[1] Hayashi Kyoko, *Hayashi Kyoko Zenshū*, (The Complete Works of Hayashi Kyoko) Vol.6. (Tokyo: Nihon Tosho Sentā, 2005), 9, 64.

[2] *Hibakusha* (被爆者) refers to a person who was exposed to the atomic bombing and suffers from radiation poisoning and other effects. More on the uses of the word will be discussed later.

[3] Yuki Tanaka and Peter Kuznick. "Japan, the Atomic Bomb, and the 'Peaceful Uses of Nuclear Power.'" *The Asia – Pacific Journal, Vol. 9, Issue 18, No. 1*, (2 May, 2011)

[4] Hayashi Kyoko. *Hibaku o Ikite: Sakuhin to Shōgai o Kataru*. (Living the Bomb: Speaking from a Life and Works) (Tokyo: Iwanami Shoten, 2011), 26.

[5] "From Trinity to Trinity" (Torinitī kara Torinitī e) is the second of the two novellas in Human Experiences Over a Long Time (Nagai jikan wo kaketa ningen no keiken, 2000, Noma Literary Prize). Translation by Kyoko Selden, *The Asia-Pacific Journal*, link.

[6] Figures were taken from Hayashi, *Living the Bomb*, 51 and can also be found in "Criticality accident at Tokai nuclear fuel plant (Japan)." World Information Service on Energy. 14 December 2010, link. The Tokaimura incident occurred on September 30th, 1999. JCO is a subsidiary of Sumitomo Metal Mining. For more in depth analysis see, for example, Nanasawa Kiyoshi. *Tokaimura Rinkaijiko e no Michi* (The Road to the Tokaimura Criticality Accident). (Tokyo: Iwanami Shoten, 2005).

[7] Hayashi Kyoko. *Human Experiences Over a Long Time*. (Tokyo: Kodansha, 2000), 156.

[8] Tsukui Nobuko. "Genten e no tabi: Hayashi Kyoko sakuhinkō," (Journey to the Source: A Look at one of Hayashi Kyoko's works). *Meisei Daigaku Kenkyū Kiyō – Jinbun Gakubu*, v. 39. (March, 2003), 61.

[9] Hayashi Kyoko. *Human Experiences Over a Long Time*. 136.

[10] Ibid., 134.

[11] Hayashi, *Human Experiences Over a Long Time*, 171.

[12] Definitions based on a survey of five dictionaries: *Nihongo Daijiten*, Vol. 2. Shogakukan, (1972, 2001); *Nihongo Daijiten*, Vol. 2. Kodansha (1995); *Gakken Kokugo Daijiten*. Gakushūkenkyūsha, (1998); *Nihongo Daijiten*, Seisen ban. Shogakukan, (2006); *Kojien*. Iwanami Shoten, (1998). The two writings of *hibaku* are often confused, and some dictionaries list them under the same heading.

[13] Hayashi, *Human Experiences Over a Long Time*, 16-17 as well as Hayashi, *Living the Bomb*, 43-44.

[14] Other critics who have discussed this include Kuroko Kazuo in Hayashi Kyoko, *The Complete Works of Hayashi Kyoko* v.6, 494 and Tsukui Nobuko "Genten he no Tabi: Hayashi Kyoko Sakuhinkou," 63 – 64.

[15] Hayashi, *The Complete Works of Hayashi Kyoko*, Vol. .6. (Tokyo: Nihon Tosho Sentā, 2005), 494.

[16] Hayashi, *Human Experiences Over a Long Time*, 129.

[17] Ibid., 133. For more criticism of Hayashi see Nakagami Kenji and other critics in John Whittier Treat, *Writing Ground Zero: Japanese Literature and the Atomic Bomb*. (Chicago: University of Chicago Press, 1995), 107 – 120 as well as Hayashi, *Living the Bomb*, 24 – 27.

[18] Hayashi, *Human Experiences Over a Long Time*, 179.

[19] Ibid., 161.

[20] Hayashi, *Living the Bomb*, 28.

[21] Hayashi, *The Complete Works of Hayashi Kyoko*, v.6, 266-267.

[22] Ibid., 267.

[23] Ibid., 265.

[24] Ibid., 268-69.

[25] Ibid., 274-75

[26] Yuki Tanaka and Peter Kuznick. "Japan, the Atomic Bomb, and the 'Peaceful Uses of Nuclear Power.'"

[27] Hayashi, *Living the Bomb*, 32.

[28] Ibid., 41.

[29] Ibid., 42.

[30] Ibid., 45

[31] Ibid., 28

[33] Shiraki Midori. "Nagasaki Hibakusha ga mita 'Fukushima' – Sakka Hayashi Kyoko san ('Fukushima' as seen by Nagasaki hibakusha Hayashi Kyoko)." *Nihon Keizai Shinbun*, 22 June 2011.

[34] Hayashi, *Human Experience Over a Long Time*, 146 – 148.

[35] Hayashi, *Living the Bomb*, 45.

[36] Ibid., 42.

[37] Ibid., 43.

[38] Satoko Oka Norimatsu. "Fukushima and Okinawa – the 'Abandoned People' and Civic Empowerment." *The Asia-Pacific Journal*, Vol. 9, Issue 47, No. 3 (21 Nov. 2011)

[39] Ibid., 43.

[40] Ibid., 43

[41] Treat, John Whittier. *Writing Ground Zero: Japanese Literature and the Atomic Bomb*. (Chicago: University of Chicago Press, 1995), 321.

"Creating a Solar Belt in East Japan: The Energy Future"
SON Masayoshi with Andrew DeWit
September 19, 2011
http://www.japanfocus.org/-Andrew-DeWit/3603

This article provides an unusual corporate perspective on nuclear power from SON Masayoshi, the CEO of SoftBank, a Japanese telecommunications company. The Fukushima disaster led him to oppose nuclear power and take up the cause of renewable energy. Son's stance is especially significant because he has broken with the rest of big business in Japan, leaving the "nuclear village" behind.

Son discusses some of the inadequacies of government and corporations revealed by the Fukushima disaster, such as the inadequacy of cellphone networks, a technological failure that made it difficult to provide immediate relief. Even more troubling, he says, TEPCO and the Japanese government deliberately spread misinformation, a moral failure that certainly endangered many citizens. After criticizing his own firm, TEPCO, and the government, Son explains that he launched a website to help coordinate recovery efforts following the 3/11 earthquake, and he established the Renewable Energy Foundation, which pushes the government to adopt policies favorable to renewable energy. He argues that nuclear power is not a sustainable option on financial grounds either; the Fukushima disaster, costing both lives and money, proved that nuclear power is too expensive and should be phased out. Even without the added costs of recovery from disasters, nuclear power is actually three times more expensive than commonly believed. Son had heard repeatedly that the unit cost of nuclear power is 5-6 yen for each kilowatt-hour (kWh) of energy produced, but he recently examined the official figures and was surprised to see a pre-accident unit cost of 15-20 yen/kWh. Son therefore urges the Japanese government to adopt a pro-renewable energy policy, particularly focusing on solar power.

Creating a Solar Belt in East Japan: The Energy Future

Son Masayoshi with an introduction by Andrew DeWit

Introduction

This article by Softbank CEO Son Masayoshi outlines the thinking of one of Japan's most innovative capitalists and public-spirited citizens. Having helped create a competitive market in telecommunications, Son is now aimed at liberating and greening Japan's YEN 16 trillion electricity industry. In addition to the efforts he outlines in the article, Son inaugurated his Japan Renewable Energy Foundation on September 12. This Foundation is to be led by Tomas Kaberger, the former Director General of the Swedish Energy Agency. It includes a stellar cast of international experts on renewable energy, associated support policies (especially the feed in tariff), and other aspects of the ongoing energy revolution. Through these initiatives and the plan for a "solar belt," described in this article, Son has been instrumental in defining a new direction for Japan in the wake of Fukushima. Without Son putting renewable energy so squarely and credibly on the public agenda, Japan might have succumbed to the enormous pressure from Keidanren, METI, TEPCO and other elements of the nuclear village to maintain the unsustainable status quo.

Son Masayoshi

In fact, the fight over Japan's energy options is not at all ended. The nuclear village's effort to portray Fukushima as merely a setback has failed in the face of the facts, of course. Among recent surveys results, we find those that indicate as much as 100,000,000 m³ of Fukushima's topsoil has been irradiated by the meltdowns, an enormous quantity whose disposal, both its logistics and its cost, simply staggers the mind. In the meantime, the Ministry of Economy Trade and Industry (METI) is in a struggle with the financial institutions that lent trillions of yen to TEPCO and now want the state to ensure that they are completely reimbursed. The nuclear village and its hired guns in the academic and administrative and political sectors have worked together to craft a mechanism through which compensation will almost inevitably be torn out of the public budget as well as the pockets of utility ratepayers. The ricketiness of the scheme suggests it can only hold together if the 10 regional monopolized utilities and their risky nuclear assets are maintained largely as is. It is thus easy to understand why the establishment is furious at Son's effort to apply "creative destruction" to their vested interests in Japan's power markets.

Softbank's role is of course not the only element that is driving Japan so rapidly towards fulfilling its longstanding commitment to be a green leader. Another is the fact that Tohoku was so heavily devastated by the March 11 earthquake and tsunami. The rebuild gives Japan the opportunity to rebuild smart, which has become common sense within the committees devising the plans for reconstruction. METI recently released the results of one of its own in-house

academic studies showing that global renewable energy and associated infrastructure businesses already reached YEN 30 trillion in 2010. The study also projects that the global industry will expand to about ¥80 trillion by 2020. The question of whether Japan plays a leading role in the process remains open.

A smart approach to rebuilding the devastated area could serve as a template for restructuring power markets within Japan. This needs to be done, as the International Energy Association argues, because Japan is balkanized into 10 regional and monopolized utilities that have very little interaction among each other as a power market. Son in fact proposed a YEN 2 trillion plan for this kind of "supergid" at the inauguration of his Japan Renewable Energy Foundation.

The IEA also points to the opportunity for extending this power market throughout the East Asian region, something Son discussed with South Korean President Lee last May as well as formally proposed during his September 12 talk. In short, initial possibilities now exist for a regionwide energy transformation

A few decades on, when the history of this stressful period in Japanese politics and business is written, Son will rank as a leader with vision and courage. By contrast, the costs of the nuclear village will still be burdening public health and public finance. - Andrew DeWit

Cell phone networks collapsed

I was shocked by the Great East Japan Earthquake. These days I carry a Geiger counter wherever I go and I was surprised when I went to the Kansai area last week and the device registered double digits like I had seen in Tokyo. Radiation now spreads beyond Tohoku and Kanto to the west as well.

One thing that I, as an operator of a cell phone business, was reminded from this earthquake and tsunami is that although cell phones are wireless, stations are wired with optical fiber cables, and when these are broken or power fails, cell phones do not work at all. When we lose electricity and the network is crippled, cell phones are completely out of service.

SoftBank phones also lacked sufficient functioning for receiving earthquake early warnings, so I have decided to equip nearly every phone in the future with this function.

In terms of recovery support, we are currently preparing to establish a foundation to aid and support disaster-hit areas, in hopes of bringing together the goodwill of the entire nation.

While I was wondering if there is anything I could do as an individual citizen in fields that do not necessarily have direct relation with my primary business, I launched a portal site specializing in recovery assistance in an effort to create a system that collaborates with local autonomies and

non-profit organizations (NPOs). The site joins forces with volunteers to develop tools to manage insufficient supplies to eliminate the imbalance of accumulated supplies not reaching those who truly need them, or a system that allows individual supporters to support individual evacuees in ways such as a certain volunteer visiting a certain evacuation camp to report on what supplies are needed. The site also provides information on evacuee reception, evacuation camps, NPOs and donations. The site's being accessed two million times a day, or 60 million a month, has made me feel the enormous demand for this service.

The Great Hanshin-Awaji Earthquake occurred in 1995, which was when Yahoo! launched and the Internet was in its early stages. Cell phones had only spread to about 10% of the population and the ability to access the Internet from them was very limited. I had not yet entered the cell phone business and in a sense considered it none of my business. But seeing cell phone networks fail before my very eyes this time around, I was deeply shocked. Lives may have been saved had cell phones worked.

And looking at questionnaires filled out at disaster-hit areas, I found that many people wanted cell phones to work more than they wanted food or anything else. This made me again think of my responsibility and my powerless was indescribably frustrating.

So I resolved that SoftBank will offer earthquake orphans free cell phone service until they turn 18 years old, all disaster-hit areas and evacuation camps will be given free public iPads, and I personally will donate 10 billion yen together with my executive pay.

How should we counter international misinformation and its effects?

I personally visited an evacuation camp in Fukushima. A high level of caesium 137 six times that found in evacuated areas around the Chernobyl plant was detected from soil in Iidate Village, and radioactive contamination was going to remain for a long time. Fukushima evacuees are suffering severe anxiety.

I conducted a questionnaire from my Twitter account on the government policy concerning voluntary evacuation within the 20-30 km radius, and 85% responded that the policy is too vague and indecisive regarding what people should do. When left to decide for themselves, and if elderly people living alone or bedridden patients cannot evacuate, those who support them with food, gas and other provisions would have to remain as well, this would increase the number of victims.

Mistaken information about radiation and its effects has spread not only throughout the nation but overseas as well. The trend of avoiding Japanese products is seen not only with vegetables and other food but with industrial goods as well. To eradicate such damage from misinformation, we must announce our figures measured under the Nuclear and Industrial Safety Agency (NISA) standard together with the global International Atomic Energy Agency (IAEA) standard. No matter how well thought out the Japanese original standard may be the world will not accept it.

For example, the IAEA standard for soil surveys samples a 1 square meter layer of soil 1-3 cm below the surface and measures becquerels per square meter. But the Japanese standard samples soil 5 cm from the surface and measures becquerels per kilogram. Dust and particles carry and spread radioactive elements, which take time to penetrate 5 cm into the soil. Foreign nations, at least, see that the Japanese method would yield lower figures, and doubts spread that Japanese figures might possibly be lower than the actual state.

Something else also concerns me. On April 6, the Ministry of Internal Affairs and Communications issued an official notice requesting "relevant ministries and agencies to collaborate against comments and information on the Internet that violate laws or public order, asking website operators to voluntarily delete them and taking appropriate action against such operators," which was also posted on its website. This is an extremely dangerous idea that could lead to repression of free speech. We know very well having seen revolutions in Tunisia, Egypt and other Middle Eastern regions how governments that repress free speech on the Internet end up.

I understand that the government has no intention of controlling the Internet, but I sincerely hope it will be extremely careful on this issue. Some foreign nations are already commenting that they hope to see nothing resembling speech repression in advanced and democratic Japan. I offer my strong warning for the sake of Japan's trust.

Nuclear power plant construction peaked in the mid-'80s

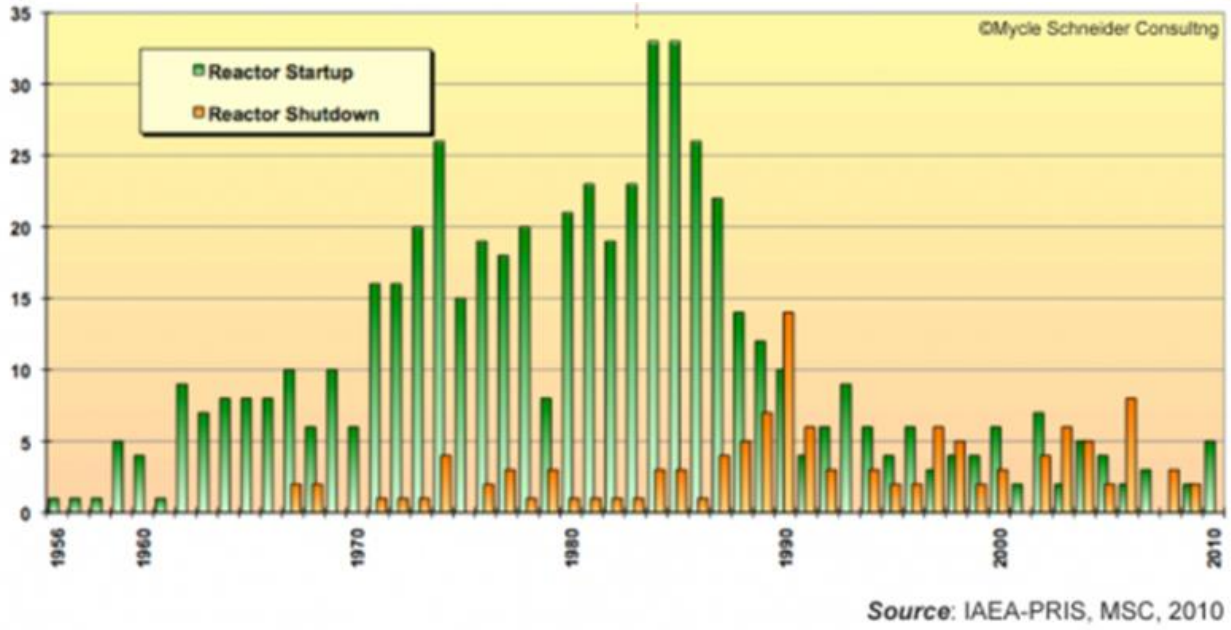
Telecommunications cannot work without electricity, and nuclear power plants are dangerous, but electricity in Japan will not come without nuclear power plants. At least this is what I had thought. I did some research on this and learned quite a few things.

In responding to the nuclear plant incident, Prime Minister Kan has already made his stand clear on three points: We need to reevaluate the conventional safety standards (on existing nuclear power plants); we need to evaluate (plans for building new plants) from scratch and we will pursue safety in nuclear power while we work proactively toward clean energy." I am in favor of these ideas. I wish to offer some specific suggestions to push them further.

As we are well aware, Japan's power production is comprised of 30% nuclear energy, 9% hydro-electric and other natural energy and 61% thermal energy. People panicked that if we lose nuclear plants we would lack electricity and the Kanto area would have to undergo rolling blackouts. But arguments that began several days ago are saying that we could probably get along without nuclear power by increasing thermal power.

How long does a nuclear power plant last anyway? A reactor pressure vessel deteriorates as neutrons continue bouncing against it, and becomes more fragile against earthquakes and rising temperatures. When we look at the lifespan of nuclear power plants around the world until shutdown, we find that the average is 22 years. I was very surprised that few in the world remain in operation beyond 40 years.

Fig. 1: Reactor startups and shutdowns in the world (1956 to Sept. 10, 2010)



Just because nuclear power plants are dangerous, we realistically cannot stop them today at this very instant. But if we intentionally halted nuclear plants when they reached a 40-year lifespan, the power they produced would naturally decline unless we constructed new ones.

Until a month ago, I had believed that nuclear power was the global trend and that nations around the world are building more nuclear power plants in order to reduce carbon dioxide. But the nuclear power plant boom was actually in the mid-1980s (Figure 1). Hardly any new nuclear plants were built after this period. This amazed me.

If we were to maintain the current level of electrical power provided by nuclear plants, we would have to build so many of them again, as we did in the ’80s when production peaked. But having experienced the Fukushima events, would the world welcome a move toward constructing new nuclear power plants when we have so few of them now? I think we the people need to discuss this issue again.

Either way, as the prime minister says, we must raise operation safety standards of existing nuclear power plants. Some of my suggestions are: (1) Principally halt all reactors whose lives have expired, (2) Prohibit exchange of executives/officials among the Ministry of Economy, Trade and Industry (METI), Nuclear Safety Commission, Nuclear Industrial and Safety Agency (NISA) and the power companies, (3) Toughen safety assessments concerning cracks and other abnormalities, (4) Safely disclose information on abnormalities, (5) Release IAEA international standard figures together with Japanese figures and (6) Reevaluate operation of plants in areas of heightened earthquake risk.

Are nuclear power plants actually cheap while natural energy is expensive?

From the standpoint of practical, economical logic, solar power and natural energy are expensive. I had always believed that nuclear power was the most inexpensive way of producing power, at 5-6 yen per kilowatt-hour; therefore we have to use nuclear power and construct new plants. I am sure that many people thought the same.

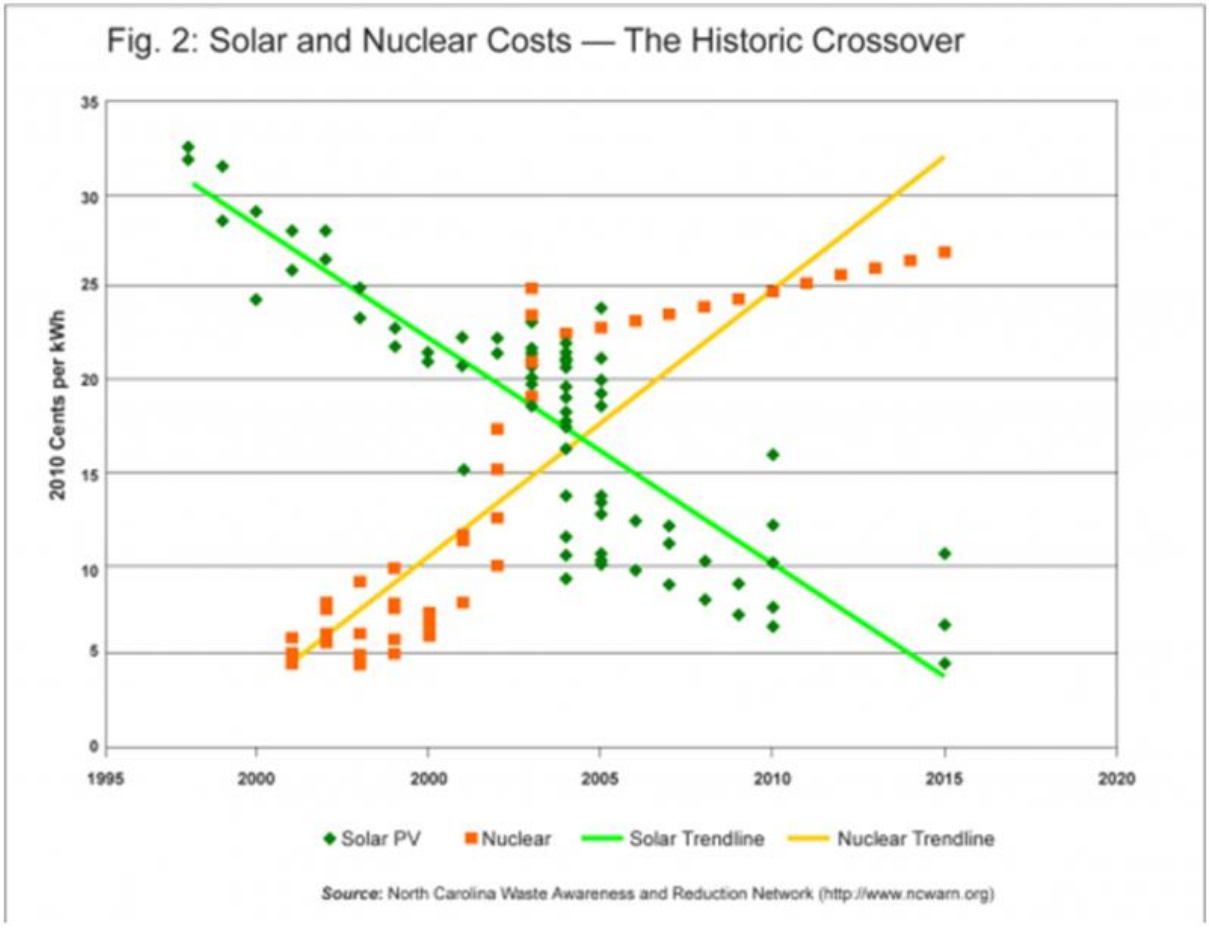
But is this really true? According to figures listed on an application for approval of the nuclear power plant installation, its unit cost is 15-20 yen. This is the actual data; the pre-accident cost.

So then what happens if we add the cost of the accident? TEPCO obviously should pay this, but any cost beyond its capacity will fall to the government; in other words, tax. If we include the full cost of the accident, nuclear power may in fact be the most expensive form of energy.

As this example illustrates, the true cost of nuclear power should include local subsidies, nuclear waste processing costs and accident coverage. We need to reevaluate the legitimacy of "5-6 yen," which was the initial hook, but now seems somewhat off.

Moreover, 15 yen was a figure derived from commodity prices 30 years ago, so I wonder what the figure per kilowatt-hour (kWh) would be for a new nuclear power plant today. The number 3 reactor at Olkiluoto Nuclear Power Plant in Finland was slated for an initial construction budget of 350 billion yen, but the work was continually delayed as safety standards continued to rise, and has already cost 1.5 trillion yen despite still having no schedule for completion. Accounting only for capital investment and without fuel or operating costs, the plant already costs 14 yen/kWh, and fuel and operating costs would add to this. The world no longer makes new nuclear power plants because the truth is, as this case shows, they come at a huge cost.

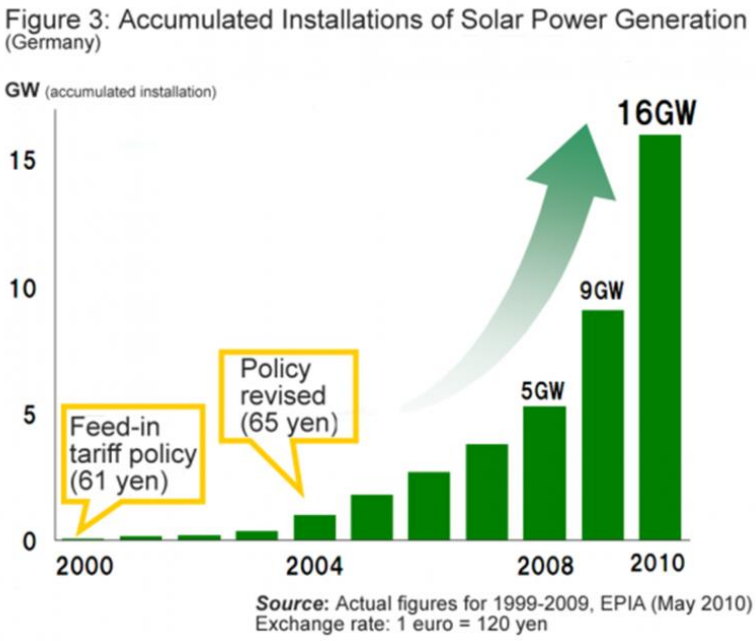
A graph shows some surprising data. Power production costs for solar and nuclear energy in the U.S. crossed over each other last year, in 2010 (Figure 2). I, like many others, had thought that natural energy was ideal but expensive, that solar power would not work in the rain or at night, and nuclear energy could mass-produce and was inexpensive. But a crossover of the two actually occurred last year, with all the rain and night concerns accounted for and looking only at production cost during operation. Looking at this case makes us think that we must shift our energy policy toward realizing a society in which every citizen can feel safe.



Government policy changes society

Power production using natural energy is currently increasing at a dramatic level in Europe, the United States and China. The key to this increase is government policy. In Germany, the feed-in tariff policy began in 2000, allowing any electricity producer to have its product purchased by power companies at 61 yen/kWh for the next 20-25 years. A 2004 revision of the policy raised the purchase price to 65 yen. The mere act of the government determining such policy sparked competition among private companies and prompted an explosive spread of solar power generation. (Figure 3)

In Europe, countries like Germany, France and Spain have set a target of supplying 20%-30% of their energy from natural sources by the year 2020, which people now believe could be accomplished faster than anticipated. The latest data confirms that countries such as Germany enforce the purchase of all produced power at 40-60 yen/kWh for 20-25 years. Japan is currently discussing purchase of surplus power for 10 years. I truly believe that we should set figures at the European level or American level of purchasing all produced power at 40 yen/kWh for 20 years to allow private businesses to compete and develop a market. Otherwise, businesses will not think of producing power since the returns will not match their investment.



Looking at trends of the next 10 and 20 years brings an expectation that fossil fuel prices will rise. On the other hand, costs are declining for natural energy, owing to effects of mass production and technological innovation as seen in the U.S. It is time for our government to draw up a grand vision.

The average monthly electricity bill of a common household is about 8,000 yen, and if we account for the 40 yen for 20 years purchase price in this, the bill temporarily rises by about 500 yen. But this buys us safety and assurance. Fossil fuel prices will continue to rise, and nuclear power plants will further involve accident costs. There is no need for us to resort to more dangerous and expensive options.

At the same time, we must reduce carbon dioxide. For us to head toward a clean and more inexpensive option over the long term, are we all not capable of facing up to the responsibility and bearing the temporary added burden of 500 yen? The government should be acquiring this consensus from its citizens.

This requires no large-scale financial investments from the government. All the government needs to do is take the solar power purchasing policy it is already discussing one step further and simply add a line, "Purchase of all produced power at 40 yen for 20 years" or shift the policy in that direction. Recall the U.S. case given above: Is it not sheer nonsense to cling to nuclear power when it will recede in the future instead of taking the path that is already crossing over and which will definitely lead to cost reduction?

Feeling that I should produce action instead of just talk, I established a Natural Energy Foundation to bear my share of responsibility as a citizen and decided to personally input one billion yen. I am hoping that the people of the world gather their wisdom here to present their research findings and give proposals for government policies. It is a dream of mine to see the foundation trigger discussion and play a role in offering practical alternatives to nuclear energy.

The sun will rise again

Solar, solar thermal, wind, geothermal, biomass, oceanic energy and other blessings of nature can be used for thousands of years without contaminating the Earth. These are forms of energy that coexist with nature without destroying it. I have one suggestion to make concerning a vision on recovering from the quake. It is known that land salinized by the tsunami cannot be cultivated for the next decade. How much money would it take to "recover" such farmland and create taller

embankments? What future do we see there? Can the government instead take the lead in creating an "East Japan Solar Belt" as an area for producing new energy for the future?

Ports of the past could gain new life as ports of solar and wind energy. Such a recovery project would create huge job opportunities for the region's people, and Japanese manufacturers already have the number-one solar technology in the world. Instead of exporting it, we should use it domestically to create the world's largest Solar Belt.

In this way, the sun of 21st century Japan would rise again rather than continuing to set. And with safety and assurance, people could live on this land for many thousands of years. I believe that our nation can come up with such a hopeful vision.

Translated from "Higashi-nihon ni sora-a beruto chitai wo: Taiyo no minato, kaze no minato de nihon ha yomigaeru," Sekai, *June 2011, pp. 44–51, by Son Masayoshi.* Japan Echo Web *No. 7 August-September 2011.*

SON Masayoshi is Chairman & CEO, SOFTBANK Corp. Representative Director & President, Yahoo Japan Corporation. Born 1957 in Saga Prefecture. Graduated from the Economics Department of the University of California, Berkeley. Founded SOFTBANK Corp. Japan in 1981. Established the Broadband Association in 2003 and assumed the role of Representative Chairman.

"Hard Choices: Japan's Post-Fukushima Energy Policy in the 21st Century"
Paul J. Scalise
From *Natural Disaster and Nuclear Crisis in Japan: Response and Recovery after Japan's 3/11*, edited by Jeff Kingston, 2012.

Paul Scalise, a supporter of nuclear power, addresses the challenges facing Japanese energy policy following the Fukushima disaster. He begins by acknowledging the massive change in public opinion on nuclear power, even pointing out Son's solar belt as one of the most popular new proposals. However, he questions whether a shift away from nuclear power will put Japan on a sustainable path: "Can Japan achieve a nuclear-free society without risk of rolling blackouts? Are energy security and environmental sustainability fundamentally compatible or mutually exclusive? Is economic efficiency still possible in an energy market that also promotes and subsidizes renewable energy sources?" Scalise reminds us that public opinion should not always dictate policy. Instead, he urges, majority rule should be set aside for what is best for Japan, even if this option may be unpopular.

Scalise explains the current dynamics of Japanese politics regarding Japan's energy future. Given the massive loss of support for nuclear power, what is likely to happen? Are Japan's politicians responsive to the desires of the general population, or are they more receptive to the opposing opinion of Japan's business elite? Opponents of nuclear power maintain that Japan's major corporations have too long dominated Japanese politics, resulting in policies favorable to nuclear power at the expense of the environment and human health. Scalise argues, however, that corporations do not have as much power in the Japanese government as nuclear power opponents fear. He says that the influence of former bureaucrats now working in the private sector, often on a board of directors (*amakudari*) and politicians who lobby for a particular industry (*zoku*)—some of the main mechanisms by which firms influence policy—is not very large, particularly for energy.

Scalise frames the debate as one between "energy security and economic efficiency (nuclear power) [and] environmental sustainability (renewable energy)," addressing the safety of nuclear power on only a limited basis. To him, Japan's future is brighter if it chooses the path of reliable energy and the resultant stronger economy. How do his arguments in favor of nuclear power stack up against the anti-nuclear opinions presented above?

Hard Choices: Japan's Post-Fukushima Energy Policy in the 21st Century

Paul J. Scalise[1]

The 'Great East Japan Earthquake' of 11 March 2011 inadvertently shook more than just infrastructure and private property; it threatened to create what some observers call a subsystem collapse (Baumgartner and Jones 1991). For most of the postwar era, a policy subsystem involving multiple actors evolved to meet Japan's market challenges and industrial development by offering energy diversification, energy efficiency, and finally greater reliance on nuclear power. These efforts risked sudden reversal in a matter of weeks following Japan's unprecedented magnitue-9 earthquake. The resulting 15-meter (49.2 feet) high tsunami flooded the back-up diesel generators cooling the Fukushima Dai-ichi Nuclear Power Station, owned and operated by Tokyo Electric Power Co. (TEPCO). Within hours, the exposed fuel rods overheated leading to a nuclear meltdown (Evans 2011).

Today, this tsunami-induced nuclear disaster has kindled renewed interest in renewable energy development at the expense of nuclear power. On 31 March 2011, Prime Minister Naoto Kan expressed his intention to reconsider Japan's Basic Energy Plan (*Enerugi kihon keikaku* or BEP) and start discussions over from a clean slate (Fackler and Pollack 2011). Twenty-two days later, the entrepreneur, Masayoshi Son— Japan's richest man—presented his idea for an East Japan 'Solar Belt' in which billions of yen would be funneled away from nuclear power towards renewable energy. Speaking at a press conference on 10 May 2011, Kan acknowledged that the nuclear incident coupled with global warming led his cabinet to 'work to ensure an enhanced level of safety for nuclear power, while at the same time more vigorously promoting natural and reusable energy' ("Press conference by Prime Minister Naoto Kan" 2011). This idea not surprisingly morphed into the premier's desire for a 'nuclear-free society' in Diet hearings held on 13 July 2011 ('Kan says Japan should aim for nuclear-free society' 2011).

As Japan raucously debates the future of nuclear power and renewable energy in both the National Diet and the courtroom of public opinion, some observers have wondered in which direction Japan's once 'quiet politics' of national energy policy, in which highly organized interest groups dominated the policy process in arenas shielded from public view, would take the country now that energy has become a 'high salience issue' (Culpepper 2011). Can Japan achieve a nuclear-free society without risk of rolling blackouts? Are energy security and environmental sustainability fundamentally compatible or mutually exclusive? Is economic efficiency still possible in an energy market that also promotes and subsidizes renewable energy sources?

This chapter seeks answers to these fundamental questions. It begins by discussing the fundamental principles of Japan's national energy policy since BEP in broad strokes—what has changed and how. It then explores the origins and logic of this policy by analyzing the country's electricity sector in cross-national and longitudinal context.[2] The third section of the chapter analyzes the feasibility of BEP pre-and post-Fukushima. It finds that many of the policy goals and aspirations of its political actors to be sometimes vague, contradictory or logistically difficult given Japan's market structure. The final section discusses the political will and capacity actors have to change Japan's energy policy, concluding that no single actor dominates the process. If a subsystem collapse is imminent, to whom or what can this change be attributed and what lessons can be draw from it?

Basic energy plan: background, structure and targets

Japan's national energy policy, like its electric power regulations, can be described best as reactionary. For much of its post-Meiji history, decision-makers lacked a comprehensive energy strategy choosing to rely on an assortment of ad hoc rules, regulations, and laws that were generally wielded in times of national uncertainty and economic crisis (Scalise 2009: 73-106, 148-192). In the postwar era, these measures were adopted often in response to the oil shocks of the 1970s, the 'lost decade' of the 1990s, and the global warming initiatives of the new millennium.

Current national energy policy is broadly outlined in the Basic Act on Energy Policy (*Enerugi seisaku kihon hō*, Act No. 71) of 14 June 2002.[3] It generally sets out to improve what is known as the 3 E's: energy security (Article 2), environmental sustainability (Article 3); and economic efficiency (Article 4). Like most Japanese laws, the Act does not offer much by way of detail and numerical targets. However, under Article 12 of the Act, the BEP diverges from previous policies by authorizing the government to 'formulate a basic plan...in order to promote measures on energy supply and demand on a long-term, comprehensive and systematic basis'. It is reviewed every three years, and revised when needed.

Revisions proved necessary in May 2006. Along with growing resource competition with China and India, the price of imported crude oil rose by almost 400 per cent from 1998 ($12.8/barrel) to 2006 ($63.5/barrel) precipitating a re-evaluation of policy (Figure 1). The Ministry of Economy, Trade, and Industry (METI) drafted The New National Energy Strategy (*Shin-kokkai enerugii senryaku* or NNES), which established a target for the proportion of nuclear energy in total power generation of 3040 per cent or higher by 2030 (OECD/IEA 2008: 30). In June 2010, this target was raised to 50 per cent or higher. Other revisions in 2010 included:

- doubling Japan's "energy independence ratio" from 38 per cent to 70 per cent;
- increasing the proportion of renewable energy in total power generation to 20 per cent or higher by 2030;
- doubling the zero-emission power source ratio from 34 per cent to 70 per cent;
- cutting the CO2 emissions from the residential sector by half; and
- maintaining and enhancing the energy efficiency in the industrial sector at the highest levels of the world.

The energy independence ratio is defined as the sum of its energy self-sufficiency (sources that can be produced domestically) and the purchase of fossil fuels under independent development. Because Japan is resource poor and dependent on 96 per cent of its primary energy supply, especially as it imports virtually 90 per cent of its imported oil from the politically volatile Middle East, finding alternatives that shield the country's vulnerability to severe fossil fuel price fluctuations and potential shortages on the world market have become the priority (ANRE 2006, Scalise 2004). In order to reach these new targets, Japan would have been required to increase its share of nuclear power in the generation of electric power from 29 per cent to 50 per cent while simultaneously raising its share of renewables from 9 per cent (of which 8 per cent is hydro) to 20 per cent. Concurrently, fossil fuels would have to have decreased in both absolute and relative terms. According to the Strategic Energy Plan, liquefied natural gas (LNG) would have to fall from 28 per cent to approximately 10 per cent; coal would fall from 25 per cent to 10 per cent; and petroleum-based sources would fall from 13 per cent to less than 1 per cent (METI 2010:

10).

The second broad target, which is related to the first, concerns Japan's zero-emission power source ratio in terms of greenhouse gas (GHG) emissions. The world scientific consensus sees a strong linkage between fossil fuel burning, climate change, and environmental impacts (Houghton and Intergovernmental Panel on Climate Change. Working Group I. 2001). Because approximately 63 per cent of Japan's electric power continues to be generated from fossil fuels, expanding the generation technologies of renewables and nuclear power would help dramatically to reduce GHG emissions (Hoffert *et al.* 2002, Service 2005). Consequently, Japan's energy independence ratio would need to correspond to its zero-emission power source ratio in order to achieve success. One of the greatest obstacles is economic.

Japan's energy economics in the 21st century

Japan's capital expenditures (*setsubi tōshi*) in the electric power sector have been propelled by cost-benefit considerations, including resource availability, application technology, the useful life expectancy of the generation asset, its utilization rate (how much capacity is used in a given period relative to potential output) and political will. Table 1 below provides Japan's current energy economics at a glance. As mentioned above, Japan’s energy portfolio for electric power generation still predominantly consists of fossil fuels (63 per cent), followed by nuclear (28 per cent), hydro (8 per cent), and other renewables (0. 3 per cent).

Historically, Japanese electric power companies have shifted from one power source to another based on cost and value (Figure 1). Abundant and inexpensive hydroelectric power gave way to domestic coal production after most appropriate hydroelectric sites were captured, thus slowly increasing political and economic costs to further building large-scale dams in remote locations. Domestically-mined coal gave way to inexpensive and abundant supplies of imported oil following import liberalization in 1961 (Culter 1999). Oil then gave way to a diversified energy portfolio including imported liquefied natural gas (LNG), imported coal, and inexpensive nuclear power in equal measure following the 1973 oil shock. A major shift towards nuclear power was set to become the next phase.

Table 1: Energy mix (2010)

Fuel	Power generation	Current Generation cost	Useful life	Avg. construction cost	Maximum utilization rate	CO_2 Emission
Unit	(TWh)	(Yen/kWh)	(Years)	(Yen/kW)	(%)	(CO_2-eq./kWh)
Coal	237.9 (24%)	6~7.6	30-40	336	85	975.2
LNG	282.4 (28%)	8.4~10.1	30-40	222	68	607.6
Nuclear	279.8 (28%)	5.1~7.4	40-60	368	90	22.1
Oil	101.9 (10%)	9~15	30-40	387	55	742.1
Hydro	79.3 (8%)	8~13	80+	690	85	11.3
Geothermal	2.6 (0.3%)	8~22	20-30	340	85	15
Wind	(Intermittent)	10~15	20	300	30	29.5
Solar	(Intermittent)	30~58.7	20	300	15	53.4

Notes: a kilowatt-hour, or kWh, is the amount of electricity required to power 10 100-watt light bulbs for one hour. A terawatt-hour, or TWh, is one billion kilowatt hours. Sources: For generation cost per kWh estimates by fuel type, see: Federation of Electric Power Companies of Japan interview (June 2011), based on data from University of Tokyo. For power generation, utilization rates, and useful life, see: *Denki jigyō rengōkai tōkei iinkai, ed. Denki jigyō binran* [Handbook of Electric Power Industry] (2010). Tokyo: *Nihon denki kyōkai*. For average construction cost per kW, see: *Denryoku shinsetsubi yōran* [Survey of new electric power facilities] (2006). Tokyo: Ministry of Economy, Trade and Industry. For CO_2-equivalent per kWh by fuel type, see: Communications Office (2003). "Nuclear Power Generation and the Nuclear Fuel Cycle." In *Energy in Japan*, edited by Agency for Natural Resources and Energy. Tokyo: Ministry of Economy, Trade, and Industry.

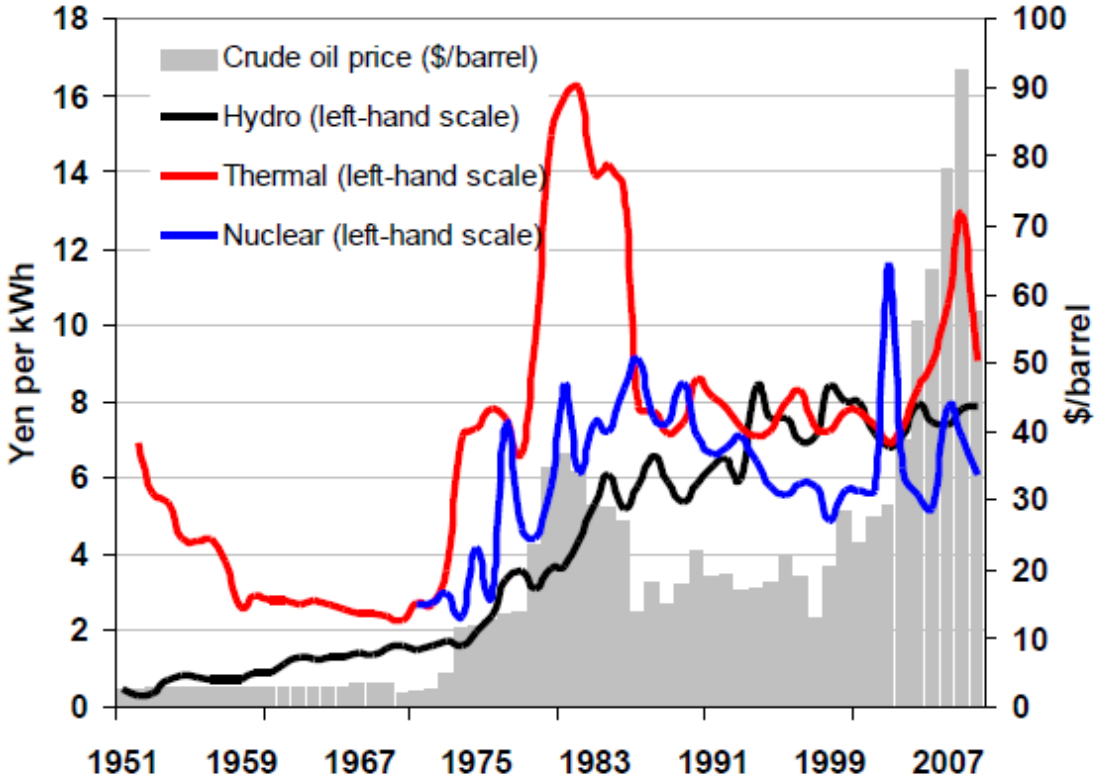
Japan's policymakers originally chose nuclear power as a strategic necessity in order to enhance national energy security, buffer the economy from energy shocks, and perhaps even serve as an important export product (Kim and Byrne 1996). Japan's unique lack of natural resources justified not only nuclear power, but also a commitment to plutonium fueled fast breeder reactors (Byrne and Hoffman 1996). This extensive support was tacitly based on a 'lesser of two evils' rationale in which the risks posed by fossil fuels outweighed the risks posed by nuclear power. In his chapter, Daniel Aldrich discusses the ways in which authorities mapped out locations and used policy instruments to induce public support in order to complete this technocratic vision—a task that became increasingly difficult over time.

Activists, students, and policy entrepreneurs have long debated the political economy of competing energy sources to replace nuclear power since the events of Three Mile Island in 1979. Nuclear power's positive media image characterized as 'atoms for peace' (jobs, economic growth, and abundantly cheap and clean power) slowly shifted towards a negative image consisting of mushroom clouds, radioactive waste, nuclear fallout, and the like. Yet despite this negative image, clear trade-offs have prevented decision-makers from placing all of Japan's eggs into another energy basket. Fossil fuel-powered generation (coal, natural gas, and oil) continues to be among the most cost competitive and reliable electric power sources in Japan, but rising imported fuel prices coupled with a high carbon footprint and death toll linked to its extraction, operation and maintenance make it politically and environmentally unattractive.[4] By contrast, solar power is quiet and clean, but its prohibitive cost per kWh and low utilization rate ensure its marginalization for energy-intensive industries requiring stable 'baseloads' to operate efficiently during business hours. Wind power is far less costly per kWh, and offers a slightly higher utilization rate, but its unreliability requires increasing fossil-fuel back-up sources while the

windmills pose a danger to avian wildlife. Hydroelectric and geothermal power—both called 'mature' renewable energy sources—show strong promise on economic and environmental grounds, but face political opposition from activists and small business owners alike who disapprove of flooded valleys, alterations to the ecosystem, and unpredictable exploration prospects in environmentally fragile locations (sometimes national parks) where, for example, it is hot enough to produce geothermal steam close to the surface.

Because new renewables are relatively high-cost and intermittent (Table 1), support mechanisms such as feed-in tariffs, green certificates, premiums, and production tax credits are still needed to induce residential and industrial support. The *political* support for and the inducement policies towards increasing renewable energy, however, began long before the events of March 11. One such example is the Special Measures Law Concerning the Use of New Energy by Electric Utilities (*Denki jigyōsha ni yoru shin-enerugii nado no riyō ni kansuru tokubetsu sochi hō*, Act No. 62), which the National Diet passed in 2002 and implemented in 2003 reinforcing renewable energy promotion measures. The eponymously named 'Fukuda Vision' announced by the former premier in response to growing concern in Japan about Climate Change is another such example. Following a speech entitled 'Action Plan for Achieving a Low-carbon Society' on 29 July 2008 (GWPH 2008), a series of policy measures were implemented by the government to counter GHG emissions. On the residential front, starting in January 2009 METI provided subsidies and tax credits for the installation and renovation of solar panels on residential homes. On the industrial front, METI encouraged the beginnings of a feed-in tariff that required electric power companies to buy surplus solar power from residential homes at 50 yen per kWh until at least 2020.

Figure 1: Generation cost per kWh by fuel type and crude oil prices, 1951-2010.



Sources: For generation cost per kWh by fuel type, 1951-2000, see: *Kantō no denki jigyō to tōkyō denryoku* (Electric Power Industry and TEPCO in the Kanto Region), CD-ROM (2000). Tokyo: Tōkyō Denkryoku. For generation cost per kWh by fuel type, 2001-2010, see: *Yūka shōken hōkokusho* [Annual Report] (various years). For historical crude oil prices, see *Nihon enerugi keizai kenkyū sho* **(**Energy Data and Modeling Center), author's calculations based on these sources. Notes: actual power generation costs fluctuate depending not only on the operating period but also on the load factor, imported fuel costs, weighted average cost of capital, and other fixed costs. Decommissioning and reprocessing of irradiated fuel are included in nuclear power's generation cost per kWh, pre-Fukushima.

Feasibility and performance: whither Japan?

Speaking at an energy symposium in Chino, Nagano Prefecture, on 31 July 2011, Prime Minister Kan argued that Japan 'cannot take a risk [with nuclear power] that could destroy the Earth even if it is a one in a hundred million chance...Renewable energy will lead to Japan's new industrial revolution' (Kyodo 2011). Such rhetoric aside, one of the most important questions to analyze is the feasibility of Japan's national energy policy in a post-Fukushima Japan. Notwithstanding the technological constraints and innovations of new renewables versus nuclear power, one should consider underlying supply and demand for electric power in cross-national context—two sides of the same political and economic coin.

In fiscal year 2010 (ending March 2011), almost 1,112 terawatt-hours of electricity were generated in Japan, a 4 per cent increase from 2000. The Japan Center for Economic Research forecasts 1.1 per cent growth in GDP in 2000-2025 for its positive case. If GDP growth leads to increased consumption of electricity in Japan as econometric studies have suggested (Cheng

1998, Lee 2006), new renewables would need to increase by seven to eight times to achieve the 20 per cent generation target and the 70 per cent targets for energy independence ratio and zero-emission generation sources, respectively. Yet, this increase of seven or eight times assumes no growth in conventional fossil-fuel generated sources or nuclear power. Moreover, should Japan's 54 nuclear power plants gradually be decommissioned without further nuclear build—as Kan and others have suggested should happen—these targets will be extremely difficult to reach.

About 18.8 gigawatts (GW) of generating capacity are currently under construction with most being gas-fired and coal-fired power plants. A further 30.8 GW is planned, including 42 megawatts (0.1 per cent) of new renewables, by 2015. If Japan hopes to achieve its GHG emission target reductions, it will depend greatly on the amount of renewable energy and nuclear power it can commercially introduce over the next 20 years. As of August 2011, these prospects appear dim; only 19 of Japan's 54 nuclear reactors (35 per cent) are on-line with political pressure to maintain the status quo until safety assurances are met (JAIF 2011a).

Table 2: International comparison, 1990 v. 2010

	Industrial tariff (¢/kWh)		Residential tariff (¢/kWh)		Reserve Margin	New Renewables (%)		
	1990	2010	1990	2010	(%)	1990	2000	2010
Denmark	7	12.6	20.9	36.6	120	3.1	15.5	27.5
Germany	4.9	10.9	13.6	16.7	85	0.3	2.4	13.2
Iceland	n/a	n/a	n/a	n/a	100	6.7	17.2	27.1
Japan	11.5	16.8	17.4	24.8	10	1.4	1.6	2.2
Spain	4.8	10.3	11.4	21.2	20	0.4	2.8	15.8

Notes: "New renewables" excludes hydroelectric and includes geothermal, solar photovoltaic, solar thermal, biomass, liquid biomass, biogas, wind, tide, wave, ocean, and municipal waste. The reserve margin is the percentage of installed capacity in excess of peak demand. Tariff data for Iceland are unavailable.
Sources: (OECD/IEA 2003, OECD/IEA 2006, OECD/IEA 2007, OECD/IEA 2008, OECD/IEA 2009, OECD/IEA 2011)

Virtually all OECD countries provide 'new renewable' generation at some level. However, geography, market structure, and government policy determine the quantity. Denmark (wind), Germany (solar), Iceland (geothermal), and Spain (wind/solar) provide 15~30 per cent of their total generated electricity from new renewables. In contrast with Japan, however, all four leading countries in renewable energy had relatively low electricity prices in 1990 *before* the introduction of feed-in tariffs. In addition, electricity capacity reserve margins—a common metric for surplus capacity—indicated percentages well above 20 per cent (Table 2). This pre-existing oversupply prevented the intermittent supplies generated by new renewables from risking blackouts as surplus back-up power existed in the event that solar, wind, and other renewables were unable to meet peak demand.

With Japan's national reserve margin in the low 10 per cent range and falling year-on-year (Scalise 2011a, Scalise 2011b), rolling blackout risk places renewed emphasis on rapid investment from stable sources with relatively quick lead times in the siting, licensing, and construction of new generation capacity. The Ministry of Environment (MOE) has already granted TEPCO a special exemption from conducting environment impact studies before expanding and building fossil-fuel power plants in the Kanto region, thus highlighting how economic realities continue to trump environmental concerns (Nikkei 2011). This economic

reality militates against strong support for new renewables among industry and the incumbent suppliers in the short-to medium-term as TEPCO and Tohoku EPCO struggle to bring capacity back online.

On the demand side of the equation, Japanese industry continues to be the largest consumer of energy as well as the largest producer of CO2 emissions by sector at 46 per cent and 34 per cent, respectively. Yet from 1990-2008, they also made the strongest improvements in both energy efficiency and reduced CO2 emissions by sector, thus creating further challenges as *setsuden* (energy conservation) becomes more important in Japan (EDMC 2010: 38, 47). With *Keidanren*, the principal industrial peak association for virtually all big businesses and companies in Japan, quite vocal in its opposition to higher electricity prices from the introduction of feed-in tariffs and other austerity measures sacrificing business productivity, a larger share of the burden will need to be carried by the largely inefficient residential and commercial sectors if the goals of the BEP and NNES are to be met.

Is a subsystem collapse imminent?

A fundamental move away from nuclear power towards renewable energy sources would require more than just technical blueprints and economic incentives to surpass Japan's structural challenges analyzed in previous sections of this chapter; it would require a shift in actor perceptions and policy images that form what some observers call 'policy whirlpools,' 'iron triangles,' or 'subsystem politics' (Griffith 1939, Heclo 1978, Redford 1969). This phenomenon characterizes several actor interests that come together in certain political venues for the purpose of compromise and coordination. Consequently, success or failure of Japan's national energy policy partially rests with the level of support from Japan's decision-makers at local, prefectural, and national levels in these policy venues.

Since the Fukushima disaster, public opinion polls indicate a gradual souring towards nuclear power in the 13 prefectures that host nuclear plants. Telephone surveys conducted by The *Asahi Shimbun* in the months of April, May, and June 2011 suggest diminishing support for nuclear power in Japan. In its April 2011 survey, the newspaper found that 32 per cent disapproved of nuclear power while 50 per cent were in support. One month later, the same newspaper recorded a slight increase in disapproval while support levels dropped to 43 per cent. By June 2011, the situation reversed: disapproval was almost half of respondents while approval for nuclear power fell to only 37 per cent (JAIF 2011b). This political souring has forced most prefectural governors to refuse permission to restart those that are offline until they have convincing assurances of their safety.

It remains to be seen if this gradual shift in voter perceptions will materially impact the political arena. The Democratic Party of Japan-led government, once a vocal supporter of lowering Japan's GHG emissions by 25 per cent from 1990 levels by 2020 under the Hatoyama Cabinet, began to backtrack on renewable energy development and their emission targets as soon as the party encountered industry opposition and conflicting budget priorities in 2009-2010 (Hughes 2009, Scalise 2010). If the Kan Cabinet, and successors, hopes to promote a shift towards new renewables, it will need to take stock of the political landscape.

There are 10 major electric power corporations (EPCOs, *ippan denki jigyōsha*) in Japan: TEPCO, Kansai (KEPCO), Chubu (CEPCO), Tohoku, Chugoku, Kyushu, Hokuriku, Shikoku, Hokkaido, and Okinawa. All nine EPCOs except Okinawa own and operate nuclear power

plants. Organizing their common interest via The Federation of Electric Power Companies of Japan (*Denki jigyō rengōkai*, hereafter FEPC), they are the most obvious of the agenda setters though not necessarily the most powerful. Their relative size, de facto monopoly status, relationship with wholesale suppliers, privately owned assets, and control of pricing information is stronger than that of almost any other developed nation, yet evidence of direct linkages with the political process is circumstantial, at best. Despite the roughly 70 known electricity suppliers in Japan's nationwide market that range from joint-ventured electric power utilities (JVs, *kyōdō karyoku hatsuden denki jigyōsha*) to municipal utilities (*kōei denki jigyōsha*) to larger wholesale electric-power suppliers (*oroshi denki jigyōsha*), none of the 10 major EPCOs have made (reported) cash contributions to any of the major political parties since 1977 (Scalise 2009: 57-62, Tatsuru 1983: 81-84). Only an occasional donation from one of the JVs or regional municipals can be seen over time, and such donations are relatively small.

There are several reasons for this lack of overt political maneuvering. One is size. The Japanese companies are among the largest in the world, measured in terms of kilowatt-hours and installed capacity. TEPCO, for example, remains the largest privately owned electric power company in Japan, and is surpassed worldwide only by The State Power Corporation of China, EDF, and E.ON. We should stress the word *private* in this context. The sheer size of such electricity sales and installed capacity suggests a lucrative market for potential new entrants should full liberalization occur. Moreover, because of the size of the industry, we should consider the various corporate linkages and political aspects of employment—areas of concern that directly and indirectly affect more than just the EPCOs.

Leaving aside the political and economic question of new entrants into the electricity market, there is a stable number of suppliers and growing number of generators in postwar Japan. Based on these initial figures, one could easily mistake this seemingly fragmented market as conducive to greater price competition under more liberalized market conditions. However, appearances can be deceiving. Since their 1951 postwar reorganization into the nine regionally independent vertically integrated utilities, the incumbent suppliers have predominantly controlled the means of electricity generation as well as its transmission and distribution to the vast majority of end users. This "vertically integrated" structure has led to nine regional de facto monopolies on power.[5]

Their regulator, METI (formerly MITI), takes a decisively pro-business approach in their dealings with the electric power companies and their competitors. In recent years, the MOE has competed with METI for upper-hand in the regulatory control of the sector (Peng Er 2010). While the MOE takes an actively pro-environment approach for obvious reasons of self-interest and preservation, the political necessity (mentioned above) of maintaining a stable supply of power in Japan sometimes forces the MOE to turn a blind eye to certain environmental regulations in the name of economic efficiency and stability. Some observers argue that the government-business relationship is theoretically strengthened via *amakudari* (literal translation: 'descent from heaven'). If ministerial career advancement seems unlikely between the ages of forty-five and fifty-five, ministry officials usually "descend" into either a private sector position or politics. *Amakudari* is an omnipresent phenomenon in the electric power sector; all major listed utilities have at least one former career bureaucrat sitting on the board of directors (*yakuinkai*) and elsewhere, though their exact purpose, connections, and usefulness is debatable.[6]

It remains to be seen if politicians will adopt a similar 'pro-stability' tact in the coming years. All

draft bills concerning the economic development of the electricity industry and regulatory matters related therein fall under the purview of the Commerce and Industry Committee (*Shōkō i'inkai*, hereafter CIC) in the postwar period, later renamed the Economy, Trade and Industry Committee (*Keizai sangyō i'inkai*) in 2000.[7] The Lower House's CIC is comprised of 40 members, and the Upper House's CIC is comprised of 20 members; it is one of the larger standing committees in the Diet and one of the most active. Historically, the LDP occupied the majority of seats on both CIC with a smattering of opposition parties thrown into the fray. In 1999, for example, LDP members held 23 out of 40 or 58 per cent of the Lower House's CIC seats versus 10 out of 21 or 48 per cent of the Upper House's CIC. The number of bills brought before a given committee range widely in any given year. The figure can be as low as one to as a high as sixteen.

Some observers have argued that the Diet is a mere rubber-stamping organ of the bureaucracy (Johnson 1982: 48-49, van Wolferen 1990: 44). Yet, politicians have the legal authority either to reject or revise draft bills at their discretion.[8] In the case of energy, postwar politicians have been known to attack bills drafted by the METI bureaucracy when they either failed to support political expectations or did not stand up to scrutiny during standard question-and-answer periods. One appropriate example in recent years dealt with partial revisions to the laws regulating the electric power industry and nuclear waste from reactors (*Denki jigyō hō oyobi genryō busshi, kakunenryō busshi, oyobi genshiro no kisei ni kansuru hōritsu no ichibu o kaisei suru hōritsu).* In November 2002, the Lower House CIC voted to revise the bill (and again in the plenary session) after several tense questioning bouts revealed serious safety flaws in the proposed bills overlooked by both the *shingikai (advisory councils)* and the bureaucracy. Such an occurrence has been commonplace in the postwar period. One scholar found that of the 9,135 draft bills presented to the Diet in 1947–2001, 1,811 (or 20 per cent) were revised significantly before passage at the instruction of the standing committees (Masuyama 2003: 35).

The extent to which *zoku* ('policy tribes') set the agenda in Japan's government-business relationship surrounding energy policy is debatable, of course. These *zoku* are politicians who are actively involved in the jurisdictional activities of one particular ministry, acquire a level of expert knowledge in that area, and then represent (i.e., lobby for) the interests of that industry in the Diet (Curtis 1999: 53-55, Inoguchi and Iwai 1987, Ishikawa 1990) As a result, area specific *zoku* tend to build close relationships with the bureaucracy.

There is no specific electricity industry *zoku*. The closest equivalent is either the energy *zoku*, which oversees the activities of METI regarding basic energy policy and strategy, or the commerce and industry *zoku*, which by definition covers a much broader range of industries. These two groups have never publicly championed the interests of the EPCO as a business. Indeed, the energy *zoku* under the leadership of Toshizuku Kanei in the Research Commission on Oil, Resources and Energy (*Sekiyutō shigen enerugī chōsakai*) are primarily concerned with the problems associated with electricity supply and demand. In particular, these energy *zoku* concern themselves with long-term strategies not only to meet the demand, but also to secure its supply through the further implementation of nuclear power. Electric power restructuring is not considered relevant.

Individual politicians might have a special interest. Tokio Kanō (LDP) is a former TEPCO vice president, serving his second six-year term as a member of the House of Councilors. As of 2003, he sits as vice chairman of the influential House of Councilors' Economy, Trade and Industry

Committee (*Keizai sangyō i'inkai*). Mr. Kanō makes thinly veiled pro-EPCO statements by advocating the importance of energy security and stability over greater competition and has the full support of the incumbent EPCOs ('Chū, in tono kankei hatten ga jūyō [it is important for Japan to develop relations with China and India]' 2006). Kiyoshi Hasegawa (DPJ) is a former TEPCO employee and Vice President of the Electric Power Labor Federation (*Denryoku roren*). Like Mr. Kanō, he served two six-year terms in the House of Councilors' Economy, Trade and Industry Committee before retiring from politics in 2004. Mr. Hasegawa's interests rest firmly with those of organized labor, as evinced by his induction into the SDPJ in 1992—a party that received large cash contributions from organized labor and held clear pro-labor platforms. Finally, Masashi Fujiwara (DPJ) might also have a special interest. A former KEPCO employee and active labor union leader for over thirty years—first for KEPCO and later for *Denryoku Sōren* as vice president—Mr. Fujiwara was elected to the House of Councilors in 2001. It is possible that all three of these politicians received funding from the electricity industry, though nothing in this investigation was conclusive in that respect.

To be sure, the presence of such an ambiguous force may present another obstacle to the implementation of a new and successful energy policy as '[T]he active presence of *zoku* [makes] it more difficult' for politicians to coordinate policies (Schoppa 1991).

Conclusions

This chapter has sought to elucidate the broad evolution of energy policy in postwar Japan, how it has changed and why; to explain the nature of policy change more generally, in particular the role of framing; to analyze the economic and technical realities of Japan's energy market in cross-national context as decision-makers apply foreign roadmaps to their country's policies; and finally to learn about the capacities of various interest groups in Japanese democracy, who can create policy changes and who cannot.

To be sure, Japan's national energy policy is at a crossroads. In the short span of four months, public opinion has soured towards Japan's nuclear power program as TEPCO failed to contain the nuclear crisis at Fukushima Dai-ichi Nuclear Power Station. What was once the domain of consummate insiders has now spread to a public increasingly apprehensive about nuclear safety. Re-election minded politicians, career-minded bureaucrats, energy-intensive industries concerned about high prices, eco entrepreneurs and beleaguered power companies now jockey for position in the courtroom of public opinion.

How did all of this occur and what does it teach us about the future? This chapter argues that Japanese national energy policy is a fragile consensus that unravels once the underlying assumptions surrounding the policy's purpose change; that external shocks tend to provoke crises that force decision-makers to import workable blueprints of sector reorganization. The energy diversification and demand management programs that emphasized nuclear power set in place following the 660 per cent rise in imported oil prices in 1973-1981 continued uninterrupted for two decades despite eroding power company profit margins, high electricity prices, and declining shareholder value. Following the relative failure of electricity liberalization and the neo-liberal ideas that propelled it in the 1990s, Japan embarked on the next great wave of sectoral re-organization in the midst of resource nationalism, the meteoric rise of China, global warming initiatives and the Kyoto Protocol, and final the *coup de grâce*: renewed oil price spikes in 1998-2008. 'Energy security,' not 'energy efficiency,' became the political mantra that produced the 2002 BEP and the 2006 NNES.

If the latest shock to the system provokes a increasingly anti-nuclear backlash, the lack of nuclear power to meet demand will certainly place further risk on electric power companies struggling to maintain a secure, stable supply of electricity. Such a political environment would almost certainly force decision-makers to abandon their ambitious GHG emission targets by increasingly resorting to conventional thermal fossil fuel generation. *Setsuden* (energy conservation) might be one of the policy tools needed in curbing future blackout risk in Japan, but the more conventional power used to replace nuclear power opens renewed threats to volatile imported fossil fuel prices.

Today, the question of which paradigm will dominate public discourse—energy security and economic efficiency (nuclear power) or environmental sustainability (renewable energy)—plays out in the National Diet and the media. Japan struggles to implement public policies once again to counter recurring external shocks reinforced by the latest incident at Fukushima, but faces technological uncertainties and economic risks. As overseas renewable energy policies—feed-in tariffs for all new renewables in particular—are the latest subject of interest, many observers wonder if Japan's democracy will produce suitable answers. High cost and unreliability could make new renewables a hard sell to a country that values stability and certainty. The manufacturing sector and electric power utilities, which prioritize stability in energy prices and supply, will oppose pro-renewable energy proposals that risk even higher electricity prices. Yet politicians will come under growing anti-nuclear pressure as the full costs of the Fukushima disaster, and the real costs and risk of nuclear energy, emerge and many businesses seek new opportunities in renewable business opportunities.

Notes

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[2] This chapter focuses exclusively on the issue of electric power generation and its spillover effects. It will not discuss energy policy as it pertains to upstream fossil fuel exploration and its downstream distribution businesses.

[3] An English-language translation of this bill is available at: http://www.japaneselawtranslation.go.jp

[4] According to a study commissioned by the Swiss Federal Office of Energy, there were a recorded 4,290 energy accidents worldwide, 1,943 defined as severe, between 1969 and 1996. The number of corresponding energy-related fatalities were 19,650 (coal), 12,638 (hydro-electric), 15,257 (oil), 3,236 (LPG), 1,375 (natural gas), and 33 (nuclear). See Hirschberg, S., Spiekerman, G. & Dones, R. (1998). Severe accidents in the energy sector (first edition). Comprehensive Assessment of Energy Systems Villigen: Aul Scherrer Institut.

[5] Okinawa EPCO was established with full government funding on 15 May 1972. The company was privatized after 16 years of public control on 1 October 1988 becoming the tenth privately owned EPCO. In this chapter, any general reference to “EPCOs” alludes to all ten companies unless stated otherwise.

[6] The exact definition of amakudari varies from author to author. For a thorough empirical analysis of amakudari and its various theories and hypotheses in English, see: Colignon, R. A. & Usui, C. (2003). Amakudari: The hidden fabric of Japan's economy, Ithaca: ILR Press.

[7] *Rules of the House of Representatives 1947, Section 5, Article 92, Clause 9.* Tokyo: EHS Law Bulletin Series; *Rules of the House of Councilors 1947, Section 4, Article 74, Clause 9, subparagraph 7*. Tokyo: EHS Law Bulletin Series.

[8] *The Diet Law (Law No. 79, 1947), Ch. 6, Article 56, paragraphs 3 and 4.* Tokyo: EHS Law Bulletin Series; *Rules of the House of Representatives 1947, Section 5, Article 143.* Tokyo: EHS Law Bulletin Series; *Rules of the House of Councilors 1947, Section 5, Article 125.* Tokyo: EHS Law Bulletin Series.

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Asia-Pacific Journal Articles Recommended for Further Reading

"Fukushima One Year On: Nuclear workers and citizens at risk"
Paul Jobin
March 26, 2012
http://www.japanfocus.org/-Paul-Jobin/3729

This interview with Paul Jobin touches on the opinions of nuclear power plant workers and local residents, and presents an analysis of their responses to government policies. Jobin has researched nuclear power plant workers since 2002, and he conducted many interviews after the Fukushima disaster. Jobin also discusses the health risks of exposure to radiation.

"Ousting Kan Naoto: The Politics of Nuclear Crisis and Renewable Energy in Japan"
Jeff Kingston
September 26, 2011
http://www.japanfocus.org/-Jeff-Kingston/3610

Paul Scalise mentioned former Japanese Prime Minister KAN Naoto's pro-renewable energy positions several times in his article. This article explains the political ramifications for Kan: as a result of his actions, Kingston argues, Kan lost his job in August 2011. This article shows the political risks of being a renewable energy advocate when the political and corporate landscape remains largely pro-nuclear.

"Japan's Nuclear Village"
Jeff Kingston
September 10, 2012
http://www.japanfocus.org/-Jeff-Kingston/3822

Kingston explains what people mean when they criticize "the nuclear village," the term widely used to refer to the cooperation between power companies, the national government, major media outlets, and some scholars and local government officials in their support of nuclear energy. He provides the perspective of MADARAME Haruki, a nuclear expert formerly associated with the nuclear village. Madarame testifies about "fundamentally flawed" safety programs in nuclear power plants that indirectly led to the Fukushima disaster. Kingston highlights continuing concerns about safety and lax oversight, arguing that the pressure to cut costs is too influential when it comes to the energy industry. He devotes a section specifically to public opinion on nuclear power, and he analyzes the impact public opinion can have on nuclear policy, which is at present "extremely well insulated from democratic processes." Finally, Kingston summarizes and updates his article "Ousting Kan Naoto."

"Fallout From the Fukushima Shock: Japan's Emerging Energy Policy"
Andrew DeWit
November 7, 2011
http://www.japanfocus.org/-Andrew-DeWit/3645

Although a large proportion of the Japanese public no longer supports nuclear power, there is no clear alternative source of energy; every option has many drawbacks. Analyzing Japan's political climate, renewable energy advocate Andrew DeWit proposes what he sees as the best solution: the feed-in tariff, which is a policy mechanism used to neutralize the higher costs of renewable energy as they are developed. DeWit also compares Japan's progress in adopting renewable energy to other nations, particularly China, and concludes that Japan will need a major shift in its energy policy to maintain pace with the rest of the world in adopting renewable energy technologies. He is in dialogue with Paul Scalise.

"Get FIT: Public Policy, the Smart State and the Energy-Environmental Revolution"
Andrew DeWit
February 8, 2010
http://www.japanfocus.org/-Andrew-DeWit/3300

In this article, DeWit gives an in-depth explanation of the feed-in tariff (FIT) which he champions in "Fallout From the Fukushima Shock" above. Writing a year prior to the Fukushima disaster, DeWit's leading motivation for urging the adoption of renewable energy is preventing the potential environmental catastrophe from climate change, rather than the dangers inherent in relying on nuclear power.

For more information on the dangers of radiation and the failures of the Japanese government following the Fukushima disaster, readers are encouraged to read the *Asia-Pacific Journal* course reader, "**Japan's 'Abandoned People' in the Wake of Fukushima**."

Recommended Articles from Other Sources

"COMMENTARY: Japan should carve out its future energy policy soon"
Robert Dujarric and Paul J. Scalise
April 30, 2012
http://ajw.asahi.com/article/views/opinion/AJ201204300007

Scalise and Dujarric continue to support nuclear power, believing that Japan ought not to rely on imported oil, coal, and other fossil fuels, and that renewable energy cannot provide enough power for at least 20 years. They counter many of the anti-nuclear arguments presented above, maintaining that despite the risks of nuclear power, its use is necessary for Japan's prosperity to continue.

"Development of Sustainable Energy"
Position Statement: Explanation
Atomic Energy Society of Japan: Social and Environmental Division
August 2010
http://www.aesj.or.jp/en/about_us/ps/AESJ-PS001e.pdf

This brief document demonstrates some of the arguments in favor of nuclear power provided by the nuclear energy industry itself. The AESJ asserts that nuclear power will help combat global warming and enhance energy security, and therefore it is important to increase the use of nuclear power. Further, the AESJ attempts to show that nuclear power is "sustainable" and almost like a renewable, since breeder reactors can create plutonium to be used as fuel and other waste products from power production can be recycled as well.