



**OPINION – Noah Mayhew**

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**Naval Nuclear Propulsion and IAEA Safeguards: A View from the PrepCom**

The trilateral AUKUS partnership's drive to provide Australia with nuclear-powered submarines continues to stoke debate among Member States of the IAEA, primarily between China and Russia on one side and the AUKUS countries on the other. Per the 2023 announcement from the AUKUS countries that they would continue with the programme, we now know what comes next: capacity building for Australia's submariners, the sale of US Virginia-class submarines, and the later joint development and deployment of new nuclear-powered submarines called the SSN-AUKUS.

This issue featured prominently last month as States Parties to the NPT gathered in Vienna. Questions were again raised on how the nuclear material that will be used for the submarines can be accounted for under Australia's comprehensive safeguards agreement – a legal instrument that all non-nuclear-weapon States under the NPT are required to conclude with the IAEA to ensure that nuclear technology is not used to develop nuclear weapons.

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safeguards on nuclear material they would normally be subject to for cases in which the State intends to use nuclear materials in a non-explosive military capacity, as is permissible under the agreement. One requirement of that provision is that the State must make an arrangement with the IAEA to ensure that the material will not be diverted for nuclear weapons purposes, as routine safeguards measures under the agreement are not applied – other verification measures would be conceived here.

An example of an activity to which such an

arrangement would apply is naval nuclear propulsion. I spent one of the early days of AUKUS debunking misinformation about the legal status of naval nuclear propulsion (for example, this brief). Over two years since the AUKUS partners announced initial plans for a feasibility study on providing Australia with nuclear-powered submarines, misinformation has somewhat waned. Nonetheless, as the partners move forward, it is useful to consider how opponents of the partnership continue to debate in the IAEA context.

**The primary request made by opponents to the AUKUS partnership has been the creation of a special committee of the IAEA's Board of Governors—one of its two primary policymaking organs—to negotiate a model safeguards arrangement for nuclear material in non-nuclear-weapon States' naval nuclear propulsion programmes.**

*How should the IAEA's policymaking organs handle Australia's safeguards arrangement?:* The primary request made by opponents to the AUKUS partnership has been the creation of a special committee of the IAEA's Board of Governors—one of its two primary policymaking organs—to negotiate a model safeguards arrangement for nuclear material in non-nuclear-weapon States' naval nuclear propulsion programmes. While this could be seen as a reasonable request on its face, it is unrealistic for a few reasons.

First, for a model arrangement to be effective, it would have to be easily applicable to any State that wished to exercise its right to conclude such an arrangement. A safeguards

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arrangement for Australia could bear little resemblance to an arrangement for a country with different circumstances. Consider the example of Brazil, the only other non-nuclear-weapon State actively developing a naval nuclear propulsion programme. Australia and Brazil have very different domestic nuclear capabilities, so the safeguards arrangement for each country would naturally look very different. This is one of the

reasons why the IAEA designs State-level safeguards that are tailored to the State concerned, based on six State-specific factors. Experts have rightly pointed out that the State-level approach for Australia would need to be revised to reflect its naval propulsion programme.

Second, the efficacy of committees of the Board is highly dependent on the prevailing political conditions. Based on my study of official oral records, the divisiveness within the Board is currently worse than during the last such

committee, known as Committee 25 (2005-2007). In its two years of operation, Committee 25 – established to identify measures to strengthen safeguards further – was unable to agree on a single consensus recommendation. A programme of work for the committee was never established, the discussions within the committee were largely political in nature rather than technical, and the

vehicle for funding the committee was unclear for most of its duration. The types of problems that plagued Committee 25 would almost certainly pose significant barriers to a new special committee.

Alternatively (and at times concurrently), opponents to the AUKUS partnership have argued for establishing an open-ended working group of experts. The group would

be open to any interested IAEA Member State to feed into what a model arrangement would look like, as well as to ensure that there is a sustained dialogue on this issue. In my analysis, the risks of this approach do not significantly differ from those of a special committee of the Board. Moreover, in regular board meetings that occur five times per year, naval nuclear propulsion already often enjoys

two official agenda items, plus discussion under the “any other business” item. It is doubtful that the creation of a second track would add value, and it might even be counterproductive.

The most realistic way to proceed under current conditions is for the Australians and the IAEA Secretariat to continue their consultations and submit the arrangement “for appropriate action” to the Board of Governors. Such an arrangement would need to satisfy the technical verification objectives of the IAEA. The phrase “for appropriate action” was most recently noted in the IAEA Director General’s statement from March 2023, though its meaning is unclear. Whatever the Board decides “appropriate action” constitutes will be the precedent that is set.

*What Does Transparency Mean in the Negotiation of the Arrangement?:* Since the AUKUS partnership was first announced, opponents have called for transparency. The AUKUS countries, for their part, have claimed that they are proceeding with the highest degree of transparency as they continue to consult with the IAEA Secretariat. Perhaps the better question here would focus on transparency about what exactly? The AUKUS countries should, indeed, be expected to act as transparently as possible.

However, it is unrealistic to expect Australia to open its private consultations with the Secretariat to all IAEA Member States about an arrangement allowed for in the type of safeguards agreement that almost every other country has in force. Such demands could set a precedent that would open future private consultations of Member States to scrutiny by the Board of Governors. This is not to say that, once the IAEA and Australia are satisfied

that the arrangement is sufficient to satisfy the IAEA’s technical safeguards objectives, Australia could not brief the Board—I believe they should and certainly would.

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(elaborated in the IAEA document INFCIRC/153) was envisaged by the drafters. Director General Grossi has confirmed this in numerous statements. Repeated calls for transparency imply that the IAEA is not being transparent when it has simply clarified the

negotiating history of INFCIRC/153. On that note, much of the opposition to this issue in Vienna seems to centre on the belief that the transfer of large quantities of highly enriched uranium (the fuel that will power the submarines) is unprecedented.

The case is, indeed, novel, but in the past, the United States and the Soviet Union had supplied highly enriched uranium for research reactors to non-nuclear-weapon States for decades. While the transfer envisioned under AUKUS is contrary to global efforts to reduce stocks of highly enriched uranium, it is hardly unprecedented. Once again, the challenge is for the IAEA and Australia to agree on an arrangement

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that satisfies the IAEA’s technical verification objectives. So, what does transparency mean in this case? Transparency means the Secretariat reporting to the Board of Governors when new information is available, briefing the Board on the nature of an arrangement and how it provides assurance that nuclear material is not diverted for

weapons development, and submitting it for action when the time comes.

*What's the historical record on naval nuclear propulsion and safeguards?:*

Another commonly heard argument on naval nuclear propulsion and IAEA safeguards in recent months concerns the accessibility of the negotiating records for INFCIRC/153. This document defines the structure and content of safeguards agreements with non-nuclear-weapon States. It also includes the provision for the non-application of safeguards measures on non-prohibited nuclear activities noted above. As such, the negotiating records for that provision are particularly important in this context. Early critics of the AUKUS partnership claimed that the negotiating records for INFCIRC/153 remain sealed, though they are available upon request from the IAEA's archives. Later criticisms along this vein shifted to the difficulty in accessing these documents, arguing that they should be available on the IAEA's public website, considering they have long since been derestricted.

As with the repeated calls for transparency, these criticisms imply that the IAEA is acting in bad faith by withholding negotiating records for political purposes. The committee that negotiated INFCIRC/153 – Committee 22, or the "Safeguards Committee" – is one of 25 committees formed by the Board, which have extensive oral records. The IAEA's archives office is relatively small, as is the office managing its website. Should Member States remain concerned that these and other records are not accessible to the general public, a way to remedy this would be to make an official request for all derestricted records to be published on [iaea.org](http://iaea.org). This should be paired with an offer to fund several cost-free experts for the archives and public information offices to conduct this work. Indeed, it would be ideal for these records

to be accessible to the general public.

**Looking to the General Conference:** Last year at the IAEA's annual General Conference, AUKUS took

up a lot of bandwidth, including a resolution on AUKUS proposed by the Chinese delegation alongside AUKUS-related language in other conference resolutions (none of which were adopted). What will this year bring? What I would hope to see during this year's General Conference is for debates on AUKUS to be informed, constructive and less divisive. As IAEA Member States engage in consultations on this issue, they should have front of mind that undermining the IAEA's technical mandate will come at a cost.

Source: <https://www.europeanleadershipnetwork.org/commentary/naval-nuclear-propulsion-and-iaea-safeguards-a-view-from-the-prepcom/>,

26 September 2023.

## OPINION – Pranav Kashyap

### Why Microsoft is Using Nuclear to Fuel Its Data Centers?

Microsoft is actively exploring the possibility of harnessing nuclear energy to fuel its data centres. The tech giant is currently in search of a program manager specialising in nuclear technology to spearhead the 'development and implementation of a global strategy for SMRs and microreactor energy systems'. This role will entail guiding the seamless integration of SMRs and microreactors into the infrastructure powering Microsoft's data centres, where the Microsoft cloud and its suite of AI technologies are hosted.

**Harnessing Nuclear Energy:** Microsoft is not new to the field of nuclear energy. The IT giant has a goal of using 100% renewable energy by 2025. Microsoft has already partnered with Helion, an

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energy start-up that is developing a nuclear fusion reactor. Microsoft has agreed to buy electricity from Helion when their reactor becomes operational in 2028. Helion is backed by OpenAI, which is majorly supported by Microsoft. Data centres are one of the main consumers of electricity in the world.

According to the International Energy Agency, data centres use 1-1.5% of the global electricity supply. A report by C&C estimates that an average data centre consumes 50-80 Megawatts of power per year, which is enough to power 80,000 households. Some larger data centres use more than 100 Megawatts. Most of Microsoft's data centres are located in the US, where fossil fuels still account for 60% of the electricity generation. By switching to nuclear power, Microsoft can reduce its carbon footprint and contribute to a cleaner and greener future.

**Data Center Spends:** Globally, there are an estimated 9,380 data centres in operation, with Microsoft taking charge of 200 of them. The collective expenditure on data centres

for the year 2023 is projected to reach a staggering \$217 billion. Although Microsoft does not publicly divulge a detailed breakdown of their capital expenditures, their financial reports reveal a substantial capex figure for 2023, hovering at nearly \$11 billion. In line with industry averages, Microsoft is said to allocate an annual budget of approximately \$24 million for the maintenance and operation of each of their data centres. This translates to an annual expenditure of nearly \$5 billion on data centre-related costs, accounting for a significant 50% of their total capital expenditure.

**How SMRs Could Save Millions of \$ and Energy:** SMRs are a type of nuclear reactor that can produce up to 300 MWs of electricity. They are

smaller than conventional reactors and can be built in factories and transported to the site. They also have a subcategory called microreactors, which can produce up to 10 MWs of electricity. These reactors

could be ideal for Microsoft, as their data centres have similar power requirements. SMRs have several advantages over conventional reactors. They are modular, which means they can be assembled and installed quickly and easily. They are also cost-effective, as they require less capital investment and maintenance. A 300 MW SMR

costs about \$900 million to \$1 billion to build, while Microsoft pays about \$7-8 million in electricity bills for each data centre per year. By switching to nuclear power, Microsoft can save money and reduce its dependence on fossil fuels.

**Microsoft's Carbon Neutral Goal:** Back in 2020, the IT giant made a commitment to transform into a carbon-negative, water-positive, and zero-

waste organisation. It appears that their strategy is yielding results. By 2022, they had already achieved a 23% reduction in emissions. Furthermore, their dedication to conserving water involves replenishing more water than they consume, with a recent pivot to nuclear power serving as a pivotal step in fulfilling this ambitious pledge. In a statement, the company affirmed their unwavering commitment to these goals, emphasising their ongoing efforts to meticulously track emissions, accelerate progress, and bolster their reliance on clean energy to power their data centres. They also underscored their dedication to procuring renewable energy sources, all in

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pursuit of their sustainability objectives: to be carbon negative, water positive, and zero waste by 2030. "We are committed to helping our customers use our platforms and tools to do more with less today and innovate for the future in the new era of AI" said Satya Nadella, CEO of Microsoft.

Source: <https://analyticsindiamag.com/microsoft-is-on-the-lookout-for-experts-spearheading-the-development-and-implementation-of-a-global-strategy-for-small-modular-reactors-smrs-and-microreactor-energy-systems/>, 27 September 2023.

**OPINION – Jacob Nagel**

**Israel Must Not Roll the Dice When it Comes to Nuclear Threats**

PM Netanyahu held important meetings with President Biden this week, as well as with other world leaders. But the highlight will be his speech at the UNGA. Assuming this will be like previous speeches, there is definitely something to look forward to. The direct Iranian threat to Israel through its nuclear program and the continued development of long-range and accurate missiles and drones that carry heavy weaponry, the indirect threat coming from its proxies in the Middle East (Hezbollah, Hamas, Palestinian Islamic Jihad, and sometimes even the Palestinian Authority), and the continuing threat from Iran to the free world through its support and encouragement of terrorism, will all undoubtedly take center stage during PM Netanyahu's speech at the UN. He will also emphasize the wish for normalization with Saudi

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**Riyadh's main demands for an agreement with the US are security guarantees, based on a defense agreement along the lines of the Asian model, mainly against Iranian aggression; advanced weaponry deals; a free trade zone, and more. These are demands that Israel can accept, assuming its qualitative military edge (QME) is maintained.**

Arabia and other countries, the multi-front threats in the north, Gaza, and the West Bank, and the need to tone things down in the (legitimate) internal debate in Israel.

We must not confuse the world regarding what Israel's real priorities are. The PM should put the onus on the US and Europe in light of the continued aggressive and negative behavior of the ayatollahs in Iran. The listeners must clearly understand that the effort to prevent a terrible agreement with Iran, even in the form of the recent

"understandings," has not been relegated by Israel to a low priority.

However justifiable and important, the push toward Israel-Saudi-US normalization should in no way come at the expense of the acute need to stop Iran. The meeting with the president and Crown Prince Salman's interview made it clear that

the reported suspension of talks with the Saudis was false. Parts of the agreements with Saudi Arabia are linked to dealing with the Iranian nuclear program and must not be separated from it; on the contrary, proper linkage will lead to a win-win. Despite the reports about (legitimate) continued attempts at persuasion, led

by Strategic Affairs Minister Ron Dermer, it seems that the discourse regarding a narrow defense pact between the US and Israel has lost momentum, mainly due to a lack of American (White House) motivation to promote an alliance at this time, which is a very good thing....The drawbacks of such an alliance far outweigh the advantages.

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agreement along the lines of the Asian model, mainly against Iranian aggression; advanced weaponry deals; a free trade zone, and more. These are demands that Israel can accept, assuming its qualitative military edge (QME) is maintained.

On the other hand, the demands for “civilian nuclear power” are problematic. The demand is for a full nuclear fuel cycle capability, on Saudi soil. The “civilian justification” for such a request is the tapping of natural resources, i.e., mining uranium and transforming it into “yellowcake,” converting it to gas (UF6), and enriching it to the level necessary to produce nuclear fuel rods for power reactors (generating electricity), for local use and export. Make no mistake, as many do: The Saudis have not asked for nuclear power reactors for the sake of generating electricity, as the Chinese, for example, are offering them. That would not pose a problem, if the reactors and their fuel sources came from the outside the kingdom and were taken out after they were used (like the reactor that Russia supplied Iran at Bushehr). The problem is that the Saudis seek a full fuel cycle on their soil, including enrichment.

The Saudis are ready for any supervision and control measures imposed by the US and the IAEA to prevent a future shift to a military program. Despite all the reports about experts from all sides seeking and finding ways to “square the circle,” I recommend continuing with the old approach of not rolling the dice when it comes to nuclear capabilities. MBS’ interview in which he said that the kingdom will have nuclear weapons if Iran gets them, validates this approach. We should ignore irresponsible reports saying Israel is developing “hidden capabilities” that in the

**If Israel's rejection of allowing enrichment means the derailment of normalization deals, so be it. Israel should not give in; this is essential. Accepting the Saudi nuclear demands will of course serve as a basis for demands by other countries in the region such as Egypt, the UAE, and Turkey. It will launch a nuclear arms race in the Middle East.**

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future will prevent Saudi Arabia from shifting to a military nuclear program.

Even if someone will prove that such verification methods have a high success rate, there is no way of knowing how things unfold. If Israel's rejection of allowing enrichment means

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PM Netanyahu should remind the world that the Iranians have violated every treaty and agreement that they have signed and despite this, the recent understandings struck with Tehran (which the

Americans deny) grant the regime the permission to continue to enrich to 60% purity, which constitutes about 98% of the required path for full military enrichment level. Iran's brilliant negotiating tactics resulted in having the US pay it so that it doesn't do something it really had no

plans on doing: namely, enrichment to 90% and beyond.

Meanwhile, Iran continues to develop and produce advanced centrifuges and has been constructing an extensive underground site at Natanz, which will be used for the enrichment and manufacturing of centrifuges. It continues developing and maintaining ballistic missiles capable of carrying nuclear warheads and continues to move forward in the weaponization efforts, the only thing that stands in the way of them having full nuclear capability.

Accordingly, it's clear where the Saudi demands are coming from. They are based on the Iran nuclear

deal, and on the absurd “understandings.” The US is, of course, denying there is any linkage between the shameful surrender and the transfer of billions of dollars to release prisoners (this is not only six billion dollars; the true amount will reach around \$50 billion), and the agreements on the nuclear issue that bypassed the need for congressional approval, which would have never been granted.

At the same time, the mass-murdering Iranian President Raisi has been welcomed at the UNGA, humiliating President Biden with declarations of his complete control over the use of the surrender funds, in complete contradiction of American statements. The Iranians are expelling a third of the IAEA inspectors, failing to answer questions about open cases, attacking American interests in the gulf, violating human rights, killing women and girls in Iran, continuing its massive support of Russia and sending advanced weapons, while the US is giving a de facto approval to increase Iranian oil sales to China in record high volumes.

**It is very important to promote a Saudi-American-Israeli deal that will include normalization, without a defense alliance between Israel and the US, but at the same time, it is possible to overcome the problematic Saudi demand for an independent fuel cycle and to minimize the damage from the understandings with Iran by triggering the snap-back mechanism in the UN that would reimpose the Security Council sanctions on the regime (including a total prohibition on enriching uranium on Iranian soil).**

It is very important to promote a Saudi-American-Israeli deal that will include normalization, without a defense alliance between Israel and the US, but at the same time, it is possible to overcome the problematic Saudi demand for an independent fuel cycle and to minimize the damage from the understandings with Iran by triggering the snap-back mechanism in the UN that would reimpose the Security Council sanctions on the regime (including a total prohibition on enriching uranium on Iranian soil). This will pull the rug out from under Saudi Arabia when it comes to its demands, will allow the normalization deals to move forward without a nuclear threat from Saudi Arabia, and will create an opening for joint action against the Iranian nuclear program. Those who have suggested that

Israel can assure MBS that the Jewish state will remove the Iranian nuclear threat and therefore he should not seek his own nuclear capabilities are assigning Israel the duties of a superpower, despite there being a possible scenario in which Israel will ultimately have to carry out the task on its own.

Source: <https://www.israelhayom.com/2023/09/22/israel-must-not-roll-the-dice-when-it-comes-to-nuclear-threats/>, 22 September 2023.

**OPINION – Anastasiia Bykovskakia**

**Nuclear Power: The Two Emotional Poles**

While I was following the southeast energy discourse for a long time, last week was the first time I got to attend a local talk about nuclear power and small modular reactors.... Unlike many people from the area or even the province, I've experienced both emotional poles of nuclear, be it power generation or weapons (whose designs are completely different, by the way), in my life. On the one hand, I was growing up in the post-Cold War space, where the nuclear war threat was still real. I assume it was so for many people who caught the Cold War times here.

But I was also growing up in the post-Chornobyl space, where people have seen firsthand what radiation can do. The accident and its aftermath affected my loved ones, as my family believes the radiation wave hit one of my aunts, who was a young girl residing in Belarus at the time. Following the Cold War, during the '90s when I was a kid, there were really scary social commercials on TV about how the post-nuclear world would look. I don't know if there was anything similar here, but for my young imagination, those clips were terrifying. They looked like cartoons, which attracted kids to the screens, but those cartoons were colourless and showed the world where nothing really existed anymore, people melted, and separate objects just rolled through the grey, dark desert.



Since my early years, I knew radiation was evil, scary and very dangerous. But on the other side, I grew up knowing that nuclear power, when built and operated properly, is a reliable source of energy. (That notion seems like something not so normal for people here.) And that's because my home city of five million used the huge Leningrad Nuclear Power Plant, located less than 100 kilometres away, for

over 55 per cent of its own as well as the Leningrad area's power supply. That plant was the first in Russia to operate the RBMK (which stands for high-power channel reactor and is similar to what was used in Chernobyl) type of reactor. The big plant originally had four nuclear reactors. In 2008, the construction started of Leningrad II with two different reactors meant to replace the older RBMKs. The first one became operational in 2018. Two older reactors have now stopped and will eventually be decommissioned.

Being young, we'd drive to Sosnoviy Bor – the town with restricted access, where the plant is located – to come closer and see it firsthand. It probably wasn't the smartest thing to do, but the plant was impressive. Don't get me wrong, the Leningrad NPP's operation was by no means flawless, especially with the RBMK type of reactors, which never were the most stable. Besides, it was built in 1967, and a lot of the issues it had during the Soviet times were covered up, resulting in greater and extended damage. It's seen accidents and issues. There were fatalities, and there was a similar-to-Chernobyl accident that preceded the later one. The reactor's instability wasn't properly addressed in Leningrad NPP. Once the Soviet era was over, more transparency helped

improve the operation and make it safer. But even though it wasn't flawless, it never was disastrous.

Nowadays everyone is aiming at zero accidents, but they still happen in any industry.

In my lifetime, the plant was operating fine most of the time with minor issues. I remember when I was working as an editor in St. Petersburg and reports or rumours about potential

problems at the Leningrad NPP came in, we'd send reporters with Geiger counters (devices to measure the amount of radioactivity) to different areas of the city and outside it to see if there was any impact. It always remained at what you'd

expect to see in the area. I understand the general worry of nuclear power, which is probably re-ignited even more now by Putin's threats of the red button. But when it comes to energy production, the process is very different. Yes, mistakes happen. But things like Chernobyl and Three Mile Island are hopefully mistakes that are never to be repeated. The Chernobyl catastrophe was the product of a severely

flawed Soviet-era reactor design combined with a human blunder.

And in Three Mile – the most serious accident in U.S. commercial nuclear power plant operating history – while the Unit 2 reactor partially melted down, its small radioactive releases had no detectable health effects on plant workers or the public. Those accidents and their aftermath brought about sweeping changes in engineering, training, operations, emergency response and regulations of nuclear power generation, affecting the safety of people involved and those around. So, being used to living next door to an old-style

**The reactor's instability wasn't properly addressed in Leningrad NPP. Once the Soviet era was over, more transparency helped improve the operation and make it safer. But even though it wasn't flawless, it never was disastrous. Nowadays everyone is aiming at zero accidents, but they still happen in any industry.**

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nuclear plant, when it comes to SMR technology, all I can see are the benefits. Yes, price- and construction-time-wise they still have a ways to go, but safety, efficiency and cleanliness seem like big fat pros to me, even though my fear of radiation is still with me.

Source: <https://www.sasktoday.ca/south/opinion/column-nuclear-power-the-two-emotional-poles-7601789>, 27 September 2023.

**OPINION – Zheng Xin**

**Nuclear Power Highlighted for Carbon Goals**

Nuclear power will be playing a more prominent role in helping achieve China's carbon neutrality goals, with its proportion in the country's total electricity generation to further climb in the years to come, according to an industry association. China's nuclear power generation will account for 10 percent of the country's total electricity generation by 2035, said Wang Binghua, head of the nuclear energy public communication committee of the China Nuclear Energy Association, during an event in Shenzhen, Guangdong province.

Amid China's ambitious target of achieving carbon neutrality before 2060, the country's installed nuclear power capacity is estimated to reach approximately 400 million kilowatts by then, accounting for around 18 percent of total electricity generation. The country is also expected to maintain a construction pace of six to eight nuclear power units per year in the foreseeable future, he said.

Considering the comprehensive utilization of nuclear energy for purposes including heating and powering vehicles, the carbon reduction contribution of nuclear energy is expected to reach

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approximately 25 percent by 2060, he added.

Figures released by the association reveal that the cumulative electricity generation of operating nuclear power units nationwide reached 211.89 billion kilowatt-hours during the first half of this year, accounting for 5.08 percent of total national electricity

generation.

Compared to coal-fired power generation, it is equivalent to a reduction of 59.64 million metric tons of standard coal burned, a decrease in carbon dioxide emissions by 156.2 million tons, it said.

An analyst said that nuclear power is a more stable and reliable type of clean energy compared with solar and wind power, which are more intermittent due to changing weather conditions.

China, which has become a notable player in the global nuclear power landscape, has been actively

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developing nuclear power capacity in recent years, contributing to a more diversified energy mix to meet its growing energy needs amid the green energy transition, said Lin Boqiang, head of the China Institute for Studies in Energy Policy at Xiamen

University.

"Nuclear power will have more application scenarios in the years to come apart from power generation, serving as a fundamental power source in the large-scale development of clean energy and playing a key role in boosting the utilization of nuclear power in more energy-intensive sectors, from petrochemicals to steel," he said. It has so far been applied in heating, seawater desalination and isotope production, as China goes full throttle into its green energy transition, Lin said.

Wang said China has approved the construction of 21 nuclear power units since the beginning of the 14th Five-Year Plan (2021-25) period and nuclear power project construction has also been steadily advancing. According to the plan, the government aims to have 70 gigawatts of installed nuclear capacity by 2025.

The association said that so far there are 55 nuclear power units in operation on the Chinese mainland, with a total installed capacity of approximately 57 million kW. The country has 24 nuclear power units under construction with a total installed capacity of approximately 27.8 million kW, with the combined total of nuclear power units in operation and under construction in China ranking second in the world.

As a clean, low-carbon and efficient base-load energy source, nuclear power plays an important role in helping achieve China's ambitious goals of a carbon dioxide peak before 2030 and carbon neutrality before 2060. It is also an important option for China to secure its energy supply and optimize the energy mix, it said.

The State Council, in a meeting held on July 31, approved six new nuclear power units in Ningde, Fujian province; Shidaowan, Shandong province; and Xudapu, Liaoning province. CITIC Securities said in a report that the accelerated approval of nuclear power projects will lead to the growth of China's related industrial chain and aid in reducing carbon emissions sooner. It estimates

that the value of investments in new nuclear power plants will hit 231 billion yuan (\$31.6 billion) by 2025.

Source: [https://www.chinadaily.com.cn/a/202309/27/WS65136\\_cd1a310d2dce4bb8046.html](https://www.chinadaily.com.cn/a/202309/27/WS65136_cd1a310d2dce4bb8046.html), 27 September 2023.

**OPINION – Gulam Jeelani**

**Will Saudi Get a Bomb from Pakistan?**

Saudi Crown Prince Salman's assertion that his country would acquire a nuclear arsenal if Iran developed one, has rekindled the possibility of Pakistan supplying the bomb to its trusted ally and old friend. This is not the first time that the Saudi prince has issued such a warning. He had made similar comments in 2018 suggesting that the Kingdom of Saudi Arabia had plans of going nuclear. The question, however, remains how Saudi Arabia will go about it. Prince Salman's fresh assertion comes at a time when the Saudi-Pakistan relations, strained during now-ousted Imran Khan's tenure as PM of Pakistan, have improved of late. PM Khan's growing camaraderie with Malaysia, Iran, and Turkey, had perhaps annoyed the kingdom. But, his ouster and the arrival of a new government in Pakistan has redeveloped the old friendship between the two Islamic nations, experts say.

"Saudi Arabia has been contributing to Pakistan's economy for long. It has been funding Pakistan's nuclear programme as

**According to the plan, the government aims to have 70 gigawatts of installed nuclear capacity by 2025. The association said that so far there are 55 nuclear power units in operation on the Chinese mainland, with a total installed capacity of approximately 57 million kW. The country has 24 nuclear power units under construction with a total installed capacity of approximately 27.8 million kW, with the combined total of nuclear power units in operation and under construction in China ranking second in the world.**

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well. We know the relationship between two countries had strained in recent years but it has improved now," said Dr Manpreet Sethi..."If you ask about Prince Salman's comments, it's been the Saudi stand for quite long."... The Saudi-Pakistan nexus is not unknown and goes back decades. In the 1970s the Kingdom of Saudi Arabia reportedly provided aid to the Bhutto regime perhaps to thwart India's nuclear ambitions after New Delhi conducted a test in 1974. In fact, Saudi Arabia was among the first UN member states to recognise Pakistan. In 1969, Prince Abdul Aziz, then-Saudi Arabia's minister of defence and aviation, visited Pakistan to conclude the protocol for bilateral defence cooperation....

"Before 2004 when the news about Dr AQ Khan broke, Pakistan would say that their nuclear bombs were for all Islamic countries to use. But now that thought doesn't exist.

Yet, we cannot dismiss the chance of Pakistan helping Saudi Arabia with acquiring a nuclear arsenal," Sethi said. Earlier, there have been reports about Pakistani nuclear aid to Saudi Arabia through possible deployment of nuclear-tipped missiles to the Kingdom. In 2013, a BBC Newsnight report had suggested that Saudi Arabia has invested in Pakistani nuclear weapons projects and believes it could obtain atomic bombs at will. Saudi

Arabia's nuclear ambition has often been linked to countering Iran's atomic programme. In fact, other countries in the region — such as Egypt and Turkey — have also asserted themselves considering Iran's nuclear ambitions.

"But for Saudi Arabia to have nuclear weapons would mean withdrawing from the NPT. This would again mean that any US military sales would have to stop. These aspects should also be

considered when anyone talks about the Kingdom acquiring nuclear weapons," said Sethi.

Source: <https://www.news9live.com/world/will-saudi-get-a-bomb-from-pakistan-2295722>, 22 September 2023.

## NUCLEAR STRATEGY

### CHINA

#### China Unveils Railgun-Armed Nuclear-Powered Supercarrier

China has unveiled a super-ship concept, a railgun-armed nuclear-powered aircraft carrier,

reviving an old Soviet concept in line with its bastion strategy in the South China Sea. However, it may be more of a prestige weapon than a viable warship design. In September 2023, the *South China Morning Post* (SCMP) reported that China's top naval scientist, Ma Weiming, has proposed a futuristic warship that could transform naval fleets into Star Wars-style super-ships. Ma proposed his design in the peer-reviewed journal *Transactions of China Electrotechnical Society*.

The SCMP notes that the super-ship could carry many aircraft but differs from traditional carriers, as it is heavily armed with electromagnetic weapons such as railguns, coilguns,

rocket launchers, laser weapons, and high-powered microwaves. The source notes that the ship's advanced technology effectively transforms energy from the ship's power source into the electromagnetic energy needed to power high-powered weapons, allowing a single warship to defend against air attacks accurately, engage in anti-submarine warfare, intercept missiles, and deliver precise strikes on both naval and land targets. The source says the super-ship's

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comprehensive nuclear-powered electromagnetic system could convert nuclear energy into usable kinetic energy or electricity to drive high-energy weapons systems, such as on-board railguns that could hit targets in near space with guided ordnance at up to seven times the speed of sound. It also says the electromagnetic-launched projectiles could be automatically reloaded like an automatic rifle, allowing far greater speed and number of projectiles fired than adversaries.

**Soviet Precedent:** China's super-ship may be a modern take on the Soviet-era aviation cruiser concept. The aviation

cruiser combines the features of an aircraft carrier and a cruiser. Unlike traditional aircraft carriers relying exclusively on their on-board air wings for offensive power, the aviation cruiser can also take on surface, air, and underwater threats with advanced weaponry. Such ships include the Kiev-class and Admiral Kuznetsov carriers. Unlike US carriers, designed primarily as floating airbases for global power projection, aviation cruisers support and defend SSBN, surface ships, and missile-carrying bombers within protected sea bastions.

However, designing ships that combine vastly different capabilities, with one half of the ship being of one type and the other half being of another, often leads to failures. This flaw was evident in the case of Soviet-era aviation cruisers, which had inflexible weapons, small flight decks, too few and short-ranged

onboard aircraft, and poor seakeeping abilities. They were more expensive than similarly sized aircraft carriers or surface combatants, yet they performed worse than either type. Additionally, the

large number of US SSNs made hunting them down impractical for so few such ships.

Despite that, technological advancements may have made the aviation cruiser concept viable again, tying in with China's bastion strategy in the South China Sea. In that strategy, land-based aircraft, missiles, naval forces, and fortified islands will protect the area. The South China Sea's semi-enclosed configuration and proximity to China's shores

make it an ideal location for the strategy. Hainan's large submarine base indicates China is moving in this direction with its SSBN fleet. Technological advances that could make the aviation cruiser concept viable in China's bastion strategy include railgun development, nuclear propulsion, and evolving submarine detection technologies...

Source: <https://asia-times.com/2023/09/china-unveils-railgun-armed-nuclear-powered-supercarrier/>, 21 September 2023.

## **RUSSIA**

**"Russia Continues to Engage in Reckless Nuclear**

**Rattling": US State Secy Blinken at UN Security Council**

US State Secretary Blinken on September 20 said that Russia is committing war crimes and crimes against humanity in Ukraine on a daily basis and violated the UN charter of respecting the

**The source says the super-ship's comprehensive nuclear-powered electromagnetic system could convert nuclear energy into usable kinetic energy or electricity to drive high-energy weapons systems, such as on-board railguns that could hit targets in near space with guided ordnance at up to seven times the speed of sound. It also says the electromagnetic-launched projectiles could be automatically reloaded like an automatic rifle, allowing far greater speed and number of projectiles fired than adversaries.**

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sovereignty and territorial integrity of all nations. While speaking at the UNSC session in New York, Secretary Blinken emphasised that Russia is using Europe's biggest nuclear power plant to save itself from the catastrophic consequences of its aggression against Ukraine. He said, "Russia continues to engage in reckless nuclear rattling, announcing that it's stationing nuclear weapons in Belarus. And continuing to use Europe's biggest nuclear power plant and its employees as a shield for its aggression, risking catastrophic consequences." Secretary Blinken accused Russia of using Iranian drones against Ukraine and alleged that Russia procured from Iran in violation of the Security Council resolution. He added that it was possible to hold Russia accountable for the war in Ukraine and confront other issues, including the climate crisis and expanding economic opportunity. "We can and we must do both," he said. "We are doing both."

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US State Secretary also commented on the North Korean President's recent visit to Russia and his commitment to Russia for full support and said, "Just last week, Russia hosted North Korean dictator Kim Jong Un. President Putin said that they discussed ways to cooperate militarily. Kim pledged the DPRK's and I, quote, full and unconditional support, end quote, for Russia's war of oppression. Of course, the transfer of arms between Moscow and Pyongyang would violate multiple resolutions of this council." Earlier in the same session, Slamming Russia at the UNSC over its invasion of Ukraine, President Zelensky said that the UN finds itself in a 'deadlock' on the issue of aggression....

Source: <https://theprint.in/world/russia-continues-to-engage-in-reckless-nuclear-rattling-us-state-secy-blinken-at-un-security-council/1770856/>, 21 September 2023.

## USA

### NSRI Strategic Deterrence Interns Brief USSTRATCOM Leadership

**"What Assumptions Did You Consider in Your Exercise Scenario?":** This was the first of a series of questions Brigadier General William Murphy, mobilization assistant to the commander of USSTRATCOM, posed to the nine undergraduate and graduate students sitting in front of him recently at USSTRATCOM headquarters, Offutt Air

Force Base, Nebraska. Ethan Czapl, a senior political science and history major at the University of Nebraska-Lincoln, responded promptly: "We thoroughly researched each country within our scenario so we could understand their capabilities now and anticipate capabilities in the future to make our tabletop exercise as realistic as possible."

**Discussion Ensued:** "The world today presents a unique set of deterrence challenges. Strategic deterrence is not a static concept, and research must take into account a wider array of variables than in years past," Murphy said. "I am appreciative of the work NRSI does for strategic deterrence and our national security. The research these young professionals presented is setting the stage for the future of deterrence. We are taking their novel thoughts, concepts and work and implementing them into our discussions and future plans. We need people like these future leaders in our Strategic Command enterprise."...

Working in two cohorts, the interns completed two research efforts that benefit USSTRATCOM interests. Cohort 1 researched the implications of leveraged resource employment in military planning systems using graph databases in support of Air Force Life Cycle Management Center interests. Using Neo4J graph database software, the interns modeled resource distribution in a scenario of multiple natural disasters over an expansive area where the individual disasters

created complex logistical challenges. They considered types of disasters, types of equipment, FEMA zones, personnel, supplies and vehicles. Through their database model, the interns were able to determine equipment proximity to zones, better visualize equipment location and mobilization, and create useful visuals when viewing different situations over the course of a 5-day scenario. "I have learned about all the ways technology is integrated into our strategic deterrence, and how strategic deterrence extends so much further than just nuclear weapons, especially in the cyberspace," said Max Sievenpiper, sophomore supply chain management and computer science major at the University of Nebraska–Lincoln. "This experience has helped me discover the possibilities of working alongside the DOD in the tech sphere, including with government contractors. I have also narrowed my focus in my major — towards backend and database development."

Cohort 2 designed a tabletop exercise to investigate allied viewpoints and reactions concerning non-strategic nuclear weapons employment in a potential China-Taiwan conflict. Considering questions such as, "What factors influence an ally's willingness to participate?" the students developed a road to war, first move, second move, and third move in a forthcoming National Strategic Research Institute (NSRI) tabletop exercise. Their delivered product is intended to walk Pacific allies through a possible conflict where the Chinese employ low-yield nuclear weapons to gauge allied participation and decision making....

In addition to the product deliverables that NSRI will carry forward, the interns themselves gained valuable mission perspective, professional development and leadership skills. "I think this internship is important for students because of the important real-world context that is covered," said Jared Dingman, senior psychology and economics major at the University of Nebraska at Omaha. "I

am significantly more aware of the variety of important issues in our defense sector after being exposed to military discourse and studying some current issues regarding defense. "I have also obtained extremely valuable skills from this internship that I plan to take with me for the rest of my professional career. Perhaps the most important skill is confidence — after consistently interacting with experts and Ph.D. professionals, I feel far more comfortable expressing my thoughts."

This is the sixth year NSRI has designed and delivered this experience to high-achieving undergraduate and graduate students. The aim is to provide knowledge, skills, professional development and mentorship to the next generation of the national security workforce, a call explicitly highlighted in the 2022 National Defense Strategy (NDS). ...

Source: <https://news.unl.edu/newsrooms/today/article/nsri-strategic-deterrence-interns-brief-usstratcom-leadership/>, 25 September 2023.

**Using Neo4J graph database software, the interns modeled resource distribution in a scenario of multiple natural disasters over an expansive area where the individual disasters created complex logistical challenges. They considered types of disasters, types of equipment, FEMA zones, personnel, supplies and vehicles.**

## **BALLISTIC MISSILE DEFENCE**

### **KUWAIT**

#### **Kuwait Requests Repair and Recertification of its Patriot Missiles**

The US State Department has approved a request from the Kuwaiti government to replace expiring components in its Patriot Advanced Capability-3 (PAC-3) missiles and subsequent certification testing. Under a Foreign Military Sales (FMS) agreement, worth \$150m, the US will provide repairs and testing of the missiles; repair and return of classified and unclassified missile items and ground support equipment components; tools to improve the turnaround time of the repair and recertification efforts; air transportation services for missile processing; US government and contractor technical and logistics support; among other forms of

supplementary assistance.

The Patriot is a long-range, all-altitude, all-weather air defence system used to counter tactical ballistic missiles, cruise missiles and advanced aircraft. Lockheed Martin is the original equipment manufacturer (OEM) of the Patriot air defence system. The US Department of Defense awarded a \$3.4bn contract to deliver an unspecified number of PAC-3 missiles for Kuwait's and Saudi Arabia's respective Patriot air-defense systems in 2018. ... This proposed sale will improve Kuwait's capability to sustain their missile density and ensure readiness for air operations. Kuwait will use this capability as a deterrent to regional threats and to strengthen homeland defense. Kuwait will have no difficulty absorbing this infrastructure, support, and associated services into its armed forces.

Source: <https://www.army-technology.com/news/kuwait-requests-repair-and-recertification-of-patriot-missiles/?cf-view>, 21 September 2023.

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**China is looking to develop its nuclear power sector as part of a broader push on renewables and domestic energy security. Nuclear is expected to contribute about 10 percent of power generation in the country by 2035 and 18 percent by 2060, with a total generation capacity of 400 gigawatts (GW) by 2060, the CNEA said.**

**NUCLEAR ENERGY**

**CHINA**

**China Expects to OK 6-8 Nuclear Power Units Per Year in Green Energy Drive**

China expects to greenlight six to eight new nuclear power units a year within the foreseeable future, an official at the China Nuclear Energy Association (CNEA) said, according to a report in state media outlet Xinhua on Wednesday. China is looking to develop its nuclear power sector as part of a broader push on renewables and domestic energy security. Nuclear is expected to contribute about 10 percent of power generation in the country by 2035 and 18 percent by 2060,

with a total generation capacity of 400 gigawatts (GW) by 2060, the CNEA said. However, while China has seen rapid capacity growth in other renewables such as wind and solar, it has struggled to meet its targets for nuclear power. Beijing had set a target for 58GW of installed nuclear capacity by 2020, but as of September 2023 is just short of this with a installed capacity of 57GW, and 24 units under construction with a total installed capacity of 27.8GW, according to CNEA.

Nuclear power generation has a significantly smaller carbon footprint than fossil fuel-based power plants, and can also dispatch power more consistently and reliably than weather-dependent renewable sources such as wind or solar.

In August this year, authorities approved an additional six nuclear power units to be built at three plants, having approved 10 nuclear power projects last year, according to earlier reporting from state-backed media outlet the Paper. Nuclear power accounted for only around 2.2% of the country's installed electricity generation capacity at the end of 2022, according to data from China's National Bureau of Statistics.

Source: <https://www.reuters.com/business/energy/china-expects-ok-6-8-nuclear-power-units-per-year-green-energy-drive-2023-09-27/>, 27 September 2023.

**INDIA**

**How India Plans to Use Nuclear Energy to Achieve Net Zero Emissions**

Addressing the conference, Mr Mohanty said NPCIL has been setting records in extended



continuous power plant operations and maintaining excellent safety records. India on Wednesday (27 Sep) spelled out plans to generate 22 GW power through nuclear energy to achieve Net Zero emissions for addressing the challenges posed by climate change.

At the IAEA in Vienna, Atomic Energy Commission Chairman Ajit Kumar Mohanty shared India's ambitious plans to step up nuclear power generation during a meeting with IAEA Director General Rafael Mariano Grossi. Mr Mohanty is in Vienna to attend the annual IAEA General Conference. Mariano Grossi posted on X, "Greetings to Mohanty on India's ambitious plans to reach 22 GW through nuclear energy for Net Zero."

Addressing the conference, Mr Mohanty said NPCIL has been setting records in extended continuous power plant operations and maintaining excellent safety records. "Some of its units have operated continuously for more than 365 days (a year) on 42 occasions and more than 700 days on five occasions. One remarkable achievement is that unit-3 at Kakrapar in the Gujarat state of India recently commenced commercial operation, the first-of-its-kind 700 MW indigenous PHWR" he said.

Mr Mohanty said a few days ago, India hosted the G20 Summit where energy security, access, affordability, and transition are essential considerations. "Under India's Presidency, the countries that opt to use civil nuclear energy reaffirmed their role in providing clean energy. These countries will now collaborate in research, innovation, development & deployment of civil nuclear technologies, including advanced and SMRs," he said.

The discussions at G20 also centered around helping build resilient nuclear supply chains,

promoting responsible nuclear decommissioning and radioactive waste and spent fuel management, and sharing knowledge and best practices, he said. Mohanty also touched upon India's nuclear programme, commitment to peaceful uses of nuclear energy, and its long history of partnership with the IAEA, the global nuclear watchdog.

Source: <https://www.ndtv.com/india-news/how-india-plans-to-use-nuclear-power-to-achieve-net-zero-emissions-international-atomic-energy-agency-vienna-4430090>, 28 September 2023.

## ITALY

### Italian Government Begins Discussions on Clean Nuclear Power

The Italian government has launched the National Platform for Sustainable Nuclear Power, which will lead within nine months to developing guidelines for possibly reintroducing nuclear power among national energy sources.... As anticipated in the electoral programme of the centre-right government of PM Meloni with parties Fratelli d'Italia (ECR), Lega (ID), Forza Italia (EPP), Italy will consider reinstating nuclear power among the country's energy sources. "We aim to eliminate coal first, then oil, and conserve gas until renewables are developed enough to achieve carbon neutrality in 2050," said Environment Minister Fratin. "But in the long run, the continued demand for energy will be such that we will have to provide for the use of sources that ensure, as opposed to renewables, continuity in energy delivery. Just like nuclear power."...

The government has ruled out the use of large third-generation nuclear power plants but is looking at new technologies such as SMRs and fourth-generation nuclear reactors (AMRs), which are considered safer. It is planned to develop

**Some of its units have operated continuously for more than 365 days (a year) on 42 occasions and more than 700 days on five occasions. One remarkable achievement is that unit-3 at Kakrapar in the Gujarat state of India recently commenced commercial operation, the first-of-its-kind 700 MW indigenous PHWR.**

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guidelines within nine months. The meeting chaired by Fratin was attended by leading public research organisations, academics, scientific associations, and public entities operating in the field of nuclear safety and decommissioning. Also in attendance were companies that already have investment programs in the nuclear sector, for instance in the production of components and plants and in medical applications in the nuclear sector.

Italy, as stated in an official note from the ministry, is focusing on the wide deployment of renewables and energy efficiency to ensure decarbonisation and energy security, including through diversification of sources and integration of the different technological solutions available, including nuclear fusion and fission....

Source: <https://www.euractiv.com/section/politics/news/italian-government-begins-discussions-on-clean-nuclear-power/>, 22 September 2023.

## **POLAND**

### **Westinghouse and Bechtel Sign Consortium Agreement for First Nuclear Power Plant in Poland**

Westinghouse Electric Company and Bechtel today announced the signing of a formal agreement to partner on the design and construction of Poland's first nuclear power plant at the Lubiatowo-Kopalino site in Pomerania. This agreement marks another important milestone on the journey to commercial operation for Poland's first AP1000® nuclear reactor in 2033. "American-Polish cooperation on development and deployment of advanced nuclear technologies continues to grow. This agreement between Bechtel and Westinghouse, two global leaders in nuclear energy, is the next step in our cooperation.

The United States is proud to be Poland's closest partner for the clean energy transition," said Mark

Brzezinski, the US Ambassador to Poland.... "The agreement is another important milestone in our cooperation with Poland. I am extremely confident that these two partners, Westinghouse and Bechtel will bring the high caliber of nuclear energy technology to the Polish people," said Dr. Kathryn Huff, Assistant Secretary for Nuclear Energy at the U.S. Department of Energy. "This is a team with demonstrated ability to deliver on

large nuclear energy projects," said David Durham, President for Energy Systems, Westinghouse. "The fleet experience we have earned with our advanced, proven AP1000 technology, including a 100% complete design and construction lessons-learned, will serve Poland well as it seeks

decarbonization and increased energy security."...The consortium and Polish utility Polskie Elektrownie J'drowe are expected to sign an engineering services contract next week.

The Polish government selected the Westinghouse AP1000® reactor technology for its first-ever nuclear energy program in November 2022. Significant licensing and engineering work is already underway on the project that will deliver reliable, clean and safe power to Poland. The AP1000 is the only operating Generation III+ reactor with fully passive safety systems, modular construction design and the smallest footprint per MWe on the market. In the U.S., at the Vogtle site in Georgia, one AP1000 unit is producing power for the grid while a second unit recently completed its initial fuel load with commercial operations likely later this year or early-2024. Four AP1000 reactors are currently setting operational performance and availability records in China with six additional reactors under construction there. Earlier this year, Bulgaria selected the AP1000 technology for its new reactor program and the technology is under consideration at multiple other sites in Central and Eastern Europe, the UK, and in North America.

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Source: <https://info.westinghousenuclear.com/news/westinghouse-and-bechtel-sign-consortium-agreement-for-first-nuclear-power-plant-in-poland>, 21 September 2023.

## **SAUDI ARABIA**

### **Saudi Arabia Announces Crucial Step Forward in its Nascent Nuclear Power Plans**

Saudi Arabia announced its commitment to building a nuclear energy program, as well as a pledge to allow greater oversight for atomic energy inspectors, at a time when the kingdom is pushing ahead with its drive to become a more powerful player on the international stage. The Saudi energy minister said his country would move to much more robust safeguards and checks from the IAEA, the U.N.'s nuclear watchdog, than it had previously.

Under the agency's Small Quantities Protocol (SQP), the IAEA exempts countries with little or no nuclear material from many inspections and transparency requirements. "The kingdom has recently taken the decision to rescind its Small Quantities Protocol and to move to the implementation of a full-scope Comprehensive Safeguards Agreement," Saudi Energy Minister Prince Abdulaziz bin Salman Al Saud said during the annual conference of the IAEA in Vienna on September 25. "The kingdom is committed through its policy on atomic energy to the highest standards of transparency and reliability," he said.

The watchdog agency had been pushing the kingdom and other countries with SQPs to switch to the Comprehensive Safeguards Agreement (CSA) for years – IAEA Director General Grossi called them a "weakness" amid global non-proliferation efforts. In a post on social media platform X, Grossi wrote: "We signed an

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agreement for #SaudiArabia to provide the @IAEAorg with junior professional officers, marking a significant step in nuclear expertise and cooperation," and thanked the kingdom for its support. The announcement put the spotlight on the kingdom's nascent nuclear energy efforts — Saudi Arabia has a small nuclear reactor, a research unit set up with the help of Argentina, that it has not yet put into operation.

Moving to the CSA will enable the kingdom to access fissile material and start running the reactor, which would make it the

second Arab country in the world with a nuclear energy program after the United Arab Emirates. "I look forward to receiving Saudi Arabia's formal communication about its decision," Grossi said late September 25. "The IAEA stands ready to provide support in this regard." The Saudi energy minister did not comment on whether his country would also join the IAEA's Additional Protocol, which requires more thorough oversight including snap inspections....

Source: <https://www.cnbc.com/2023/09/26/saudi-arabia-announces-step-forward-in-its-nascent-nuclear-power-plans.html>, 26 November 2023.

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## **TURKEY**

### **Türkiye Plans Over 20 Gigawatts of Nuclear Capacity by End of 2050**

Another phase of Türkiye's nuclear energy path has emerged with the aim of adding over 20 GW of nuclear energy capacity to its energy mix by the end of 2050. During the sixty-seventh General Conference of the IAEA via video message on September 25, Alparslan Bayraktar, the country's energy and natural resources minister, detailed that this aim would be achieved through the targeted addition of 7.2 GW of nuclear capacity by the end of 2035.

He affirmed that nuclear energy would play a vital

role in reaching carbon neutrality by the year 2053 as a priority for the development of the nation's sustainable energy. He said that Türkiye aims to increase the share of renewable energy sources as well as continue its efforts to include nuclear power in its energy mix as a base load clean source of power. This will not only involve conventional large-scale nuclear power plants but also small modular reactors SMR. "We've been following the developments of SMR, and we would like to include them in our energy mix," Bayraktar said.

The country's first nuclear power plant with a capacity of 4.8 GW, Akkuyu, is currently under construction. The first of the plant's four planned reactors is scheduled to be put into service by the end of 2024. "I would also like to emphasize our

dedication to work closely with the IAEA to support the highest standards in nuclear safety, security and safeguards to promote the peaceful use of nuclear technology," Bayraktar said. Türkiye is now a party to all international conventions in the nuclear safety and security field and submits compliance reports on a regular basis.

Source: <https://www.aa.com.tr/en/energy/nuclear/turkiye-plans-over-20-gigawatts-of-nuclear-capacity-by-end-of-2050/38960>, 25 September 2023.

## USA

### World Needs Nuclear for Net Zero, Says John Kerry

Nuclear will be essential for the world to accelerate its transition away from fossil fuels, US Special Presidential Envoy for Climate John Kerry said at a New York summit.... He also praised the recently launched Net Zero Nuclear Initiative – which has now welcomed GE Hitachi Nuclear Energy (GEH) as its first corporate partner. Envoy Kerry was addressing the first day of Nuclear Energy Policy Summit 2023: Accelerating Net Zero Nuclear, an inaugural event organised by the

Atlantic Council Global Energy Center in partnership with the Emirates Nuclear Energy Corporation on the sidelines of New York Climate Week and the UNGA.

Extreme weather events are only going to increase as the world falls behind on its climate targets, Kerry said, as he called for science-based decision-making. "The reality is that this year it's going to be worse than last year, and next year is going to be worse than this year, no matter what we do - for the simple reason that we're way

behind.... We're currently heading towards something like 2.4 degrees, 2.5 degrees of warming on the planet and everything that you see happening today is happening at 1.1 degrees Celsius of warming.... We have to recognise a reality here. We have to transition

away from unabated burning of fossil fuel," Kerry said.... The magnitude of the challenge will require commitment, he added. "Even if you had a quintupling of renewable energy, you will not alter the current course of 2.4 degrees - it's that big a challenge right now."

This needs commitment firstly "not to keep making the problem worse" by supporting the use of fossil fuels which remain unabated, and secondly to accelerate all zero emissions or extremely low emissions approaches to energy, transportation and ultimately heavy industry: "We don't have the luxury of unilaterally disarming ourselves...with respect to any decarbonisation technology when we're facing the urgency of this crisis - it's all of the above we need on the table." The USA is now committed, "based on experience and based on reality", to trying to accelerate the deployment of nuclear energy, he said. "It's what we believe we absolutely need in order to win this battle and we believe we still can win this battle".

**Net Zero Nuclear:** ...The COP28 climate conference - which takes place in Dubai from 30 November until 12 December - is an opportunity to try to galvanise more action, and Kerry said he was pleased to see the launch of the "pioneering"

**Türkiye aims to increase the share of renewable energy sources as well as continue its efforts to include nuclear power in its energy mix as a base load clean source of power. This will not only involve conventional large-scale nuclear power plants but also small modular reactors SMR.**

Net Zero Nuclear platform. This initiative was launched in early September by World Nuclear Association and the Emirates Nuclear Energy Corporation (ENEC), with support from the IAEA's Atoms4NetZero and the UK government, and aims to ensure that nuclear energy's potential is fully realised in facilitating the decarbonisation of global energy systems by promoting the value of nuclear energy and removing barriers to its growth especially in the run-up to COP28. Speaking after Kerry's address to Nuclear Energy Policy Summit 2023, World Nuclear Association Director General Sama Bilbao y León announced that GEH has become Net Zero Nuclear's first corporate partner....

Source: <https://www.world-nuclear-news.org/Articles/World-needs-nuclear-for-net-zero-Kerry>, 20 September 2023.

## **NUCLEAR COOPERATION**

### **CHINA-ASEAN**

#### **China, ASEAN Enhance Cooperation on Peaceful Uses of Nuclear Technology**

Over the past decade, China and the ASEAN have deepened their cooperation in the field of nuclear energy and nuclear technology applications, according to the China Atomic Energy Authority (CAEA). Liu Jing, vice chairman of the CAEA, made the remarks at the second China-ASEAN Forum on Peaceful Uses of Nuclear Technology held on 14 and 15 September in Nanning, the capital of south China's Guangxi Zhuang Autonomous Region. "China has provided ASEAN countries with reliable

**The COP28 climate conference - which takes place in Dubai from 30 November until 12 December - is an opportunity to try to galvanise more action, and Kerry said he was pleased to see the launch of the "pioneering" Net Zero Nuclear platform. This initiative was launched in early September by World Nuclear Association and the Emirates Nuclear Energy Corporation (ENEC), with support from the IAEA's Atoms4NetZero and the UK government.**

nuclear technology products, services, and solutions, promoted the training of professionals, and supported the development of peaceful uses of nuclear technology," Liu said.

Speaking at the forum, Kao Kim Hourn, secretary-general of ASEAN, said he believes the forum can further promote practical cooperation between ASEAN countries and China in the fields of nuclear technology applications and clean energy. The secretary-general said he hopes that the cooperation will further contribute to the peaceful uses of nuclear energy and technology as well as green

development. Experts also agreed at the forum that China and ASEAN countries should continue to actively promote cooperation in the field of nuclear technology applications.

**'Nuclear Technology for a Better Home':** At the forum, the CAEA released a document of China's solutions for "nuclear technology for a better home." The document introduces the development of China's nuclear technology application industry, offering China's solutions in the fields of industry, agriculture, health care, environmental

**At the forum, the CAEA released a document of China's solutions for "nuclear technology for a better home." The document introduces the development of China's nuclear technology application industry, offering China's solutions in the fields of industry, agriculture, health care, environmental governance, and public security.**

governance, and public security. "China will accelerate the application of nuclear technology in the fields of industry, agriculture, health care, and environmental governance, in order to better benefit economic development and the well-being of the people," Liu said.

In the field of agriculture, China can provide the technology and services of radiation-induced plant mutation breeding for the creation of new germplasm and the cultivation of new varieties. In terms of health care, China can provide a one-

stop solution for nuclear medicine imaging diagnosis. While in the public security area, China can provide passenger and carry-on baggage screening solutions for airports and other transportation hubs, according to the document....

Source: <https://news.cgtn.com/news/2023-09-18/China-ASEAN-enhance-cooperation-on-peaceful-uses-of-nuclear-tech—1nc0aJg0I7q/index.html>, 18 September 2023.

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## PHILIPPINES–JAPAN–AUSTRALIA

### Countries Push Treaty to Curb Nuclear Materials

The Philippines, Japan and Australia urged the international community to start negotiations on a treaty to curb “fissile materials” that can be weaponized for war. The UNODA said fissile materials are those that can undergo fission reactions. They are the key components of nuclear weapons or other nuclear explosive devices. Those mostly used in nuclear weapons are highly enriched uranium and plutonium. Japanese PM Kishida, Australian Foreign Minister Wong and Filipino Foreign Affairs Secretary Manalo co-hosted the FMCT event on the sidelines of the 78th UNGA last September 19. The high-level event coincided with the 30th year since the UNGA urged the Conference on Disarmament to negotiate an FMCT, the Department of Foreign Affairs (DFA) said in a statement.

**The Philippines is therefore proud to stand with Japan and Australia to breathe life into long-standing international efforts towards a fissile material cut-off treaty.” The three foreign ministers called for the conclusion of an FMCT that will obligate states to dismantle fissile materials for military purposes as well as putting a cap on the expansion of nuclear weapons stockpile.**

Speaking before other world leaders and foreign ministers, Manalo highlighted the Philippine’s commitment to rejecting nuclear weapons and the pursuit of nuclear disarmament. “The Filipino people have always been unequivocal in our rejection of nuclear weapons,” Foreign secretary Manalo said. “The Philippines is therefore proud to stand with Japan and Australia to breathe life into long-standing international efforts towards a fissile material cut-off treaty.” The three foreign ministers

called for the conclusion of an FMCT that will obligate states to dismantle fissile materials for military purposes as well as putting a cap on the expansion of nuclear weapons stockpile. The DFA said the Philippines has been consistent in its position that an FMCT must be negotiated without preconditions and without delay, and that pending the entry into force of an FMCT, arrangements be undertaken to establish a five-year moratorium on additional facilities for uranium enrichment and plutonium separation.

“It is disappointing that this remarkable achievement is being reversed in the Asia-

Pacific. The starting point of our collective journey towards nuclear disarmament, after all, begins in that region - in Nagasaki and Hiroshima,” Manalo said. “The stories of the victims of nuclear horrors from these places inspired global action towards landmark instruments like the NPT, the CTBT, and the TPNW,” he said.

Source: <https://www.manilatimes.net/2023/09/22/news/national/countries-push-treaty-to-curb-nuclear-materials/1911197>, 22 September 2023.

URANIUM PRODUCTION

UKRAINE

**First Batch of Domestic Uranium Concentrate Sent to Cameco for Processing**

Ukraine's Eastern Mining and Processing Plant (VostGOK) has sent a first batch of domestic uranium concentrate to Canada's Cameco for further processing and eventual nuclear fuel production.... Interfax Ukraine said Cameco is to convert the batch to uranium hexafluoride (UF6) before it is sent to Urenco, the British-German-Dutch nuclear fuel consortium, for enrichment and ultimately to Westinghouse for fuel manufacturing.

In April 2023, Cameco and Ukraine's state-owned nuclear operator Energoatom signed the final agreement needed for a programme to export all of Ukraine's uranium production for processing in Canada to produce fuel for Ukrainian nuclear power plants. The agreement would see Cameco supply 100% of Energoatom's UF6 requirements – consisting of uranium and conversion services – for the nine nuclear units at its Rovno (four units), Khmel'nitski (two units) and South Ukraine (three units) nuclear power stations for the duration of the contract.

In August, the UK agreed to guarantee a £192m (€224m, \$245m) finance deal for Ukraine to buy nuclear fuel from producers including UK companies and end its reliance on Russia. The UK would provide the loan guarantee to Energoatom via the UK's export credit agency, UK Export Finance. Through the deal, Urenco would supply Energoatom with uranium enrichment services. In June 2022, Westinghouse and Energoatom signed agreements for the supply of nuclear fuel for the country's entire reactor fleet and an ambitious expansion of a planned AP1000

new-build programme.

The US company started supplying fuel for Russia-designed VVER-1000 pressurised water reactor units in Ukraine's commercial fleet as early as 2014, with seven out of 15 Ukrainian reactors running on Westinghouse fuel at the time Russia's invasion began in February 2022. Earlier in September 2023, the first batch of Westinghouse-made VVER-440 fuel was loaded into the core of the Rivne-1 nuclear plant in Ukraine, one of the two VVER-440 units in the country.

Source: <https://www.nucnet.org/news/first-batch-of-domestic-uranium-concentrate-sent-to-cameco-for-processing-9-2-2023>, 19 September 2023.

NUCLEAR NON-PROLIFERATION

GENERAL

**SIPRI to Co-Host Intensive Introductory Course on Nuclear Non-proliferation and Disarmament**

SIPRI and the European Union Non-Proliferation and Disarmament Consortium (EUNPDC) invite students of engineering disciplines to apply for an intensive introductory course on the proliferation of nuclear weapons, mechanisms to control their further spread, the security of nuclear materials and installations, and pathways to disarmament.

The course will take place 28–30 November 2023 in Stockholm, Sweden. The course has two main objectives: to enable students of engineering disciplines to use their knowledge and expertise to build their future careers in the fields of non-proliferation and disarmament, including by addressing the risks of nuclear proliferation through technological developments; and to raise awareness among the students of proliferation

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risks associated with engineering disciplines.

The course will cover the fundamentals of nuclear weapons, as well as of missiles and other means of delivery of nuclear weapons; threats associated with the military and potential terrorist use of radioactive and nuclear material; arms control treaties; non-proliferation treaties and their means of verification; export controls; financial expenditure associated with developing and maintaining nuclear weapons, and mechanisms aimed at achieving disarmament. The course will also examine gender perspectives on armament and disarmament and cover potential career paths in these disciplines. Course instructors will include renowned experts on nuclear non-proliferation, arms control, disarmament, export controls, verification and related subjects from SIPRI, other European research centres, think tanks and international organizations.

**Eligibility and Application:** The course is open to all students currently enrolled in a European university, pursuing a graduate or postgraduate degree in any engineering discipline. Applications from qualified women and underrepresented communities are encouraged. The language of instruction is English. There is no tuition fee, and SIPRI will cover accommodation and economy class roundtrip costs for students travelling from Europe upon request. The deadline for applications is 23 October 2023. Twenty applicants will be selected for participation in the course. As space is limited, we recommend that applications be submitted as early as possible. Participants will be given access to preparatory materials and are expected to read them in advance of the course. Applications should be submitted in English via the form in the vacancies

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section of SIPRI's website. Please note that applicants will be asked to upload a cover letter and a curriculum vitae, as well as a letter confirming enrolment in a graduate/postgraduate programme. Selections will be finalized by 30 October 2023, and applicants will be informed thereafter.

Source: <https://www.sipri.org/news/2023/sipri-co-host-intensive-introductory-course-nuclear-non-proliferation-and-disarmament>, 21 September 2023.

## NUCLEAR PROLIFERATION

### IRAN

#### Iran's President Defends Uranium Enrichment after Europeans 'Trampled on Their Commitments'

Iranian President Raisi has defended his country's enrichment of uranium to near weapons-grade levels, claiming it was a response to European states not living up to their end of the 2015 nuclear agreement. "In the beginning, we were not seeking 60% levels of enrichment. They (European states) trampled upon their commitments," President Raisi...in New York on the sidelines of the UN General Assembly this week. "What the Islamic Republic of Iran did was in response to a breaking of commitment of the signatories to the (2015) agreement."

Iran announced that it was enriching uranium to 60% in 2021, following an attack on its above-ground nuclear facility in Natanz, which Tehran blamed on Israel. The move alarmed the West, as it shortened Iran's so-called "breakout time" to build a nuclear weapon, which requires uranium that is enriched above 90%. The UN's nuclear watchdog, the IAEA, said earlier this month that



Iran was the only country without a nuclear weapon that was enriching uranium to 60% purity, and in March 2023 the agency announced that uranium particles enriched to 84% were found at Iran's Fordow plant.

In September 2023, Reuters cited a confidential IAEA report stating that Iran's stock of uranium enriched to up to 60% purity continued to grow, albeit at a slower pace than in the previous quarter. Nuclear power, which Iran says is the purpose of its nuclear program, requires uranium to be enriched to 3% to 5%...President Raisi rejected accusations that Iran's ramped up enrichment was because the country is seeking to build a bomb, telling CNN: "It was officially announced that the action that we intend to take is not intended to reach nuclear weapons of any type or a military dimension of any type, but it is...a response for the lack of commitment demonstrated by the Europeans." He also reiterated Tehran's long-standing claim that it does not plan to acquire a nuclear bomb.

The JCPOA, as the 2015 deal to limit Tehran's nuclear program was known, was signed between Iran and world powers including the US and the EU. The agreement capped Iranian uranium enrichment at 3.67% in exchange for sanctions relief.... While it was only the US that pulled out of the deal, that withdrawal affected European trade with Iran, said Ali Vaez, Iran Project Director at International Crisis Group think tank. "As a result...around 80% of Europe's trade with Iran evaporated almost overnight," Vaez told CNN. "And the Europeans made plenty of lofty promises to the Iranians in 2018...and none of it materialized."

**Tit for Tat:** Iran has long argued that after the US' withdrawal, other JCPOA signatories have also failed to stick to their parts of the deal, continuing instead to impose sanctions against Tehran. The

**Iran has long argued that after the US' withdrawal, other JCPOA signatories have also failed to stick to their parts of the deal, continuing instead to impose sanctions against Tehran. The Iranian president told CNN that should Europeans at "any time return to a fulfilment of their commitments, rest assured, and have no doubt that the Islamic Republic as it has done in the past, will fully adhere to [its] commitments.**

Iranian president told CNN that should Europeans at "any time return to a fulfilment of their commitments, rest assured, and have no doubt that the Islamic Republic as it has done in the past, will fully adhere to [its] commitments." Tehran has recently expressed frustration with mounting Western sanctions against it, as well as the refusal by the UK, France and Germany

(the E3) to lift a number of sanctions on individuals and entities involved in Iran's missile, nuclear, and other weapons programs, which under the 2015 nuclear pact were due to be lifted next month.

**President Raisi told CNN that Iran's intention is not to bar the IAEA from conducting inspections, but that Tehran has withdrawn designations of inspectors from France, Germany and the UK, the countries Iran accused of not living up to their commitments under the 2015 deal, as well as the US.**

This month, the E3 said they will not be lifting sanctions on Iran's missile programs as scheduled, but will instead be transferring them into domestic laws "in

response to continued Iranian non-compliance with their JCPOA commitments and ongoing nuclear escalation." Iran's foreign ministry called the decision "illegal," and that it "amounts to a tension-building measure, which is taken in bad faith".... Iran this month barred several UN inspectors from conducting verification activities on its nuclear program, the IAEA said, adding that Tehran has "effectively removed about one third of the core group of the Agency's most experienced inspectors designated for Iran."

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US. "Iran hasn't said we do not wish any inspectors to be here," President Raisi told CNN. "We have said what these three countries, what has been said by the IAEA is that we have certain considerations vis-a-vis individuals from these three countries," he said, adding that "their trust is under a shadow of doubt." In a joint statement, the three European countries and the US on September 18 demanded that Iran immediately reverse its decision and "fully cooperate with the Agency."

**Iran signed the JCPOA with world powers in July 2015, agreeing to put some curbs on its nuclear programme in return for the removal of sanctions on the country. The US, however, pulled out of the deal in May 2018 and reimposed its unilateral sanctions on Tehran, prompting the latter to drop some of its nuclear commitments under the deal. The talks on the revival of the JCPOA began in April 2021 in Vienna, Austria.**

The European signatories to the JCPOA have lost a lot of credibility in the eyes of the Iranians, Vaez of Crisis Group said, adding that the Iranians see them as having "overpromised and underdelivered." This view, he added, is taken up by hardline politicians like Raisi, as well as more moderate ones. "Now, you see that the Iranians and the Americans have reached an understanding that has toned down Iran's nuclear program, in which Europe played no role" ....

In a sign of a diplomatic breakthrough, Iran this week released five American prisoners in a Qatar-mediated deal that also included the unfreezing of some \$6 billion in Iranian funds and the release of five Iranian prisoners in the US. The deal was a sign of what analysts described as a method of unwritten arrangements between Washington and Tehran, with smaller exchanged concessions in lieu of a wider, formal agreement.

Source: <https://edition.cnn.com/2023/09/24/middleeast/iran-raisi-fareed-zakaria-interview-intl/index.html>, 24 September 2023.

### **Agreement on Revival of Nuclear Deal 'Within Reach' if US Quits 'Contradictory Behaviours': Iranian FM**

Iranian Foreign Minister Abdollahian has said that an agreement on the revival of a 2015 nuclear deal, formally known as the JCPOA, will be "within

reach" if the US stops its "contradictory behaviours".... F.M Abdollahian made the remarks to reporters on September 22 in New York while elaborating on his meetings on the sidelines of the 78th session of the UNGA, said the report on September 24. "We believe that, in view of the prisoner swap conducted between Iran and the US, if the American side quits its contradictory behaviors and shows its real intention, achieving an agreement for all parties' return to the JCPOA and the removal of

sanctions on Tehran will not be out of reach, " the report quoted the Minister as saying. F.M Abdollahian noted that he met with members of an American think-tank and a number of former US officials in New York to explicitly discuss bilateral issues, one of which was the "wrong" approach of the US toward Iran and the JCPOA....

On September 18, Iran's Foreign Ministry spokesman Nasser Kanaani said Iran is open to indirect nuclear talks with the US on the sidelines of the UNGA, which had seen the attendance of Iranian President Raisi, leading a high-ranking delegation. Iran signed the JCPOA with world powers in July 2015, agreeing to put some curbs on its nuclear programme in return for the removal of sanctions on the country. The US, however, pulled out of the deal in May 2018 and reimposed its unilateral sanctions on Tehran, prompting the latter to drop some of its nuclear commitments under the deal. The talks on the revival of the JCPOA began in April 2021 in Vienna, Austria. Despite several rounds of talks, no significant breakthrough has been achieved since the end of the last round in August 2022.

Source: <https://www.punjabnewsexpress.com/world/news/agreement-on-revival-of-nuclear-deal-within-reach-if-us-quits-contradictory-behaviours-iranian-fm-222863>, 24 September 2023.

## SAUDI ARABIA

### 27 Experts Urge Biden Not to Allow Saudis to Enrich Uranium for Israel Deal

Over two dozen nuclear and Middle East experts on September 22 told US President Biden not to permit Saudi Arabia to enrich uranium on its soil as part of a normalization deal with Israel. The bipartisan group of 27 signatories wrote in a letter that they backed a potential deal between Jerusalem and Riyadh but expressed their belief that uranium enrichment was not necessary for a civilian program, warning that such a process would bring the Saudis close to having offensive nuclear capabilities.

"We urge you to reject the Kingdom of Saudi Arabia's request for uranium enrichment as part of or separate from a normalization agreement between Saudi Arabia and Israel," they wrote, according to the Axios news site, which first

reported on the letter. Among the signatories are Jacob Nagel, a former national security adviser to PM Netanyahu; David Albright, a leading international nuclear expert; Olli Heinonen and Pierre Goldschmidt, former deputy director-generals of the IAEA; as well as several US officials who served under Democratic and Republican presidents. The letter was co-organized by a US conservative think tank with pro-Israel leanings, the Foundation for the Defense of Democracies, and the Nonproliferation Policy Education Center, a nonprofit that advances understanding of nuclear proliferation issues.

The US is pushing Israel and Saudi Arabia to forge ties, and as part of the potential agreement, Riyadh is asking for a civilian nuclear program. Saudi Crown Prince Salman on September 21 warned against nuclear escalation in the region, but said that if Iran acquires a nuclear weapon, Saudi Arabia will need one also. "It's a useless effort, to reach a nuclear weapon, because you can't use it," he told Fox News. "If you use it,

you're going to have a big fight with the rest of the world." But, he added, "If they get one, we have to get one." According to a September 22 report in The Wall Street Journal, officials from Israel and the US are working together on a plan that would potentially see the Gulf kingdom openly enrich uranium.

Unnamed Israeli and US officials told the paper that PM Netanyahu has told top nuclear and security experts in Israel to cooperate with US negotiators on a proposal for a "US-run uranium enrichment operation" in Saudi Arabia, as part of a potential normalization deal. An unnamed senior Israel official told the newspaper that there would

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be "a lot" of safeguards on any potential program for uranium enrichment in Saudi Arabia. Experts told the Journal that while there are potential remote shutdown mechanisms that could be put in place in a nuclear facility, or systems that could speed up centrifuges until they

break, there were no guarantees such arrangements would be failsafe.

The report said that President Biden has not yet agreed to the proposal, and noted that Washington officials are still looking at other alternatives. While welcoming a potential deal, government critics have expressed concern over granting Riyadh a nuclear program, warning that allowing the Saudis to potentially develop a nuclear weapon would go against Israel's nuclear strategy, and likely spark a nuclear arms race in the Middle East. "The Saudi crown prince already spoke yesterday about the possibility of Saudi Arabia having nuclear weapons. All his life, Netanyahu fought precisely against such moves. These are the foundations of our nuclear strategy," opposition leader Yair Lapid said September 22. "Strong democracies do not sacrifice their security interests for politics," he warned. "It is dangerous and irresponsible. Israel must not agree to any type of uranium enrichment in Saudi Arabia." Both former PM Ehud Barak, an outspoken

government critic, and Labor party leader Merav Michaeli also warned of consequences over the proposals in interviews....

Foreign Minister Eli Cohen dismissed the fears, saying there was no need to rush to judgment prematurely, in an interview with Army Radio.

"There are many details for that kind of agreement," he said. "But Israel's security takes precedence above everything. We want peace, but also security." He also stated that the last details could be finalized as early as the start of 2024. "The gaps can be bridged...It will take time. But there is progress"....

Source: <https://www.timesofisrael.com/27-experts-urge-biden-not-to-allow-saudis-to-enrich-uranium-for-israel-deal/>, 22 September 2023.

## **NUCLEAR DISARMAMENT**

### **GENERAL**

#### **International Day for the Total Elimination of Nuclear Weapons**

**Secretary General's Message – 2023:** The International Day for the Total Elimination of Nuclear Weapons reminds us that a peaceful future depends on ending the nuclear threat. Geopolitical mistrust and competition have spiked the nuclear risk to Cold War levels. Meanwhile, hard-won progress over many decades to prevent the use, spread and testing of nuclear weapons is being undone.

On this important Day, we re-affirm our commitment to a world free of nuclear weapons and the humanitarian catastrophe their use would unleash. This means nuclear-weapon States leading the way by meeting their disarmament obligations, and committing to never use nuclear weapons under any circumstances. It means strengthening the nuclear disarmament and non-proliferation regime, including through the NPT and the Prohibition of Nuclear Weapons. It means

all countries that have not yet ratified the CTBT to do so without delay, and for those States that possess nuclear weapons to ensure a moratorium on all nuclear testing. It means taking into account the evolving nuclear order, and addressing the blurring lines between strategic and conventional weapons and the nexus with new and emerging technologies.

Above all, it means deploying the timeless tools of dialogue, diplomacy and negotiation to ease tensions and end the nuclear threat. The recently launched Policy Brief on a New Agenda for

Peace calls on Member States to urgently recommit to this important cause. The only way to eliminate the nuclear risk is to eliminate nuclear weapons. Let's work together to banish these devices of destruction to the history books, once and for all.

Source: [https://www.un.org/en/observances/nuclear-weapons-elimination-day/messages?\\_gl=...](https://www.un.org/en/observances/nuclear-weapons-elimination-day/messages?_gl=...), 26 September 2023.

### **SRI LANKA**

#### **SL Sends Strong Message to India, Pakistan by Signing Treaty Against Nuclear Weapons**

Sri Lanka has sent a "strong message" to its two nuclear-armed neighbours - India and Pakistan - by acceding to the TPNW, said an official associated with the island nation's disarmament forum. A spokesman for the Forum on Disarmament and Development (FDD), the local arm of the ICAN said that the move is a huge achievement not only for Sri Lanka but also for the entire South Asian region. "Sri Lanka is surrounded by two nuclear weapon states which are India and Pakistan. Sri Lanka's accession to the TPNW sends a strong message to both nuclear-weapon states India and Pakistan," Vidya Abhayagunawardena, Coordinator for the FDD in Sri Lanka said welcoming the achievement as "reaffirmation of Sri Lanka's long-standing

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commitment" towards nuclear disarmament in favour of international peace and security.

Sri Lanka also ratified the CTBT in July, 27 years after the Treaty was open for signature at the UN, New York. Sri Lanka was among the first signatories of the CTBT in October 1996, just days after the Treaty opened for signature. Sri Lanka joined the TPNW bringing the tally of signatories to 93 – close to half of all states in the world - and States Parties to 69. Sri Lanka Foreign Minister Ali Sabry joined the Foreign Minister of the Bahamas to ink the landmark accord at a ceremony in New York during the annual United Nations Leaders' Week. Negotiated in 2017 and in force since 2021, the TPNW is the first multilateral agreement to outlaw nuclear weapons in a comprehensive manner and establish a framework for their elimination and for assisting victims of their use and testing.

**Sri Lanka joined the TPNW bringing the tally of signatories to 93 – close to half of all states in the world - and States Parties to 69. Sri Lanka Foreign Minister Ali Sabry joined the Foreign Minister of the Bahamas to ink the landmark accord at a ceremony in New York during the annual United Nations Leaders' Week.**

**This year, Belarus ratified the (A/CPPNM), Egypt ratified the (CNS), and Zimbabwe delivered the following six instruments at once: the instruments of accession to the CNS, the Vienna Convention on Civil Liability for Nuclear Damage, the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention, as well as the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, and instruments of acceptance of the Amendment to the CPPNM and of the Agreement on the Privileges and Immunities of the IAEA.**

multilateral treaties under IAEA auspices, which cover a spectrum of subjects aiming to bolster global nuclear safety and security as well as enabling the development of nuclear science and technology.

This year, Belarus ratified the Amendment to the Convention on the Physical Protection of Nuclear Material (A/CPPNM), Egypt ratified the Convention on Nuclear Safety (CNS), and Zimbabwe delivered the following six instruments at once: the instruments of accession to the CNS, the Vienna Convention on Civil Liability for Nuclear Damage, the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention, as well as the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, and instruments of acceptance of the Amendment to the CPPNM and of the Agreement on the Privileges and Immunities of the IAEA.

Source: <https://www.daijiworld.com/news/newsDisplay?newsID=1122544>, 21 September 2023.

## **NUCLEAR SAFETY**

### **BELARUS, EGYPT, ZIMBABWE**

#### **Three More Countries Commit to Safe, Secure and Peaceful Use of Nuclear Technology**

At the annual Treaty Event on the sidelines of the 67th regular session of the IAEA General Conference today, three more countries pledged their commitment to nuclear safety, security and the peaceful use of nuclear technology. Belarus, Egypt and Zimbabwe all deposited legal instruments to become a party to various

... The Permanent Representative of the Republic of Belarus to the IAEA, Andrei Dapkiunas, deposited an instrument of ratification of the Amendment to the Convention on the Physical Protection of Nuclear Material (A/CPPNM).

The CPPNM establishes legal obligations for Parties regarding the physical protection of nuclear material used for peaceful purposes during international transport; the criminalization of certain offences involving nuclear material; and international cooperation, for example, in the case of theft, robbery or any other unlawful taking of nuclear material or credible threat thereof.

Its entry into force in 1987 and Amendment in 2016

were crucial milestones in the development of the international legal framework for nuclear security, as they remain the only internationally legally binding undertakings in the area of physical protection of nuclear material and of nuclear facilities used for peaceful purposes. The CPPNM as strengthened by its Amendment is relevant for all States, not just those with nuclear facilities or nuclear materials.

**Egypt ratifies the Convention on Nuclear**

**Safety:** The Permanent Representative of the Arab Republic of Egypt to the IAEA, Mohamed EIMolla, deposited an instrument of ratification of the Convention on Nuclear Safety (CNS). The CNS aims to commit Contracting Parties operating land-based civil nuclear power plants to maintain a high level of safety by establishing fundamental safety principles to which States would subscribe. The Convention is based on the Parties' common interest to achieve higher levels of safety that will be developed and promoted through regular meetings. It obliges Parties to submit reports on the implementation of their obligations for "peer review" at meetings held at IAEA Headquarters. This mechanism is the main innovative and dynamic element of the Convention.

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**Zimbabwe Deposits Six Instruments of Accession and Acceptance:** Mr A.T. Chikondo, Secretary for Project Implementation, Monitoring and Evaluation, in the Office of the President and Cabinet of the Republic of Zimbabwe, deposited six instruments on behalf of Zimbabwe. One of these was the instrument of accession to the Vienna Convention on Civil Liability for Nuclear Damage, which aims to establish some minimum standards to provide financial protection against damage resulting from certain peaceful uses of nuclear energy.

**During the event, Zimbabwe also acceded to the Convention on Nuclear Safety and accepted the Amendment to the Convention on the Physical Protection of Nuclear Material as well as the Agreement on the Privileges and Immunities of the IAEA. The Agreement, approved by the Board of Governors in 1959, grants immunity to the Agency.**

Instruments of accession were also deposited to the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention and the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage. Since the objectives of the Vienna Convention on Civil Liability for Nuclear Damage are largely mirrored in the Paris Convention on Third Party Liability in the Field of Nuclear Energy, the Joint Protocol aims to establish treaty relations between the two Conventions, and to eliminate conflicts that may arise from the simultaneous application of both Conventions to the same nuclear incident.

During the event, Zimbabwe also acceded to the Convention on Nuclear Safety and accepted the Amendment to the Convention on the Physical Protection of Nuclear Material as well as the Agreement on the Privileges and Immunities of the IAEA. The Agreement, approved by the Board of Governors in 1959, grants immunity to the Agency, its property and assets from legal processes, and gives the Agency the capacity to contract, acquire and dispose of property and institute legal proceedings. ...

*Source: Elifnaz Kabalci,*

*<https://www.iaea.org/newscenter/news/three-more-countries-commit-to-safe-secure-and-peaceful-use-of-nuclear-technology>, 25 September 2023.*

**GENERAL**

**Nuclear Groups Propose 'Stepwise' Approach to Increased Regulatory Efficiency**

A new joint report from World Nuclear Association, the Nuclear Energy Institute and the Canadian Nuclear Association proposes regulatory steps which can be taken to minimise the time and cost

for large-scale deployment of a fleet of standardised reactor designs that are acceptable in multiple countries around the world. The report, A Framework for International Regulatory Efficiency to Accelerate Nuclear Deployment, says changes are required if there is going to be the scale of new nuclear required to tackle climate change and energy security concerns. It proposes a step-by-step approach

“given the complexity of the differences in regulations and standards, including technical, human and cultural challenges and how difficult this makes convergence” of regulatory requirements in different countries.

Its model is for “gradually increasing collaboration between key stakeholders that is supported by multilateral agreements between technology vendors, regulators, and operators”, and proposes to “build upon the efforts of small groups of regulators and industry jointly working on the review of specific reactor designs to increase efficiency in the design reviews to facilitate the ability of one regulator to leverage all, or part, of the outcomes from reviews undertaken by other regulators to support their own regulatory process”.

Its three key recommendations for action are: Increased support from governments, regulators and industry “to facilitate collaborative regulatory design review activities, including the enabling of groups of regulators working on specific designs”; Stakeholders to facilitate “increased collaborative regulatory design reviews” through a stepwise phased approach, which would allow near-term benefits through “low risk activities”

**The report, A Framework for International Regulatory Efficiency to Accelerate Nuclear Deployment, says changes are required if there is going to be the scale of new nuclear required to tackle climate change and energy security concerns. It proposes a step-by-step approach “given the complexity of the differences in regulations and standards, including technical, human and cultural challenges and how difficult this makes convergence” of regulatory requirements in different countries.**

**The report, produced by World Nuclear Association’s Cooperation in Reactor Design Evaluation and Licensing (CORDEL) working group in cooperation with the Canadian Nuclear Association (CNA) and the Nuclear Energy Institute (NEI), builds on existing work such as the Multinational Design Evaluation Programme and the IAEA’s Nuclear Harmonization and Standardization Initiative which was launched in 2022.**

while building a foundation for greater benefits that need a longer timeframe; Increased coordination of existing harmonisation activities “to accelerate progress through the stepwise phased approach and make most effective use of the resources available”.

The report, produced by World Nuclear Association’s Cooperation in Reactor Design

Evaluation and Licensing (CORDEL) working group in cooperation with the Canadian Nuclear Association (CNA) and the Nuclear Energy Institute (NEI), builds on existing work such as the Multinational Design Evaluation Programme and the IAEA’s Nuclear Harmonization and Standardization Initiative which was launched in 2022. “These initiatives and others, including from other industries, have demonstrated that there is much that can be, and has been, achieved through

collaborative efforts between different regulators and with industry. What is clear from other industries and ongoing harmonisation activities is that support from governments and early alignment among key stakeholders are important prerequisites for success,” the report says.

It also says that “working with large groups of stakeholders makes alignment of requirements increasingly difficult, and that working generically on design safety issues makes it difficult to identify the real challenges to joint design reviews”. It concludes that to meet the targets for new nuclear by 2050, there needs to be an “innovative approach” and says “the collaboration efforts will require additional resources above and beyond what each

national regulator already needs to support short-term regulatory activities in their own countries". "The aim of committing resources and efforts to these international collaborative efforts now is to support increased export markets and facilitate national regulators being able in future to carry out more reviews more efficiently."...

Source: <https://www.world-nuclear-news.org/Articles/Nuclear-groups-propose-stepwise-approach-to-increa>, 22 September 2023.

## JAPAN

### IAEA and Japan Sign Agreement on Continuous Monitoring and Safety Assessment of ALPS Treated Water Discharge

The IAEA and Japan signed an agreement on 18 September setting out the full scope of the Agency's comprehensive and continuous safety review of the discharge of treated water from the Fukushima Daiichi Nuclear Power Station (FDNPS), paving the way for decades of independent monitoring, sampling and analysis at the site and at sea. IAEA Director General Grossi and Japanese Foreign Minister Yoko signed the Memorandum of Cooperation on the side-lines of the UNGA in New York, nearly four weeks after the discharge of the water treated through the Advanced Liquid Processing System (ALPS) began.

The IAEA has been reviewing the safety of Japan's plan on how to handle the treated water since it was first announced in 2021 and 18 September's agreement focuses on the Agency's long-term activities during the discharge itself. It identifies five main areas of the IAEA's safety review work: 1) monitoring and assessment, focused on the protection of people and the environment; 2) the IAEA's presence in Japan and at the FDNPS, including for conducting onsite analysis; 3) regular

Agency review missions; 4) corroboration of Japan's source and environmental monitoring based on independent sampling and analysis; and 5) outreach and awareness activities, including sharing key information with the public.

These activities will enable the IAEA to check that the relevant international safety standards are constantly applied during the discharge, backed up with real-time and other monitoring data on the Agency's website. In July, Director General Grossi established an IAEA office at the FDNPS.

"Today's agreement sets the broad parameters for the IAEA's permanent presence at the site to implement the monitoring, corroboration and assessment activities that are indispensable for transparency and for building confidence – both in Japan and abroad – that the discharge will neither harm people nor the environment," Director General Grossi said. "We will stay and carry out our technical work until the last drop of the treated water

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has been safely discharged into the sea," he said. "Through its independent and scientific work, the IAEA will be able to provide assurances to people around the world that the discharge will cause no harm."

TEPCO – Fukushima Daiichi's operator – on 24 August started discharging the ALPS treated water stored at the site. To bring the tritium levels below operational limits, the water is also diluted before it is discharged. The Agency's two year detailed safety review of Japan's plan had previously concluded that the approach and activities for the discharge are consistent with relevant international safety standards and would have a negligible radiological impact on people and the environment. Earlier this month, the IAEA's first independent sampling and analysis of seawater



near FDNPS since the discharge started also confirmed that the tritium levels were below Japan's operational limits.

18 September's agreement – which formalizes some activities that are already being implemented – comes just over two years after the IAEA and Japan signed the Terms of Reference for the IAEA's assistance to Japan in reviewing the safety aspects of the handling of the ALPS treated water, and the Agency's establishment of a Task Force for this purpose. "As today's Memorandum of Cooperation demonstrates, the IAEA's work is far from over. In some respects, with last month's start of the discharge, it is only now beginning," Director General Grossi said.

Source: <https://www.iaea.org/newscenter/pressreleases/iaea-and-japan-sign-agreement-on-continuous-monitoring-and-safety-assessment-of-alps-treated-water-discharge>, 18 September 2023.

## POLAND

### Polish Regulator Ready for Nuclear Programme, IAEA Says

Poland's nuclear regulatory framework is in line with IAEA safety standards and its regulatory body is competent and prepared for the launch of the country's nuclear power programme, an IAEA team of experts has concluded. An Integrated Regulatory Review Service (IRRS) mission to Poland took place from 4-15 September at the request of the Polish government and hosted by the country's National Atomic Energy Agency (Państwowa Agencja Atomistyki, PAA).

The mission team was made up of 15 senior regulatory experts from 14 countries, as well as

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four IAEA staff members and one observer from the European Commission. It was the second IRRS mission to Poland, following one held in 2013. IRRS missions are designed to strengthen the effectiveness of the national nuclear and radiation safety regulatory infrastructure, based on IAEA safety standards and international good practices, while recognising the responsibility of each country to ensure nuclear and radiation safety.

The team concluded that the PAA was a competent regulatory body whose staff are committed to delivering their regulatory statutory obligations effectively and to prepare to embark on a nuclear power programme in line with international safety standards. "This is a major milestone for Poland, which has been considering a nuclear power programme for many years. The PAA's commitment to safety, as demonstrated throughout this second IRRS mission, is essential to ensuring that any nuclear power plants

**IRRS missions are designed to strengthen the effectiveness of the national nuclear and radiation safety regulatory infrastructure, based on IAEA safety standards and international good practices, while recognising the responsibility of each country to ensure nuclear and radiation safety.**

built in Poland are operated safely and securely," said Mike King, Deputy Office Director for Reactor Safety Programmes and Mission Support at US Nuclear Regulatory Commission and the IRRS Team Leader.

The team said the Advanced Licensing Exercise Project conducted by the PAA in 2018-2019 was considered good practice. This was a simulation of the analysis of a nuclear power plant construction licence application, carried out with the participation of international experts. The team said it enabled the PAA to enhance its competencies for the licensing of a nuclear power programme, to identify priorities for further

developing the safety infrastructure and to better prepare for several practical issues that may be encountered during licensing of the first nuclear plant in Poland.

In addition, the team identified good practices and performances conducted by Poland, including: the training of 300 Regional Sanitary Inspectorates staff on how to effectively inform the public on radon related issues; the communication strategy of the PAA to interact effectively with its interested parties, including information published on its website in relation to the conflict in neighbouring Ukraine; and the installation of 30 additional radiation monitoring stations close to its border to improve radioactivity detection capability.

The IRRS team concluded the main challenge in Poland was to implement robust measures to ensure that the PAA is effectively independent and continues to be properly resourced. Additionally, the team said the government should: ensure the availability of financial resources to enable the timely decommissioning of research reactors; improve coordination and cooperation between different regulatory authorities with responsibilities for facilities and activities in Poland; address the need for additional medical physicists for ensuring radiation protection of workers, patients and the public in medical treatments using radiation; and provide the PAA with the authority to amend licences on its own initiative without the documented consent from the authorised party.

**The IRRS team concluded the main challenge in Poland was to implement robust measures to ensure that the PAA is effectively independent and continues to be properly resourced. Additionally, the team said the government should: ensure the availability of financial resources to enable the timely decommissioning of research reactors; improve coordination and cooperation between different regulatory authorities with responsibilities for facilities and activities in Poland.**

**Poland currently operates a single research reactor, MARIA, has a research reactor, EWA, under decommissioning and two used fuel storage facilities, all located in Otwock, near Warsaw. Industry, medicine and research applications of radioactive sources are widely used. The National Radioactive Waste Repository, located in the town of Rozan, is a near-surface repository for radioactive waste and sealed radioactive sources disposal operated by Radioactive Waste Management Plant.**

The team also recommended the PAA establish an integrated overarching human resource plan, including the identification of financial resources

to implement it. "We would like to thank the IRRS team for their intensive work during the last two weeks, the results of which will help us to further enhance the overall effectiveness of the regulatory system in Poland," said PAA President Andrzej G<sup>3</sup>owacki. "The PAA has been identified as a competent regulatory body with staff committed to deliver their regulatory functions effectively. It will allow Poland to safely develop its nuclear power programme." The final mission report will be provided to PAA in about three months. Poland plans to make the report public.

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in the town of Rozan, is a near-surface repository for radioactive waste and sealed radioactive sources disposal operated by Radioactive Waste Management Plant. Construction of Poland's first nuclear power plant is planned to begin in 2026 at Lubiatowo-Kopalino in the province of Pomerania. As set out in Polish Nuclear Power Programme, there will be up to six reactors in two or three locations in the country with total generation capacity of 6-9 GWe. The aim is that all units will be online by 2040.

Source: <https://world-nuclear-news.org/Articles/Polish-regulator-ready-for-nuclear-programme,-IAEA>, 19 September 2023.

## **UKRAINE**

### **Pope Warns of Threats from Nuclear Weapons, New Technologies**

As the threat of nuclear war grows due to the war in Ukraine, so does the need to reflect on the ethical implications of other forms of new military weaponry, Pope Francis said. The pope sent a message to Cardinal Peter Turkson, chancellor of the Pontifical Academy of Social Sciences, Sept. 19 at the start of a two-day Vatican conference to mark the 60th anniversary of St. John XXIII's 1963 encyclical "Pacem in Terris." The conference is "most timely as our world continues to be in the grip of a third world war fought piecemeal, and, in the tragic case of the conflict in Ukraine, not without the threat of recourse to nuclear weapons," Pope Francis wrote. Organized by the Pontifical Academy for Social Sciences and the Peace Research Institute in Oslo, the conference gathered military experts and scholars at the Vatican to reflect on the ethical implications behind contemporary technologies of warfare. Several scholars came from U.S. institutions, including the U.S. Naval Academy and the U.S. Naval War College.

Pope Francis noted that since St. John's landmark encyclical calling for a ban on nuclear weapons was published, "not only has the number and potency of nuclear weapons grown, but other weapon technologies have burgeoned, and even the long-standing consensus to prohibit chemical and biological weapons is coming under stress." In response, the pope called for "ethical reflection on the grave risks associated with the continuing possession of nuclear weapons" and urged

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**The pope said that particularly when it comes to the possession of nuclear arms, "the work of the United Nations and related organizations in raising consciousness and promoting adequate regulatory measures remains fundamental."**

scholars to analyze other "military and technology-based threats to peace."

Among the topics listed in the conference's sessions are AI-based weapons systems, autonomous robots, regulatory approaches to cyber warfare and nuclear risk scenarios

today. The pope said that particularly when it comes to the possession of nuclear arms, "the work of the United Nations and related organizations in raising consciousness and promoting adequate regulatory measures remains fundamental." Yet he added that "concern for the moral implications of nuclear warfare must not be allowed to overshadow the increasingly urgent

ethical problems raised by the use in contemporary warfare of so-called 'conventional weapons,' which should be used for defensive purposes only and not directed to civilian targets."

Source: <https://www.ucanews.com/news/pope-warns-of-threats-from-nuclear-weapons-new-technologies/102657>, 20 September 2023.

### **As Russia Hits Ukraine's Energy Facilities with a Deadly Missile Attack, Fear Mounts Over Nuclear Plants**

A "massive" Russian missile attack on at least six cities across Ukraine killed at least two people and left more than 20 others wounded on September 21 night, Ukrainian officials said. Ukrenergo, the country's electrical grid operator, said on social media that the missile barrage was Russia's first successful attack targeting energy facilities in months, and it reported partial blackouts in five different regions across the country.

The strike came as Ukraine's frigid winter months approach and just hours after Ukrainian President

Zelenskyy cautioned at the UNGA that Russian leader Putin was not afraid of weaponizing nuclear power. Zelenskyy warned from the U.N. podium that if Russia is allowed to win the war in Ukraine, other countries will be next. "The mass destruction is gaining momentum," he said. "The aggressor is weaponizing many other things and those things are used not only against our country, but against all of yours as well." One of those weapons, President Zelenskyy said, is nuclear energy, and the greatest threat is at the sprawling Zaporizhzhia Nuclear Power Plant in southern Ukraine, which has been occupied by Russian forces for more than a year.

For several months, Ukraine's counteroffensive has been partly focused on liberating territory around the facility, amid fear that Moscow could deliberately cause a radiation leak there to use as a false pretext for further aggression. For 18 months, the ground around the massive complex, and even Europe's largest nuclear power plant itself, has repeatedly been targeted in missile and drone attacks. The clashes around the sensitive site have drawn dire warnings from the UN nuclear energy watchdog as engineers have had to regularly take its six reactors offline and rely on backup power to keep the plant safely cooled.

Ukraine remains heavily dependent on nuclear energy. It has three other plants still under its direct control which, combined, power more than half the country. That makes them too important to shut down, despite the risks of Russian attacks. But until now, only Moscow was capable of providing fuel for Ukraine's Soviet-era nuclear reactors. So, as part of a wider strategy by Kyiv to sever any reliance on Russia, Ukraine partnered

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**Until now, only Moscow was capable of providing fuel for Ukraine's Soviet-era nuclear reactors. So, as part of a wider strategy by Kyiv to sever any reliance on Russia, Ukraine partnered with the Pittsburgh-based company Westinghouse to develop its own fueling systems to power its plants. The first such system was installed this month at the Rivne plant.**

with the Pittsburgh-based company Westinghouse to develop its own fueling systems to power its plants. The first such system was installed this month at the Rivne plant. Ukraine's Minister of Energy, Hermann Galuschenko, told CBS News it's a shift that was a long time coming. He said it gave him pride to see nuclear fuel being fed in to power the reactors recently at the Rivne plant for the first time under the new system. "I'm proud that even during the war, we managed to do some historical things," he said. "We should get rid of Russian technologies in nuclear."

Ukraine is still haunted by the 1986 nuclear disaster at Chernobyl. One of the worst man-made catastrophes in history, the Chernobyl meltdown left millions of acres of forest and farmland contaminated and caused devastating long-term health problems for thousands of people in the region. As Ukrainian forces battle to push Russia out of Zaporizhzhia, the lingering fear is that the Kremlin could be preparing to sabotage that nuclear power plant with mines or other military explosives.

Source: <https://www.cbsnews.com/news/russia-ukraine-war-zelenskyy-says-putin-weaponizing-energy-nuclear-plants/>, 21 September 2023.

## **NUCLEAR WASTE MANAGEMENT**

### **JAPAN**

#### **Japan Says Tritium in Seawater Around Fukushima Plant 'Below Detectable Level'**

Japan on September 21 said the tritium level in seawater around the Fukushima power plant, since the release of nuclear waste last month,

has "remained below the detectable level." After its fifth weekly survey, the country's Environment Ministry said: "Concentration of tritium at all the points was below the minimum detectable level of 10 becquerels per liter."

September 20 marked one month since Tokyo began releasing the nuclear waste into the sea and Japanese officials have said there has been no major change in the price of fish products. According to Japanese public broadcaster NHK, the ministry collected samples on September 19 from 11 points off the coast of Fukushima province. Tokyo began releasing the treated radioactive water from the crippled Fukushima Daiichi nuclear power plant on Aug. 24, triggering severe reaction from China, and opposition parties in South Korea and the Solomon Islands. Beijing has imposed a blanket ban on seafood imports from Japan.

Source: <https://www.aa.com.tr/en/asia-pacific/japan-says-tritium-in-seawater-around-fukushima-plant-below-detectable-level-/3000154>, 25 September 2023.

## **SPAIN**

### **Milestone in Restoration of Zorita Plant Site**

Work to fill in the hole left following the demolition of the containment building of the José Cabrera nuclear power plant has been completed, Spanish decommissioning and waste management firm Enresa announced. The plant - also known as Zorita - is the first to be fully dismantled in Spain.

The single-loop pressurised water reactor at the José Cabrera nuclear power plant, in the central municipality of Guadalajara, operated from 1968 until 2006 when it was closed by ministerial order.

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Although small by today's standards at 142 MWe, the plant nevertheless supplied more than 75% of Guadalajara's power requirements. Pre-dismantling activities - carried out between 2006 and 2009 under the responsibility of the facility's operator, Union Fenosa - consisted mainly of the management of used fuel and the conditioning of operational waste. After the completion of pre-dismantling activities and the corresponding ministerial

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authorisation of 11 February 2010, ownership of the José Cabrera nuclear power plant was transferred to Enresa for decommissioning. In 2010 Westinghouse - which originally supplied the reactor - won a contract from Enresa to dismantle the reactor vessel internals. This was followed by another contract in 2013 to dismantle the reactor pressure vessel.

The dismantling of the plant's containment building began in November 2019 with the

first section of the containment dome - measuring 8 metres in diameter, 16 millimetres thick and weighing 5.2 tonnes - being cut and removed. Enresa said a total of 9500 cubic metres of selected soil has now been used to fill the void that remained following the complete dismantling of the containment building. This, it said, involved the loading and unloading of 850 trucks. During the process, the corresponding humidity, density and degree of compaction tests were carried out, with satisfactory results.

The demolition of the last remaining large building at the plant, the turbine building - 30 metres in height and made of reinforced concrete - was completed in June 2022. In order to restore the site to its initial state, the Restoration Plan - which was approved by Spain's Nuclear Safety Council - will ensure that the land to be released is free of residual radioactivity. During this final phase, site clean-up and final characterisation will be carried out before application is made for the declaration of decommissioning, with the aim of returning the site to its owner.

Source: <https://www.world-nuclear-news.org/Articles/Milestone-in-restoration-of-Zorita-plant-site>, 22 September 2023.

## USA

### **Over 68,000 Gallons of Liquid Radioactive Waste have been Treated 5 Months After Launch of Arco Cleanup Project**

The Idaho Cleanup Project, along with the Idaho Environmental Coalition, the U.S. Department of Energy, Gov. Brad Little and other dignitaries, celebrated on September 18 the efforts of hundreds of workers who built the Integrated Waste Treatment Unit (IWTU) in the Arco desert and began the process of converting liquid radioactive waste into a safer, solid form. The treatment of sodium-bearing radioactive liquid waste got underway in April more than a decade after the facility was completed. So far, more than 68,000 gallons of waste have been treated out of the 900,000 gallons that still remain in an

**The treatment of sodium-bearing radioactive liquid waste got underway in April more than a decade after the facility was completed. So far, more than 68,000 gallons of waste have been treated out of the 900,000 gallons that still remain in an underground tank farm on the site. The Snake River Aquifer is several hundred feet below the surface of the IWTU, and the reason the conversion of this waste into a solid form is significant is because it's preventing the possibility of a leak that could contaminate the water supply for eastern Idaho.**

underground tank farm on the site. The Snake River Aquifer is several hundred feet below the surface of the IWTU, and the reason the conversion of this waste into a solid form is significant is because it's preventing the possibility of a leak that could contaminate the water supply for eastern Idaho.

Getting to this point has been challenging, and Connie Flohr, manager of the Idaho Cleanup Project, praised the efforts of the men and women who have been involved from the beginning. "I cannot say enough good things about

the workers here.... They have literally carried the weight of this project on their shoulders and I could not be more proud of how dedicated, devoted (they are) and how much perseverance they've demonstrated to get this plant to where it is."

**The waste comes from spent nuclear fuel that was reprocessed between 1952 and 1992 at the Idaho Nuclear Technology and Engineering Center. Three years after the state quit processing spent fuel, it filed a lawsuit so it wouldn't become a national dumping ground for radioactive waste. One of Idaho's responsibilities as part of a 1995 settlement agreement with the federal government is to transfer spent nuclear fuel from wet storage to dry storage.**

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is to transfer spent nuclear fuel from wet storage to dry storage. The IWTU was specifically built to treat liquid sodium-bearing waste, which is stored in three stainless steel 300,000 gallon storage tanks that are part of a tank farm of 15 tanks. Twelve of those tanks previously contained a different type of radioactive waste that was converted into a sand-like substance called calcine. That project was completed in 2000.

The IWTU uses steam-reforming technology, according to a fact sheet about the plant. Liquid waste is injected into a heated vessel. Billions of tiny beads inside help dry it out. The solid material coats the beads similar to how a pearl is formed. It's then put in 10-foot tall canisters that are placed in a concrete vault. Workers are able to treat about one canister of waste a day, officials say. See how it works in the video above.

Several delays have prevented this project from happening sooner. Construction on the 53,000-square-foot building didn't begin until 2007. Once it was complete in 2012, there were technological challenges that required them to do multiple tests with a simulated waste. "We've done a lot of runs with simulated waste, which doesn't have all the radio nuclides in it that real waste does. We did the best we could to simulate that waste but as soon as we started running the plant, it reacted differently to the actual waste," Flohr explains. After many tweaks, modifications and adjustments, the IWTU was finally ready to launch in April.

During September 18's celebration, David Turk, the deputy secretary for the DOE, Gov. Brad Little and others joked about the project being behind schedule, but Flohr points out there isn't an exact timeline for this project to be completed. "The

Department has decided that safety is absolutely priority, which is why we did not give the contractor a schedule prior to startup," says Flohr. "Our job is to empty those tanks and treat this material, and that's what we're going to do. It's going to take however long it's going to take." Officials anticipate the project being complete sometime in the next three to seven years.

Under the terms of the agreement, Idaho is supposed to dispose of the waste by 2035. It will ultimately be taken to a national geologic repository once a location has been identified. Little cites multiple cleanup projects in the last several years that were timely and were completed ahead of schedule. He encouraged the more than 300 workers in attendance to "keep their eye on the prize" as they move forward. "What the team has done here has been remarkable," Turk says. "We still have a lot more to do...but today's event is a celebration of human achievement of all the problems solved and the 300 people working as a team to make significant progress for the community."

*Source: <https://www.eastidahonews.com/2023/09/over-68000-gallons-of-liquid-radioactive-waste-have-been-treated-5-months-after-launch-of-arco-cleanup-project/>, 21 September 2023.*



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