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Editorial

Dear readers of the WISE/NIRS Nuclear Monitor,

In this issue of the Monitor:

- editor Jim Green writes about unfolding debates as to how to manage plutonium stockpiles in the UK;
- M.V. Ramana writes about unresolved issues in relation to nuclear technology transfer from Japan to India; and
- Paul Hockenos writes about energy debates in central Europe.

The Nuclear News section includes items on: GE Hitachi being fined for making false claims; claims that management has made workers hesitant to raise safety concerns at the Wolf Creek nuclear plant in the US; the impact of extreme weather on nuclear plants in Europe and North America; Pacific Islanders' experience of nuclear bomb testing; strong EC criticism of UK government subsidies for planned reactors at Hinkley Point; Westinghouse backing away from small nuclear plants; WILPF's 'Women's Power to Stop War' initiative; and updates from 'Nuclear Resister'.

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.

Email: monitor@wiseinternational.org

Monitored this issue:

Will PRISM solve the UK's plutonium problem?

Author - Nuclear Monitor editor Jim Green

NM777.4382 The UK Nuclear Decommissioning Authority (NDA) released a position paper in January outlining potential options for future management of separated plutonium stockpiles.[1] All the options are problematic yet the paper is silent as to why plutonium is separated from spent fuel in the first place, and whether it's such a great idea to be planning to build more power reactors producing more plutonium.

The UK already has a stockpile of over 100 tonnes of separated plutonium from its nuclear power program, expected to increase to 140 tonnes by 2018.[1] Business as usual is not an option, especially if that involves continued production and separation of plutonium. The UK Royal Society noted in a 2011 report that the plutonium oxide powder, which is stored in drums, "poses a serious security risk" and "undermines the UK's credibility in non-proliferation debates." [2]

Plutonium separation and stockpiling clearly increases proliferation risks, and it involves spent fuel reprocessing - acknowledged to be "environmentally dirty" by a World Nuclear Association executive, no less.[3] And reprocessing is pointless - precious little of the plutonium or uranium separated during reprocessing is used as reactor fuel. Yet global plutonium stockpiles continue to grow, now amounting to over 260 tonnes globally.[4] The UK is the worst offender - it has the largest stockpile of separated plutonium.

The options being considered for separated plutonium management in the UK are:

- Incorporating separated plutonium into mixed uranium-plutonium oxide MOX fuel for use in conventional light-water reactors;
- Reuse in Candu Energy 'Enhanced CANDU 6' reactors;
- Reuse in 'Power Reactor Innovative Small Module' (PRISM) fast reactors proposed by General Electric Hitachi (GEH);
- Non-reuse options - long-term storage followed by disposal, or immobilisation followed by disposal.

The NDA report states that reuse in CANDU reactors "remains a credible option", that MOX is a "credible and technically mature option", while PRISM "should also be considered credible, although further investigation may change this view." Non-reuse options are given short shrift although they may be the least-worst of the options, while non-production options are given no shrift at all.

The report states that "all the technologies being considered have pros and cons and that no 'perfect' solution exists" and suggests the possibility of pursuing a "multi-track approach". Given the history of nuclear white elephants at Sellafield - the MOX plant, the THORP reprocessing plant and the Windscale Piles among others - the multi-track approach may result in a multiplicity of white elephants.

The NDA seems in no hurry to progress the matter and plans to undertake further studies over the next 1-2 years in conjunction with technology suppliers: "Currently, we believe there is insufficient understanding of the options to confidently move into implementation and consider that significant further work must be undertaken, focussing on technical and commercial risks and uncertainties ..."

The NDA report further states that "this is a long term programme with bulk reuse of plutonium likely to commence around 2030-2035 and concluding several decades after that." The NDA wants to focus on options which "allow decisions to be made on a timescale that is commensurate with any strategic imperatives", adding that the timescale is around 25 years.

MOX

The NDA regards MOX as a "credible and technically mature option for the majority of plutonium and, given the current planned new build reactor types, remains implementable." However the UK's experience with MOX has been disastrous - £1.4 billion wasted on a MOX fabrication plant at Sellafield that produced very little MOX and was shut-down in 2011.[5]

It is far from certain that reactors capable of using MOX fuel will be operating decades into the future in the UK. Overseas demand for MOX is limited - it accounts for just 2% of nuclear fuel worldwide[6] - and uncertain. It is also doubtful whether reactor operators would be willing to use MOX instead of fresh uranium fuel in UK reactors. The NDA report obliquely mentions these problems: "Due to the relative immaturity of the UK new build programme, at this stage, the appetite of developers to ultimately include MOX in their considerations remains uncertain."

Among many other problems with MOX:

- MOX-fuelled reactors produce more plutonium than they consume;
- extracting weapons-useable plutonium from MOX is far easier than extracting it from spent fuel;
- a MOX fuel cycle requires the operation of dangerous, polluting, proliferation-sensitive reprocessing plants to separate plutonium from spent fuel.
- the NDA estimates that about 85-90% of the plutonium stockpile could be used in MOX fuel, while "plutonium whose condition is such that it could not be converted into MOX would be immobilised and treated as waste for disposal."

MOX amounts to an elaborate method of incorporating plutonium into spent fuel and begs the question: why separate plutonium from spent fuel in the first place?

CANDU

The CANDU option involves a variation of MOX fuel (CANMOX) in heavy water-moderated, heavy water-cooled reactors.[7]

The NDA report states that spent fuel from CANDU reactors could then be disposed of in "the Geological Disposal Facility".[1] That would be the Geological Disposal Facility that doesn't exist - the Geological Disposal Facility that won't exist for decades, at least. Presumably the non-existence of a Geological Disposal Facility is one issue that might arise in a "full disposability assessment" which, as the NDA notes, "has yet to be undertaken."

The NDA mentions uncertainties around aspects of the CANDU proposal, noting that "some of the fuel fabrication systems have not been delivered at full industrial scale for plutonium fuels", and that there "remains uncertainty over the extent of the fuel performance demonstration programme that would be required". Thus the CANDU proposal "would require some development work, related mostly to fuel performance and industrialisation of fuel fabrication." The timeframe for "disposition" of the plutonium stockpile using CANDUs could range from 2 to 60 years.

PRISM

PRISMs [8] - the latest manifestation of much-hyped but non-existent 'integral fast reactors' (IFR) - don't exist so represent a bigger technological leap than the evolutionary CANDU-6 proposal. GEH says it offers PRISMs on the world market - but there aren't any takers and none have been built.

GEH proposes two 311 MWe PRISM reactors with the following processes:

- conversion of separated plutonium to a sodium-bonded U/Pu/Zr metal fuel using Direct Electrolytic Reduction, Pyroprocessing and metal casting techniques;
- irradiation of this metal fuel in PRISM reactors, in a burn rather than breed mode; and
- storage of the spent fuel pending disposal (no recycle of spent fuel, in line with current UK new nuclear build assumptions).

The NDA notes that the facilities required by the PRISM approach have not been industrially demonstrated, so further development work to be undertaken with the cost and time to complete this work still to be defined in detail. GEH estimates that licensing these first of a kind PRISM reactors would take around six years. GEH envisages first irradiation (following development, licensing and construction) in 14-18 years but the NDA considers that timeframe "ambitious considering delivery performance norms currently seen in the UK and European nuclear landscape".

Internal 2011 emails, released under Freedom of Information laws, revealed that the NDA said it had carried out a "high-level assessment" of PRISM and "the technology maturity for the fuel, reactor and recycling plant are considered to all be low".[9]

Contrast that with the breezy confidence of IFR/PRISM cheerleaders - Mark Lynas says GEH could get a PRISM reactor "up and running in 5 years – the PRISM is fully proven in engineering terms and basically ready to go."[10]

PRISM cheerleaders argued in 2011 that the first PRISM could be built in the US by 2016.[11] However the US Nuclear Regulatory Commission has yet to receive a licensing submission from GEH [12] and there are no concrete plans for PRISMS in the US let alone any concrete pours.

PRISM waste

The NDA states that it has carried out a 'Generic Disposability Assessment' which found that, "whilst challenging, a disposal safety case can probably be made for disposal of sodium bonded PRISM Spent Fuel derived from the irradiation of the plutonium stocks in the UK." GEH proposes methods to remove the sodium from spent fuel in the event that a disposability safety case cannot be made.

IFRs are promoted on the grounds that they could recycle spent fuel repeatedly, leaving only relatively short-lived fission products (with half lives of 10-30 years) to be disposed of as waste. But the aims of the UK PRISM proposal are far more modest. GEH's Eric Loewen says: "What we're proposing is to disposition it; that means irradiating it in the reactor so that the plutonium is fissioned and the material is at the same radiation standard as spent fuel."[13]

So it is uncertain whether PRISM spent fuel would be suitable for geological disposal, and further processing might be required to achieve disposability in the non-existent Geological Disposal Facility, i.e. sodium removal, generating another waste stream. Compare that with the statements of the IFR cheerleaders, most of them self-proclaimed pro-nuclear environmentalists:

- George Monbiot: "IFRs, once loaded with nuclear waste, can, in principle, keep recycling it until only a small fraction remains, producing energy as they do so. The remaining waste ... presents much less of a long-term management problem, as its components have half-lives of tens, not millions, of years."[14]
- Mark Lynas: "The most compelling reason to look seriously at the PRISM is that it can burn all the long-lived actinides in spent nuclear fuel, leaving only fission products with a roughly 300-year radioactive lifetime. This puts a very different spin on the eventual need for a geological repository."[15]
- Monbiot, Lynas, Fred Pearce, Stephen Tindale and Michael Hanlon: "The PRISM reactor offered by GE-Hitachi [is] a fourth-generation fast reactor design which can generate zero-carbon power by consuming our plutonium and spent fuel stockpiles, thereby tackling both the nuclear waste and climate problems simultaneously ..."[16]

Cheerleaders would argue that IFRs could *theoretically* recycle spent fuel until nothing is left but short-lived fission products. But that's precisely the problem. Attractive theories have given us a global legacy of 260 tonnes (and counting) of separated plutonium; a legacy of failed fast reactor projects (the super-dud Superphenix in France, to mention just one); and failed white elephants such as the MOX and THORP plants at Sellafield. In the case of IFRs, as nuclear engineer Dave Lochbaum from the Union of Concerned Scientists puts it: "The IFR looks good on paper. So good, in fact, that we should leave it on paper. For it only gets ugly in moving from blueprint to backyard."

Cheerleaders also talk up the 'proliferation resistance' of the IFR fuel cycle. Theoretically, IFRs could consume more plutonium than they produce, and plutonium would

never be separated from other actinides in a modified form of reprocessing called pyroprocessing. But in the case of the UK:

- proliferation risks are heightened by separating plutonium from spent fuel;
- internal 2011 emails reveal that the NDA is concerned about increased proliferation risks from converting plutonium oxide powder into metal PRISM fuel: "This would introduce more security/proliferation risk."[9]; and
- PRISMs will incorporate plutonium into spent fuel ... which begs the question: why separate plutonium from spent fuel in the first place?

PRISM economics

The NDA report states that GEH believes that PRISMs could be implemented "under commercial arrangements". But it's unclear what that means. GEH already has its hands out for funding from the US Export-Import Bank.

GE executive Mark Elborne says PRISMs could "provide significant revenue for UK taxpayers".[17] Again, it's not at all clear what that means. PRISMS could theoretically provide a more cost-effective means of partially addressing plutonium problems than other proposals, but it's unclear how they could be a money-spinner for UK tax-payers unless GEH propose donating profits from the sale of electricity to the UK government.

GEH executive Daniel Roderick claims that if given the go-ahead, GEH will form a consortium to build the PRISM plant at no up-front cost to the UK taxpayer, and that GEH "will only charge for each kilogram or tonne of plutonium we dispose of."[18] How long until either or both of those positions are reversed? Not so many years ago, the UK government insisted that new reactors would not be subsidised while EDF claimed that EPR reactors could produce electricity for £28.80 / MWh; last year the UK government agreed to guarantee EDF payment of over three times that amount along with other massive subsidies including a £10 billion loan guarantee.

GEH refuses to release estimates of PRISM capital and operating costs, saying they are "commercially sensitive".[19] Cheerleaders aren't so shy about offering implausible estimates for IFRs - for example Steve Kirsch says the "first one [1 GWe IFR] will probably cost around [US]$1 to $2 billion".[20]

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Resisting Abe's Sales Pitch

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NM777.4383 After all the build-up over the last few weeks, it seems that the best that Prime Minister Manmohan Singh could come up with after meeting Japanese Prime Minister Shinzo Abe was: "Our negotiations towards an agreement for cooperation in the peaceful uses of nuclear energy have gained momentum in the last few months".[1] The blandness of the statement suggests that the momentum cannot be all that great and the pace of movement on the agreement is quite slow.

This is reinforced by a comparison to the best that Manmohan Singh and then Japanese Prime Minister Naoto Kan could say about their meeting in 2010 - "encouraged their negotiators to arrive at a mutually satisfactory agreement for civil nuclear cooperation at an early date".[2] The latter statement was issued before the disaster that struck Fukushima on March 11, 2011, and the Japanese Prime Minister was described during that period by the Financial Times as "enthusiastically embracing a new role as salesman for some of his nation's biggest businesses" which included "high-speed rail, nuclear power and water-related infrastructure systems".[3]

Much changed after the accidents at the reactors in Fukushima Daichi. One was former Prime Minister Kan's change of mind and his realization that nuclear reactors are hazardous and that Japan should aim to be "a society ... without nuclear power".[4] The second change is that the majority of Japanese public "want to end the country's dependence on nuclear power".[5] The third change is that in India too, there is now significant opposition to nuclear power, especially at all the sites that have been selected for installing reactors imported from companies like Westinghouse, General Electric and Areva.

The primary motivation for a nuclear agreement between Japan and India dates back to the US-India nuclear deal. In 2008, William Burns, a senior U.S. diplomat, told the U.S. senate that as its part of the bargain, the Manmohan Singh government had "provided the United States with a strong Letter of Intent, stating its intention to purchase reactors with at least 10,000 megawatts (MW) worth of new power generation capacity from U.S. firms [and] has committed to devote at least two sites to U.S. firms".[6] Those sites are Mithi Virdi in Gujarat and Kovvada in Andhra Pradesh.

We also know thanks to Wikileaks that in 2007, former Chairman of the Atomic Energy Commission, Anil Kakodkar told a nuclear trade delegation from the US-India Business Council that "the Jaitapur site in southern Maharashtra would go to the French".[7] All of these reactors need key components produced in Japan and the Japanese government has to formally allow these exports.

There is a confluence of interests here. Exports "of nuclear components and technology, as well as conventional arms" are said to be a key element in Prime Minister Abe's economic program, dubbed "Abenomics" by many.[8] This is somewhat reminiscent of the Soviet Union after the Chernobyl disaster, when the Soviet nuclear industry was desperate to improve its image and Soviet leaders were willing to sell nuclear reactors at concessional prices. The result of that drive was the 1988 agreement to buy the Koodankulam reactor.

We do not know what the Soviet population then thought of that idea, but we do know that the majority of Japanese do not support the export of Japan's nuclear technologies. A public poll found that a mere 24% are in favour of such sales.[9]

Abe's democratic credentials are evident from his various attempts at peddling reactors despite this overwhelming opposition. In October of last year, Abe reached an agreement with Turkey's Recep Tayyip Erdogan, another head of state who doesn't seem to be particularly concerned about democratic sentiment, to sell two nuclear reactors. The majority of the Turkish public too opposes the construction of nuclear power plants.[10,11]

All this at a time when TEPCO was struggling - and failing - to contain radioactive water at Fukushima plant.[12] For Prime Minister Abe, not surprisingly, the leaks were not a problem. When trying to persuade the international Olympic committee (IOC) to hold the 2020 Olympics in Japan, said (in Japanese, of course), "It poses no problem whatsoever. ... There are no health related problems until now, nor will there be in the future ... I make the statement to you in the most emphatic and unequivocal way".[13] So it is no surprise that as radioactive water leaked from Fukushima, Prime Minister Abe has led sales promotions in at least 21 countries.[14]

His current sales trip to India comes just after the Tokyo Electric Power Company (TEPCO) acknowledged for the first time, nearly three years after the accident started, that water was leaking from the reactor containment vessel in Unit 3 of the Fukushima Daiichi Nuclear Plant.[15] According to Tatsujiro Suzuki, the vice chairman of the Japan Atomic Energy Commission, "the leakage is a significant finding [and] could indicate that the Unit 3 containment vessel has significant damage".[16]

The continued leaks are risky. The escape of radioactive materials into the soil and the sea at Fukushima adds to the hazards to human and marine health from the accident. This means that estimates made so far of the likely long-term total health and environmental effects of Fukushima are necessarily incomplete, even if future contributions to the total radiation dose may not add significantly to the already incurred dose. Or it may. Trying to control a hazardous technology such as nuclear power is always linked to the possibility of failures and errors, and events going disastrously wrong.

While this possibility of disastrous accidents should be evident to anyone who examines the long history of accidents at nuclear facilities, Prime Ministers Abe and Singh continue to reassure[17] the public with promises to "make our nuclear power generation increasingly safe" and to "ensure that the safety and livelihoods of people are not jeopardised in our pursuit of nuclear power".[18]

These assurances don't reassure. Abe's visit provoked widespread protests against the proposed agreement and for a change these were actually covered by the mainstream press.[19] As most of those in protest presumably realize, the primary goal should be to have the idea of reactors at Jaitapur and Mithi Virdi and Kovvada abandoned. And there is some hope for that. Recently even the nuclear establishment seems to have realized that the cost of imported reactors is prohibitively high and the secretive "negotiations" they have been involved in for several years now don't seem to be making the price come down to anywhere close what they think they can get away with.[20] One hopes that the opposition that developed before the Abe visit will, like the negotiations of the would-be Indo-Japanese agreement, gain momentum and force the government to call off the entire idea of importing nuclear reactors.

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India-Japan Nuclear Negotiations

Nuclear negotiations between Japan and India have stalled since 2008 primarily because of Japan's insistence on India relinquishing its right to conduct nuclear tests and an immediate cessation of cooperation if India violates its self-imposed moratorium.

The formal statement signed by the Prime Ministers of India and Japan on January 25 states: "The two Prime Ministers reaffirmed their shared commitment to the total elimination of nuclear weapons. Prime Minister Abe stressed the importance of bringing into force the Comprehensive Nuclear-Test-Ban Treaty (CTBT) at an early date. Prime Minister Singh reiterated India's commitment to its unilateral and voluntary moratorium on nuclear explosive testing."

It is unclear whether India's ongoing production of fissile material for weapons is a bone of contention. The formal statement suggests that the Japanese government is prepared to acquiesce to India's continuing production of fissile material for nuclear weapons. It states that the Prime Ministers "reaffirmed their commitment to working together for immediate commencement and an early conclusion of negotiations on a non-discriminatory, multilateral and internationally and effectively verifiable Fissile Material Cut-off Treaty (FMCT)."

The Japanese government reportedly wants India to formally restate its commitment to a no-first-use policy. India's argues that Japan should accept weaker provisions such as those in the 2008 US-India agreement.

Nuclear liability is another contentious issue. Arun Jaitley, the BJP opposition leader in India's Upper House, told the Japan Times on January 25 that the issue of liability remains murky. Nuclear vendors are relying on a clause in contracts signed with the Nuclear Power Corp. of India to insulate them from any right to recourse in the event of an accident, but Jaitley argues that legally this won't stand.

January 25 was a National Day of Protest against the India-Japan Nuclear Agreement with actions in Koodankulam, Jaitapur, Fatehabad, Kovvada, Mithi Virdi, Chutka and elsewhere. The Coalition for Nuclear Disarmament and Peace said: "The agreement will give a push to the Indian government's insane and anachronistic nuclear expansion drive which it is implementing through brutal repression of its rural poor. A recent global nuclear safety report has ranked India 23rd last among the 25 countries. The nuclear regulator in India is completely toothless and non-independent, as highlighted by the CAG report last year."

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Central Europe's Bad Bet

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NM777.4384 Czech Republic, Hungary, Poland and Slovakia, also known as the Visegrad Group, are all in the process of making profound mistakes concerning their energy supplies, which will cost these countries dearly for decades to come.

While most of Europe is investing in renewable energies and planning for low-carbon power supplies, the Visegrad states are stuck in backward thinking. The Central Europeans are committing themselves to a future of coal, nuclear energy, and imported gas and oil – just when low-carbon clean energy has become affordable. Indeed, the cost of fossil fuels and nuclear power have soared in recent years – and, by all accounts, will continue to. But renewables have plummeted in price; at the same time, clean-energy technology improves by the year. Now that it is cost-effective even for countries with modest means and moderate sunlight, it makes no sense to continue investing in conventional energies.

Flawed energy strategies will not only separate the Visegrad Group from the European mainstream, they will severely hamper their long-term energy security, which they value above all else. The Central Europeans have different energy profiles, but the quest for energy security unites them. Memories of Russian aggression and postwar Soviet rule understandably make the Central Europeans uncomfortable. Today, squeezed as they are between Putin's Russia and another enormous, historically unfriendly neighbor to their West, Germany, it is entirely understandable that their foremost goal is energy autonomy.

Yet, tragically, by sticking so stubbornly to conventional energies the Visegrad bloc is putting energy independence ever further out of reach. In the Czech Republic, fossil fuels account for about 80% of the primary energy supply, almost all of which is imported, and the lion's share bought from Russia. Hungary and Slovakia are also prominent customers of Gazprom. Poland, the most energy autonomous of the group, relies heavily on its own coal reserves and Soviet-era coal-firing plants, the dirtiest in the EU. In fact, Poland is the biggest coal producer in Europe and the ninth largest worldwide. Even so, Russia supplies 90% and 65% of its oil and gas, respectively.

The Visegrad countries' response to this quandary may sound logical: "diversity of supply." The more different energy sources a nation calls upon, the less dependent it is on any one source. For the Central Europeans, this potpourri includes conventional fossil fuels, nuclear power, unconventional natural gas like shale gas, waste-to-energy incineration, and renewables, too.

But this diverse array of energy sources is deceptive. Shale gas reserves in Central Europe, for example, were grossly overestimated by US petrochemical giants, which talked big and then this year, after making new calculations, withdrew completely from Poland, which was wrongly thought to possess massive reserves. There won't be a shale gas revolution in Mitteleuropa.

All of the Central Europeans – and many of their counterparts from the Baltics down across the Balkans – think that nuclear is a big part of the answer. This they made clear just recently when Hungary's prime minister Victor Orban proclaimed the Visegrad Group would pursue its energy needs, including nuclear and shale gas, regardless of EU concerns.

The Czech Republic is currently trying hard to expand its nuclear fleet, which consists of two nuclear power stations in southern Bohemia. Its aim is to double its capacity so that by 2040 nuclear energy would account for a third of its domestic mix. The Czechs' nine-billion-euro tender to build two new nuclear reactors is the largest-ever contract offered by the country and the only active tender for new nuclear capacity in the whole EU. And there's a good reason investors aren't jumping to bite – the financing costs of nuclear reactors are so exorbitant that they can't pay for themselves anymore.

The greatest obstacle these days to expanding nuclear isn't safety, it's expense. Nuclear power is simply no longer affordable. Just look at the problems Great Britain has brought upon itself: Europe's first new nuclear reactor since the Fukushima disaster in spring 2011 will cost investors around $23 billion. To make it worth the while, the British government had to promise a French consortium prices of about 92.5 pounds per megawatt-hour of power – more than twice current market levels. And this price will be valid for 35 years as of 2023.

This is why the European Commission is ever more skeptical about nuclear power; it recently signaled that new nuclear projects should not qualify for state aid – a stipulation that would certainly spell their death. A leaked report from the commission's energy ministry underscored what the fossil fuel and nuclear utilities had long denied – that they're subsidized more richly than renewables.[1] Take away those supports, say experts, and neither could compete with an array of advanced green energies.

As for Poland, its political elite, closely bound up with the conventional energy lobby as is the situation across Central Europe, wrongly believes that Poland's coal will rescue it from import dependency. Warsaw's even planning several new open-pit lignite mines. But this is living in the past.

Polish coal is simply no longer competitive with that from Russia and elsewhere – even at a time when the EU's emissions trading scheme (ETS) is broken and no one's paying for carbon emissions. This won't be the case for much longer. Germany's new government will hopefully make sure that the ETS gets back up on its feet and push coal out of the energy market.

Central Europe's powerful energy lobbies, driven largely by the state-owned utility giants more or less inherited from communism, have many people here convinced that renewables are a luxury, something for the rich Germans but not them. This is misinformation today. Solar photovoltaic in particular – with onshore wind right behind it – is already at market parity with fossil fuels.

In a Financial Times piece titled 'A Rising Power', a representative of the global bank Citigroup confirmed, "We're at a point now where demand starts to be driven by cold, hard economics rather than by subsidies and that is a game changer." [2] And UBS, another international bank, argued that an "unsubsidized solar revolution" has begun in Europe. It estimates that solar energy could supply 18% of electricity demand in parts of Europe by 2020.

This means that Central and Eastern Europe can now go green, too, and begin putting infrastructure in place that will increase its energy security and cut its energy bills in the future. Poland's windy northern coast is a perfect location for both onshore and eventually offshore wind farms, too. Hungary sits on a wealth of geothermal power, something the Turks caught on to when they built the region's first thermal baths there four hundred years ago.

Numerous studies show that Central Europe is ripe for renewables. One recent report entitled Energy [R]evolution Energy Blueprint for Poland argues that if Poland shifted its planned investments from coal to renewables, it could increase renewable energy use from 7.8% (2010) to 26.8% by 2030, while at the same time halving its coal usage.[3] Shifting 90% of energy investment to renewables would also create over 100,000 jobs (while the coal sector would lose 50,000). From the Central Europeans' perspective it makes sense as it would serve security of supply and decrease reliance on exports.

Even though the political class in Central Europe will be hard to win over, opinion polls show that ordinary citizens and localities are much more open to renewables than their representatives. A March 2013 survey found that 45% of Poles want to have a renewable-energy micro-generation installation in their households.[4] Farmers were among the most interested in investing. There is also considerable open-mindedness toward renewables as the energy source of the future. A separate polling of Polish municipalities showed that two-thirds of local officials see clean energies as a chance for local economic development.[5]

The idea of small-scale renewable energy production is particularly appealing to people in search of energy autonomy. Now that the price of green energy technologies has come down – and will certainly sink further – the Central Europeans could replicate what the Germans have accomplished over the last decade, namely turning a monopoly of utility giants into a decentralized patchwork of millions of energy producers. Over one hundred towns and cities in Germany are aiming to be 100-percent renewable by 2030 or 2035, and in doing so keep locally created value in their communities.

The Central Europeans are at a crossroads in energy policy – and unfortunately there is not an open, vigorous debate about it in progress. In the energy sector, many of the structures and biases from the old days persist. There is unconcealed collusion between the politicians, the energy companies, and the media that undermines a real democratization of energy. This state of affairs is the reason that legislation easing the way for individuals and small businesses to become energy producers has run into a brick wall.

This condition bodes ill for the Visegrad states as taking the wrong path today will hurt them for decades to come – ultimately making their industries uncompetitive with those of clean-energy economies. The Central Europeans' motivation for going green may not be climate protection or safety concerns about nuclear power, but then this isn't a requirement for renewable power investment. There are enough sound reasons to begin making the shift to clean energy in Central Europe.

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NUCLEAR NEWS

Safety culture scrutinised at US nuclear plant

Officials from the Wolf Creek nuclear power plant met with the Nuclear Regulatory Commission (NRC) on January 22 to review actions the company has taken in response to the NRC's issuance of a chilling effects letter last August. The NRC defines a "chilled work environment" as one in which workers are hesitant to raise safety concerns for fear of retaliation. The letter was issued, in part, because the NRC had seen an increase in the number of allegations raised at Wolf Creek since 2010, including 19 concerns related to the safety conscious work environment, in addition to alleged harassment and intimidation or discrimination.

www.powermag.com/safety-culture-scrutinized-at-u-s-nuclear-plant/

US fines GE Hitachi over flawed reactor design

The US Justice Department said on January 23 that General Electric Hitachi Nuclear Energy Americas LLC has agreed to pay US$2.7 million to resolve allegations that it made false claims to U.S. regulators about a nuclear reactor component. The company allegedly made false statements to the US Nuclear Regulatory Commission (NRC) and the Department of Energy between 2007 and 2012 about the advanced nuclear Economic Simplified Boiling-Water Reactor (ESBWR).[1]

The NRC requires that applicants for nuclear reactor design certification show that vibrations caused by the steam dryer will not result in damage to a nuclear plant. The government alleged that GE Hitachi concealed known flaws in its analysis of the steam dryer, falsely represented that it had properly analysed the dryer, and had verified the accuracy of its modeling using reliable data.[1]

The settlement was reportedly reached after LeRay Dandy, a former employee of the General Electric subsidiary (also partially owned by Tokyo-headquartered Hitachi Ltd.) filed a whistleblower suit under the False Claims Act. Under the False Claims Act, private citizens can sue on behalf of the government and share in any recovery.[5]

The NRC is currently reviewing ESBWR construction and operation licence applications for Dominion's North Anna and Detroit Edison's Fermi sites.[6]

Greenpeace noted that the current allegations echo cover-up allegations from the 1970s and '80s involving the work of GE and Hitachi at Fukushima.[2] In the 1970s, Dale Bridenbaugh [3] and other top GE engineers resigned from their positions within GE over the company's failure to address critical design flaws with their Mark 1 Boiling Water Reactor – the same reactor design that catastrophically failed at Fukushima Daiichi in March 2011.

Greenpeace further notes that Hitachi also failed to address a safety issue during the construction of one of the crippled, GE-designed Fukushima reactors, actively flaunted Japanese law during the fabrication of the reactor pressure vessel – a critical component. Instead of scrapping the pressure vessel after a deformation was discovered, Hitachi attempted to correct it ad hoc and cover up the problem – in the interest of money. The integrity of the pressure vessel could never be guaranteed. Legally Hitachi was required to discard it, but as Mitsuhiko Tankana [4], the Babcock-Hitachi leader for the reactor pressure vessel project, stated in the wake of the Fukushima catastrophe, "When the stakes are raised to such a height, a company will not do what is safe and what is legal."

Shielding nuclear suppliers, like GE Hitachi, from all liability for risk – and unfairly shifting that financial burden to taxpayers and consumers – only increases the likelihood that flaws will be ignored or concealed and accident risks increased.

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Pacific Islanders' experience of nuclear bomb testing

The International Campaign to Abolish Nuclear Weapons (ICAN) released a report on January 30 detailing the ongoing humanitarian impact of nuclear weapons tests on Pacific Islands. From 1946 until 1996, more than 315 nuclear test explosions were conducted across the region by France, Britain and the US. ICAN is encouraging all Pacific Island nations to attend the Second Conference on the Humanitarian Impact of Nuclear Weapons, to be held in Mexico in February. Report author Nic Maclellan said: "Pacific island nations – which understand all too well the horrific effects of nuclear weapons – are perfectly placed to play a leadership role in the process to negotiate a ban on nuclear weapons, which will help ensure that no one else suffers as they have suffered."

The report, 'Banning Nuclear Weapons: A Pacific Islands Perspective', is posted at:

www.icanw.org/wp-content/uploads/2014/01/ICAN-PacificReport-FINAL-email.pdf

Women's Power to Stop War

To build momentum for 100th anniversary of the Women's International League for Peace and Freedom (WILPF) in April 2015, WILPF is gathering sign-ons from individuals and organisations wanting to support Women's Power to Stop War, the anniversary theme. There is a pledge available in English and Spanish on the website:

www.womenstopwar.org/take-the-pledge

Extreme weather in Europe and North America

On January 21, both Units 1 and 2 at the Calvert Cliffs nuclear generating station in Lusby, Maryland automatically shut down when snow and ice caused an electrical short-circuit in a ventilation louver. The electrical power supply shorted out to reactor safety systems including motors needed to move both reactors' control rods, a malfunction in Unit 1's main turbine control system and the circulating-water pumps for Unit 2. Emergency diesel generators for both units started up to provide backup power and successfully shut down the reactors.[1]

On January 9, the Fort Calhoun nuclear power station on the Missouri River had to manually shut down power production because sub-freezing weather caused an ice buildup on one of six flood protection gates, preventing the gate from closing. Fort Calhoun had just restarted after being closed for nearly three years after flood waters surrounded the nuclear power plant for weeks.[1]

An investigation is ongoing to determine whether cold weather was the cause of the 23-day shutdown of the Pennsylvania's Beaver Valley nuclear power station on January 6 when a ruptured fire suppression system sprayed Unit 1's electric transformer with water which immediately froze, failed and caused the unit to shutdown.[1]

The UK Nuclear Free Local Authorities (NFLA) are notifying the UK Environment Agency and public heath agencies of serious issues put forward to it by an independent marine pollution specialist. The specialist's briefing argues that the ongoing high winds, storm surges and heavy rain affecting the British and Irish Isles this winter may be generating increased radiation doses to coastal populations. The briefing, provided to the NFLA by Tim Deere-Jones, argues that this winter's extreme weather will be having a major influence on the behaviour and fate of the radioactive wastes discharged to sea from UK nuclear sites.

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Westinghouse backs away from small nuclear plants

After millions of dollars and more than a decade spent developing a small modular nuclear reactor (SMR), Westinghouse Electric Co. is pulling back. Danny Roderick, president and CEO of the firm, said Westinghouse recently "reprioritized" staff away from SMRs towards the AP1000, the company's pressurised water reactor currently under construction in China and the US.[1]

"The problem I have with SMRs is not the technology, it's not the deployment - it's that there's no customers," Roderick said. "The worst thing to do is get ahead of the market."

Roderick said it would be difficult to justify the economics of small modular reactors at this point, especially without government subsidies. "Unless you're going to build 30 to 50 of them, you're not going to make your money back," he said.

Westinghouse was twice snubbed by the US Department of Energy's SMR commercialisation program, which awarded R&D funding support to two other companies - Babcock & Wilcox, and NuScale Power.

Westinghouse is looking to triple its decommissioning business. "We see this as a $1 billion-per-year business for us," Roderick said.

A recent analysis of SMRs in the Bulletin of the Atomic Scientists states: "Without a clear-cut case for their advantages, it seems that small nuclear modular reactors are a solution looking for a problem. Of course in the world of digital innovation, this kind of upside-down relationship between solution and problem is pretty normal. Smart phones, Twitter, and high-definition television all began as solutions looking for problems. In the realm of nuclear technology, however, the enormous expense required to launch a new model as well as the built-in dangers of nuclear fission require a more straightforward relationship between problem and solution. Small modular nuclear reactors may be attractive, but they will not, in themselves, offer satisfactory solutions to the most pressing problems of nuclear energy: high cost, safety, and weapons proliferation."[2]

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More information: Institute for Energy and Environmental Research, http://ieer.org/resource/nuclear-power/light-water-designs-of-small-modular-reactors-facts-and-analysis/

EU criticism of UK state aid for Hinkley reactors

The European Commission (EC) has delivered a scathing initial verdict on the UK Government's deal with French state owned EDF to build the first new nuclear reactors in the UK for a generation. It concludes the measures are definitely state aid and therefore illegal under EU law.[1]

The initial analysis - published on the Commission website [2] - suggested that the deal may not be proportionate and risked substantially overpaying EDF. The Commission said additional support to EDF (on top of market prices) could end up costing anywhere between £5bn and £17.6bn.

The Commission is now launching a full investigation into the package of measures supporting Hinkley C, including a contract providing a fixed price for power (known as a Contract for Difference), guarantees for loans to the project and political guarantees.

Greenpeace summarises the EC statement [1]:

- Support to build new reactors may be unnecessary. Private investment is expected to invest in nuclear by 2030, without the need for government sweeteners.
- The deal is expensive. It "could hardly be argued to contribute to affordability – at least at current prices, when it will instead and most likely contribute to an increase in retail prices."
- The UK may be paying too much for the new reactors because EDF can borrow money more cheaply thanks to the Contract for Difference and loan guarantees. This means EDF would be able to build the reactors for less than the UK government is paying. UK taxpayers will be protecting EDF and its investors.

- If the price of electricity falls below the fixed price guaranteed to EDF, the company stands to make a fortune while consumers are forced to pay artificially higher bills.
- There wasn't a tender for Hinkley C. Low-carbon electricity sources don't seem to have been considered instead of new nuclear reactors which could put the project in violation of EC directives.
- The Commission doesn't believe the UK government when it says the reactors are needed to keep the lights on. They won't be ready until 2023 at the earliest.
- The Commission also said that all these favours being done for the nuclear industry "might crowd out alternative investments in technologies or combinations of technologies, including renewable energy sources."
- The fixed electricity price offered to EDF shields the company from risks that its competitors can't avoid. The Commission concludes the package, especially Contracts for Difference, could severely distort the market. The combination of Contract for Difference, a credit guarantee, and compensation for political risk means the project "is not far from being risk-free at the level of operations."

Support for renewables is specifically allowed under EC guidelines while no such guideline exists for nuclear power (despite ongoing lobbying from nuclear interests).

There is no legal deadline by which the EC's investigation must be concluded and EDF Energy has said that it will not make an investment decision until it is completed.[3]

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Nuclear Resister

The latest issue of the Nuclear Resister was published in late January, with information about anti-nuclear and anti-war related arrests and peace prisoner support. Stories featured in the latest issue include:

- the Transform Now Plowshares disarmament activists facing lengthy jail terms for breaking in to the Y-12 nuclear facility in Oak Ridge, Tennessee, pelting a bomb-grade uranium storage facility with human blood and spray-painting antiwar messages;
- the jailing of Irish peace activist Margaretta D'Arcy in relation to protests over US military use of Shannon Airport;
- the arrest of 11 people at US nuclear weapons sites in January;
- the brave resistance of the Gangjeong Human Rights Committee in South Korea;
- the arrest of people at two US air bases for protesting against drone warfare; and
- the arrest of nine women from the 'Shut It Down' affinity group at the headquarters of Entergy in Vermont.

You can find a regularly updated list of imprisoned military refusers, anti-nuclear and anti-war activists on the Nuclear Resister blog, as well as prisoners' writings and upcoming nonviolent direct actions.

www.nukeresister.org

To receive the Nuclear Resister e-bulletin, visit: www.nukeresister.org/email-updates/

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

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