Japan's Nuclear Village日本の原子力ムラ

Jeff Kingston

The "nuclear village" is the term commonly used in Japan to refer to the institutional and individual pro-nuclear advocates who comprise the utilities, nuclear vendors, bureaucracy, Diet (Japan's parliament), financial sector, media and academia. This is a village without boundaries or residence cards, an imagined collective bound by solidarity over promoting nuclear energy. If it had a coat of arms the motto would be "Safe, Cheap and Reliable". There is considerable overlap with the so-called 'Iron Triangle' of big business, the bureaucracy and Liberal Democratic Party that called the shots in Japan from the mid-1950s, and the evocative moniker 'Japan, Inc.', a reference to cooperative ties between the government and private sector. The nuclear village is convenient shorthand to describe a powerful interest group with a specific agenda, one that it has effectively and profitably promoted since the 1950s. (McCormack 2011)

NEW EXPLOSION AT FUKUSHIMA DAIICHI NUCLEAR REACTOR
March 13, 2011. Hydrogen explosion at Unit No. 3. *(Nippon News Network)*

On the eve of March 11, 2011 Japan had 54 nuclear reactors generating nearly one-third of its total electricity supply, evidence of just how influential this interest group was in promoting its agenda. Over the years, as Japan's nuclear sector grew, so did the nuclear village's power and influence. (Hymans 2011) There has been a proliferation of vested interests in nuclear power that benefit from its expansion ranging from the companies directly involved to lenders and investors in nuclear energy-related firms and extending down to grant-seeking academic researchers. The nuclear village is not monolithic on policy, and there are disagreements between members over various issues that are bitterly contested, but these are the squabbles of a gated community where cooperation and reciprocity prevail. The Village shares a common commitment to nuclear energy, and that means ostracizing naysayers and critics and denying them the access and benefits that "members" enjoy. This modern version of the traditional practice of murahachibu (village exclusion) has been the stick, while access to vast resources and corridors of power are the carrot. Researchers who don't support the Village consensus on the need, safety, reliability and economic logic of nuclear power don't get grants and are denied promotions. Journalists who criticize the nuclear village are denied access and other perks, while politicians seeking contributions, and media companies eager for a slice of the utilities' massive advertising budgets, trim their sails accordingly. Crossing the nuclear village carries consequences just as support has delivered benefits; during the Fukushima crisis the chairman of TEPCO was in China treating favored members of some of Japan's largest media organizations to a luxury junket.

Fukushima Daiichi Nuclear Power Plant (before)

Fukushima Daiichi Nuclear Power Plant (after)

Regulatory Capture and the Culture of Safety

Regulatory capture refers to the situation where regulators charged with promoting the public interest defer to the wishes and advance the agenda of the industry or sector they ostensibly regulate. Those with a vested interest in specific policy or regulatory outcomes lobby regulators and influence their choices and actions. Frank von Hippel, a nuclear physicist and expert on nuclear policy at Princeton University, argues that in the US, "Nuclear power is a textbook example of the problem of 'regulatory capture' — in which an industry gains control of an agency meant to regulate it." (von Hippel 2011) In Japan, nuclear regulators have also long been regulating in the interests of the regulated. (Ramseyer 2012)

Three investigations into the Fukushima disaster reveal that regulatory capture was at the heart of the nuclear accident and the absence of a culture of safety. (Funabashi 2012, National Diet 2012, Hatamura 2012) There has been an institutionalized culture of complacency and deceit in the Nuclear and Industrial Safety Agency (NISA) and the Tokyo Electric Power Company (TEPCO), Japan's most powerful utility and operator of Fukushima Daiichi, that explains why Fukushima in particular and the nuclear industry in general, settled for inadequate safeguards and emergency procedures. (Kingston 2012) Regulatory capture explains some of the major reasons why the risks of operating nuclear reactors were systematically downplayed and mismanaged in ways that compromised operational safety.

NISA, has been the nuclear regulatory authority operating from within the Ministry of Economy Trade and Industry (METI) that has long promoted nuclear energy, creating an institutionalized conflict of interest that systematically downplayed risk and undermined safety. Japan's nuclear industry was established and nurtured by the government and flourished on the back of massive government subsides and research funding. Over the years, METI and NISA were solicitous of TEPCO's concerns as well as those of other utilities and the Federation of Electric Power Companies, meaning that policies and regulatory implementation were carried out in ways that supported utility interests.

In the context of Japan's Iron Triangle, the cooperative ties between the utilities and nuclear regulators were standard operating procedure. MITI (Ministry of Trade and Industry) promoted nuclear energy because it was deemed critical to Japan's economy. This industrial targeting also was evident in many other sectors of the economy. (Johnson 1982) MITI, later renamed METI, deployed vast government resources and subsidies that sent a clear signal to business that nuclear energy was a national priority for a Japan that lacked oil. This green light encouraged utilities to ramp up nuclear power and reassured investors and lenders. Later METI nudged companies to enter the nuclear energy business via tie-ups with overseas vendors, notably

Toshiba-Westinghouse, Hitachi-GE, and more recently, Mitsubishi and Areva.

Kurokawa Kiyoshi (left), Hatamura Yotaro and Kitazawa Koichi, Heads of Three Inquiries into Fukushima Disaster in 2012.

The close ties among political, business, bureaucratic and scientific circles — as well as the mass media — regarding Japan's nuclear power policy, is typical in this global industry as qualified experts are drawn from a "limited pool of fish." (Bloomberg 12/12/2007) This incestuous network nurtures a solidarity and group-think that marginalizes dissenting opinions and in Japan views regulatory capture as sound and efficient governance. Government agencies and the utilities depend heavily on the technical expertise of private sector specialists employed by the major vendors. Under the circumstances, it is not surprising that oversight was lax and regulators deferred to industry demands while rubber stamping requests and averting eyes from safety lapses.

In the US, the revolving door between business and government is shorthand for the collusive relations that lay at the heart of regulatory capture. In Japan, regulatory capture is embodied in amakudari (descent from heaven), the practice in which senior government officials secure post-retirement, well-paid sinecures at firms or industries they once supervised. (Colignon and Usui 2003) These firms hire ex-officials because of the bureaucracy's extensive regulatory and discretionary powers and the consequent need to maintain good relations and channels of communication with the government over critical matters. The conflict of interest implicit in amakudari generates considerable controversy, but the practice persists despite frequent efforts to eradicate it. This system incentivizes officials to engage in perfunctory enforcement of regulations so as to enhance future job prospects. In Japan, cozy and collusive ties between regulators and industry embodied in the amakudari system and the nuclear village have compromised nuclear safety. (NYT 4/26/2011) This has led to widespread regulatory capture, explaining the lack of a culture of safety at TEPCO and NISA's lax monitoring of the nuclear industry.

Outing the Village

Madarame Haruki, as Chairman of the Nuclear Safety Commission (2010-2012), gave testimony in the Diet in February 2012 that pulled back the curtain on the nuclear village. Madarame was a longstanding advocate of nuclear energy and one of the nuclear village headmen, but his testimony revealed that the nuclear industry had relentlessly opposed adopting stricter international safety standards. (AP 2/16/2012, Bloomberg 2/16/2012) He spoke of officials ignoring nuclear risks and admitted, "We ended up wasting our time looking for excuses that these measures are not needed in Japan." (AP 2/15/2012) Madarame drew attention to NISA specifically warning utilities in 1993 about the risk of a station blackout causing the cessation of cooling systems, precisely what happened at Fukushima. (Asahi 6/6/2012) At that time NISA urged utilities to develop a defense in depth in terms of power sources to maintain cooling systems in the event of a catastrophic event, but the utilities downplayed the dangers and argued that existing backup systems were sufficient. NISA backed down and their sensible suggestions to adopt appropriate countermeasures and improve operating safety

were ignored. The Fukushima accident resulted from this case of regulatory capture.

Madarame Haruki, former Chairman of the Nuclear Safety Commission

Madarame also asserted that Japan's safety monitoring technology is out of date, while acknowledging that he and his colleagues had, "…succumbed to a blind belief in the country's technical prowess and failed to thoroughly assess the risks of building nuclear reactors in an earthquake-prone country." (NYT 2/15/2012) He said that regulators and the utilities missed many opportunities to improve operating safety and warned that safety regulations are minimally enforced and fundamentally flawed. Furthermore, he asserted, regulators were toothless and overly solicitous of utility interests. In Madarame's view, there has been a collective heedlessness about safety and inadequate risk management. In the one sector where a culture of safety should have been foremost, the nuclear safety czar revealed a culture of complacency.

As a prominent expert, Madarame actively participated over the years in promoting the myth of safety and supporting industry efforts to cut corners. (Repeta 2011) Testifying for a utility in 2007, he rejected the plaintiff's contention that two backup generators powering a reactor cooling system might fail simultaneously. Speaking volumes about the nuclear village's safety ethos, Madarame asserted that worrying about such possibilities would 'make it impossible to ever build anything.' (NYT 5/16/11) But as the Hatamura Report asserts, worrying about such possibilities and worst-case scenarios is obligatory for nuclear reactor operators and assuming them away is an inexcusable dereliction of duty. (Hatamura 2012) The increased costs of meeting tougher safety standards pose a threat to the nuclear industry, which is why the nuclear village has fought to contain such costs at the expense of operational safety.

The three investigations cited above conclude that cozy ties between regulators and the utilities have come at the expense of robust safety monitoring and were a primary factor in the three meltdowns at Fukushima. The nuclear village encourages regulators to regulate in favor of the regulated by offering retirement sinecures. (Financial Times 4/19/11) METI Minister Edano Yukio acknowledged, for example, that one vice-president position at TEPCO had long been reserved for a retiring METI official and that this is inappropriate. In the 2012 Diet session he was grilled about the specific case of an ex-METI official who drafted the 2010 national energy plan to build fourteen new reactors who landed a top advisory position at TEPCO in January 2011. (Japan Press Weekly 4/14/11) Following this public exposure the official in question resigned and Edano stated that METI officials should refrain from landing jobs in utility companies. It remains to be seen, however, whether amakudari can really be curbed. (Japan Times, 4/19/11) When Shimizu Masataka, the disgraced president of Tepco, retired he parachuted into an outside director's position at Fuji Oil in which TEPCO is a significant shareholder. Fuji Oil defended its brazen personnel decision by saying Shimizu had invaluable experience and expertise, provoking sardonic media commentary since he went

AWOL and was useless in managing the Fukushima crisis.

Shimizu Masataka, former TEPCO president

DIY Nuclear Safety Compliance

The nuclear village's manipulation of nuclear policy has not gone unchallenged, but a total of fourteen lawsuits by local citizens challenging operating licenses on grounds of overlooked seismic dangers and faulty siting have not been successful; there have been only two instances where the courts ruled in favor of the plaintiffs, and these decisions were overturned on appeal. (NYT 5/16/2011, Ramseyer 2012) In one of these cases, the court ruled in 2005 that there was no scientific evidence supporting the plaintiff's contention that the Kashiwazaki nuclear plant in Niigata was sited adjacent to an active fault line. In 2007 a 6.8 magnitude earthquake shut Kashiwazaki down and later TEPCO admitted that in 2003 it had 'discovered' this fault line, but apparently failed to inform authorities. Automated emergency systems at Kashiwazaki worked as planned, but the command center was inaccessible because the entrance door was jammed owing to land subsidence, meaning that plant operators were fortunate that systems and equipment were not damaged by a quake that exceeded design specifications. (Kingston 2007) But, there wasn't supposed to be a fault line there.

Seismic experts in Japan have drawn attention to a number of other nuclear plants located on or near active fault lines. For example, the Hamaoka plant located closer to Tokyo than Fukushima is, was shut down by Chubu Electric at the instigation of Prime Minister Kan Naoto in May 2011 because experts believe there is a very high probability of a large quake and tsunami in the area. In mid-2012 the government ordered other utilities to conduct their own new seismic inspections, but given their large pecuniary interest in the outcome, hopes are not high that they will overturn the original reactor siting assessments. The Asahi points out that, "Even when experts pointed out the possibility of the existence of active faults, utilities kept denying that the faults posed safety threats without publishing sufficient materials and information to support their arguments. We are tempted to suspect that the government and utilities were also concerned that making active responses to the danger of active faults would jeopardize the operations of the nuclear power plants." (Asahi 7/23/12)

At the end of August 2012 NISA proposed allowing continued operation of reactors sited on fault lines if the expected ground movement is not excessive. (Kyodo 8/28/2012) The seismic science is not exact, but the conspicuous implications for nuclear safety embodied in this proposed shift provide another example of regulatory capture; utilities may no longer have to worry about closing down dangerously sited reactors. Ramseyer also points out the moral hazard involved because in the event of an accident utilities' liabilities are limited by their assets leaving taxpayers picking up the tab for most of the damages. (Ramseyer 2012)

The government's inclination to let utilities police themselves is an established pattern consistent with regulatory capture. For example, the utilities were responsible for conducting the stress tests on their own reactors that were ordered by PM Kan in 2011, and submitted the results of these computer simulations for review by the pro-nuclear NISA and NSC. Similarly, in 2006 the government announced new safety guidelines for

nuclear plants, drawn up by experts with close ties to the nuclear industry, and let the utilities determine whether they met the new standards. (NYT 5/16/2011) The power companies' track record of concealing or withholding inconvenient facts, and boldly dissembling, undermines public confidence in the stress tests and also the new inspections about active fault lines under or near reactors. Kono Taro, a senior LDP Diet member, captured the prevailing attitude towards utilities when he bluntly suggested that TEPCO officials, "…don't tell the truth ... It's in their DNA." (Reuters 3/20/11)

PM Noda Yoshihiko faced strong opposition to his plans to hasten the restart of reactors in the summer of 2012 due to widespread doubts about the reliability of the safety tests conducted by the utilities under the supervision of the discredited NISA. Madarame Haruki, Chairman of the Nuclear Safety Commission, stoked these doubts when he announced in March 2012 that the stress tests were not sufficient to ensure the operational safety of reactors. PM Noda's cabinet then hastily cobbled together a provisional set of 30 safety guidelines that would be used to determine whether to restart a reactor. (Japan Times 4/6/2012) In the event, the two Oi reactors that were restarted met only 20 out of the new 30 safety criteria, including the most important and expensive safety measures such as a larger seawall and a remote command center. They were nevertheless restarted on the promise that KEPCO would implement necessary measures over the next few years. This means that the reactors will operate for a few years in the hope that the more robust countermeasures won't prove necessary. Fukushima demonstrates the folly of wishing risk away.

While the public is anxious about the risks of restarting reactors before new safety countermeasures are in place, Ramseyer (2012) explains the legal and financial calculations that make this attractive to the utilities. Limited liability means the utilities can shift the risks so that in the event of a catastrophic accident the government and taxpayers have to cover the bets. Thus the potential downside of restarting before safety countermeasures are taken is financially much more attractive than the certain downside of keeping the reactors idled, while bringing the reactor online confers considerable benefits on the utilities and its shareholders and lenders.

The Asahi Shimbun

Reactors ranked based on hazard levels

	Reactor	Operator
1	Oi No. 1	Kansai
	Oi No. 2	Kansai
3	Tsuruga No. 1	JAPC
4	Mihama No. 2	Kansai
5	Mihama No. 1	Kansai
6	Mihama No. 3	Kansai
7	Takahama No. 1	Kansai
	Shimane No. 2	Chugoku
9	Takahama No. 2	Kansai
	Shimane No. 1	Chugoku
11	Hamaoka No. 3	Chubu
	Hamaoka No. 4	Chubu
	Hamaoka No. 5	Chubu
14	Tokai No. 2	JAPC
15	Kashiwazaki-Kariwa No. 1	Tokyo
	Kashiwazaki-Kariwa No. 4	Tokyo
17	Onagawa No. 1	Tohoku
18	Kashiwazaki-Kariwa No. 6	Tokyo
19	Kashiwazaki-Kariwa No. 2	Tokyo
	Kashiwazaki-Kariwa No. 5	Tokyo
21	Fukushima No. 1 / No. 5	Tokyo
	Tsuruga No. 2	JAPC
23	Kashiwazaki-Kariwa No. 3	Tokyo
	Kashiwazaki-Kariwa No. 7	Tokyo
	Shika No. 1	Hokuriku

	Reactor	Operator
26	Oi No. 3	Kansai
	Oi No. 4	Kansai
	Ikata No. 1	Shikoku
29	Onagawa No. 2	Tohoku
30	Genkai No. 1	Kyushu
31	Fukushima No. 1 / No. 6	Tokyo
32	Shika No. 2	Hokuriku
33	Tomari No. 3	Hokkaido
34	Fukushima No. 2 / No. 1	Tokyo
35	Takahama No. 3	Kansai
	Takahama No. 4	Kansai
37	Onagawa No. 3	Tohoku
	Ikata No. 3	Shikoku
39	Tomari No. 1	Hokkaido
	Fukushima No. 2 / No. 2	Tokyo
	Fukushima No. 2 / No. 3	Tokyo
	Fukushima No. 2 / No. 4	Tokyo
43	Sendai No. 1	Kyushu
44	Tomari No. 2	Hokkaido
	Sendai No. 2	Kyushu
46	Ikata No. 2	Shikoku
	Genkai No. 2	Kyushu
48	Genkai No. 3	Kyushu
49	Higashidori No. 1	Tohoku
	Genkai No. 4	Kyushu

JAPC: Japan Atomic Power Co.

This reactor risk ranking was released in June 2012 by the Genpatsu Zero no Kai (Group for Zero Nuclear Power), a cross-party alliance of politicians that includes Kono Taro of the LDP and Kondo Shoichi of the DPJ.

In short, the nuclear village captures the benefits while externalizing the most catastrophic risks. Hosting communities also stand to reap benefits, but evacuees from near the Fukushima plant know too well about bearing the costs and Tepco's empty promises.

The pattern of relying on the utilities to monitor their own compliance with safety standards, giving them the benefit of the doubt and letting them shape regulations and policies affecting their business has come at a high cost to public safety. Investigations reveal that TEPCO withheld 2008 in-house research from NISA until March 7, 2011 indicating that it knew Fukushima was vulnerable to a massive tsunami and

decided against building a higher seawall because it was deemed too expensive. Tsunami risk should have come as no surprise as the Tohoku coastline had had monster tsunami in 1611, 1677, 1793, 1896 and 1933, and in the decade prior to 3.11 numerous reports warned of tsunami risk in Fukushma. The 3.11 tsunami was no black swan, once-in-a-thousand year event. (AP 3/27/2011) Tsunami are a known risk in Tohoku and happen with alarming regularity. There are tsunami stones dotting the coastline warning future generations to heed the perils. Why did TEPCO and the government ignore the risks and site so many reactors in a tsunami zone? This collaboration in obtuse reactor site selection is emblematic of the nuclear village's shortchanging of safety.

New government safety guidelines issued in 2006 specifically called on utilities to improve tsunami countermeasures, but NISA did not follow up and the utilities did not prioritize compliance. It also turns out that TEPCO and two other utilities actually lobbied the government's Earthquake Research Committee in February 2011 to water down wording in a report warning that a massive tsunami might hit the Tohoku coast in the near future. Apparently the committee agreed to modify the report in accord with the utilities' concerns that the stark warning of a colossal tsunami might cause "misunderstanding" among the public. (Japan Times 2/27/2012)

It gets worse. Back in 2000, a whistleblower informed METI that TEPCO's nuclear plant repair and maintenance records had been systematically falsified since the 1980s. (Kingston 2012) METI then called TEPCO and told executives that they had a problem—there is a whistleblower. METI's inclination was to put a lid on the story, but when the media reported TEPCO's duplicity, it had no choice but to shut down all of TEPCO's reactors and order inspections. In 2007 the government reported that seven of Japan's twelve utilities admitted they had falsified safety records for thirty years. (Bloomberg 12/12/2007)

Despite such warning signs regarding operational safety and cost cutting on repairs and maintenance, at the end of February 2011, shortly before the meltdowns, NISA extended the operating license of the aging Fukushima Daiichi #1 reactor that commenced operations in 1971. NISA did so, but expressed reservations about a dubious maintenance record and stress cracks in the back-up diesel generators that left them vulnerable to inundation in the event of a tsunami. At least they saw it coming.

In 2012 the Diet passed legislation that in principle requires the decommissioning of reactors after 40 years of operation, but there is a large loophole that allows the government to extend licenses for such old plants at its discretion, similar to the proviso that has kept many old US reactors online; 70 of the 104 reactors operating in the US have 60 year permits. (Sawa 2012) In Japan, about one-third of its 51 viable reactors are over 30 years old and nine will be 39 years or older by 2016. (Bloomberg 8/25/2011) Given that so many of Japan's reactors are aging with the attendant risk of metal fatigue and dated technology, safety issues are becoming ever more urgent; the three meltdowns at Fukushima occurred in reactors commissioned in 1971, 1974 and 1976. In 2010 two forty-year old reactors received ten-year extensions. NISA also gave provisional approval to extend the license of the forty-year old Mihama #2 reactor in June 2012 just as the Diet was deliberating the new legislation limiting operations to 40 years. Decommissioning reactors is costly (estimated at $2.5 billion each), and building new reactors post-Fukushima will be very difficult in the present environment, explaining why regulators seem hesitant to retire older reactors.

Subsidy Addiction

Subsidies have been liberally distributed to the communities that agreed to host nuclear reactors. (New York Times, 5/30/2011; Japan Times 7/14/2011; Mainichi Daily News 7/5/ 2011) Remote, coastal towns suffering from depopulation, government deficits, and grim economic prospects suddenly were given a lifeline. (Aldrich 2008) Hosting reactors was a lucrative option for these towns and deemed a risk worth taking given the downward-spiraling alternative. Spigots were opened and funds lavished on hosting towns where suddenly there were well-paid jobs attracting an influx of residents generating tax revenues. Town coffers were brimming with these inducements, enabling them to build and maintain an expanded infrastructure and attractive amenities such as sports facilities, parks, community centers and museums, all made possible by the Village's largesse. Between 1990-2010 TEPCO alone donated 40 billion yen in unpublicized payments to hosting communities in Fukushima, Niigata and Aomori. These payments were in addition to the revenues allocated to hosting communities from nuclear fuel taxes and grants mandated by law. (Asahi Sept. 15, 2011). In the opinion of Matsuyama Haruyuki, a certified public accountant specializing in analyzing the finances of public organizations, this is how local support was bought, "I feel that donations by electric power companies are a kind of bribe." (Asahi 9/15/2011)

The economic bubble propped up by Village outlays created a subsidy addiction in hosting towns, a reliance that made them pliant. (Onitsuka 2012) In Genkai (Saga Prefecture), for example, 60% of the town budget comes from hosting the nuclear power plant while 1/6 of local jobs are at the plant or related enterprises. One of the interesting features of the subsidy system is the frontloading of hosting benefits, meaning towns are paid significant sums during the planning and building phases and these expire once the reactor goes online. Of course other payments kick in when reactors go online, but in order to ensure a continued revenue stream, the towns have a major incentive to agree to the building of additional reactors at the plant site, helping to explain why Japan's reactors are built in clusters. While this makes sense in terms of maximizing revenues, there are obvious risks associated with multi-reactor complexes because if something goes wrong at one reactor there is greater potential for cascading consequences while managing an emergency at multiple reactors is inherently more difficult. (Perrow 2011)

Genkai Plant's 4 Reactors are Close Together

Public Opinion and Nuclear Energy

"Right now, we know that we can live without nuclear energy. It's only because the government does not want to put the nuclear industrial complex out of business that they don't contemplate the other solutions (http://www.japantoday.com/category/quote-of-the-day/view/right-now-we-know-that-we-can-live-without-nuclear-energy-its-only-because-the-government-does-not-want-to-put-the-nuclear-industrial-complex-out-of-business-that-they-dont-contemp)." Norimichi Hattori, a spokesman for the network of groups opposed to nuclear energy in Japan known as Metropolitan Coalition Against Nukes. 8/22/2012 as cited in Japan Today 8/27/2012

As of September 2012, public opinion in Japan is firmly against nuclear power, but as Aldrich argues, " Japanese leaders and civil servants

envision public opinion as malleable; in this approach, the people's perspective should be changed to match the perspective of the administration rather than elevated as a guidestar which should be followed." (Aldrich 2012, 131) Official reluctance to allow the public to have a say in national energy strategy post-Fukushima is evident in the derailing of all efforts to hold national or local referendum on nuclear energy.

The government was not going to risk the 'Italy syndrome' whereby voters there pulled the plug on nuclear energy in June 2011.

In June 2011 METI was attempting to fast-track reactor restarts, issuing public reassurances that operational safety had been confirmed and sponsoring a town hall Internet meeting in Genkai to solicit public opinion about bringing local nuclear reactors back online. This PR campaign imploded as the media reported that the local power company had orchestrated participation in a bid to fabricate public support for the reactor restart. It subsequently emerged that this sham was standard operating procedure at a series of similar events staged by regional utilities; NISA and METI officials were fully involved in these efforts to orchestrate favorable public opinion. (NHK News 7/29/2011; Kingston 2011)

Anti-Nuclear Rally attended by over 100,000 at Yoyogi Park July 22, 2012. Oe Kenzaburo Addresses the Crowd.

Given widespread nuclear anxieties among the Japanese people, and public opinion polls in 2012 showing over 70% favored phasing out or significantly reducing nuclear energy, the nuclear village went into damage control mode. Keidanren and other large business organizations lobbied vigorously to block efforts to downsize nuclear power, citing growing trade deficits due to energy imports and increased business flight overseas because of Japan's high and rising costs of electricity. Pro-nuclear advocates also raised the issue of global warming, pointing out that in the absence of nuclear power Japan could not meet its CO2 emission reduction pledges. In addition, renewable energy was portrayed as unreliable and too costly.

Public opinion, however, remains resolutely anti-nuclear, inflamed by a cascade of revelations about misconduct, human error and institutional myopia that lead to the three meltdowns at Fukushima. One poll in 2012 found that 80% nationwide do not trust the government's safety measures for nuclear power plants. (Asahi 3/13/2012) In the largest demonstrations in mainland Japan since the 1960s, from the early summer of 2012 people took to the streets of Tokyo in the tens of thousands on multiple occasions to pressure the government to abandon

nuclear power and not proceed with plans to restart any nuclear reactors. (Arita 2012) Prior to mid-June 2012, the demonstrations had been relatively small, hundreds perhaps thousands, but PM Noda's decision to restart two reactors at Oi proved to be a boon for the anti-nuclear movement because he was seen to be ignoring public sentiments and in the pocket of the nuclear village. Noda was oblivious to public opinion, arguing that that is what leadership is about, but bulldozing ahead on reactor restarts proved politically inept and convinced many that the lessons of Fukushima were being ignored.

Revelations about how the government manipulated public opinion regarding nuclear power in the past dogged efforts in 2012 to consult the public about resetting the nation's energy strategy. In 2010 the then new national energy strategy set a target of about 50% of electricity from nuclear energy, and proposed building fourteen new reactors by 2030 to achieve this goal. However, PM Kan scrapped this plan because he did not believe it is possible to safely operate nuclear reactors in Japan, the world's most earthquake-prone nation. The 2010 energy strategy was a dream plan for the nuclear village, but post-Fukushima such ambitious expansion is unthinkable.

Rain or Shine, Growing Numbers of Demonstrators mobilized by the Metropolitan Coalition Against Nukes gather every Friday in front of the prime minister's office.

The government has gone through the motions of consulting the public about a new national energy strategy to be announced in September 2012, holding eleven hearings around the nation during July 2012 and staging "deliberative consultations" with 286 citizens in Tokyo in early August. The government laid out three options for the proportion of Japan's electricity that would be generated by nuclear power by 2030: 1) 0% 2) 15%, 3) 20-25%. The public hearings proved an unmitigated public relations disaster for the government. Participants in the July and August hearings were screened when they applied to attend the meetings and some 81% voiced a preference for the zero option which calls for totally phasing out nuclear energy by 2030. (Japan Times 8/29/2012) The media highlighted the participation of utility employees who were among a handful of those selected to speak at some of the initial meetings. At most of the meetings nine applicants were selected to speak for ten minutes, three in favor of each option. This equal time approach overrepresented those who favored the 15% and 20-25% options since more than 2/3 of applicants favored the zero option. (Japan Times 8/5/2012) Combined with the tightly scripted format of the meetings, media reports convey the impression that yet again the government was trying to marginalize public opinion and orchestrate the outcome.

Tokyo Governor Ishihara Shintaro Rejects Petition signed by 320,000 Tokyoites to Hold Referendum on Nuclear Power in June 2012.

METI's track record of fabricating public support

for nuclear power makes it difficult to convince anyone that the government is sincere about heeding public opinion. The government was put in the awkward position of figuring out how to ignore public opinion without appearing to do so. One participant stated, "My bet is that they are going to use us as an excuse that they've heard us out when they decide on a scenario other than zero percent."

The media also reported an inherent bias in how the government framed the options since all three options involve restarting all of Japan's 50 viable nuclear reactors, while the 15% and 20-25% options require building new reactors to replace those that become obsolete. Reportedly, the government prefers the 15% option because this can be achieved just by decommissioning reactors after 40 years of operation, leaving Japan with 30 reactors by 2030, but under this scenario it may be necessary to build some new reactors. So the government is trying to gain consensus to restart reactors and operate them until 2030 whereas public sentiment favors pulling the plug much sooner; 16% want an immediate cessation, 21% want to phase out nuclear power over five years while a further 21% favor a ten year phase out period. (Asahi 8/25/2012) Thus, nearly one half of Japanese want no nuclear energy within a decade while only 8% favors sustaining nuclear power indefinitely. Under all of the options, utilities would have until 2030 to recoup reactor investments and then idle and shutdown nuclear reactors according to the target adopted in the new national energy strategy. But this is not what the hundreds of thousands of demonstrators mobilized by the Metropolitan Coalition Against Nukes want; they want all the reactors, including those in Oi, shut down and decommissioned.

Aside from Noda's blundering, the anti-nuclear movement in the summer of 2012 has been bolstered by the government-instigated investigations into the Fukushima debacle. In July 2012, two reports were released that confirm anti-nuclear protestors concerns about the absence of a culture of safety and lax monitoring in the nuclear industry. (Hatamura Report 2012, National Diet Report 2012) Diet investigators concluded that regulatory capture, collusive relations and human error were critical factors in the accident. They lambaste an institutionalized shortchanging of safety, a self-deluding myth about reactor safety and a failure to prepare for worst-case scenarios. Since March 11, 2011 the nuclear village has been indicted and found guilty in the court of public opinion, but now even the government, echoing a February report by a non-government group (Funabashi Report 2012), has issued a guilty verdict. What most people thought was true—that the nuclear village is responsible for not taking measures to prevent Fukushima and inadequate emergency responses—has been endorsed by the Diet. This is an extraordinary development, one that has poured fuel on the fires of discontent smoldering in contemporary Japan and underscored the flaws and wrongdoing of the nuclear village.

While the large demonstrations and signs of a more robust civil society have drawn considerable attention and stoked a degree of citizen euphoria about the prospects of a green revolution centered on renewable energy, it is important to bear in mind the huge obstacles to ending nuclear power. The fact remains that the nuclear village remains in control of national energy policy and citizens may not get to decide the outcome. The antinuclear movement is surprisingly robust and is creating an awkward situation for PM Noda, and its rise has coincided with the robust development of renewable energy supported by a Feed in Tariff (FIT) system. But can it really prevail over the pro-nuclear advocates among utilities, vendors, government, media, politics and academia? These institutional powers remain powerful and influential and there are few signs that the government will leave the important policy issue of national energy strategy up to the people. The financial stakes are high and if Japan were to pull the plug on nuclear power, the pain would

extend beyond the utilities and vendors; lenders and investors also face huge losses. Pulling the plug on nuclear power might drive four of Japan's ten utilities into insolvency. (NYT 8/30/2012) In addition, there have been strident voices from the political right calling for the retention of nuclear energy because it leaves open the nuclear weapon option. (Hymans 2011) This is another reason why it is too optimistic to assume that an aroused civil society will prevail.

Yet there are various signs that the unanticipated strength of public sentiments against nuclear power and in favor of renewables is having an impact. In an August 2012 survey, 42% of Diet members favor phasing out nuclear power while only 3% favor the 20-25% option. (Asahi 8/26/2012) They understand that nuclear energy has become a critical issue for many voters and that opponents are energized; the Asahi found that nuclear energy is an election priority for nearly one-half of voters. (Asahi 8/28/2012) It is also indicative that METI is proposing legislation to permit the burial of nuclear waste, meaning a possible end of the nuclear fuel cycle. (Asahi 8/25/2012) Ending the nuclear fuel cycle may foreshadow the beginning of the end of nuclear power in Japan because it would mean that plans to recycle spent fuel for use in powering reactors would be cancelled. This would highlight the problems of nuclear waste disposal as the spent fuel pools at nuclear plants are approaching full capacity and are much more vulnerable to seismic events than reactor containment vessels and also more prone to release toxic plumes in the event of an accident. This is also a potential deal-breaker with hosting prefectures that have been reassured that they won't be stuck with nuclear waste.

Et Tu Kobayashi?

One of the most extraordinary developments affecting public opinion is Kobayashi Yoshinori's support for the anti-nuclear movement. (Kobayashi 2012) This best-selling manga author and high profile neo-nationalist pundit has long promoted a glorifying and exonerating version of Japan's shared history with Asia in a series of very popular manga. As such he has been a darling of the conservative Establishment. So it is astonishing that in August 2012 Kobayashi turned on this Establishment, penning a withering and powerful indictment of the nuclear village and its insidious influence. In his typical no-holds barred style, he points out that fellow conservatives are supporting the nuclear village for financial gain and that researchers who support nuclear power are showered with grants while opponents go unfunded and are excluded from energy advisory groups. He compares TEPCO to Aum Shinrikyo, the religious cult that released sarin gas in Tokyo's subways in 1995. The Sankei and Yomiuri newspapers are blasted for supporting nuclear power as he presents detailed information on why nuclear power is not necessary and accuses pro-nuclear advocates of manipulating electricity supply and demand statistics to scare the public into submitting to the dictates of the imperious nuclear village. In the same style as his previous manga, his self-righteous, demagogic alter-ego relentlessly prosecutes his opponents, exposing their subterfuges and dissembling, leaving the reader in no doubt that this is a battle against the 'evil' nuclear village that must be won to safeguard Japan's future. He argues that the risks of nuclear power are too great and that the Fukushima nuclear accident was a very close call, one that could have cascaded out of control and left Tokyo uninhabitable. Readers are told that the spent fuel pool situation in Fukushima remains precarious and ending nuclear power is an urgent necessity.

Kobyashi Yoshinori, author of Genpatsu Datsuron (Aug. 2012)

This is a stunning, vitriolic tirade, one that explicitly crosses what Kobayashi describes as the ideological divide in Japan's nuclear energy discourse that pits pro-nuclear conservatives against anti-nuclear progressives. Kobayashi repudiates nuclear village-coddling conservatives and argues that conservatives have a rightful place in the anti-nuclear movement as Japan-loving patriots. In railing against the nuclear village he seeks to rally people from across the political spectrum against those who have needlessly exposed Japan to the existential threat of nuclear energy. Given his massive readership, and engaging style, Kobayashi's salvos against the nuclear village will have a walloping impact on public opinion and represent the zeitgeist of Japan's summer of discontent. In the siege of the nuclear village, Kobayashi is a catapult with devastating power and range.

Nationalization

In mid-2012 the government nationalized TEPCO because it is 'too big to fail', serving some 30 million customers in the greater Tokyo metropolitan area. This has not been a popular decision given that TEPCO post-Fukushima is probably considered the most irresponsible company in Japan, and apparently second in world rankings released at the Davos World Economic Forum. (Asahi 1/29/2012) Oddly enough, Hirose Naomi, a forty-year company man named as TEPCO's new president in 2012, told the press he is, " baffled by fierce criticism of the firm". (Asahi 7/19/2012) Not an encouraging start for a company trying to reinvent itself. It is also a worrisome sign that there will not be an overhaul of TEPCO's corporate culture, one identified by all three investigations as a significant factor in insufficient commitment to safety and a floundering crisis response.

The three major investigations into the Fukushima accident dismiss TEPCO's claims that the massive tsunami was inconceivable, pointing out that there had been numerous warnings including from TEPCO's in-house researchers. The public also discovered that TEPCO HQ wanted to delay injecting seawater into the reactors as the crisis spiraled out of control, explicitly bringing up the point that doing so meant they could never be used again, a deplorable prioritizing of company assets over public safety. (WSJ 3/19/2012; Asahi 8/14/2012) As it turned out, the plant manager ignored these instructions.

In this context, using taxpayer money to prevent TEPCO from going under was politically tricky. So just as TEPCO was lobbying for electricity rate hikes, not long after the media revealed that it had been systematically overcharging customers for several years, the government injected nearly $13 billion in exchange for a majority stake in the company. (WSJ 6/27/2012) For that amount of money the government was entitled to a 75%

stake in the company, raising questions about why it settled for only 50.1% voting shares, and agreed to accept the remainder of its stake as non-voting shares. Either way the government owns TEPCO's liabilities, but this plan cedes significant autonomy to TEPCO. This was a significant victory for TEPCO because if the government insisted on a 75% voting stake it would have undiluted managerial control and could ensure a thorough reorganization. This is what happened in 2003 when the government took over Resona Bank, sacked existing management and brought in professionals to revamp operations. Subsequently the government sold off its stake. A similar restructuring of TEPCO might involve selling off subsidiaries, splitting electricity generation from distribution, and embracing greater transparency, but under the current quasi-nationalization TEPCO is being allowed to conduct its own restructuring. This scenario is consistent with the broader pattern of regulatory capture wherein the government relies extensively on self-monitoring by the utilities, a tendency that has subordinated the public interest to private interests.

In terms of effective risk management, the nationalization plan was a significant coup for the nuclear village. Now TEPCO's liabilities are the government's, meaning that taxpayers will foot the bill. And, this signals that TEPCO remains a powerful player in the nuclear village. As of May 2012 TEPCO had received injections, loans and guarantees totaling some $45 billion, but this does not include the costs of decommissioning and is likely to increase due to the mounting bills for waste disposal, compensation and decontamination. (WSJ 5/12/2012) An Asahi editorial criticizes the quasi-nationalization because it revamps little at great cost while preventing a much needed restructuring of Japan's power supply system. The Asahi concludes that, "Considering the tremendous amounts of funds needed for paying compensation and decontaminating areas polluted by radiation, the current financing framework, under which TEPCO is required to pay back the money supplied by the government over a long period, is just a fantasy." (Asahi 6/28/2012) Nationalization, as with other energy reform measures, is more a charade than substantive.

The chimera of reform is also evident in METI's plan to separate electricity generation from transmission. Commenting on this plan, Sentaku magazine asserts,

" Spinning off nuclear plant operations would be a big relief for Tepco and an ideal way for METI to publicize its success in reforming the power industry. The separation of generation and transmission facilities as well as the retail liberalization of electricity — as described in the METI panel's document —cannot be considered meaningful reform of the power industry. They amount to a rescue plan for the power industry and an opportunity for METI to publicize its claims of reform. This almost smacks of deception by the state. All the while, Tepco is cracking a big smile of relief." (as translated in Japan Times 8/13/2012)

Replacing NISA

The watered down nationalization plan is not the only sign that the nuclear village is weathering strong headwinds. NISA lost all credibility following Fukushima and a series of revelations about its timid and flawed record in regulating the nuclear industry. Post-Fukushima it was imperative to establish a credible nuclear watchdog to lessen public distrust and improve operational safety through more robust monitoring. But bureaucratic turf wars complicated this initiative.

In September 2012 NISA is being disbanded and replaced by the new Nuclear Regulatory Authority (NRA) after METI thwarted initial plans adopted in 2011 to shift nuclear safety monitoring to an agency within the Environment

Ministry. This original plan appeared to be a major, but unavoidable setback for METI given media exposes about how it had condoned if not encouraged NISA's slack supervision of the nuclear industry. However, the sense of urgency in the summer of 2011 dissipated and the Diet stonewalled legislation aimed at establishing the new regulatory agency. METI called in its markers among politicians and the plan for putting regulatory control under the Environment Ministry died on the vine. The NRA is now an autonomous organization. (World Nuclear News, 6/18/2012) METI hopes to colonize the NRA, vulnerable precisely because of its 'autonomy', through secondment of personnel and other coopting strategies.

The new NRA head is Tanaka Shunichi, former vice chairman of the Japan Atomic Energy Commission, a key organization that strongly influences government nuclear policy. He also served as president of the Atomic Energy Society, an academic society that advocates nuclear energy. In Diet confirmation hearings in July 2012, Tanaka acknowledged that he is a member of Japan's nuclear village, an admission that attracted public criticism, but did not impede his confirmation. He has a major task in restoring the tarnished credibility of Japan's nuclear watchdog authorities. Tanaka stated he favors decommissioning older reactors (>40 years of operation) and tightening up the provisional safety guidelines hastily cobbled together by the Noda Cabinet in April 2012. He also testified that he would close the Oi reactors if they are found to be located on active fault lines and said his agency would get more involved in fault line assessments and not rely on the utilities to probe the matter. (Kyodo 8/2/2012) In doing so he hoped to mollify critics, but owing to his background and record, there is strong reason to believe that regulatory capture will persist and doubt that the NRA will play a more robust monitoring role.

Political Vendetta

Since the onset of the Fukushima disaster, TEPCO and its supporters in the nuclear village have sought to shift blame for the bungled crisis response to PM Kan. The three investigations cited above criticize Kan's excessive meddling in micro-managing the crisis, but they all conclude that collusive relations between TEPCO and government regulators lay at the heart of the debacle. Kan's role may have been problematic, but not decisively so. They agree that TEPCO's poor crisis response and failure to provide critical information in a timely way sowed distrust while NISA was ineffective in fulfilling its duty to provide information, analysis and advice to the prime minister. PM Kan was facing an unprecedented crisis and the institutions that were supposed to be handling it were panicked and blundering. In his Diet testimony Kan criticized the lack of crisis procedures, the disorganization in NISA, the NSC and TEPCO and concluded that, "I am convinced that the safest nuclear energy is to move away from any reliance on nuclear energy." Asahi (5/29/2012)

Certainly Kan could have sat back and waited for other actors to respond, but it is understandable that he intervened to spur others into action and to try to get information that he needed to figure out what to do. Kan has been criticized for losing his temper and yelling at TEPCO staff when he visited their headquarters in Tokyo as if getting upset in the midst of an unprecedented crisis was an unforgivable breach of protocol. Kan said he met TEPCO President Shimizu Masataka on March 15, 2011 at headquarters and told him a total plant evacuation by workers was unthinkable and according to Kan, Shimizu merely replied, "Yes I understand". (Kan 2012) Shimizu did not at that time deny these plans for total evacuation as he has done subsequently. Government officials who were in the room with Kan when he met Shimizu confirm Kan's version of events. (Funabashi 2012) Prior to that meeting Kan was informed by METI Minister Kaeda Banri and Chief Cabinet Spokesman Edano Yukio about TEPCO calling to inform them of plans to

evacuate all workers from the plant site so it is not surprising that he was irate when he visited TEPCO HQ. In Kan's view there is no doubt whatsoever that TEPCO HQ was planning to abandon the stricken nuclear reactors and if this had happened the crisis could have spiraled out of control. Kondo Shunsuke of the Japan Atomic Energy Commission advised Kan that in a worst-case scenario there might be massive radioactive releases from the spent fuel rod pools, necessitating the evacuation of Tokyo. This nightmare scenario meant that the national government would not be able to function and Japan would not be able to bring the situation under control.

Elsewhere I have detailed the reasons why the nuclear village has scapegoated Kan for Fukushima, whereas he deserves kudos for acting while others were paralyzed. (Kingston 2011) Briefly, following the meltdowns, Kan: 1) reset the national energy strategy the nuclear village had pushed through in 2010, 2) called for gradually phasing out nuclear power, 3) advocated separation of electricity generation from transmission, 4) promoted ramping up renewable energy to 20% of electricity capacity (up from 1%) by making his resignation dependent on the Diet passing Feed-in-Tariff (FIT) legislation, 5) jawboned Chubu Electric into closing down the Hamaoka nuclear plant due to its seismic vulnerability, and, 6) delayed restarts by mandating stress tests for all of the nation's reactors. When he stated that it was not possible to safely operate nuclear reactors in Japan because of high seismic risk, over 75% of the public agreed. (Asahi 7/13/2011) These are the main reasons why Kan was on the nuclear village's hit list and had to be discredited at all costs.

METI neutralized Kan's energy initiatives by stonewalling and foot dragging on the grounds that he sidestepped process and ignored prerogatives in promoting his anti-nuclear agenda. (Japan Times 8/22/2011) He understood that METI represented the nuclear village and thus did his best to overcome their expected resistance by bold moves. But without METI's cooperation there were limits to what Kan could accomplish precisely because they controlled the levers of energy policy.

By ousting and discrediting Kan, the nuclear village put other politicians on notice. What is striking in the post-Fukushima context is how few prominent politicians have sought to capitalize on popular anti-nuclear sentiments. With 70-80% of the public favoring the end of nuclear power, it is unusual that normally opportunistic politicians have resisted the temptation. In July 2012 Ozawa Ichiro created a new party and adopted an anti-nuclear platform, but he is a tarnished messenger in desperate straits at the end of his political career. Hashimoto Toru, the mayor of Osaka and standard bearer of a Kansai based political movement (Ishin no Kai), was perhaps the most ardent critic among high profile critics, but under great pressure he grudgingly agreed to the restart of the Oi reactors. Many take this as a sign of just how powerful the nuclear village is since nobody else, not even the yakuza, has been able to cow him. More recently, the Ishin no Kai manifesto vaguely calls for ending dependence on nuclear power, opening the possibility that Hashimoto may revive his battle. (Japan Times 9/2/2012) Kono Taro, one of the few anti-nuclear members of the LDP, confides that when he ran for party president in 2009 he was told to ditch his anti-nuclear rhetoric or else. (Taro 2011) In the event he obeyed orders, but still lost. PM Noda came into power in 2011 and quickly backtracked from Kan's opposition to nuclear power. Edano Yukio, now METI minister, has toned down his criticisms and played a key role in the Oi reactor restarts and also in the nationalization of TEPCO. Insiders say he is biding his time and not nearly as ambivalent as he appears, but he understands the risks of becoming an outspoken target. Thus, the ousting of Kan has had a chilling effect. Politicians are maintaining a low-profile on

nuclear power not because they think it is quixotic, but more because they don't relish being on the Village hit-list and recognize that this could derail their careers.

Reality Check

Anti-nuclear groups found vindication in electricity demand data released by the Federation of Electric Power Companies in August 2012 that showed a 6.3% nationwide annual decrease in consumption in July, one of the hottest on record. (Japan Times 8/22/2012) Household and industry conservation is having an impact as indicated by the fact that the Osaka region peak power use during July fell by 13% from 2010, the hottest summer on record, while in Tokyo it dropped by 16%. The August power usage data is even more stunning as there was a minor nationwide increase of 2.1% over August 2012. This shows how much conservation is becoming a habit because in 2011 there were 25% mandatory power cuts for large users and households achieved a 20% reduction. Moreover, in August 2011 there was a record setting 25 straight days in Tokyo when temperature exceeded 30 C in the day and never dropped below 25 C in the evening and unusually sweltering conditions prevailed nationwide. It is also clear that it was not necessary to reactivate the Oi nuclear reactors. The utilities adjacent to the KEPCO service area had surplus electricity supply that could have been tapped to meet peak demand in Kansai. For the first time in four decades, Japan did not generate any electricity from nuclear reactors from early May until mid-July 2012 and the new data on summer consumption when demand peaks demonstrates that the country can get by without depending on nuclear power. Predicted rolling blackouts, scare tactics by the giant utilities, never materialized. Surveys indicate that some 60% of Japanese households have practiced setsuden (conservation) since 3/11 and it seems to be a new commonsense habit, one that is being reinforced by higher electricity prices. (DeWit 2012)

The government estimates that household electricity bills will rise significantly under all three national energy strategy options so setsuden is increasingly becoming a matter of necessity for many. For example, in 2010 an average ousehold paid about 16,900 yen per month for electricity, but if nuclear power is completely phased out the monthly bill is forecast to rise to an average of 32,243 yen a month and about 30,000 yen a month under the other two scenaries. (Japan Times 9.5.2012; NHK 9/4/2012) While the utilities try to convince people that fuel imports are driving this surge, the public understands that the real costs of nuclear energy are embedded in these rising electricity prices; as taxpayers and ratepayers the Japanese public is paying a steep price for Fukushima and the follies of the nuclear village.

Restarting idled reactors is profitable for the utilities because it is cheaper than importing fuel for thermal power plants, but the price of power is in the eye of the beholder. In the view of the Japanese public, the real cost of nuclear power is apparent in the devastated lives of Fukushima residents forced to evacuate their homes, in the anxieties about children's radiation exposure, in the loss of livelihoods for farmers and fishermen in addition to the costs of decontamination, disposal of radioactive waste and fuel rods from the stricken reactors, decommissioning, compensation for the displaced and the massive government bailout of TEPCO. For the vast majority of the Japanese public, the longstanding Village mantra about nuclear power being safe, cheap and reliable has been refuted irretrievably

Attitudes are also becoming more positive toward renewable energy despite Village efforts to discredit it. The public hearings convened by the government in the summer of 2012 revealed that 81% favor phasing nuclear power out completely by 2030. Nuclear advocates are quick to point out that existing renewable technology

renders this scenario highly improbable unless the nation becomes more dependent on imports of carbon fuels from the volatile Middle East. But this assumes a technological stagnation at odds with experience. Indeed, the nuclear energy sector could not have developed without massive subsidies and government research funding that propelled significant technological advances following WWII. Today's technological impediments may seem insurmountable, but time after time major hurdles have been cleared ranging from IT and hybrid cars to landing on Mars. Is a renewable energy revolution in the early 21st century an impossible dream? Apparently many Japanese companies are betting that it is possible, but this will depend on adequate resources and support mechanisms. (DeWit et al. 2012) Large nuclear vendors like Toshiba, Hitachi and Mitsubishi are expanding into renewable energy generation because they also see considerable potential and want to hedge their bets.

Commanding Heights

If Hymans is right, it is unlikely that there will be a significant shift in Japan's nuclear energy policy anytime soon despite public opinion favoring a phasing out of nuclear energy. (Hymans 2011) In his view, nuclear institutions are "extremely well insulated from democratic processes" and not subject to the passions of public opinion. He writes, " Opinion swings are certainly worth tracking, but it is also necessary to recognize that in countries with large numbers of nuclear veto players, whichever direction the political winds end up blowing, abrupt, radical nuclear policy reorientations are very difficult to achieve and are therefore rare. " (Hymans 2011, 160) He traces the development of what he terms "veto players" in Japans nuclear policy field since the 1950s, arguing that the proliferation of such institutionalized actors creates a policy rigidity that precludes abrupt and sharp shifts. The nuclear village is home to these veto players and they are the powers that be in deciding Japan's national energy strategy. Hymans writes that METI, the Atomic Energy Commission and prefectural governors are key veto players, while he also refers to the, "nuclear iron triangle of METI, industry, and national politicians". (Hymans 2011,177)

Hymans reminds us that overseas business tie-ups with GE, Westinghouse and Areva also mean that, "Japan now sits at the epicenter of the global nuclear energy industry. Given the economic stakes involved, the government simply cannot ignore the manufacturers' nuclear policy preferences" (Hymans 2011, 181) Hymans goes on to detail the utilities and government agencies' dependence for technical expertise on staff from Hitachi, Toshiba and Mitsubishi, a relationship that confers extensive influence on these private firms in shaping public policy regarding nuclear energy.

The seven samurai of the nuclear village are: 1) the Diet, 2) the electric power companies, 3) METI, 4) prefectural governors, 5) nuclear plant vendors, 6) the Atomic Energy Commission, and 7) big business represented by Keidanren and institutional lenders and investors. While these actors are not always on the same page and there are significant differences in specific policy preferences, promoting nuclear energy is a shared goal. Differences within are ironed out one way or another because at the end of the day, they all need and benefit from having nuclear energy and set aside differences or hammer out compromises to protect that option. While Hymans is right that bitter contests within the nuclear village create policy rigidity, the common goal of promoting nuclear energy also generates policy rigidity. And, the post-Fukushima crisis has played a unifying role as the nuclear village is under siege and facing unprecedented challenges.

Hymans historical institutionalist angle on veto players and the policy rigidity they sustain suggests that the public's preference for the zero

option in nuclear energy will not prevail. The nuclear village's seven samurai are able to block, "… radical Japanese nuclear policy change in any direction, even in the face of the most serious disaster Japan has faced since World War II. After all, even in crises, veto players tend to stand up for their perceived interests." (Hymans 2011 188).

Most recently the Village is suggesting that the zero option will bankrupt several utilities, requiring even more taxpayer bailouts and shouldering of liabilities. And, some analysts warn, this could trigger the Armageddon scenario of a debt crisis similar to the EU as Japan's public debt to GDP already exceeds 230%. Such alarmist scenarios will probably not influence an adamant public opinion that has already shrugged off warnings about spiking trade deficits and carbon emissions. However, they do provide political cover for the government to disregard public opinion. There are signs that the government may do so. On September 4, 2012 a DPJ advisory committee issued a draft for achieving a nuclear free society. This proposal suggested that a decision on national energy strategy be postponed until 2015 while pushing back the nuclear phase-out until 2050. The Asahi reports that the Federation of Electric Power Companies intensively lobbied DPJ lawmakers in August, emphasizing the adverse consequences and high costs of the zero option including massive investments in energy saving measures and renewable energy along with the loss of technical expertise. (Asahi 9/4/2012) In this case, kicking the can down the road on crafting a new energy strategy and implementing a phase-out would represent a major victory for the Village. Perhaps the veto players will prevail and Japan will not phase out nuclear power, but as discussed above there are signs that the nuclear village is vulnerable. Four key developments have introduced some fluidity into the process. Broad dissemination of the damning findings of the three investigations into Fukushima has exposed the seamy ways and means of the nuclear village, revealing how cupidity trumped safety. Social media, mainstream media and Kobayashi ensure a wider audience for such revelations. The second major development is the large anti-nuclear demonstrations that have surged through the summer of 2012. The third is the inability of the nuclear village to sway public opinion despite extensive scaremongering. The fourth is that nuclear energy is not economically viable, because raising funds, securing permissions, building reactors and operating them with adequate safeguards takes too much time and is too costly. (Economist 2012)

These four developments have introduced uncertainty into Japanese politics although the ramifications remain unclear. Restarting Japan's fleet of nuclear reactors, especially those on active fault lines, will spark further intense battles and stoke opposition in ways that will impede the Village's agenda and test its resilience and solidarity. Looming NIMBY battles over nuclear waste disposal also carry grim portents. Just as Japan's green revolution is not a done deal, however, it is also too early to forecast a Village victory in what is shaping up to be a long-haul battle.

Institutions are not destiny although they are proving resilient in a very unfavorable environment. It was never going to be easy to reset the national energy strategy or take on the nuclear village even if it seemed that Fukushima was a game-changing event that would open the way for sweeping policy reform. Given public opinion, the nuclear village had to adopt a low-key, biding time approach and hope that outrage would dissipate and that policy inertia would prevail or at least minimize reform. Given the cascade of tawdry revelations, it was impossible for the Village to spin the Fukushima saga. Yet it has engaged in surprisingly effective damage control, spreading blame, obfuscating responsibility and otherwise shaping public discourse while working the corridors of power

to keep the nuclear option on the table. Just as it failed to prepare for worst-case scenarios in Fukushima (and the other reactors), the Village was unprepared to cope with political fallout on this magnitude. In an ad hoc manner and mostly making it up along the way, the seven samurai have withstood a furious onslaught since 3.11 and mounted a robust rearguard action. Of course there is an advantage in that they are professionals who command considerable institutional resources who believe that they know better and are trying to overcome a misguided public. To them this is a noble mission to save the Japanese people from themselves, a perception that blinds many in the Village to the glaring risks of nuclear power in an earthquake-prone country and also to the significant progress in renewable energy and conservation technologies. They face a ragtag band of volunteer irregulars ranging from concerned citizens and street activists to civil society organizations and a small but courageous group of critical scientists and public intellectuals, but in the corridors of power, the battlefield remains tilted in the Village's favor.

There are cracks in Village solidarity and signs of weakness, but under the circumstances, averting an unraveling constitutes a stunning sign of resilience. The summer of discontent in 2012 may mark the high point of the anti-nuclear movement and the strategy is to wait it out. So rather than see policy drift as a sign of weakness, the apparently rudderless process is a strategy based on perceptions that time is on the side of the nuclear village. Policy gridlock boosts the odds of settling back into established policy ruts. The Village is betting on a reemergence of complacency or resignation in a public that has generally been deferential to authority. A strong assertive approach would only galvanize the anti-nuclear movement as PM Noda did in restarting two reactors. But that was a calculated risk because the longer reactors stood idled and the longer Japan remained nuclear free, the harder it would be to get back up and running. So the Oi confrontation was a show of strength by the nuclear village, rallying supporters and boosting morale by letting them know the battle is far from over. Thus the hydra-headed nuclear village does not have a single-pronged strategy, but rather understands its limits and strengths, pressing here, conceding there, but letting time do its work while pushing to reframe the discourse and shift attention away from the meltdowns and lingering dangers to more prosaic assessments based on electricity supply and demand, trade imbalances and fiscal realities. It has weathered the barrage of three damning investigations and a spike in political activism directed against nuclear energy in rather better shape than even its most ardent supporters could have anticipated.

Here and there the media discovers some backroom wheeling and dealing that is coopting the policymaking process—the nuclear fuel cycle debate is one prominent instance—but this is probably only the tip of the iceberg. (Asahi 5/26/2012; Japan Times 7/9/2012) Policies are made in these backrooms and in the corridors of power, not on the streets, meaning this is a battlefield where the seven samurai control the commanding heights.

The Village's perimeter defenses may have been breached, but the ramparts remain well defended. Japan's new national energy strategy 2012 may call for phasing out nuclear power, or significant downsizing, but there will be opportunities for the Village to reverse this reversal. It has the resources and resilience to overcome its opposition and has much riding on the outcome. Just as the 2010 strategy was scrapped due to an unanticipated nuclear accident, some shock such as an energy supply disrupting war in the Middle East or a financial crisis could derail phasing out of nuclear energy.

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