

NUCLEAR MONITOR

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Editorial

Dear readers of the WISE/NIRS Nuclear Monitor,

In this issue of the Monitor:

- We summarize progress with clean-up and decommissioning operations at Fukushima, and problems faced by workers at the plant.
- We consider South Africa's plans for new power reactors, in particular the controversy that has erupted since the release of the secret nuclear cooperation agreement with Russia.
- We summarize two recent reports. One, by the International Energy Agency and the OECD's Nuclear Energy Agency, argues for a rapid expansion of nuclear power, prompting an *Oilprice.com* columnist to note that a rapid expansion is "highly unlikely" because the industry is "failing miserably" to build new power plants on time and within budget, and because the industry is facing a "tidal wave" of reactor closures. Meanwhile, BP has released the 2015 edition of its annual *Energy Outlook*, projecting a modest nuclear growth rate of 1.8% per year.
- M. V. Ramana and Suvrat Raju write about the problems and double standards associated with the ongoing attempts of the US and Indian governments to circumvent India's nuclear liability law.
- We reprint an article summarizing the mounting problems facing the Hinkley Point C nuclear project in the UK, and the UK government's bullying tactics to attempt to prevent Austria from challenging the EU decision to allow massive subsidies for the project.



Monitored this issue:

Fukushima Fallout: Four years on	1
South Africa's nuclear soap opera	5
The nuclear power industry is failing miserably	7
US-India nuclear 'breakthrough' met with skepticism	8
US-India nuclear 'breakthrough': Profitability without accountability	9
UK uses bullying tactics to save Hinkley	10

Feel free to contact us if you have feedback on this issue of the Monitor, or if there are topics you would like to see covered in future issues.

Regards from the editorial team.

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Fukushima Fallout: Four years on

Author: *Jim Green – Nuclear Monitor editor*

NM799.4446 Almost four years have passed since the 3/11 triple-disaster. Around 160,000 people were relocated because of the nuclear disaster and very few have returned to their homes. Apart from the radioactive contamination, there is little for them to return to.

A steady stream of reports detail the misery faced by evacuees from the triple-disaster. The latest of these reports concerns the number of evacuees who have died in solitude. At least 145 evacuees from the triple-disaster have died in solitude since March 2011. It is believed that prolonged isolation damages their health.¹

The clean-up and decommissioning of the Fukushima Daiichi site will take decades to complete – but no-one knows how many decades. There is little precedent for some of the challenges TEPCO faces, such as the robotic extraction of damaged nuclear fuel from stricken reactors and its storage or disposal ... somewhere.

Last October, TEPCO pushed back the timeline for the start of the damaged fuel removal work by five years, to 2025. Dale Klein, a member of TEPCO's Nuclear Reform Monitoring Committee, says the decommissioning schedule is pure supposition until engineers figure out how to remove the damaged fuel.²

International Atomic Energy Agency (IAEA) report

The IAEA completed its third review of the Fukushima clean-up operations in mid-February.³ The 15-member IAEA team released a preliminary report and the final report will be released by the end of March.⁴ The report does not consider contamination and clean-up operations outside the Fukushima Daiichi site.

“Japan has made significant progress since our previous missions,” said IAEA team leader Juan Carlos Lentijo. “The situation, however, remains very complex, with the increasing amount of contaminated water posing a short-term challenge that must be resolved in a sustainable manner. The need to remove highly radioactive spent fuel, including damaged fuel and fuel debris, from the reactors that suffered meltdowns poses a huge long-term challenge.”³

The preliminary report notes that the safe decommissioning of Fukushima Daiichi “is a very challenging task that requires the allocation of enormous resources, as well as the development and use of innovative technologies to deal with the most difficult activities.”

Achievements since the last IAEA mission in 2013 include the complete removal of nuclear fuel from reactor #4 (1,533 new and spent fuel assemblies); progress with the clean-up of the site; and some progress with water management. Challenges include persistent underground water ingress and the accumulation of contaminated water; the long-term management of radioactive waste; and issues related to the removal of spent nuclear fuel, damaged fuel and fuel debris.

Water management

A large majority of the 7,000 workers at Fukushima Daiichi are working on problems associated with contaminated water – groundwater that becomes contaminated, and cooling water that becomes contaminated.⁵

An estimated two trillion yen (US\$16.7 billion; €14.8b) will be spent on water management alone, which is 20% of the estimated cost of decommissioning the entire site.⁶ (In 2012, the American Society of Mechanical Engineers provided a “rough estimate” of US\$500 billion (€447b) for on-site decommissioning costs, clean-up of contaminated lands outside the Fukushima plant boundary, replacement power costs due, and compensation payments.⁷)

The IAEA report states that achievements since the last IAEA mission in 2013 include:

- Improved and expanded systems to clean contaminated water;
- The installation of new, improved tanks to store contaminated water (fully welded tanks replacing bolted flange type tanks), construction of dykes around the tanks with enhanced water holding capacity, and provision of covers to deflect rainwater from the dykes; and
- The installation and operation of a set of pumping wells to reduce the flow of groundwater towards the reactor buildings, sealing of sea-side trenches and shafts, and

the rehabilitation of the subdrain system. Groundwater ingress has been reduced by about 25% or 100,000 litres per day.

The installation of additional measures to reduce groundwater ingress, such as a frozen (ice) wall, is ongoing. The partially-built ice wall will enclose the area around reactors #1–4 on both the sea-side and the land-side. Whether the ice wall will effectively prevent the ingress and contamination of groundwater has been the subject of debate and scepticism.⁸

According to the IAEA report, the rehabilitation of subdrains (wells built around reactor buildings) and the construction of a treatment system for pumped subdrain water, are nearly complete. As the subdrains are placed in operation, they are expected to further reduce the groundwater ingress by about 150,000 litres per day, and to near zero following the installation of the land-side ice wall (if it works as hoped).

As of February 2015, about 600 million litres of contaminated water was stored on-site, of which more than half has already been treated to remove some radionuclides (including most caesium and strontium, but not tritium) and TEPCO expects to complete the treatment of the remaining water in the next few months.

Nevertheless the situation remains “complex”, the IAEA report states, due to the ingress of about 300,000 litres of groundwater into the Fukushima Daiichi site each day, and the ongoing use (and contamination) of water to cool stricken reactors. The IAEA states that not all of the large number of water treatment systems deployed by TEPCO are operating to their full design capacity and performance. One of the many remaining challenges for TEPCO will be to seal leakages in reactor and turbine building walls, which it plans to tackle after controlling groundwater ingress.

Leaks and spills are still occurring. On February 22, sensors detected a fresh leak of radioactive water to the ocean. The sensors, rigged to a gutter that directs rain and groundwater to a nearby bay, detected contamination levels 50–70 times greater than normal, falling to 10–20 times the normal level later that day.^{9,10}

On February 24, TEPCO acknowledged that it had failed to disclose leaks to the ocean of highly contaminated rainwater from a drainage ditch even though it was aware of the problem 10 months ago. The ditch receives run-off from the roof of the #2 reactor building. TEPCO said it recorded 29,400 becquerels of caesium per litre in water pooled on the rooftop, and 52,000 becquerels per litre of beta-emitting radionuclides such as strontium-90.¹¹

The governor of Fukushima Prefecture, Masao Uchibori, said the incident was “extremely regrettable”. Masakazu Yabuki, head of the Iwaki fisheries cooperative, said he had been “betrayed” by TEPCO. “I don’t understand why [TEPCO] kept silent even though they knew about it. Fishery operators are absolutely shocked,” Yabuki said.¹² The National Federation of Fisheries Cooperative Associations said: “The anger among local fishermen who have been waiting to resume their business is immeasurable.”¹³

Fishing industry and ocean dumping

A Fisheries Agency survey released in February revealed that the fishing industry has been slow to recover in coastal prefectures affected by the 3/11 triple-disaster. Only 50% of the surveyed companies in five prefectures said their production capacities have recovered to 80% or more of the levels before the disaster, with Fukushima Prefecture recording the lowest figure of 25%. Selling the catch has also been problematic. In the Fukushima, Iwate and Miyagi Prefectures, only 28% of the fish processing businesses have seen their sales rise to 80% or more of the pre-disaster levels.¹⁴

In January, the National Federation of Fisheries Cooperative Associations called on the government not to allow the release of contaminated water into the sea.¹⁵ Yet the IAEA report reiterates earlier advice to do just that. According to the IAEA, TEPCO's present plan to continue storing contaminated water in tanks, with a capacity of 800 million litres, is "at best a temporary measure while a more sustainable solution is needed."

Meanwhile, subsidiaries of Russian state nuclear corporation Rosatom are working on plans to build a demonstration plant to test technology for tritium removal from contaminated water.¹⁶ However the demonstration plant would not be operational until early 2016 and it is doubtful whether it could be deployed before the existing tank storage capacity is full.

The Prince of PR

The IAEA's latest report is one part substance, one part public relations. It is silent about the miserable situation faced by evacuees, sub-standard working conditions at Fukushima, the government's disgraceful secrecy law¹⁷, and much else besides.

Prince William's visit to Japan in late February was used for more pro-nuclear PR by the Japanese government. Escorted by Prime Minister Shinzo Abe, Prince William visited Fukushima prefecture, ate local produce and went to a children's playground. However they drove straight past a village where some of the Fukushima evacuees are still living as refugees.

Tokuo Hayakawa, a Buddhist priest who lives near the Fukushima plant, said: "I think Abe is using him. It's true that you can find children playing outside, and you can eat some Fukushima food. But to take that as the overall reality here is totally wrong. If I could, I would take him to these abandoned ghost towns, and to the temporary houses where people still live, so he could see the reality that we are facing."¹⁸

Worker accidents and deaths on the rise

Shortly after the third anniversary of the triple-disaster, Fukushima workers rallied outside the Tokyo headquarters of TEPCO, complaining that they were forced to work in dangerous conditions for meagre pay.¹⁹ Little has changed over the past year.^{20,21,22}

The number of serious work-related accidents at Fukushima Daiichi doubled in 2014. Nine serious accidents occurred between March 2014 and January 2015, resulting in two deaths and eight serious injuries.

The total number of accidents at Fukushima Daiichi, including heatstrokes, has almost doubled to 55 this fiscal year (which ends on March 31). "It's not just the number of accidents that has been on the rise," said labour inspector Katsuyoshi Ito. "It's the serious cases, including deaths and serious injuries that have risen."²²

On January 19, a worker died at Fukushima Daiichi after falling into an empty rainwater tank, and the following day a worker at the nearby Fukushima Daini plant died after being hit on the head by a piece of heavy equipment in a waste treatment facility. In March 2014, a worker died at Fukushima Daiichi after being buried by gravel while digging a ditch.

Just one week before the two deaths in January, labour inspectors warned TEPCO about the rising frequency of accidents and ordered it to take measures to deal with the problem. The rising accident rate is partly due to the increased number of workers involved in the clean-up of Fukushima Daiichi – now around 7,000, more than double the 3,000 or so that worked there in April 2013. But other factors are at work. TEPCO acknowledged after the deaths in January that there has been a "lack of continuous safety enhancement activity, such as listing up danger zones and eliminating them." The company also noted that "because of strong pressure to comply with the schedule, accident recurrence prevention activity was not thorough, and the range of inspection and measures was restricted."²¹

Hazard payments

TEPCO President Naomi Hirose announced in late 2013 that the daily hazard payment for Fukushima Daiichi clean-up workers would be doubled to about US\$180 (€161). But many workers are not receiving the promised pay increase. TEPCO has declined to disclose details of its legal agreements with the 800 contractors and subcontractors who employ almost all of the Fukushima workforce. Only one of the 37 workers interviewed by Reuters from July–September 2014 said he received the full hazard pay increase promised by TEPCO. Some got no increase. In cases where payslips detailed a hazard payment, the amounts ranged from US\$36–90 (€32–80) per day.²³

Two former and two current workers have initiated legal action against TEPCO to reclaim unpaid wages, in particular unpaid hazard payments. The four workers are seeking a total of US\$543,000 (€485,000).²⁴

In November 2014, TEPCO acknowledged that the number of workers on false contracts has increased in the past year. Survey results released by TEPCO showed that around 30% of those workers polled said that they were paid by a different company from the contractor that normally directs them at the worksite, which is illegal under Japan's labour laws. A similar survey in 2013 found that about 20% of workers were on false contracts.²⁵

Yet another controversy emerged on February 18 when a construction firm executive was arrested for sending a 15-year-old boy to help clean up radioactive waste outside the Fukushima plant. Japan's labour laws prohibit people under 18 from working in radioactive

areas. The boy was ordered to lie about his age. He said he was paid just ¥3,000 (US\$25.1; €22.4) per day and was hit when he did not work hard enough.²⁶

A *New York Times* editorial in March 2014 stated: "A pattern of shirking responsibility permeates the decommissioning work at the damaged Fukushima Daiichi nuclear power plant. ... It was the Japanese government, which had been leading the promotion of nuclear power, that made the Fukushima cleanup TEPCO's responsibility. The government kept TEPCO afloat to protect shareholders and bank lenders. It then used taxpayer money to set up the Nuclear Damage Liability Facilitation Fund, which provided loans to TEPCO to deal with Fukushima. This arrangement has conveniently allowed the government to avoid taking responsibility for the nuclear cleanup."²⁷

The government passes responsibility to TEPCO, and TEPCO passes responsibility to a labyrinth of contractors and subcontractors. The government and



TEPCO shirk responsibility for the Fukushima clean-up, just as they shirked responsibility for the March 2011 nuclear disaster.

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South Africa's nuclear soap opera

NM799.4447 South Africa's nuclear power program has become a soap opera over the past month. President Jacob Zuma said in his annual State of the Nation address on February 12 that the US, South Korea, Russia, France and China "will be engaged in a fair, transparent, and competitive procurement process to select a strategic partner or partners to undertake the nuclear build programme."

But the National Treasury said on February 1 that it has no idea where the money will come from, and a treasury spokesperson issued a statement saying "the government will not make a financial commitment it cannot afford." Zuma said details on financing would be released in the March budget, but in response the treasury insisted that the "nuclear build is so far not part of those decisions."¹

Zuma is promoting the construction of 9.6 gigawatts of nuclear capacity in addition to the two existing Koeberg reactors (1.8 GW). He said on February 12 that the first new reactor would begin operation in 2023. The following day, Nuclear Industry Association of South Africa managing director Knox Msebenzi said the start date had been pushed back by two years: "The first plant was due in 2023, but it's been very delayed. Part of the delay has to do with politics. The latest date is 2025, but there may be other delays. Maybe we're perceived by government as not read."²

Russia's BOO boys

The September 2014 South Africa–Russia nuclear cooperation agreement has been published by the *Mail & Guardian* newspaper despite the South African government's refusal to release it. It appears that the agreement was leaked but was later found to be publicly available on the website of the legal department of the Russian foreign ministry.³

The agreement – which is not binding until and unless it is ratified by the National Assembly and the National Council of Provinces – goes well beyond comparable agreements concluded between South Africa and Korea in 2011 and the US in 2009. It creates an expectation that Russian nuclear technology will be used in favour of alternative vendors – and may breach a constitutional requirement for open and competitive tendering. The agreement would indemnify Russian vendors from any liability arising from nuclear accidents. It would provide Russian vendors with regulatory concessions and "special favourable treatment" in tax and other financial matters.³

Officials in the department of energy, international relations, trade and industry, as well as in the treasury and the chief state law adviser, raised concerns about clauses in the draft agreement – but those concerns were largely ignored.^{3,4}

The *Mail & Guardian* editorialised: "The way the Russian nuclear deal was handled can only be to ensure a politically driven process, unhampered by technical or financial considerations. ... [I]t is a lopsided, murky and

legally fraught arrangement that hands most of the aces to Russia's state-owned nuclear company and carries significant risks for South Africa."⁵

On February 20, the *Mail & Guardian* reported on a "top secret" presentation by South Africa's energy department, proposing a closed government-to-government procurement of new nuclear power stations instead of a transparent and competitive tender.⁴

'National security' is put forward by a state law adviser as a possible justification to sidestep the constitutional requirement for open and competitive tendering.⁴ Patriotism is the last refuge of the scoundrel and 'national security' is the last refuge of the nuclear industry.

There is one obvious reason why South Africa might favour Russian reactors – an expectation that Russia will provide capital funding under Rosatom's Build-Own-Operate (BOO) model. A draft of the agreement suggested that reactors would be vendor financed, but the final version defers any decision on funding.⁵

It is doubtful whether Russia can afford to employ the BOO model in South Africa given its heavy BOO commitments elsewhere and Russia's broader economic problems.⁶

Spy stories

On February 24 *The Guardian* newspaper reported on the contents of a cache of secret intelligence documents and cables. A December 2009 file says that foreign agencies had been "working frantically to influence" South Africa's nuclear power program, identifying US and French intelligence as the main players.⁷

The documents also discuss the 2007 break-in at the Pelindaba nuclear research centre. Previously believed to be a failed attempt to steal highly enriched uranium, the documents raise the possibility that the would-be thieves were acting on behalf of China and were seeking to steal design information about South Africa's Pebble Bed Modular Reactor R&D program.⁷ That claim has been met with scepticism.⁸ In any case South Africa abandoned its pebble bed program and it is a low priority project in China.

Meanwhile, Greenpeace Africa announced on February 27 that it had filed papers in the Pretoria High Court to compel the energy minister to update the country's inadequate nuclear liability regulations. Greenpeace Africa executive director Michael O'Brien Onyeka said: "Shockingly, the levels of financial security for nuclear license holders have not been amended, updated or revised in more than 10 years. This means there is no lawfully applicable determination for the levels of financial security as required by the Act, and what is currently contained in the regulations is both out of date, and completely inadequate, which is in contravention of South Africa's constitution."⁹

(Written by Nuclear Monitor editor Jim Green.)

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Dr. Ernest Sternglass – scientist, humanitarian, activist

Dr. Ernest Sternglass, 91, Emeritus Professor of Radiological Physics at the University of Pittsburgh School of Medicine, passed away in New York on February 12. He was a prominent, published scientist and anti-nuclear activist, whose early warnings about the health effects of low-level radiation from global nuclear weapons fallout contributed to the passage of the Atmospheric Test Ban Treaty in 1963. Dr. Sternglass would go on to focus on the public health threat from routine and accidental radiological releases from nuclear power plants.

During the Three Mile Island meltdown disaster, Dr. Sternglass rushed into the area, with radiation monitoring equipment, in hopes of shedding light on the crisis, and providing vitally needed information to the public.

Dr. Sternglass was a physicist and inventor whose TV cameras sent the first live pictures back from the moon's surface and were also used in the Hubble Space Telescope, and whose digital x-ray systems work in the 1970s and 1980s led to the low x-ray dose and high-image accuracy of today's digital machines.

Born in Germany in 1923, Sternglass fled Nazi Germany with his family in 1938. In 1947 he was invited to discuss his scientific ideas with Albert Einstein, another refugee from Nazi Germany. Einstein advised him: "Don't go back to school. They will try to crush every bit of originality out of you. Don't go back to graduate school."



Ernest Sternglass in 1970.

www.beyondnuclear.org/home/2015/2/13/dr-ernest-sternglass-scientist-humanitarian-activist-public.html

www.legacy.com/obituaries/theithacajournal/obituary.aspx?n=ernest-j-sternglass&pid=174146534

www.nytimes.com/2015/02/21/science/ernest-sternglass-physicist-and-nuclear-critic-dies-at-91.html

The nuclear power industry is failing miserably

NM799.4448 The International Energy Agency (IEA) and the OECD's Nuclear Energy Agency (NEA) have released a *Nuclear Energy Technology Roadmap*, arguing that total installed nuclear capacity should be more than doubled to reach 930 GW by 2050 to contribute to climate change mitigation (well down from the 1200 GW figure put forward in the 2010 *Nuclear Energy Technology Roadmap*).¹

Nuclear growth would contribute 13% of the emissions reductions envisaged in the IEA/NEA scenario (far less than 13% if all sectors are considered, not just power generation). Nuclear would account for 17% of electricity generation in 2050 – still less than the historical peak of 17.6% in 1996.

Writing in *Oilprice.com*, Nick Cunningham argues that nuclear growth of the magnitude promoted in the IEA/NEA report is “highly unlikely”.² Obstacles include workforce issues, the need for greater standardisation, greater public acceptance, and a resolution to long-term nuclear waste storage.

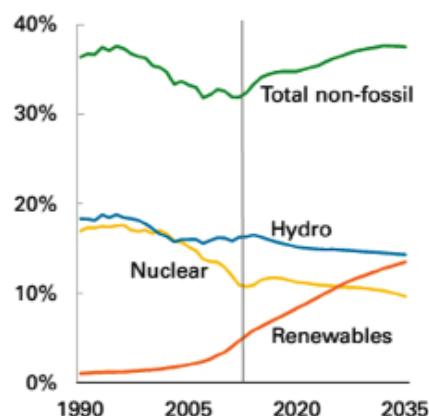
Cunningham writes:

“Critically, however, the IEA notes that the nuclear industry is going to need to demonstrate that it can build new power plants on time and within budget. On this objective, the industry is failing miserably. Nuclear power plants have often suffered from cost overruns and delays, one factor (among many) that put the industry into a decades-long lull beginning in the early 1980’s. The so-called “nuclear renaissance” was thought to put an end to these problems with a new generation of designs and modular construction. So far, it hasn’t played out that way.

“Meanwhile, a tidal wave of nuclear reactors will close down over the next 20 years as their operating licenses expire. ... A massive build out of nuclear power in China is where the nuclear industry’s best hopes reside, but it is unclear if even China can make up for the shrinking industry presence in the West, let alone meet the IEA’s ambitious scenario for 2050.”

Meanwhile, BP has released the 2015 edition of its annual *Energy Outlook*.³ BP projects that from 2015 to 2035:

- Global energy consumption increases by 37% with India and China accounting for half the growth.
- Total energy-related carbon emissions increase by 25%.



Source: BP: Energy Outlook 2015

- Coal demand growth in China and India more than makes up for declines in the rest of the world. Jointly they are projected to account for 66% of total coal demand in 2035.
- Renewables (including biofuels) account for 8% of total energy consumption in 2035, compared to 3% today.
- Renewable power generation overtakes nuclear in the early 2020s and hydro in the early 2030s.
- The fastest fuel growth is seen in renewables (6.3% p.a.), followed by nuclear (1.8% p.a. – down from BP’s 2014 estimate of 1.9% p.a.), hydro (1.7% p.a.), natural gas (1.9% p.a.), and oil and coal (both 0.8% p.a.).
- The shares of nuclear and hydro to total power generation continue to decline, but the scaling up of renewables is sufficient to lift the aggregate non-fossil share from 32% in 2013 to 38% by 2035.
- Within the OECD, renewables contribute 90% of net growth in power generation from all sources. In non-OECD countries, there is significant growth in renewables, hydro and nuclear.
- China overtakes the US as the biggest nuclear producer.
- Nuclear power declines in Europe and North America: “Nuclear capacity in Europe and North America declines as ageing plants are gradually decommissioned, and the difficult economics and politics of nuclear energy stunts new growth.”
- Japan is assumed to restart its reactors gradually from 2015 but is not expected to recover to pre-Fukushima level of nuclear power generation by 2035.

(Written by Nuclear Monitor editor Jim Green.)

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US-India 'breakthrough' met with skepticism

NM799.4449 Claims in late January from US President Barack Obama and Indian Prime Minister Narendra Modi that they had reached an agreement on accident liability arrangements have been met with skepticism.

In a detailed analysis posted on the website of the (Indian) Institute for Defence Studies and Analysis, G. Balachandran writes:

*"In a sort of official statement, US Ambassador to India Richard Verma was reported in the media to have said – although the US Embassy refused to either clarify or deny his having ever made such a statement – that the liability issue was to be resolved through a 'memorandum of law within the Indian system' that would not require a change of the Indian law. Later on, the spokesperson of the Indian Ministry of External affairs clarified the situation by the mere statement that 'We will indeed be providing you that information and that will be copious in nature, it will answer all your questions.' This was done ... in a Frequently Asked Questions (FAQ) format, although this still leaves many questions unanswered. For instance, it does not answer how the understanding between the two sides will be formalised. On the contrary, the FAQ answers raise further questions that need to be answered. Obviously, a FAQ will not carry much weight in business decisions that have to be made in respect of nuclear transfers."*¹

Pro-nuclear commentator Dan Yurman said:

*"There is no signed piece of paper, joint communique, or treaty between the US and India that says US nuclear firms, including Westinghouse and GE Hitachi, will now be exempt from the provisions of a nuclear liability law enacted with the support of the BJP, the political party that swept PM Nodi into office. ... No one on the US side is buying it. Spokesmen for both Westinghouse and GE Hitachi were noncommittal in response to questions from the news media about the so-called 'breakthrough' deal and the insurance pool. At best their responses have been lukewarm."*²

Washington Post reporters Annie Gowen and Steven Mufson wrote:

"We've been characterizing it as a breakthrough or breakthrough understanding," said a senior U.S. administration official on Tuesday. But, the official said, "It is not a signed piece of paper but a process that led us to a better understanding of how we might move forward. ..."

*The key issue will be whether the conflict between international law and Indian law can be waved away by a memorandum from India's attorney general. The memorandum would have to say that the 2010 liability law "doesn't mean what it says," said a Washington lawyer familiar with the issues but who asked for anonymity to protect his professional relationships. "The fear is that the U.S. government will say this is good enough," the lawyer added. "Even if the [Indian] attorney general comes out with a memorandum saying the law doesn't apply to suppliers, that's not binding on Indian courts."*³

The Associated Press reported:

*"India and America's declaration of a breakthrough in contentious nuclear energy cooperation has been met with a lukewarm response from industry and analysts. Few expect the potentially lucrative Indian market to suddenly become less complicated for U.S. nuclear companies."*⁴

Other obstacles remain in addition to the liability issue, as energy and nuclear policy consultant Mycle Schneider told *Deutsche Welle*:

*"In reality, there is no real market for foreign nuclear companies in India, unless they bring their own funding. Under free market conditions it is not possible anymore to build a nuclear power plant anywhere in the world. So if new reactors are built in India or elsewhere, the projects are highly subsidized, either by the government – the taxpayer – or the ratepayer."*⁵

Schneider is a nuclear critic but his views on nuclear economics can also be found in the industry literature. World Nuclear News recently ran an article by Edward Kee from the Nuclear Economics Consulting Group, who notes that of the 69 reactors under construction around the world, only one is in a liberalized electricity market.⁶

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Profitability without accountability

Authors: M. V. Ramana and Suvrat Raju

NM799.4450 In its efforts to promote nuclear commerce with the United States, India's Narendra Modi government has run into a dichotomy that lies at the heart of this industry. While multinational nuclear suppliers, such as G.E. and Westinghouse publicly insist that their products are extraordinarily safe, they are adamant that they will not accept any liability should an accident occur at one of their reactors.

The joint announcement by Mr. Modi and US President Barack Obama in January raised concerns that the government would move to effectively indemnify suppliers, contrary to the interests of potential victims. The list of "frequently asked questions" (FAQs) on nuclear liability released by the Ministry of External Affairs on February 8 confirms the suspicion that the Modi government is trying to reinterpret India's liability law by executive fiat in order to protect nuclear vendors (<http://tinyurl.com/india-liability>).

The government has disingenuously suggested that it achieved the recent "breakthrough" by establishing an insurance pool to support suppliers. However, to focus on this arrangement is to miss the wood for the trees as even a cursory analysis of the economics of nuclear plants shows.

A section in the Indian law called the "right of recourse" allows the Nuclear Power Corporation of India Ltd. (NPCIL) to claim compensation from suppliers up to a maximum of Rs.1,500 crore (US\$240 million; €214m). This pales in comparison with the total cost of the six planned Westinghouse reactors at Mithi Virdi in Gujarat; estimates from similar plants under construction in the US suggest that this may be as high as Rs.2.5 lakh crore (US\$40.1 billion; €35.8b). In the US, all nuclear plant operators must have third-party insurance for at least US\$375 million (€335m), and suppliers could easily set aside a small portion of their profits to do the same for reactors sold in India.

Problematic principle

What suppliers are worried about is not the amount, but the principle. More concretely, if the law places some responsibility on suppliers, then a future Indian government could use this to gain leverage by forcing them to pay substantially more for a serious disaster. Moreover, their executives could be held accountable under other civil and criminal statutes in India. The FAQs released by the government are meant to reassure nuclear vendors on these counts.

The FAQs claim that the provision allowing the NPCIL a right of recourse "is to be read ... in the context of ... the contract between the operator and supplier." This goes beyond the law, where the right of recourse exists independently of a contract.

In 2010, when a parliamentary standing committee suggested such a linkage, its recommendation was rejected by the Cabinet after a public outcry. Although the FAQs later state that "a provision that was expressly

excluded from the statute cannot be read into the statute by interpretation," this is precisely what the government is doing here.

The FAQs suggest that the government is also committed to the interests of the public sector NPCIL which "would insist that ... contracts contain provisions that provide for a right of recourse consistent with Rule 24 of CLND Rules of 2011." However, this is a cunning sleight of hand. A central element of these rules is that "the provision for right of recourse ... shall be for the duration of initial license," which is usually granted only for five years. In contrast, the promised lifetime of modern reactors is 60 years, and failure rates tend to increase in later years. Therefore, linking the right of recourse to a contract is an attempt to water down supplier liability to a meaningless level.

The FAQs also declare that suppliers cannot be "asked to pay more compensation in the future ... than currently provided under the law." However, this ignores the fact that the law itself has a provision for revising liability, which states that "the Central Government may ... from time to time ... specify, by notification, a higher amount."

A revision of the cap with time is only natural. Several decades from now, Rs.1,500 crore may be worth much less than it is currently. Therefore, the government's move to perpetually limit supplier liability to this nominal amount defies basic economic principles, and implies that victims will receive a lower compensation, in real terms, for future accidents.

Finally, the FAQs assert that the liability act, *ipso facto*, takes away the rights of victims to sue suppliers even under other laws. If this interpretation of the law is correct, then it implies that suppliers cannot be prosecuted even for criminal negligence.

Double standards

This provides a striking example of double standards. Under US law, suppliers can be held legally responsible for accidents. Consequently, for decades, the US refused to join any international convention that would require it to legally indemnify suppliers. When it engineered the Convention on Supplementary Compensation for Nuclear Damage, it inserted a "grandfather clause" to ensure that it would not have to alter its own law. In contrast, the Indian government seems willing to meekly surrender the rights of its citizens.

It is sometimes argued that India must make these concessions to "repay" the US for its help in facilitating India's access to international nuclear commerce. US policymakers pushed for such access in a calculated attempt to induce India to support its geostrategic objectives and to ensure that US companies would have access to the emerging Indian nuclear market. However, just because the Manmohan Singh government accepted this Faustian pact – and even cast an unconscionable vote against Iran at the

International Atomic Energy Agency – does not mean that the country needs to repay this self-serving “favour” endlessly by bending its laws and spending billions of dollars on US reactors.

Although the question of liability is somewhat abstruse, it deserves greater public attention because it serves as a clear lens to understand the central conflict involved in India's nuclear expansion: the desire of nuclear vendors to have profitability without accountability and the interests of ordinary people who could be potential victims. The

government's attempt to resolve this conflict in favour of the industry is a revealing indicator of its priorities.

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UK uses bullying tactics to save Hinkley

NM799.4451 UK Prime Minister David Cameron has threatened to retaliate over Austria's plans to mount a legal challenge to the Hinkley Point nuclear project, according to a document written by Vienna's ambassador to London. Britain's concerns are highlighted in Mr Eichinger's account of a meeting with Vijay Rangarajan, a senior official at the Foreign Office. According to the letter, the UK has said that it could retaliate in several ways, with officials working on a “systematic creation of countermeasures” against the country.¹

Austria confirmed that it would launch a legal challenge against the European Union's (EU) decision to allow billions of pounds of subsidies for Hinkley on 21st January.²

The UK could retaliate by mounting a legal challenge to Austria's electricity (source) labelling on the basis that this breaches common market rules. It could also apply pressure on Austria to shoulder a higher burden in EU “internal effort-sharing” in the bloc's transition to a low-carbon economy. Britain could also begin an investigation into whether Austria's suit violated the Euratom treaty on nuclear power.

Doug Parr, chief scientist at Greenpeace, criticised the government for bullying the Austrians for daring to question the “huge and wasteful energy project”, which would raise bills for British consumers. Thankfully the Austrian Government has said it won't be intimidated by threats.³

A spokeswoman for Mr Cameron said he believed that Britain had the right to choose its own energy mix. The UK government said it had no reason to believe that Austria was preparing a legal case that had any merit.⁴ On the other hand Dr Dörte Fouquet, a lawyer for the Brussels-based law firm Becker Büttner, which specialises in energy and competition law, said she thought that Austria's chances of success were “pretty high.”⁵ And as the Nuclear Free Local Authorities pointed out in letters to the *Guardian and Independent*, if Hinkley Point goes ahead, with a £17 billion state aid package between the UK Government and EDF Energy, it could see other EU states like the Czech Republic, Poland and Slovakia – all close to Austria – seek to replicate such contractual operations for their own new nuclear ambitions.

It is important to note in 2006 the then Chancellor Alasdair Darling said it will be up to the private sector to “initiate, fund, construct and operate” the nuclear plants. And the UK Coalition Agreement between the

Tories and Liberal Democrats allowed the Government to promote the construction of new nuclear reactors provided they receive “no public subsidy”.

Councillor Mark Hackett for the NFLA says the UK Government's churlish response is mainly due to it knowing that the writing is on the wall – Hinkley Point will be subject to another long delay, and this makes it ever less likely to be built. Austria should be commended for bringing us to our senses and forcing us to see the necessity of a quite different low carbon strategy; where renewables, energy efficiency and decentralised energy can become the norm.

Investment decision delayed

The Times reported on February 7 that an investment decision would be delayed until several months after the general election because the project's Chinese backers have demanded that the French government protect them if it goes bust.⁶ The Chinese were reported to have serious concerns about the EPR reactor design and are refusing to invest unless the French government promises to bail out Areva, if necessary, and cover their share of any cost overruns.

Complex negotiations involving British ministers, their opposite numbers in Paris, EDF Energy and the Chinese have been complicated still further by the legal challenge brought by Austria against Hinkley Point. Now EDF Energy is seeking assurances from the UK Government that if Austria wins the case and the project has to be abandoned halfway through, the company will receive compensation for the money invested up to that point.

At first, according to the Burnham-on-sea.com website, EDF Energy denied reports that an investment decision would be delayed until the Autumn. And the Stop Hinkley Campaign pointed out that if EDF Energy or the Chinese demanded any new financial guarantees these would require approval from the European Competition Commissioner.⁷

Just two days later, *The Telegraph* reported that EDF Energy appears to have abandoned its March 2015 deadline for making an investment decision and has warned that talks on the project may still take a “considerable” time. EDF described finalising agreement on Hinkley as a “major challenge” facing the company in 2015. EDF said that before it could take a decision it needed to sign deals with co-investors, gain European Commission and UK government approval of waste transfer contract arrangements, finalise a £10 billion

loan guarantee from the Treasury and finalise a subsidy contract that was provisionally agreed with the UK Government in 2013.⁸

Earlier the *Financial Times* reported that several potential investors have backed away from the project despite the promise of a 35-year index-linked price guarantee backed by the UK taxpayer.⁹ The Kuwaitis, the Qataris, the Saudi Electric Company and even Hermes, the UK based investment fund, have all been mentioned as possible investors but none has signed up.

On top of all this Areva, the French, mainly State-owned company which would be the main equipment supplier, will have difficulty funding its expected 10% share of the project. Areva is struggling to survive the ongoing mess of the Olkiluoto nuclear plant in Finland, which is years behind schedule and billions over budget. Areva's losses in Finland are currently estimated at €3.9bn. The loss of Areva's share of Nuclear Management Partners Consortium's contract to decommission the Sellafield will not have helped.

Areva's share price has collapsed. It ended its market year with a decline of 52% as a result of financial difficulties caused by mismanagement, hazardous speculations and acquisitions, repeated technical fiascos (i.e. the EPRs in Finland and France), the regression of global nuclear market, and especially the cessation of the Japanese market since the Fukushima nuclear disaster.¹⁰

Chinese investment

Meanwhile, the government is refusing to say whether it has followed its own rules in allowing the Chinese to invest in Hinkley, citing questions of national security. Chinese involvement in UK energy schemes remains controversial, not least because of the historical links between its industry and the military. The National Security Council (NSC) is supposed to review critical projects. But ministers have consistently refused to say whether this has been the case. The BBC requested information, under Freedom of Information laws, about whether the NSC had discussed China's investment in Hinkley and if it had, whether it had been approved.

In a delayed response, the government confirmed the information was held by the Cabinet Office but refused to say whether the NSC had approved or even discussed China's expected 30–40% stake. Labour MP Dr Alan Whitehead, a member of the Energy and Climate Change Committee, said the government's refusal to say whether it had followed its own rules was "not acceptable".¹¹

Abridged from NuClear News, No.71, February 2015, www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo71.pdf

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