

# NUCLEAR MONITOR

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AND THE NUCLEAR INFORMATION & RESOURCE SERVICE (NIRS)

## Editorial

Dear readers of the WISE/NIRS Nuclear Monitor,

In this issue of the Monitor:

- We consider Russia's plans to build more power reactors in Iran, focusing on the proliferation and security risks.
- Prof. Ian Lowe writes about Australia's plan to export uranium to India
- Tim Judson from the Nuclear Information & Resource Service argues that there's no place for nuclear in the US 'Clean Power Plan'.

The Nuclear News section has reports on 17 activists facing jail time for a peaceful protest at a nuclear plant in Spain; significant new reports on nuclear and uranium issues produced by the Environmental Justice Organisations, Liabilities and Trade (EJOLT) project; new obstacles facing the plans for new power reactors in the UK; a dispute over Paladin's plan to discharge radioactive sludge from a uranium mine into Lake Malawi; and more.

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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## Russia to build more reactors in Iran

**Author:** *Jim Green – Nuclear Monitor editor*

**NM795.4434** Russia and Iran have signed a contract to build two VVER power reactors at Bushehr on the Persian Gulf. The two countries also signed a protocol envisaging possible construction of an additional two reactors in Bushehr and another four at an undetermined location. Bushehr is already home to the only power reactor in Iran (and the entire Middle East), a VVER pressurised water reactor which began commercial operation in September 2013.<sup>1,2</sup> Iran has identified 16 potential sites for nuclear power plants – 10 on the coastal rim of the Persian Gulf and the Sea of Oman.<sup>3</sup> Consideration is also being given to the construction of desalination plants powered by new reactors.<sup>1,2</sup>



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Iran's nuclear plants are vulnerable to earthquakes, as discussed by the Nuclear Threat Initiative: "In 2013, a 6.3 magnitude earthquake hit the southwest region of Iran, where Bushehr is located. Given that much of Iran is in a seismic zone, many expressed concerns over [Bushehr's] safety following the earthquake. For example, the United Arab Emirates and Saudi Arabia voiced concerns at the IAEA Board of Governors meeting in June 2013. Iran denied allegations concerning the plant's safety "vulnerability." Simultaneously, Iran reported an electric generator malfunction and "long cracks ... in at least one section of the structure." However, Tehran dismissed

the suggestion that the malfunction was connected to the earthquake.<sup>14</sup>

### Oil for atoms?

There is no pretence that Iran's nuclear power program is driven by concerns about climate change. Nuclear Energy Insider and the World Nuclear Association state that Iran intends to conserve hydrocarbon reserves for future export.<sup>2,5</sup>

In February 2014, Iran's ambassador to Russia Mehdi Sanaei said the two countries have been negotiating Iranian supply of a few thousands barrels of oil per day and "Iran could use some of the proceeds [to pay for] the construction by Russia companies of a second unit at the nuclear power plant in Bushehr."<sup>6</sup>

Neutron Bytes blogger Dan Yurman writes:

*"A very real question is how is Iran going to pay for the reactors? The country's economy is on the rocks because of economic sanctions and rapidly dropping oil prices. One possibility is that the Russians are betting the Iranians will offer to pay for the reactors with oil which they will be able to sell on world markets if, and only if, they negotiate a deal with the West on their uranium enrichment program.*

*"Running the numbers for eight 1000 MW reactors at [US]\$5000/kw yields a snapshot value of \$5 billion per reactor or \$40 billion overall. That kind of money might be helpful to Russia which depends heavily on oil exports to keep its economy afloat. Also, it would pull \$40 billion worth of oil out of world markets and put it in Putin's hands perhaps to hold for a future date when market prices have moved north of \$100/barrel. At the current price of \$75 for barrel oil, \$40 billion works out to 533 million barrels of oil. ...*

*"It still seems plausible then that one motivation for Russia's deal is to prevent Iran's return to world oil markets from depressing the price further. But some experts disagree with this idea. According to the Financial Times, Mark Fitzpatrick, a former US State Department diplomat, says that the whole enterprise is a smoke screen for Iran to justify its uranium enrichment infrastructure. He called it a potential "Putin double cross" of the negotiations being led by the European Union and the U.S."<sup>7</sup>*

The US has expressed concern that trade and barter arrangements between Russia and Iran could breach or undermine US-led sanctions over Iran's nuclear program.<sup>8</sup>

Ambassador Mehdi Sanaei said: "Our Russian friends, who have stood by us at difficult moments, should have advantages on the Iranian market. But Russian companies must hurry to get into their niche in our market and not hesitate out of fear of Western sanctions."<sup>9</sup> Meanwhile, Behrouz Kamalvandi, a spokesperson for the Atomic Energy Organisation of Iran, held out the prospect of Western investment in Iran's nuclear power program: "We welcome different countries' cooperation in this regard and it seems that given the tendency that the Western companies have towards cooperation with Iran, we will use their experiences in future."<sup>10</sup>

### Weapons proliferation implications

What are the proliferation implications of Iran's plans for more power reactors? Perhaps not much, for these reasons:

- Russia's Rosatom will provide nuclear fuel "throughout the entire lifecycle" of the proposed eight new reactors, and spent fuel will be returned to Russia for reprocessing and storage.<sup>1,2</sup>
- The reactors will be subject to International Atomic Energy Agency safeguards.
- Iran already has several potential sources of fissile material for weapons: its enrichment program, the Bushehr power reactor, and a 5 MW research reactor in Tehran (as well as the partially-built IR-40 research reactor).

That said, the plan for new reactors presents several problems and risks.

Russia supplies the operating Bushehr reactor with enriched fuel – but that hasn't stopped Iran citing its nuclear power program as one justification for its enrichment program.<sup>11</sup> Daryl Kimball wrote in *Arms Control Today* in September: "Iran's light-water reactor at Bushehr ... uses fuel supplied by Russia under a 10-year deal that could be extended past its 2021 end date. Russia is obliged to supply fuel unless Iran chooses not to renew the contract. But Iran's leaders are under heavy political pressure to reduce the country's reliance on foreign energy suppliers and to maintain a uranium-enrichment program that could be expanded if and when the country's nuclear energy needs grow."<sup>12</sup>

With several countries willing to engage in nuclear trade with India, and China supporting Pakistan's nuclear program, and Russia supplying new reactors to Iran, previous historical norms and agreements against nuclear trade with countries violating non-proliferation norms and commitments are near-dead.

The politicking around Iran's nuclear program is dripping with contradictions and irony – not least the leading role of the five declared nuclear weapons states, none of which take their NPT disarmament commitments seriously, in pressuring Iran to curtail its nuclear program. There are further contradictions regarding Iran's partially-built Arak research reactor. Iran is being pressured to either modify the reactor to reduce its plutonium production rate (which it seems willing to do), or to abandon the reactor altogether.

With its current design, if completed the Arak reactor could produce 5–10 kgs of weapon grade plutonium annually.<sup>13</sup> Yet there is no effort to prevent the construction of new power reactors, each of which could produce 150–200 kg of weapon grade plutonium annually.<sup>14</sup>

### French hypocrisy

France has been leading the charge to have the Arak reactor included in negotiations over Iran's nuclear program.<sup>15</sup> Yet France supplied Israel with a similar 'research' reactor used to produce plutonium for Israel's nuclear weapons.<sup>16</sup>

Dr David Lowry, former director of the European Proliferation Information Centre, addresses another aspect of French hypocrisy: "Among the several reasons the Vienna talks on Iran's nuclear program have had to be reconvened this month — and now extended into next year — was that France objected to the deal with Iran being closed off earlier because of Tehran's contested plutonium production plant at Arak. Whatever doubts the French have over Arak, they seem to be sanguine about Iran's involvement in uranium enrichment, so much so that they are in industrial partnership with the Iranians in this technology, and have been for four decades since an agreement with the Shah of Iran in 1975. Oddly, this deal never gets reported in the context of the Iran nuclear negotiations. Is there any good reason why not? It ought to be centre-stage in any public diplomacy, but isn't. ... The hypocrisy of France, as a nuclear technology supplier to Iran, ganging up on its customer with the other self-appointed permanent five members of the UN security council, along with Germany, would be funny if it wasn't so serious."<sup>17</sup>

Following France's obstructive role in negotiations about Iran's nuclear program in November 2013, nuclear physicist Yousaf Butt wrote:

*"France's torpedoing of the agreement appears less related to genuine nuclear proliferation concerns than with trying to curry favor with anti-Iranian countries like Saudi Arabia and the United Arab Emirates – who commission and buy expensive French military, satellite and nuclear hardware. ... France's reluctance to sign off on the interim agreement is easier to understand through the prism of its lucrative regional trade agreements with Sunni Arab monarchies opposed to Iran. For example, for the first time since 2007, France penned a military contract with the United Arab Emirates in late July. The billion dollar contract for two spy satellites couldn't have been better timed: French military contracts lost a quarter of their value last year.*

*"Similarly, just a month after the deal with the UAE, France also signed a billion euro contract with Saudi Arabia – a bitter rival of Iran – to overhaul four frigates and two refueling ships. French business interests in Saudi Arabia are not restricted to just the military, however. Last month, the government-controlled French nuclear power conglomerates Areva and Electricite de France (EDF) hosted about 200 Saudi business and industry representatives at a "Suppliers Day" event held in Jeddah.*

*"The French ambassador to Saudi Arabia explicitly expressed his hope that the Kingdom would seek French help in implementing its "huge program in the nuclear field." Such long-term infrastructure contracts could be worth roughly 40 billion euros to the French. Similar deals have already been signed with the tiny Gulf nation of Qatar, also an adversary of Iran. Given these – and future – lucrative military and infrastructure contracts, it seems likely that France would seek to curry favor with the Sunni Gulf Arab monarchies by holding up a deal with Iran."<sup>18</sup>*

## Technology transfer

It seems that there will be little or no technology transfer of proliferation significance associated with the Russia-

Iran reactor agreement. Yet there are mixed messages. A World Nuclear News article describes the agreement as a "turn-key" deal but also quotes Rosatom stating that the parties "intend to ensure the maximum possible participation of enterprises and organizations of the Islamic Republic of Iran in all works related to the construction of new power units on the sites, their operation and decommissioning."<sup>1</sup>

Rosatom made the mysterious statement that Russia and Iran have "confirmed their intent to cooperate in the field of the nuclear fuel cycle and ecology."<sup>1</sup> However fuel cycle technology transfer may be limited to fuel fabrication rather than more sensitive stages such as enrichment and reprocessing. Nuclear Energy Insider reports that a Memorandum of Understanding was signed on November 19 for Iran and Russia to work together on the feasibility of assembling fuel bundles in Iran, which will be "economic" once all eight new reactors are grid-connected.<sup>2</sup>

Rosatom will also train Iranian specialists in the operation, servicing and engineering support for the new reactors.<sup>1,2</sup>

If nothing else, Iran will be better placed to build and operate indigenous reactors as a result of the collaboration with Russia.

## Proliferation and security

Tied to proliferation issues are security issues such as potential military strikes and cyber-attacks on nuclear plants, and the murder of nuclear scientists and others involved in Iran's nuclear program.

Israel has repeatedly threatened to launch military strikes against Iran's nuclear program.<sup>22</sup>

In addition to the Stuxnet cyber-attack on Iran's enrichment program, there has been speculation that Bushehr was also targeted and that Stuxnet may have caused problems leading to the removal of fuel from the reactor in early 2011.<sup>35</sup>

The Bushehr plant (then under construction) sustained damage from numerous Iraqi bombing raids during the 1980-88 war.<sup>19,20</sup>

In September 2014, Iran arrested a Ukrainian man suspected of sabotaging the Bushehr plant. The suspect pretended to be an expert from Russia, the Iranian newspaper *Hamshahri* cited authorities as saying. The nature of the alleged sabotage was not disclosed.<sup>21</sup>

An explosion occurred inside the Arak reactor building in late 2013 according to Israeli sources. According to Israeli website Debkafile, Tehran did its utmost to conceal the blast. Debkafile speculated that the blast resulted from physical sabotage, a viral attack on computers, or the result of inferior steel materials that were unable to withstand intense pressure during testing.<sup>23</sup>

In March 2014, the deputy head of Iran's Atomic Energy Organisation, Asghar Zarean, accused "foreigners" of trying unsuccessfully to sabotage the Arak plant.<sup>24</sup> Zarean said: "Several cases of industrial sabotage have been neutralized in the past few months before achieving the intended damage, including sabotage at a part of the IR-40 facility at Arak."<sup>25</sup>

Arak is regarded as particularly vulnerable to attacks in its partially-built state, since attacks could damage or destroy the reactor and associated infrastructure without resulting in widespread radioactive contamination. Israel's former chief of military intelligence, Amos Yadlin, who piloted one of the planes that bombed Iraq's Osirak heavy-water reactor in 1981 before it was due to become operational, said: "Whoever considers attacking an active reactor is willing to invite another Chernobyl, and no one wants to do that."<sup>26</sup>

In addition to the strike on Osirak in 1981, Israel destroyed a suspected reactor site in Syria in 2007 and has refused to rule out bombing Arak.<sup>27</sup>

In August 2012, saboteurs blew up power lines supplying Iran's underground uranium enrichment plant near the city of Qom.<sup>28</sup>

In August 2014, Iran said it had shot down an Israeli drone that was heading for its uranium enrichment site near the town of Natanz.<sup>29</sup>

At least five people associated with Iran's nuclear program have been murdered since 2007, including the deputy head of Iran's uranium enrichment facility at Natanz (killed by a car bomb in 2012), the head of the country's ballistic missile program, and the head of Iranian cyber warfare (who was shot dead).<sup>30-33</sup> In 2012, Iran hanged a man it claimed was a Mossad agent over the killing of an Iranian nuclear scientist in 2010.<sup>34</sup>

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# A cricketing ally, but will India play a straight bat on Aussie uranium?

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**NM795.4435** Behind the flag-waving and cheers surrounding Indian Prime Minister Narendra Modi's recent visit to Australia are serious questions about the safety and security implications of Australia's agreement to supply uranium to New Delhi.<sup>1</sup>

When he inked the uranium deal in India in September, Australian Prime Minister Tony Abbott praised India's "absolutely impeccable non-proliferation record".<sup>2</sup> He refused to answer questions about alleged serious deficiencies in India's civil nuclear sector and was reduced to cliché, declaring that Australia and India trust each other on issues like uranium safeguards because of "the fundamentally ethical principle that every cricketer is supposed to assimilate – play by the rules and accept the umpire's decision".<sup>3</sup>

Yet despite the assurances of peaceful purposes, this deal has serious nuclear security implications. After all, India has form. It used Canadian peaceful nuclear technology to develop weapons, provoking Pakistan to follow suit. Even if all goes well – and in the aftermath of the Fukushima disaster that is a big assumption – Australian sales could potentially free up India's domestic uranium stocks for military use.

Whatever happens, the new deal certainly won't reduce the continuing tension with nuclear rival Pakistan, or promote nuclear non-proliferation.

## Checks and balances

India is a nuclear-armed nation that has not signed the Nuclear Non-Proliferation Treaty, and as such is not subject to the (admittedly fragile) checks and balances provided by full international nuclear safeguards. It is engaged in an active nuclear weapons program, has an estimated 80-100 nuclear warheads, and explicitly refuses to renounce nuclear testing.

Contrary to Abbott's statement, India is neither playing by the rules nor recognising the authority of the international umpire. Add these facts together and the plan to sell Australian uranium to India is in clear and direct conflict with Australia's international obligations under the South Pacific Nuclear Weapons Free Zone Treaty,<sup>4</sup> which says: "States Parties are obliged not to manufacture or otherwise acquire, possess, or have control over any nuclear explosive device anywhere inside or outside the Treaty zone; not to seek or receive any assistance in this; not to take any action to assist or encourage the manufacture or acquisition of any nuclear explosive device by any State; and not to provide sources or special fissionable materials or equipment to any non-nuclear weapon State (NNWS), or any nuclear weapon State (NWS) unless it is subject to safeguards agreements with the International Atomic Energy Agency."

Prime Minister Modi is intent on expanding India's civil and military nuclear ambitions but there are big question marks around the safety and security arrangements for India's nuclear sector. In 2012 a scathing report by India's then Auditor-General Vinod Rai warned of a "Fukushima or Chernobyl-like disaster if the nuclear safety issue is not addressed".<sup>5</sup>

The issues identified in this frank assessment from one of India's own senior officials have not been addressed, and there is no guarantee that they ever will be. The safety of India's nuclear reactors remains shaky, because the sector's regulation and governance is deficient. As we have seen with Fukushima and Chernobyl, the cost of errors or accidents can be catastrophic.

## Australian uranium's role

Fukushima is a continuing nuclear crisis that has been directly fuelled by Australian uranium, so its lessons are significant. If Japan, the world's third-largest economy and a nation steeped in technological expertise, could not control the atomic genie, it bodes poorly for the application of this technology in other countries. In the aftermath of Fukushima, instead of opening up uranium exports to insecure and conflict-prone regions, we should tread more carefully.

With Australia's renewable energy expertise and resources, we are perfectly placed to turn on the lights in Indian villages while ensuring that the Geiger counter stays off.

The deal has even prompted doubts among pro-nuclear commentators. For two decades until 2010, John Carlson<sup>6</sup> was director general of the Australian Safeguards and Non-Proliferation Office<sup>7</sup> and charged with overseeing Australian uranium sales. Now he has raised serious concerns, including his worry that Australia may be unable to keep track of what happens to uranium once it's sold to India.<sup>8</sup>

As Carlson makes clear, without proper reporting Australia has no way of knowing whether India is really meeting its obligations to identify and account for all the material that is subject to the agreement, and to apply Australia's safeguard standards. It is not good enough simply to take India on trust as a fellow cricket-mad nation, or to appeal to an "impeccable" non-proliferation record that it doesn't actually have.

Carlson's assessment is that the planned deal is short-sighted, self-defeating, and compromises Australia's standards. That warning should ring loud alarms in Canberra. The deal has yet to be examined by the Joint Standing Committee on Treaties.<sup>9</sup> The rigour that the committee brings to this issue will be a test of whether

radioactive rhetoric or real-world responsibility is in the ascendancy in Canberra.

Uranium is not just another mineral. It fuels nuclear reactors and devastating weapons. Whether used for electricity or bombs, it inevitably produces radioactive waste that must be stored for geological timescales.

As home to around a third of the world's uranium supply, Australia's decisions on this issue matter. It is important that those flagging concerns are listened to just as much as those waving flags.

*Reprinted from The Conversation:*

<http://theconversation.com/a-cricketing-ally-but-will-india-play-a-straight-bat-on-aussie-uranium-34607>

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## Indian government cautious about nuclear power

India's Power, Coal and Renewable Energy Minister Piyush Goyal said on November 6 that the government remains "cautious" about developing nuclear power. He pointed to waning interest in the US and Europe: "This government would like to be cautious so that we are not saddled with something only under the garb of clean energy or alternate energy; something which the West has discarded and is sought to be brought to India."<sup>1</sup>

Goyal noted that India's Nuclear Liability Law remains an obstacle to nuclear vendor countries and companies. That law does not fully absolve vendors of liability in the event of an accident. Asked if a breakthrough on the liability dispute was possible ahead of President Obama's January 2015 visit to India, US Assistant Secretary of State Nisha Biswal recently said: "I see there is a lot of hard work ahead and I would not be sanguine about announcing any early breakthrough. What is required right now is not a lot of unrealistic expectations."<sup>2</sup>

The *Hindustan Times* reported on November 30 that the Indian government is working on a plan to weaken

the liability law. Options include setting up an insurance pool, fixing a limit on reactor components for the purpose of determining liability, and the PM providing a personal assurance that vendors won't be harassed unnecessarily in the event of an accident.<sup>5</sup>

An article in *The Hindu* newspaper notes that three factors have put a break on India's reactor-import plans: "the exorbitant price of French- and U.S.-origin reactors, the accident-liability issue, and grass-roots opposition to the planned multi-reactor complexes."<sup>3</sup>

Meanwhile, *The Times of India* reports that US investment in nuclear power in India remains far off. In addition to unresolved liability issues, India and the US are yet to complete administrative arrangements concerning safeguards and non-proliferation assurances. The US is reportedly demanding fresh bilateral safeguards in the nature of non-proliferation assurances, and the two countries have yet to agree on matters regarding the tracking of nuclear fuel through the entire cycle.<sup>4</sup>

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# There's no place for nuclear in the US 'Clean Power Plan'

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**NM795.4436** *The US Environmental Protection Agency's plan for 'clean power' are welcome, writes Tim Judson – except for its inclusion of nuclear, and economic distortions and serious omissions that favour the technology. This open letter to EPA Administrator Gina McCarthy calls on the EPA to ditch the 'false and irrational assumptions' used to justify both new and existing nuclear power.*

Dear Administrator Gina McCarthy,

We strongly support the EPA's goals in the Clean Power Plan draft regulation, and we are grateful for the agency's leadership in setting a critical policy for reducing emissions from the electricity generation sector. We also appreciate the fact that the Clean Power Plan's purpose is to create enforceable goals for states to reduce emissions, and a framework (the Best System of Emissions Reduction / BSER) for them to implement and comply with the targets.

Unfortunately, the treatment of nuclear energy in the draft rule is unsupported by meaningful analysis, and would make it possible for states to implement the rule in ways that are counterproductive to the Clean Power Plan's purpose of reducing emissions.

## **The role of nuclear power must be re-evaluated**

We are, additionally, very concerned about industry proposals to expand provisions to encourage nuclear. We urge the EPA to conduct a thorough and fact-based analysis of nuclear, and to do the following:

- Remove the preservation of existing nuclear reactors from the BSER.
- Do not force Georgia, South Carolina, and Tennessee to finish building new reactors.
- Conduct a thorough and accurate analysis of the environmental impacts of nuclear power, from radioactive waste and uranium mining to reactor accidents and water use.
- Recognize and incorporate the much greater role renewable energy and efficiency can, will, and must play in reducing carbon emissions and replacing both fossil fuels and nuclear.

We recognize that the EPA has undertaken a monumental task in developing the Clean Power Plan – perhaps the most important single step in setting the U.S. on the path to reducing emissions enough to avert the worst of global warming and climate change.

It is essential that we begin making substantial reductions in emissions immediately, and that the institutional inertia and narrow self-interest of utilities and major power companies do not stand in the way of deploying the most cost-effective and environmentally sustainable energy solutions.

For that very reason, it is important the regulation ensures states do not get off on the wrong foot and implement the rule in ways that are counterproductive.

## **False and irrational assumptions**

Unfortunately, the Clean Power Plan's treatment of nuclear incentivizes the preservation and expansion of a technology that is and has always been the most expensive, inflexible, and dangerous complement to fossil fuels.

The Clean Power Plan incorporates nuclear into the BSER in two ways:

- Assumes five new reactors will be completed and brought online in the states of Georgia, South Carolina, and Tennessee, and irrationally estimates the cost of doing so as \$0. In fact, billions more remain to be spent on these reactors and there is a great deal of uncertainty about when, if ever, they will be completed, facing years of delays and billions in cost overruns. The cost assumption would force states to complete the reactors no matter the cost, rather than enabling them to choose better ways to meet their emissions goals. Even though renewables and efficiency could be deployed at lower cost than nuclear, the draft rule would make it look like they are much more expensive because of the zero-cost assumption about completing the reactors.
- Encourages states to 'preserve' reactors economically at-risk of being closed, equivalent to 6% of each state's existing nuclear generation. While it is true that about 6% of the nation's operating reactors may close for economic reasons, this provision encourages every state to subsidize existing reactors, greatly underestimates the cost of doing so, and overestimates their role in reducing emissions. Uneconomical reactors have high and rising operating costs, and cannot compete with renewables and efficiency.

The rule also says states may utilize two other ways of adding nuclear capacity as options for achieving the goals, even though they are not incorporated in the BSER:

- New reactors other than those currently in construction. EPA recognizes that new nuclear is too



expensive to be included in the BSER, so it should not suggest states consider it as a way of meeting their emissions goals.

- Power uprate modifications to increase the generation capacity of existing reactors. Power uprates are capital-intensive and expensive, and several recent projects have been cancelled or suffered major cost overruns, in the case of Minnesota's Monticello reactor, at a total cost greater than most new reactors (US\$10 million/megawatt).<sup>1</sup>

Rather than suggesting states waste resources on nuclear generation too expensive and infeasible to be included in the BSER, EPA should include an analysis of these problems so that states can better evaluate their options and select lower-cost, more reliable means for reducing emissions, such as renewables and efficiency.

### **Serious nuclear concerns ignored**

The Clean Power Plan also considers some non-air quality impacts of nuclear generation, as it is required to do under the Clean Air Act. However, the EPA's evaluation is both woefully incomplete and alarmingly inadequate. EPA dismisses concerns about radioactive waste and nuclear power's impact on water resources, simply characterizing them as equivalent to problems with fossil fuel generation.

In fact, radioactive waste is an intractable problem that threatens the environment for potentially hundreds of thousands of years. In addition, nuclear reactors' use of water is more intensive than fossil fuel technologies, and a majority of existing reactors utilize the most water-intensive once-through cooling systems.

Regardless, however, rather than only comparing them to fossil fuels, EPA should have compared these impacts to the full range of alternatives, including renewables and efficiency, which do not have such problems.

EPA leaves out a host of other environmental impacts unique to nuclear, including uranium mining and nuclear accidents. There are over 10,000 abandoned uranium mines throughout the US, which are subject to lax environmental standards, pose major groundwater and public health risks, present serious environmental justice concerns, and could entail billions in site cleanup and remediation costs.

The failure to consider the impacts of a nuclear accident is a glaring oversight, in the wake of the Fukushima disaster. EPA must consider both the environmental and economic impact of nuclear accidents.

### **Renewables can do the job!**

In general, the Clean Power Plan's consideration of nuclear appears to be based on a dangerous fallacy: that closed reactors must be replaced with fossil fuel generation, presumably because other low- / zero-carbon resources could not make up the difference.

In fact, renewable energy growth has surpassed all other forms of new generation for going on three years, making up 48% of all new electricity generation brought online from 2011 to July 2014.<sup>2</sup>

The growth rate of wind energy alone (up to 12,000 MW per year) would be sufficient to replace all of the 'at-risk' nuclear capacity within two years, at lower cost than the market price of electricity,<sup>3</sup> let alone at the subsidized rate for nuclear the draft rule suggests.

Assuming that closed reactors will be replaced with fossil fuel generation both encourages states to waste resources trying to 'preserve' (or even build) uneconomical reactors rather than on more cost-effective and productive investments in renewables and efficiency.

While states are free to develop their implementation plans without using the specific energy sources included in the BSER, the rule should not promote such foolishness.

No amount of spending or subsidies for nuclear has been effective at reducing the technology's costs nor overcoming lengthy construction times and delays, whereas spending on renewables and efficiency has had the effect of lowering their costs and increasing their rate of deployment.

The economic problems facing currently operating reactors merely underscore the point that nuclear is not a cost-effective way of reducing emissions.

We believe that correcting the problems with the way nuclear is considered in the draft rule, and increasing the role of renewables and efficiency, will make the Clean Power Plan much stronger and lead states to implement it more productively and cost-effectively.

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# NUCLEAR NEWS

## Spain: We are all the Cofrentes 17

*Celia Ojeda from Greenpeace Spain writes:*

Seventeen people face trial in Spain on charges of public disorder, damage and injury. The punishment being demanded is nearly three years in prison. In addition, Greenpeace may have to pay a fine of 360,000 euros.

Why? Because on February 15, 2011, 16 Greenpeace activists and a freelance photojournalist entered Spain's Cofrentes nuclear power plant, climbed one of the cooling towers and painted "Nuclear Danger" on it. Greenpeace's protests are peaceful actions. Is punishing the painting of a cooling tower with jail fair and proportionate? Defending the environment should not carry a cost that is higher than for destroying it.

In a time when peaceful protest is being questioned, Greenpeace points to Article 45 of Spain's constitution that establishes the right of everyone to "enjoy an environment suitable for the development of the individual as well as the duty to preserve it". That is what Greenpeace does and it is a right our people exercised on February 15, 2011.

So we have launched a campaign: COFRENTES MISSION: ARTICLE 45. Because when you have exhausted all other avenues, all you have left is peaceful protest.

Three years ago we expected this trial to be held on 4 December, 2014. Today [November 19] we begin a campaign that will last 17 days. During these days we will be proposing 17 missions to make bring attention to the injustice the Cofrentes 17 are facing.

*Abridged from [www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/we-are-all-the-cofrentes-17/blog/51395/](http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/we-are-all-the-cofrentes-17/blog/51395/)*

In a separate post, Raquel Montón, nuclear and energy campaigner for Greenpeace Spain, lists 17 nuclear power plants that ought to be shut down immediately – one for each of the 17 Cofrentes activists. Most of the plants are ageing: Fessenheim (France), Doel 3 (Belgium), Borssele (Netherlands), Gundremmingen B and C (Germany), Tarapur 1 and 2 (India), Dukovany (Czech Republic), Paks 2 (Hungary), Krsko (Slovenia), Forsmark 1 (Sweden), Cofrentes (Spain), Rivne 1 and 2 (Ukraine), Fukushima (Japan), Santa María de Garoña (Spain).

*[www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/17-nuclear-headaches/blog/51509/](http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/17-nuclear-headaches/blog/51509/)*

## Australia: Kakadu Traditional Owner just wants a house on his country

*Kirsten Blair, Community and International Liaison officer with the Gundjehmi Aboriginal Corporation, writes:*

Jeffrey Lee spoke powerfully about his work to protect Koongarra from mining at the closing plenary of the International Union for the Conservation of Nature (IUCN) World Parks Congress in Sydney, Australia on November 18.

Kakadu, in the tropical Top End of the Northern Territory, is Australia's largest National Park and is dual World Heritage listed for both its natural and cultural values. Encompassing tropical wetlands, extensive savannah and soaring sandstone escarpments and waterfalls this region has been sculptured and shaped by people and nature for many tens of thousands of years.

Jeffrey Lee, the Senior Traditional Owner of the Djok clan in Kakadu fought for many years to see his country at Koongarra protected from the threat of uranium mining.

In 2011 he made the long journey from Kakadu to Paris to see the World Heritage Committee include Koongarra in the World Heritage estate and in 2013 the area was formally included within Kakadu National Park and permanently protected from uranium mining. [Areva is understood to be planning legal action against the Australian government over its 2013 decision to veto mining at Koongarra.]

For decades Jeffrey was pressured to allow uranium mining on his land at Koongarra and for decades he resisted – refusing millions of dollars in promised mining payments. Now he is seeking something. After generously allowing his land to be included in Kakadu National Park Jeffrey has a modest ask of the Australian Government in return: please build a house on his country.

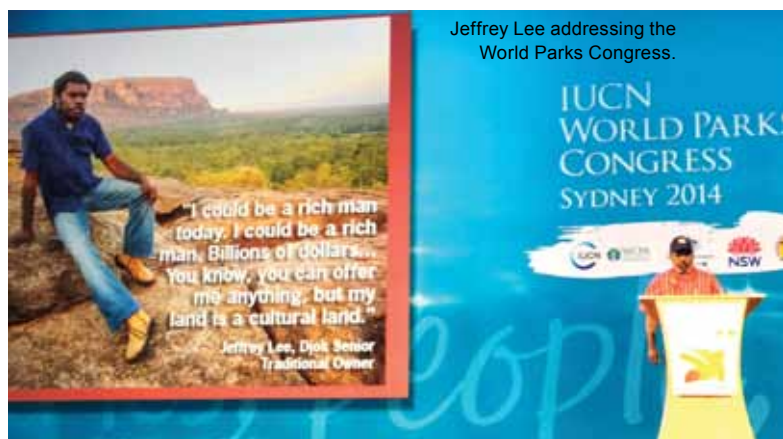
Jeffrey spoke to thousands of delegates at the closing plenary of the World Parks Congress in Sydney and told the story of his long fight to protect Koongarra. He concluded by calling on the Australian Government to come good on their promise to build him a house on his country.

"I have said no to uranium mining at Koongarra because I believe that the land and my cultural beliefs are more important than mining and money. Money comes and goes, but the land is always here, it always stays if we look after it and it will look after us," he said.

"While I'm down here at this Congress, I want to tell people about Koongarra and remind the Government that I did all that work to protect that country. All I'm asking is for a place to live on my country. I don't want to wait until I've passed away, I want to live on my country now.

"I don't want the Government to forget me, they came to visit me, they congratulated me on my hard work and said they will support me in this. The Government knows how hard I worked, they gave me an Order of Australia and I'm happy for that. Now I just want a commitment from them for a house so I can live on that country that I fought for."

[www.mirarr.net](http://www.mirarr.net)



Jeffrey Lee addressing the World Parks Congress.

## **Environmental Justice Organisations, Liabilities and Trade reports**

Environmental Justice Organisations, Liabilities and Trade (EJOLT), a collaboration between 23 universities and civil society organisations, published two significant reports on nuclear and uranium issues in November.

**‘Expanded nuclear power capacity in Europe, impact of uranium mining and alternatives’** tackles the myths that nuclear energy is clean, reliable, cheap and climate friendly. In reality, nuclear energy capacity in Eastern Europe is characterised by hidden externalised costs, technical problems and covered-up dangers. At the same time, alternative options for energy production and measures for managing energy demand already exist. The report focuses on Bulgaria and Slovenia, where the full range of issues with nuclear energy are exposed: from zombie mines to badly managed radioactive waste. Slovenia plans one new nuclear power plant and prolongs one other, while Bulgaria is planning two new nuclear power plants. The report concludes that projected Bulgarian and Slovenian energy demand is deliberately exaggerated by competent authorities, while nuclear costs are underestimated. This is despite the existence of an economically justifiable potential for renewable energy solutions, at lower cost per kWh.

*Raeva, D., et al., 2014, Expanded nuclear power capacity in Europe, impact of uranium mining and alternatives. EJOLT Report No. 12, 129p., www.ejolt.org/2014/10/expanded-nuclear-power-capacity-in-europe-impact-of-uranium-mining-and-alternatives/*

**‘Uranium mining. Unveiling the impacts of the nuclear industry’** argues that the EU should improve legislation and practices to limit the environmental and health impacts of uranium mining. Lead author Bruno Chareyron states: “Uranium mining is increasing the amount of radioactive substances in the biosphere and produces hundreds of millions of tonnes of long lived radioactive waste. The companies have no solutions for the confinement of this waste and for the appropriate management of contaminated water flowing from the mine sites, even decades after mine closure.” The cost of remediation should be properly estimated and paid by the mining companies. Field studies done for this report reveal how zombie mines keep affecting the lives of thousands, even decades after the mines are closed.

The report draws from on-site studies performed in Bulgaria, Brazil, Namibia and Malawi in the course of the EJOLT project and from previous studies in France and Africa over the past 20 years. It gives examples of the various impacts of uranium mining and milling activities on the environment (air, soil, water) and provides recommendations to limit these impacts.

*Chareyron, B., et al., 2014, Uranium mining. Unveiling the impacts of the nuclear industry. EJOLT Report No. 15, 116p., www.ejolt.org/2014/11/uranium-mining-unveiling-impacts-nuclear-industry/*

### **UK reactor plans face obstacles**

*Paul Brown writes:*

Plans to build two giant nuclear reactors in south-west England are being reviewed as French energy companies

now seek financial backing from China and Saudi Arabia – while the British government considers whether it has offered vast subsidies for a white elephant.

A long-delayed final decision on whether the French electricity utility company EDF will build two 1.6 gigawatt European Pressurised water Reactors at Hinkley Point in Somerset – in what would be the biggest construction project in Europe – was due in the new year, but is likely to drift again.

Construction estimates have already escalated to £25 billion (US\$39.3b, €31.5b), which is £9 billion more than a year ago, and four times the cost of putting on the London Olympics last year.

Two prototypes being built in Olikuoto, Finland, and Flamanville, France, were long ago expected to be finished and operational, but are years late and costs continue to escalate. Until at least one of these is shown to work as designed, it would seem a gamble to start building more, but neither of them is expected to produce power until 2017.

British experts, politicians and businessmen have begun to doubt that the new nuclear stations are a viable proposition. Steve Thomas, professor of energy policy at the University of Greenwich, London, said: “The project is at very serious risk of collapse at the moment. Only four of those reactors have ever been ordered. Two of them are in Europe, and both of those are about three times over budget. One is about five or six years late and the other is nine years late. Two more are in China and are doing a bit better, but are also running late.”

Tom Greatrex, the British Labour party opposition’s energy spokesman, called on the National Audit Office to investigate whether the nuclear reactors were value for money for British consumers.

Peter Atherton, of financial experts Liberum Capital, believes the enormous cost and appalling track record in the nuclear industry of doing things on time mean that ministers should scrap the Hinkley plans.

Billionaire businessman Jim Ratcliffe, who wants to invest £640 million in shale gas extraction in the UK, said that the subsidy that the British government would pay for nuclear electricity is “outrageous”.

Finding the vast sums of capital needed to finance the project is proving a problem. Both EDF and its French partner company, Areva, which designed the European Pressurised water Reactor (EPR), have money troubles. In November, Areva suspended future profit predictions and shares fell by 20%.

Chinese power companies have offered to back the project, but want many of the jobs to go to supply companies back home – something the French are alarmed about because they need to support their own ailing nuclear industry. Saudi Arabia is offering to help too, but this may not go down well in Britain.

On the surface, all is well. Preparation of the site is already under way on the south-west coast of England, with millions being spent on earthworks and new roads. ... But leaks from civil servants in Whitehall suggest that the government may be getting cold feet about its open-

ended guarantees. ... The Treasury is having a review because of fears that, once this project begins, so much money will have been invested that the government will have to bail it out with billions more of taxpayers' money to finish it – or write off huge sums.

– *Abridged from Climate News Network, www.climatenewsnetwork.net/europes-nuclear-giants-are-close-to-collapse*

### Belgium: Fire takes another reactor offline

Electrabel closed the Tihange 3 power reactor on November 30 after an electrical fire, leaving only three of the Belgian firm's seven nuclear plants in action. Several electrical cables outside the reactor caught fire. Electrabel operates seven nuclear reactors – four in Doel and three in Tihange – producing about half of Belgium's electricity demand.<sup>1</sup>

Doel 3 and Tihange 2 were off-line for almost a year in 2012–13, due to the discovery of thousands of cracks in the reactors' steel containment vessels, and they were shut down again in March 2014. Sabotage on August 5 by an unidentified staff member damaged the steam turbine of Doel 4, causing its automatic shut down.<sup>2</sup>

1. [www.reuters.com/article/2014/11/30/belgium-nuclear-idUSL6N0TK0LV20141130](http://www.reuters.com/article/2014/11/30/belgium-nuclear-idUSL6N0TK0LV20141130)  
2. [www.wiseinternational.org/node/4202](http://www.wiseinternational.org/node/4202)

### Uranium mine sludge discharge permit threatens Lake Malawi

Paladin Africa Ltd, which mines uranium ore in Malawi's northern district of Karonga, has come under fire from a coalition of Malawian civil society groups and chiefs over its proposal to discharge mining sludge into the Sere and North Rukuru rivers. The toxic substances that would flow from the tailings pond at the Kayelekera Uranium Mine into Lake Malawi 50 kms downstream include waste uranium rock, acids, arsenic and other chemicals used in processing the uranium ore, the coalition fears.

A statement issued by the Natural Resources Justice Network (NRJN), a coalition of 33 civil society organisations active in the extractive industry sector, expressed grave concerns about a recommendation by the National Water Development and Management Technical Committee in the Ministry of Agriculture that the minister issue a discharge permit to Paladin Africa.

Officials from Paladin Africa at a November 4 meeting told participants, according to NRJN members present, "Paladin fears that if the water from the tailings dam is not released into Rukuru River then there is a high risk that the contaminated water from the dam would overflow as a result of the impending rains."

The NRJN says it is "shocking and inhumane" for Paladin to put the lives of millions of Malawians at risk as a result of the company's failure to plan properly.

"We therefore ask Paladin to build a second tailings dam as was the initial plan and consequently refrain from this malicious practice of discharging radioactive effluents into the river systems, which would subject lives of innocent Malawians to a series of acute and chronic health effects," the NRJN said in its statement.

The coalition is calling for an independent team of chemists to conduct studies of the lake to ascertain whether effluents proposed for discharge from the mine are indeed safe.

Paladin Africa issued a statement in February that due to the sustained low uranium price, processing would cease at Kayelekera and that the site would be placed on care and maintenance. Following a period of reagent run-down, processing was completed in early May.

*Abridged from Environmental News Service,*

<http://ens-newswire.com/2014/11/25/uranium-mine-sludge-discharge-permit-threatens-lake-malawi/>

## WISE/NIRS Nuclear Monitor

The World Information Service on Energy (WISE) was founded in 1978 and is based in Amsterdam, the Netherlands.

The Nuclear Information & Resource Service (NIRS) was set up in the same year and is based in Washington D.C., US.

WISE and NIRS joined forces in the year 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, proliferation, uranium, and sustainable energy issues.

The WISE / NIRS Nuclear Monitor publishes information in English 20 times a year. The magazine can be obtained both on paper and as an email (pdf format) version. Old issues are (after 2 months) available through the WISE homepage: [www.wiseinternational.org](http://www.wiseinternational.org)

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