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In the Dark With Tepco: Fukushima's Legacy for Nuclear Power 東電の暗闇　原子力発電と福島の遺産

Andrew DeWit

The sad saga of Fukushima, with its recurrent revelations of incompetence and obfuscation, carries on. Among the latest, as related in detail in this July 31 Reuters article, are radioactive releases into the sea, unexplained ventings of steam, and the lack of a credible plan to deal with a daily 400-tonne influx of groundwater. Tokyo Electric, or TEPCO, is clearly unable or unwilling to devote the resources necessary to resolve this crisis, which will continue for decades. As United Nations University research fellow Christopher Hobson argues, the only solution is for the government to take over.

Tepco is desperate to survive. Japan's most loathed firm - and a millstone for the global nuclear business - it recently hired British-American Lady Barbara Judge, chair of the UK Atomic Energy Authority from 2004 to 2010, and still its honorary chairwoman, to oversee its safety campaign. This employment of a foreign woman, to put a new face on Tepco was announced in early July. But that aggressive public relations move did not stop Tepco from being chary with the truth on the release of radioactive water into the ocean. Tepco had denied these releases for months, in the face of accumulating evidence and a chorus of criticism that included the Japanese Nuclear Regulation Authority (NRA). It apparently confirmed the releases on July 18.

Barbara Judge with Tepco President Hirose Naomi

But true to form, Tepco appears to have held back official release of this information pending the outcome of the July 21 Upper House elections.

Moreover, as the following article highlights, a Reuters investigation from last December showed that Tepco is making limited, if any, use of overseas business expertise on the various aspects of reactor decommissioning and clean-up. So its deployment of Lady Judge does indeed appear – to recycle an apt phrase – to be putting lipstick on a pig.

One narrative emerging from nuclear advocates is that the Fukushima Daiichi reactors were outdated and poorly maintained because Tepco ran them as a cash cow while focusing resources on fixing its Kashiwazaki-Kariwa reactors. So perhaps we can understand the recent ineptness at Fukushima as more of the same. The seven reactors at

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Kashiwazaki-Kariwa comprise the world's largest nuclear plant, which had been shut down by the 2007 Chuuetsu offshore earthquake. The earthquake caused fire and radiation leaks, severely damaging the seven reactors. Tepco was eager to get them back online before Fukushima; and now its prospects of returning to profitability rely heavily, if not entirely, on restarting at least some of the power generation capacity at this plant.

Indeed, the July 2012 partial nationalization of the utility by the hapless Democratic Party government was predicated on a March 2013 restart of some of the Kashiwazaki-Kariwa reactors. The promise of restarts was the assurance of viability in order to encourage the banks to continue lending to the utility.

Kashiwazaki-Kariwa reactors

Seen from another perspective, Tepco's shenanigans at Fukushima Daiichi are all the more incredible. For one thing, restarts at Kashiwazaki-Kariwa remain opposed by Niigata Prefecture Governor Izumida Hirohiko, and Tepco just handed him a whole lot of political capital and credibility on this point.

Moreover, restarts are contingent on safety checks that include inspection of seismic zones. Japan's NRA has limited staff, and only about 80 in 3 teams of inspectors. The NRA will now be forced to focus more scarce resources on Fukushima Daiichi while being even more careful in inspecting the 10 reactors at 5 plants for which four utilities have filed restart applications. These inspections were already expected to take several months, per reactor. Compounding Tepco (and the other utilities') problems is the fact that the risk of earthquakes in Japan appears to have been increased by the major series of seismic events centered on the March 11, 2011 magnitude 9.0 Great East Japan Earthquake.

Another Tsunami?

Considering the goings-on at Fukushima, it is impossible to imagine what mischief Tepco and its allies are up to. But they may be in the path of another tsunami. As Keio University's Kaneko Masaru points out in a new Iwanami Shoten booklet (published August 3) titled (in Japanese) "Nuclear Costs More than Conventional Thermal Power," the monopoly utilities are probably bankrupt. He shows in careful detail that once all the costs of Fukushima and other matters are added up and priced into power, nuclear generation is an astounding YEN 23.5 per kilowatt-hour, well over the YEN 8-9/kWh for thermal power and a far cry from the YEN 5-6/kWh calculated for nuclear back in 2004.

Kaneko's publication deserves a review article in its own right, but for reasons of space this brief overview of the issues will have to suffice at present. An expert on public finance, Kaneko was a member of the commission that reviewed nuclear and other costs under the previous DPJ government. His work examines the conditions of each of the remaining reactors, including the safety-measure costs, the decommissioning and other costs associated with running a power-cost generation profile. He embeds this reactor-by-reactor analysis in a larger framework of critique, highlighting how the monopolies have become the equivalent of the

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bad banks of the 1990s.

A core problem Kaneko focuses on is the Japan Atomic Power Company (JAPC) which owns three reactors, two at Tsuruga and another at Tokai. The fate of Tsuruga Number 2 was likely sealed by a May, 2013 study which concluded that an active fault lies directly beneath it. The NRA approved this study. Though JAPC disputes the NRA's findings, Japanese regulatory rules forbid construction over active faults and thus require decommissioning of the plant if the NRA's ruling holds.

JAPC's income and outgo has serious implications for the other nuclear-dependent utilities. JAPC is entirely dependent on atomic power for its income; but even though the reactors it owns remain shut down, it has been able to survive because it is paid "basic fees" through its power contracts with five of the monopolized utilities (Tepco and Tohoku Electric for power from the Tokai Number 2 reactor and Kansai, Chubu, and Hokuriku Electric Co's for the Tsuruga reactors).

In the event that JAPC is compelled to decommission its Tsuruga Number 2 reactor, it will no longer receive this basic fee for that unit. It will then have to cover all related personnel, repair, depreciation and other fixed costs from its own resources. Keep in mind that its Tsuruga Number 1 reactor is 43 years old, and thus up for the expensive special inspections and safety measures required of reactors more than 40 years old. In addition, its Tokai Number 2 plant is 34 years old and its restart it strongly opposed by area residents. JAPC has yet to file applications for restarting *any* of its reactors.

The utilities set aside funds for decommissioning, but these appear generally inadequate to cover the costs. According to , the Ministry of Economy, Trade and Industry's (METI) Resource and Energy Bureau's calculations for an LDP working group on June 7, there are three reactors over 40 years of age among the 50 potentially operable reactors in Japan. These three reactors include JAPC's Tsuruga Number 2 as well as Kansai Electric's Hamaoka Numbers 1 and 2. The cost of decommissioning Kansai Electric's Hamaoka 1 is projected to be YEN 32.3 billion, for which Kansai has set aside only YEN 22.8 billion leaving a shortfall of YEN 9.4 billion. The shortfall for the Hamaoka Number 2 reactor is YEN 6.7 billion, and YEN 3.8 billion for the Tsuruga Number 1 reactor. But with the Tsuruga Number 2 reactor, the shortfall is a massive YEN 23.7 billion.[1]

According to Kaneko's research, if the Tsuruga Number 2 reactor is forced to decommission, JAPC will save roughly YEN 70 billion in maintenance and other fixed costs. But the fraughtness of its situation is evident in its financial reports. As of March 2012, its losses were roughly YEN 114.8 trillion and it had eaten into its capital to the tune of YEN 165 billion. It simply doesn't have the resources to absorb the expense of decommissioning, and is therefore fighting to forestall a final decision.

Kaneko holds that such enterprises simply lack the means and incentives to manage their nuclear assets responsibly. Indeed, recent reports confirm this analysis. The NRA, concerned about seismic risks for the fuel rods stored in a pool at the Tsuruga Number 2 site, asked JAPC to investigate. The concern is that 1700 fuel assemblies, each of which contains multiple rods, may be vulnerable in the event an earthquake causes loss of coolant. But JAPC denied there is any risk, insisting that a fuel meltdown scenario "is avoidable because air flowing between the fuel assemblies would serve as a cooling agent." This is in spite of the fact that JAPC itself recognizes that the fuel cladding's temperature would rise to 420 degrees Celsius. Apparently stalling, JAPC did not consider the possibility that seismic motion would shift the position of the assemblies and thus negate this airy assurance.[2]

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But it isn't only JAPC that is in deep trouble. The firm's finances are intimately bound up with the five monopoly utilities that contract with it. Tepco is its largest shareholder. Moreover, the utilities' exposure includes YEN 100 billion in investment and debt guarantees, as well as roughly YEN 130 billion on the block for Tsuruga's Number 3 and 4 reactors currently under construction (projects that are suspended). Kaneko notes that Yagi Makoto, Chair of the Federation of Electric Power Companies of Japan, made clear how desperate conditions are by declaring that "dealing with the costs of decommissioning and related matters should be considered in cooperation with the national government."[3]

In Kaneko's view, this explicit declaration of seeking assistance from the government is the classic pattern of Japan's zombie firms. Just as in the long nonperforming loan saga of the 1990s and into the early 2000's, following the collapse of the 1980s bubble economy, all indicators point to reliance on a drip feed from the public purse. Indeed METI has proposed defraying the cost of decommissioning Tsuruga Number 2 by including it in electric power bills as a surcharge spread over several years (according to the June 2 edition of the Asahi Shimbun).[4] For Kaneko, this approach too is reminiscent of the 1990s, where bankrupt firms were spoon fed with forbearance and as a result losses simply ballooned, needlessly - and very expensively - protracting the banking crisis.

No Alternative?

The instinctive response of any political system is to avoid big fixes and try to muddle through, if it can and until it can't. That is why post-bubble Japan lost well over a decade in dithering over what to do. It is the core political reason the EU stands on the precipice. And it is why Japan's post-Fukushima power regime remains such a mess. The July 31 Reuters article looks at the chaos at Fukushima Daiichi; but as we have seen, the problem is nationwide, and requires a quick and systemic solution.

Don't hold your breath waiting for decisive action. But do keep your eyes on the fact that Japan's high power prices are driving the diffusion of renewables and efficiency. While House Republicans in the US go to the ramparts in defence of the incandescent bulb, 90% of all ceiling light sales in Japan are LEDs, and Japan is 40% of global LED demand. Competition from rapidly increasing energy services firms, the entry of Toyota and other majors into the power-generation business, an accelerating ICT revolution, the loss of customers, the threat of deregulation and other factors are also reshaping the status quo and its players. Even Tepco and other monopolies have been driven to offer businesses free analysis and advice on increasing efficiency at the point of production.[6] But the best hope lies with nationalizing the nuclear assets and providing them with competent management, relieving the utilities of their burdens and the rest of us of some portion of risks.

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Notes

[1] On the figures, see (in Japanese) "Shortfalls on Decomissioning Reserves: METI Documents Show 3 Over-40 Year Reactors Total YEN 19.9 Billion," Sankei Shimbun, June 8, 2013.

[2] On this, see "Tsuruga plant operator says spent fuel in storage pool absolutely safe," Asahi Shimbun, August 1, 2013.

[3] Yagi's comment can also be found (in Japanese) in "Japan Atomic Power Company: Fighting at the Edge of the Cliff, Concerns Over a Management Crisis Through Decommissions," Sankei Shimbun, May 23, 2013.

[4] The article, in Japanese, is "Handle Losses Via Decommissioning Through Installments: METI Presses For Preparations," Asahi Shimbun, June 2, 2013.

[5] On this, see Keith Dawson, "US House Blocks Enforcement of Energy Standards, Again," Allied Lighting, July 16, 2013.

[6] On this, see (in Japanese) "Tepco Tries to Staunch the Loss of Customers by Factory-Oriented Free Diagnoses on Energy Conservation," Nikkei Shimbun, July 13, 2013.

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