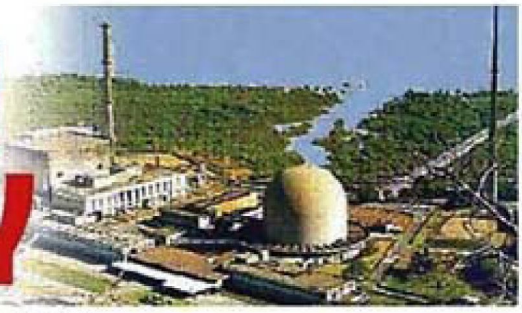
NUCLEAR SECURITY



A FORTNIGHTLY NEWSLETTER ON NUCLEAR DEFENCE, ENERGY AND PROLIFERATION FROM CENTRE FOR AIR POWER STUDIES

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OPINION – Anil Kakodkar

Going Nuclear

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India's economy is growing rapidly. It is expected to surpass Germany and Japan and move up from number five to number three position before the end of this decade. Economic growth triggers demand for energy. One would thus expect significant growth in our primary energy consumption which is already the third-highest globally. Most of this is based on fossil energy.

Fossil fuel consumption is a major contributor to global warming, which has now become an existential crisis for humanity. Deep and immediate emission cuts, leading to net zero, have become unavoidable. There is now a global consensus to reach this goal before a 2045–2070 time frame. Transition to net zero involves massive transformation of energy systems, involving new technologies, restructuring of energy systems at supply-and-demand ends and large costs. For a large and developing country like India, the challenge of reaching net zero is much bigger. Our developmental aspirations require a manifold increase in per-capita energy use even as we transition to net-zero GHG emission. Our inability to meet this dual challenge would mean either compromising on development or failing to realise the net-zero target timeframe or both.

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We all aspire to reach a Human Development Index (HDI) comparable to advanced countries of the world. For this, as per prevailing correlations, we need a minimum of 2,400 kilogram of oil equivalent (kgoe) energy consumption per capita per year. This threshold could improve to around 1,400 kgoe, as a result of expected improvements in energy

use efficiency. Even after considering this, the total clean energy requirement to support a developed India would work out to around 25,000-30,000 TWhr/yr. this is more than four times our present energy consumption. While we are rightfully making rapid strides in deployment of renewable energy including hydro, would this alone enable us to become an advanced country? This answer is no.

Hypothetically, even if the entire barren uncultivable land in India is used up for setting up solar plants (which, clearly, is not possible), it would still fall way short of the target. The potential of wind energy is even smaller. The only way out then is a rapid scale-up of nuclear energy. For this, we need to shed the unfounded phobia around nuclear energy. Today, nuclear energy has emerged as one of the cleanest and safest of energies capable of effectively countering climate change. Since we pursue a closed nuclear fuel cycle, waste issue is also reduced to a negligible level. Based on a study done by Vivekananda International Foundation, with due analytical back-up from IIT-Bombay, it appears that nuclear energy would need to be called up to a couple of thousand GWe for an optimum solution to reach net-zero in a developed India. this is major implementation challenge and the country must brace up to meet it. Luckily, on the technology front, we are capable of self-reliance. What is missing is the determination and requisite policy/ management framework. Without nuclear energy playing its due role, the country will not be able to reach the status of a developed nation. We need to be guided by our own *sui generis* strategy and not be driven by foreign vendors.

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Luckily, on the technology front, we are capable of self-reliance. What is missing is the determination and requisite policy/management framework. Without nuclear energy playing its due role, the country will not be able to reach the status of a developed nation. We need to be guided by our own *sui generis* strategy and not be driven by foreign vendors.

In this context, it would be worthwhile to pursue a six-pronged national strategy for a rapid scale up of nuclear energy.

Indigenous 700 MWe PHWR, the first unit of which is already in commercial operation, should be the prime workhorse for base load electrical capacity addition. Fifteen more such units are already under construction in fleet mode, one should take up many such fleets for implementation leveraging multiple PSUs in addition to NPCIL.

Secondly, build indigenous SMRs at a large number of sites that would be vacated by retiring coal plants in the coming decades. As the experience with large PWRs has shown, importing these units would make electricity production unaffordable. NTPC, being the owner of the largest number of coal plants in the country, is a natural partner in this process. More industrial partners could be involved.

Thirdly, well-proven 220 MWe PHWR units can be offered as partially owned captive units for electricity and hydrogen for energy-intensive industries such as metals, chemicals, and fertilizers. AHWR300-LEU developed by BARC can also be offered for this role after demonstrating a prototype.

Fourthly, develop a high temperature reactor for direct hydrogen production without resorting to electrolysis. This would enable cheaper green hydrogen production and reduce pressure on excessive electrification of the energy system in the country, which otherwise appears inevitable. BARC has the requisite capability. Speed up second and third stage nuclear-power programme development to unleash thorium energy potential in accordance with the pre-existing plans for long-term sustainable energy supply.

Finally, emerging-economy countries, where one expects maximum net growth in energy consumption, should see rapid deployment of new nuclear-energy capacity to credibly address the climate-change challenge at the global level. Our PHWRs are globally competitive both in terms of performance and capital cost and are a good fit for meeting these requirements. Thorium-HALEU fuel in PHWR can make these reactors even more attractive in terms of economics, safety, waste management and proliferation resistance. India should encash this opportunity through piloting a major international co-operation for global efforts to address climate change challenges.

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Reaching 25,000-30,000 TWh per year from where we are today by the year 2070 corresponds to a CAGR of around 4.8 per cent. While this should clearly be feasible, leveraging nuclear energy in a significant way is inevitable. A large and growing economy like India can certainly implement this, provided it is driven as a national programme guided by a bold policy support that provides a level playing field for nuclear energy on par with renewable energy.

On the barren Arctic archipelago of Novaya Zemlya, the surge of activity had been watched closely for months: satellite imagery showing an uptick of construction at one, possibly two, settlements that researchers had identified as sites for a possible test of a nuclear device or a new, trouble-plagued missile called the Burevestnik that is under development.

Source: https://indianexpress.c om/article/ opinion/india-needs-to-go-nuclear-8978909/, 12 October 2023.

OPINION – Mike Eckel

'Escalatory and Deeply Damaging': What Putin's Claim of A Missile Test Means for Nonproliferation

On the barren Arctic archipelago of Novaya Zemlya, the surge of activity had been watched closely for months: satellite imagery showing an uptick of construction at one, possibly two, settlements that researchers had identified as sites for a possible test of a nuclear device or a new, trouble-plagued missile called the Burevestnik that is under development. Late last month, a NOTAM – an official warning to airplane pilots about "hazardous operations" – was issued by Russia for the Barents and Kara seas, east and west of Novaya Zemlya. As many as five U.S. military surveillance planes have been tracked south of the archipelago in recent weeks.

Days later, the head of Russia's leading nuclear research center called for the Kremlin to resume nuclear tests, including at Novaya Zemlya, a move that would end a 33-year moratorium and deal a big blow to global nonproliferation efforts. President Vladimir Putin weighed in on October 5: "I am already hearing calls, for example, to start testing nuclear weapons, to return to testing," he told an audience of Russian and foreign analysts. "We conducted the final successful test of the Burevestnik nuclear-powered global-range cruise missile," he also said, adding: "We have actually finished work on the Sarmat, a super-heavy rocket."

"I'm not ready to say now whether we really need or don't need to conduct [nuclear] tests," Putin said, but he signaled Russia would consider withdrawing from a major international treaty that bans all nuclear testing. The 1996 CTBT was signed and ratified by Russia, but only signed, and not ratified, by the United States. "This is a question for the deputies of the State Duma," he said, referring to the lower chamber of parliament. "In theory, this ratification could be revoked. If we do this, it will be quite enough."

Nuclear arms treaties, and other major Cold War-era agreements, have been fraying for years now. The United States pulled out of the Intermediate-

Range Nuclear Forces Treaty in 2019 after years of accusing Russia of cheating on it. Years before that, Washington withdrew from the Anti-Ballistic Missile Treaty. And the last remaining restraint on Russian and American arsenals, New START, is set to expire in 2026.

As of October 6, there was no independent confirmation of Putin's statement that Russia had successfully conducted a test of the Burevestnik. Another NOTAM warning off Novaya Zemlya was issued the day after Putin's remarks. And there is no indication that a test of an actual nuclear device is imminent.

As of October 6, there was no independent confirmation of Putin's statement that Russia had successfully conducted a test of the Burevestnik. Another NOTAM warning off Novaya Zemlya was issued the day after Putin's remarks. And there is no indication that a test of an actual nuclear device is imminent. "The overall level of activities appears to support the idea that they are either preparing for testing directly due to a decision by Putin, or are preparing for eventual testing depending on what China and the U.S. do, or as an escalatory measure in the context of Ukraine," said William Alberque, director of strategy, technology, and arms control at the International Institute for Strategic Studies. "Testing a nuclear explosive device for the first time since the [CTBT] was negotiated would be escalatory and deeply damaging to the nuclear nonproliferation regime," said Lynn Rusten, a former White House and State Department arms control expert who participated in negotiations on the original New START treaty.

In August 2019, while officials were trying to raise a Burevestnik missile from the seabed near the town of Nyonoksa, an explosion occurred, spewing radiation over a wide area, including Severodvinsk, and killing at least five Russian nuclear specialists. U.S. officials later concluded that the explosion "was the result of a nuclear reaction that occurred during the recovery of a Russian nuclear-powered cruise missile.

Asked about concerns that Russia was seeking to conduct a nuclear test or a test of the nuclear-powered cruise missile, the U.S. State Department said: "Russia is pursuing novel nuclear weapons that are not currently covered by the New START treaty, such as a nuclear-armed and nuclear-powered ground-launched intercontinental- range cruise missile. "We are monitoring developments of these systems closely," a spokesman told RFE/RL on condition of anonymity.

'A Ridiculously Stupid Weapons System': Arms control experts said a test of either of the two — the nuclear-powered cruise missile or an actual detonated nuclear device — would be hugely problematic, though for different reasons. Dubbed Skyfall by NATO officials, the Burevestnik has been reportedly under development since the early 2010s, according to the Nuclear Threat Initiative, a Washington research organization. However, it was first publicly discussed by Putin during a March 2018 speech in which he bragged about a host of new weapons Russia was developing.

A ground-launched, low-flying, potentially nuclear-tipped cruise missile powered by a nuclear reactor, the Burevestnik would theoretically have a range of up to 23,000 kilometers, meaning it could hit the United States if launched from anywhere inside Russia. The United States experimented with such a weapon in the 1950s and '60s before discarding it as unpractical. Among the places Russia is known to have tested the Burevestnik is the White Sea, west of the city of Arkhangelsk and the port of Severodvinsk. In August 2019, while officials were trying to raise a Burevestnik missile from the seabed near the town of Nyonoksa, an explosion occurred, spewing radiation over a wide area, including Severodvinsk, and killing at least five Russian nuclear specialists. U.S. officials later concluded that the explosion "was the result of a nuclear reaction that occurred during the recovery of a Russian nuclear-powered cruise missile."

...Stupid or not, the missile system is not covered

by New START. That, plus the fact that its design would make it hard for air-defense systems to detect or intercept, worries U.S. officials. "We have long said that future arms control agreements must expand to include these types of novel nuclear weapons," the State Department spokesman said.

'Everything will Fall into Place': Putin's suggestion that a nuclear test was under consideration was echoed on October 6 by Vyacheslav Volodin, the chairman of the Kremlin-controlled Duma. Volodin pointed to the U.S. unwillingness to ratify the CTBT, known as the CTBT, and claimed that Russia, which launched a large-scale invasion of Ukraine in February 2022, is at war with the United States and NATO. "The situation in the world has changed. Washington and Brussels have unleashed a war against our country. Today's challenges require new solutions," Volodin said in a post to Telegram. He said lawmakers would "absolutely discuss the question" of withdrawing ratification at their next session.

Resumption of full-blown nuclear testing by either Russia or the United States would likely signal the demise of New START as well, since the treaty cannot be renewed after 2026. Tensions over Russia's war against Ukraine have made it impossible for negotiators to hold talks; the two sides have also been unable to agree on letting inspectors into one another's countries to conduct site visits authorized under the treaty.

A test of an actual nuclear device — even a small-scale detonation of fissile material — would be more worrisome since it would be the first conducted by Russia since 1990. It would be a definite signal of Moscow's intention to move to withdraw from the CTBT. "If there's a test with a genuine release of energy, we'll find out about it pretty quickly," Pavel Podvig, a Geneva-based UN arms control researcher, told RFE/RL. "For example, when North Korea conducted its tests, it was visible almost immediately. And I don't think anyone will try to hide such experiments."

It would also undermine the Treaty on the Non-Proliferation of Nuclear Weapons, a Cold War agreement whose signatories include the five major nuclear-armed states — the United States, China, France, Britain, and Russia, which are also the five permanent members of the UN Security Council. "Were any of the [five states] to test a nuclear weapon and therefore abandon their parallel unilateral testing moratoria as CTBT signatories, that would be a huge blow to the [nonproliferation] regime and would undoubtedly lead to a cascade of nuke testing by other states," Rusten said.

On September 28, Mikhail Kovalchuk, who heads the Kurchatov Institute, one of Russia's leading nuclear research facilities, called for revisiting the country's deterrence doctrine — redefining exactly when a nuclear weapon would be used. He also called for resuming nuclear testing, asserting that the Soviet Union's 1961 test of the world's most powerful atomic weapon — the Tsar Bomba — spurred the United States to open negotiations with Moscow. "It's enough to carry out tests on Novaya Zemlya...at least once," he was quoted by state news agency RIA Novosti as saying. "And everything will fall into place."

Arms control researchers have also pointed to the increased pace of construction at known nuclear test sites in China and the United States as cause for concern. In 2019, under then-President Donald Trump, some U.S. officials reportedly pushed to resume full testing. The official U.S. policy statement on the subject — the Nuclear Posture Review — ultimately stated that the United States would not seek to ratify the test-ban treaty, and it would "remain ready to resume nuclear testing if necessary to meet severe technological or geopolitical challenges."

There's no public indication that Trump's successor, President Joe Biden, wants to resume full testing. However, the United States is believed to have conducted subcritical tests, in which a detonation does not lead to a fission explosion. Late last month, at a meeting in Vienna, U.S.

officials floated a proposal to allow international inspectors to observe U.S. subcritical experiments, a move seen as a possible goodwill gesture.

Resumption of full-blown nuclear testing by either Russia or the United States would likely signal the demise of New START as well, since the treaty cannot be renewed after 2026. Tensions over Russia's war against Ukraine have made it impossible for negotiators to hold talks; the two sides have also been unable to agree on letting inspectors into one another's countries to conduct site visits authorized under the treaty. In February, Putin announced Russia was suspending compliance with New START.

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Dumping Grounds: One alternative explanation for the activity at Novaya Zemlya, in particular at a settlement known as Severny: Russia is looking to ship and store more of the radioactive waste generated from its nuclear-powered ships there. According to the Barents Observer, the Rosita, a Russian ship specially designed to carry nuclear waste, was spotted moored at Severny. "The big unanswered question is if what we now are witnessing is a Russia that brings dangerous nuclear waste to Novaya Zemlya for long-term storage in the permafrost," Frederic Hauge, president of the Norwegian environmental group Bellona, was quoted as saying.

The problem? Even as they condemn each other, Russia has already moved nuclear weapons into Belarus, and the United States may be considering a similar course by sending nuclear weapons to the UK for the first time since 2008.

Source: https://www.rferl.org/a/russia-missile-test-putin-burevestnik-nonproliferation-treaties/32626376.html#:~:text=%E2%80%9CTesting%20a%20nuclear%20explosive%20device,participated%20in%20negotiations%20on%20the, 06 October 2023.

OPINION – Jennifer Knox

Will There Be a Nuclear Buildup in Europe?

The United States and Russia agree: as war rages in Ukraine, only an irresponsible and reckless nuclear power would move nuclear weapons into Europe. Sending such a signal in the middle of an ongoing crisis would heighten tensions and increase the risk of nuclear escalation. The problem? Even as they condemn each other, Russia has already moved nuclear weapons into Belarus, and the United States may be considering a similar course by sending nuclear weapons to the UK for the first time since 2008.

Russia is conducting a brutal and criminal war in Ukraine, and only Russia is responsible for the ongoing humanitarian crisis it has caused. At the same time, the highest responsibility of both Russia and the United States is to prevent nuclear war. The United States should refuse to follow Russia's example by stationing more nuclear weapons in other countries.

Will the US Station More Nuclear Weapons in Europe? The United States has stationed its nuclear weapons in other countries since the 1950s, though most were withdrawn after the Cold War ended. Currently, the US stores around 100 nuclear gravity bombs in five NATO host countries: Belgium, Germany, Italy, the Netherlands, and Turkey. According to one report, the United States accelerated its timeline to replace its B-61 gravity bombs in Europe with an upgraded version following Russia's invasion of Ukraine. But the US has not deployed any additional nuclear weapons in Europe since Russia's invasion of Ukraine.

In 2021, NATO Secretary General Jans Stoltenberg said the alliance has "no plans of

stationing any nuclear weapons in any other countries than we already have these nuclear weapons…and they have been there for many, many years." That may change soon. The Federation of American Scientists discovered that the US Air Force has requested funding to build a "surety dormitory" at RAF Lakenheath, a British military base which is shared by the US Air Force.

US nuclear policies embolden Russia and normalize practices that make the ongoing crisis in Ukraine more dangerous. Russia's aggression and reckless rhetoric push the United States to reassure allies with more nuclear signals. Russia responds with "countermeasures," and the crisis continues to spiral. Each nuclear power interprets its own behavior as justified, while the same behavior from an adversary is unacceptable.

The term 'surety' is used by the US government to signify the safety and security of nuclear weapons, suggesting that US nuclear weapons may return to the United Kingdom. RAF Lakenheath hosted US nuclear weapons for over five decades before their removal in 2008; during that time, US forces caused at least two major accidents which almost resulted in the accidental detonation of nuclear weapons.

Gigawatt-scale nuclear plants aren't the only options available today, however. SMRs and microreactors are quickly gaining momentum. Earlier this year, Wilmington, North Carolina–headquartered GE Hitachi Nuclear Energy (GEH), Ontario Power Generation (OPG), SNC-Lavalin, and Aecon announced they had signed a contract for the deployment of a BWRX-300 SMR at OPG's Darlington New Nuclear Project site.

Pointing Fingers at the Mirror: The Russian foreign ministry said it would view the return of US nukes to the United Kingdom as "an escalation," part of a US and NATO transition to an "an openly confrontational course." Russia's warning might carry more weight if Russia hadn't transferred some of its own nuclear weapons to neighboring Belarus just a few months earlier. The United States and NATO allies protested Russia's decision to station nuclear weapons in Belarus. A spokesperson for the US State Department called it "the latest example of irresponsible behavior that we have seen from Russia since its full-scale invasion of Ukraine." The EU foreign policy chief described the move as "an irresponsible escalation and threat to European security."

But Putin shrugged off the criticism by pointing to existing US nuclear weapons deployed in NATO countries. "We are doing what they have been doing for decades," he said, "stationing [nuclear weapons] in certain allied countries, preparing the launch platforms and training their crews." EU foreign policy chief said. The action-reaction cycle will continue.

US nuclear policies embolden Russia and normalize practices that make the ongoing crisis in Ukraine more dangerous. Russia's aggression and reckless rhetoric push the United States to reassure allies with more nuclear signals. Russia responds with "countermeasures," and the crisis continues to spiral. Each nuclear power interprets its own behavior as justified, while the same behavior from an adversary is unacceptable….

Source: https://blog. ucsusa.org/jknox/will-there-be-a-nuclear-buildup-in-europe/, 02 October 2023.

OPINION – Aaron Larson

Nuclear Power is Making a Comeback: What will it Take to See Meaningful Growth?

There are many reasons for the nuclear power industry to feel optimistic about the future. For example, the entry of Vogtle Unit 3 into commercial operation on July 31 was a significant milestone and one worth celebrating. Meanwhile, Vogtle Unit 4 is in the final stages of construction and is expected to enter service by the first quarter of 2024. The completion of these units offers many lessons that the industry can use going forward.

SMR and Microreactor Projects Abound:

Gigawatt-scale nuclear plants aren't the only options available today, however. SMRs and microreactors are quickly gaining momentum. Earlier this year, Wilmington, North Carolina–headquartered GE Hitachi Nuclear Energy (GEH), Ontario Power Generation (OPG), SNC-Lavalin, and Aecon announced they had signed a contract for the deployment of a BWRX-300 SMR at OPG's Darlington New Nuclear Project site. That marked the first commercial contract for a grid-scale SMR in North America.

Gigawatt-scale nuclear plants aren't the only options available today, however. SMRs and microreactors are quickly gaining momentum. Earlier this year, Wilmington, North Carolina–headquartered GE Hitachi Nuclear Energy (GEH), Ontario Power Generation (OPG), SNC-Lavalin, and Aecon announced they had signed a contract for the deployment of a BWRX-300 SMR at OPG's Darlington New Nuclear Project site.

In the U.S., the Tennessee Valley Authority (TVA) is also planning and conducting preliminary licensing work for the potential deployment of a BWRX-300 unit. This would be the first of what TVA has said could be as many as 20 SMRs it hopes to add to its fleet. Several other companies around the world are also seriously considering deployment of BWRX-300 technology. Yet, GEH isn't the only SMR manufacturer making news.

NuScale Power announced in August that the U.S. NRC accepted its Standard Design Approval (SDA) application for formal review. The NRC has docketed the application for NuScale's VOYGR-6 plant design featuring an uprated 77-MWe SMR, which the company says "will support capacity requirements for a wider range of customers." The NRC issued an SDA for NuScale's 50-MWe design in 2020, and design certification this year, making it the first and only SMR to achieve either milestone. There's also a lot of interest in microreactors.

On Aug. 31, the Defense Logistics Agency Energy, on behalf of the U.S. Air Force and the DOD, announced that it had selected Oklo as the pending contractor awardee to site a microreactor at Eielson Air Force Base in Alaska.…The MARVEL microreactor, which stands for Microreactor Applications Research Validation and EvaLuation, is another project in full swing at INL. It's expected to begin operation by the end of 2024. MARVEL will be used to develop regulatory approval processes, test microreactor applications, evaluate systems for remote monitoring, and develop autonomous control technologies, among other things….

Challenges Persist: Yet, for all the positive developments, there are still plenty of difficulties. "The U.S. nuclear power industry faces several significant challenges that affect its ability to thrive," said Jay Jiang Yu, founder and chairman of NANO Nuclear Energy Inc.—another emerging microreactor technology company based in New York City. "One of the primary challenges for the U.S. nuclear power industry is economic competitiveness. Nuclear power plants require substantial upfront capital investment, and the costs of construction, operation, and maintenance can be high. Cheap and abundant natural gas, along with the growth of renewable energy sources, has created tough competition for nuclear power," Yu said.

One of the primary challenges for the U.S. nuclear power industry is economic competitiveness. Nuclear power plants require substantial upfront capital investment, and the costs of construction, operation, and maintenance can be high. Cheap and abundant natural gas, along with the growth of renewable energy sources, has created tough competition for nuclear power," Yu said.

Because there have been few nuclear construction projects in the U.S. since the early 1990s, Yu said the country has been left with a relatively small group of experienced workers. "The lack of new projects can hinder technological advancements and workforce development in the industry," he said. "The nuclear industry faces a potential shortage of skilled workers, including operators, engineers, and technicians. Ensuring a well-trained workforce for

the future is crucial." Yu said.

Yu suggested long-term storage and disposal of nuclear waste, the protracted and costly licensing process, and project financing difficulties are other challenges that must be addressed. He also noted that negative public perceptions about nuclear energy could hinder growth. However, those views have been changing in recent years.... James Walker, CEO of NANO Nuclear, said the U.S. government could do many things to encourage growth in the nuclear industry.

Even though France refuses to sign the treaty, and still controls the defence and foreign policy of French Polynesia, the local legislature in Tahiti with its new pro-independence government sees TPNW as setting a new norm in international law... . Unlike Australia, nine independent Pacific Island countries and Aotearoa-New Zealand have already signed and ratified the TPNW.

Streamlining the regulatory process, providing long-term policy support, and addressing the nuclear waste management issue were at the top of his list. Among other things, he said collaborating more on an international level, fostering greater public-private partnerships, and implementing market reforms that value the attributes of nuclear power would also be beneficial to the industry.

The Albanese government has proclaimed its support for a world without nuclear weapons. But talk is easy. It's getting harder for the ALP government to balance tensions between its role as an AUKUS partner, a strategic partner with France and the "security partner of choice" for the island nations of the Pacific, which are deeply opposed to nuclear weapons.

Source: https://www.powermag.com/nuclear-power-is-making-a-comeback-what-will-it-take-to-see-meaningful-growth/, 02 October 2023.

OPINION – Nic Maclellan

Will French Criticism of Nuclear Ban Treaty Highlight Canberra's Dilemma

On 28 September, the Assembly of French Polynesia unanimously passed a resolution endorsing the Treaty on the Prohibition of Nuclear Weapons (TPNW), the nuclear ban treaty that entered into force in 2021. Even though France refuses to sign the treaty, and still controls the defence and foreign policy of French Polynesia, the local legislature in Tahiti with its new pro-independence government sees TPNW as setting a new norm in international law... . Unlike Australia, nine independent Pacific Island countries and Aotearoa-New Zealand have already signed and ratified the TPNW.

At the recent Australian Labor Party (ALP) National Conference in Brisbane, the party re-confirmed its support for signing the TPNW – under restrictive conditions – and agreed to send an observer to the next Meeting of State Parties. However key ALP leaders are opposed to signing, and nuclear weapons states such as the United States and France, having long derided the treaty, are now ramping up their opposition to it.

A front-page story in *The Australian* on 2 October cited an unnamed French diplomat who criticised Australia over its tentative moves towards signing TPNW, though the story fails to mention last week's resolution from the Assembly of French Polynesia. "Observers to the TPNW de facto commit themselves to support the promotion of this treaty as they are requested to financially support it", the French official said. "From our viewpoint, there is a contradiction between such a move and the support to the primacy of the NPT." the official said.

After the AUKUS announcement in September 2021, France officially downgraded its strategic partnership with Australia. Since then, the ALP government has been seeking to rebuild Canberra's ties with Paris... . The Albanese government has proclaimed its support for a world without nuclear weapons. But talk is easy. It's getting harder for the ALP government to balance tensions between its role as an AUKUS partner, a

strategic partner with France and the "security partner of choice" for the island nations of the Pacific, which are deeply opposed to nuclear weapons. Why should Australia side with a European colonial power against its closest neighbours?

Source: https://www.lowyinstitute.org/the-interpreter/french-criticism-nuclear-ban-treaty-highlights-canberra-s-dilemma, 02 October 2023.

The British began creating a new class of nuclear attack submarines (SSNs) in September 2021, around the same time the United States, Australia, and the United Kingdom declared their desire to join a strategic alliance known as AUKUS. Both BAE Systems and Rolls Royce were the recipients of two contracts totaling close to 200 million euros.

NUCLEAR STRATEGY

AUSTRALIA-UK-USA

UK Launches Detailed Design Phase for SSN-AUKUS Submarines

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On October 1st, the SSNR programme, now known as SSN-AUKUS, achieved a new benchmark in its development. The UK's MoD has announced that it has begun the detailed design phase by awarding three contracts to BAE Systems, Rolls Royce (for nuclear propulsion), and Babcock. With the help of these contracts, the programme will advance in design, prototyping, and acquiring long-term vital components for the first British submarines.

According to the MoD, this strategy will "guarantee stability and resilience" in the "national supply chain," and it will also support thousands of employees in the UK who require highly specialized training. The first submarines will be delivered to the United Kingdom in the late 2030s, and the first submarines will be delivered to Australia in the early 2040s. If you recall, the United States announced in March that it planned to sell three submarines of the Virginia class to Australia beginning in the early 2030s.

Source: https://frontierindia.com/briefs/uk-launches-detailed-design-phase-for-ssn-aukus-submarines/?expand_article=1, 03 October 2023.

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RUSSIA

Putin Claims Russia Successfully Tested a Nuclear-Powered Missile and could Revoke a Global Test Ban

President Putin has said Russia successfully completed the testing of a new nuclear-powered strategic missile and could revoke its ratification of a nuclear test ban treaty, raising fears that Moscow could resume nuclear testing for the first time in decades....In his hours-long remarks at a forum in the southern city of Sochi, Putin said Moscow has almost completed work on "modern types of strategic weapons," which he first announced in 2018. "The last successful test of the Burevestnik, a global-range cruise missile with a nuclear propulsion system, was carried out," Putin said.

The question now, Putin said, was about resolving some "purely administrative and bureaucratic" procedures in order to move on to mass production of these weapons and putting them on combat duty. "We will do this soon," Putin added. While Putin's speech may stoke renewed concern in the West, analysts were not convinced there was too much to be worried about from the new weapon itself. "This is a stupid weapon system, designed by stupid people for operational reasons that are not tremendously useful," William Alberque, the director of strategy, technology and arms control at the International Institute for Strategic Studies, told NBC News.

'A Hammer Blow' to Global Bans: Since the start of his war in Ukraine, the Russian leader has repeatedly threatened to unleash the country's powerful nuclear arsenal should its sovereignty or territorial integrity be threatened. It's part of the country's so-called nuclear doctrine, which Putin said on 5 October 2023 there was no reason to update, when asked if the threshold for employing nuclear weapons should be lowered to restrain the West. "No person in his right mind and clear memory" would think of using nuclear weapons against Russia, Putin said. He added that he was not ready to say whether nuclear testing is actually needed, but threatened to revoke Moscow's ratification of the CTBT, which bans all nuclear explosions, whether for military or peaceful purposes. It would mirror Washington signing but not ratifying the treaty, Putin added....

It's part of the country's so-called nuclear doctrine, which Putin said on 5 October 2023 there was no reason to update, when asked if the threshold for employing nuclear weapons should be lowered to restrain the West. "No person in his right mind and clear memory" would think of using nuclear weapons against Russia, Putin said.

Kremlin spokesman Dmitry Peskov clarified later on 6 October 2023 that revoking the ratification would not mean that Russia plans to conduct nuclear tests. It comes just months after Russia suspended its involvement in the last remaining arms control treaty with the U.S., which limits nuclear stocks. Putin did not specify when or where the alleged testing of the Burevestnik missile took place. But the *New York Times* reported earlier this week, citing satellite imagery and aviation data, that Russia may be preparing to test an experimental nuclear-powered cruise missile, or may have recently tested one.

Little is known about the Burevestnik, which translates as "Storm Petrel" and was code-named Skyfall by NATO. On Russia's defense ministry website, Burevestnik is described as a nuclear-powered cruise missile with an "unlimited range." Its nuclear propulsion could allow it to cover a longer distance and stay airborne for a much longer time than other missiles, but may also make it more unreliable, according to experts. Animation shared in 2018 shows the missile flying around the planet, bypassing missile defense systems and eventually reaching the Pacific Coast of North America. But there have been doubts about how quickly Russia could develop a major new weapon of this scale and how easy it would be to handle.

Burevestnik is described as a nuclear-powered cruise missile with an "unlimited range." Its nuclear propulsion could allow it to cover a longer distance and stay airborne for a much longer time than other missiles, but may also make it more unreliable, according to experts. Animation shared in 2018 shows the missile flying around the planet, bypassing missile defense systems and eventually reaching the Pacific Coast of North America.

A suspected failed test of Burevestnik in 2019 killed five scientists and caused a radiation spike in a nearby city. Technologically, the weapon is not that much of a challenge, said Alberque, but safely deploying it is much more difficult. "There is a reason the U.S. abandoned this technology in the Cold War. It's just a bad idea," he added. The failed

test in 2019 illustrates the dangers of this technology, he added.

Talking about its testing may primarily be an attempt to intimidate the West and force concessions on Ukraine, but Moscow withdrawing from the nuclear test ban treaty would be a huge deal, Alberque said. Russia is part of the global monitoring system that helps detect nuclear explosions and losing Russian sensors would deal "a hammer blow" to that ability, he added. According to the United Nations, the Soviet Union's last nuclear test took place in late 1990, so the resumption of nuclear testing by Putin's Russia would be a major development that could further escalate global tensions.

Source: https://www. nbcnews.com/news/world/putin-russia-successfully-tested-nuclear-powered-missile-burevestnik-rcna119158, 06 October 2023.

President Putin has threatened the West with total nuclear destruction leaving 'no chance of survival' in the event of a strike on Russia. In a ranting anti-US speech, Putin said his powerful 'Satan-2' and 'Flying Chernobyl' missiles are ready for deployment in an ominous doomsday warning.

Putin Threatens the West with Total Nuclear Destruction

President Putin has threatened the West with total nuclear destruction leaving 'no chance of survival' in the event of a strike on Russia. In a ranting anti-US speech, Putin said his powerful 'Satan-2' and 'Flying Chernobyl' missiles are ready for deployment in an ominous doomsday warning. Putin told a conference in Sochi: 'From the moment the launch of missiles is detected, no matter where it comes from - from any point of the world ocean or from any territory - such a number, so many hundreds of our missiles appear in the air in a retaliatory strike that there is no chance of survival there will be no single enemy left, and in several directions at once.'

The West has not threatened a first strike on Moscow and it is only his officials and an army of propagandists who have talked up the use of nuclear weapons in the Ukraine conflict. Putin asked the West to understand that threats against Russia are 'absolutely unacceptable for any potential aggressor'....Putin also claimed: 'We have actually finished work on Sarmat [Satan-2] on the super-heavy missile.... This 'unstoppable' 15,880mph Armageddon intercontinental missile system is the size of a 14-storey tower block.

'We just need to finish some of the procedures in a purely administrative and bureaucratic way and move on to mass production and putting them on combat duty,' Putin said. 'And we will do this in the near future.' Putin said. Yet this directly contradicted the words of his space agency chief who said on September 1 that a 208-tonne Satan-2 'has been put on combat duty'. There is only evidence of one successful test of this weapon. More than a dozen tests are normally needed before deployment. And Western sources have suggested that the 13 known tests of Burevestnik - dubbed Flying Chernobyl - have all failed. A 2019 test led to the deaths of seven people who attempted to salvage the crashed top-secret missile. Putin dubbed them 'national heroes' without explaining details of their deaths... .

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Source: https://www. dailymail.co.uk/news/article-12598295/Putin-vows-create-new-world-Russian-insists-Western-arrogance-started-war-Ukraine-trying-end-ranting-anti-speech.html, 05 October 2023.

BALLISTIC MISSILE DEFENCE

GERMANY

Germany Boosts Defense: Signs Historic Deal for Arrow 3 Missile Defense System

An agreement to begin the process of procuring the Israeli Arrow 3 anti-ballistic missile defence system for the German Armed Forces was signed

in Berlin on September 28, 2023, by the government of Germany, the Ministry of Defence of Israel, and the Israeli corporation Israel Aerospace Industries (IAI). The final contract is anticipated to be signed in November of 2023.

According to the agreement, the contract cost has been agreed upon to be 3.5 billion euros, and the German government is contributing an advance payment of 600 million euros towards the deal's price. It is anticipated that Germany will receive the first battery of the Arrow 3 system around the fourth quarter of 2025. It also appears that Germany intends to install at least three batteries.

According to the agreement, the contract cost has been agreed upon to be 3.5 billion euros, and the German government is contributing an advance payment of 600 million euros towards the deal's price. It is anticipated that Germany will receive the first battery of the Arrow 3 system around the fourth quarter of 2025. It also appears that Germany intends to install at least three batteries. Thus, Germany has become the first foreign customer for the Arrow series of Israeli-American missile defence systems operated in Israel since 2000.

The Arrow 3 defence system is designed to intercept ballistic rockets far before they enter the planet's atmosphere. It is a component of Israel's missile defence system, which also includes the "Iron Dome," its primary purpose is to intercept missiles that have a short range…. These discussions occurred after Pistorius had met with Yoav Galant, the Minister of Defence of Israel. He remarked, "Israel is contributing to our security – that of Germany and Europe," confirming Berlin's ambitions to integrate the Israeli system into NATO's European air defence system.

According to the minister, Germany can use Arrow 3 from late 2025. In June, the decision to purchase the missile defence system received approval from both the budget and defence committees of the Bundestag. The funding will come from a dedicated fund for the modernisation of the Bundeswehr (German for "Armed Forces"), which has a total allocation of €100 billion and is designed for defence-related expenditures and projects.

Source: https://frontierindia.com/briefs/germany-boosts-defense-signs-historic-deal-for-arrow-3-missile-defense-system/, 03 October 2023.

NUCLEAR ENERGY

BANGLADESH

Bangladesh Joins Nuclear Club as First Fuel Delivered

The arrival of nuclear fuel marks the moment that the site gets the status of a nuclear facility, and also means that Bangladesh officially joins the world's "nuclear" countries. The Rooppur plant, 160 kilometres from the capital Dhaka, features two Russian VVER-1200 reactors. Construction of the first unit began in November 2017 and it is scheduled to be commissioned in 2024….

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In his address, via weblink, Grossi (DG of IAEA) said it was an "important, historic" and "auspicious" occasion. He congratulated Bangladesh's Prime Minister on fulfilling her father's dream of nuclear energy in the country, and said that the IAEA had been, and would be, with the country "every step of the way"…. During the ceremony, the leaders of the two countries, appearing via weblink, gave symbolic permission for the delivery of the nuclear fuel to the site.

The fuel was manufactured at Novosibirsk Chemical Concentrates Plant in Russia, part of Rosatom, and transported by air and road under

the supervision of the Bangladesh Atomic Energy Authority. In his speech, President Putin noted the close ties between the two countries, and said that once at full capacity the plant would supply about 10% of Bangladesh's energy needs while also helping to cut carbon dioxide emissions, which would provide benefits for the environment and people's health in the country.

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President Putin also added: "Russia is not just building a station - we will provide assistance to our Bangladeshi partners throughout the entire life cycle of the nuclear project, including obligations for the long-term supply of reactor fuel, maintenance of the nuclear power plant, as well as for the management of spent nuclear material." According to *The Business Standard*, Bangladesh's Prime Minister Hasina thanked Russia for its friendship and said the country was committed to using nuclear power for peace and prosperity and said the plant would be part of the country's vision for a "Smart Bangladesh". ...

San'ao 1 and 2 are scheduled to begin supplying electricity in 2026 and 2027, respectively. CGN said the San'ao plant is the first nuclear power project in China's Yangtze River Delta region to adopt the Hualong One reactor design. Once all six units at San'ao are put into commercial operation, the annual power generation capacity will reach 52.5 billion kWh, which can reduce standard coal consumption by almost 16 million tonnes and carbon dioxide emissions by 43.69 million tonnes per year.

Source: https://www.world-nuclear-news.org/Articles/First-nuclear-fuel-delivered-as-Bangladesh-joins-n, 05 October 2023.

CHINA

Dome Installed at Second San'ao Unit

The dome - weighing about 238 tonnes and measuring 45 metres in diameter - was hoisted into place at 10.26am on 28 September, CGN said. CGN holds 46% of the shares of the project company Cangnan Nuclear Power, with other state-owned enterprises holding the remainder. It noted the milestone marks the completion of the civil construction stage and the start of the equipment installation stage of the unit's construction.

In May 2015, the National Energy Administration approved the project to carry out site protection and related demonstration work at San'ao. On 2 September 2020, the executive meeting of the State Council approved the construction of units 1 and 2 as the first phase of the plant. China's National Nuclear Safety Administration issued a construction permit for the two units on 30 December that year and first concrete for unit 1 was poured the following day. The dome of unit 1 was installed on 3 November 2022.

The first concrete for San'ao 2 was poured on 30 December 2021. San'ao 1 and 2 are scheduled to begin supplying electricity in 2026 and 2027, respectively. CGN said the San'ao plant is the first nuclear power project in China's Yangtze River Delta region to adopt the Hualong One reactor design. Once all six units at San'ao are put into commercial operation, the annual power generation capacity will reach 52.5 billion kWh, which can reduce standard coal consumption by almost 16 million tonnes and carbon dioxide emissions by 43.69 million tonnes per year.... The San'ao project marks the first Chinese nuclear power project involving private capital, with Geely Technology Group taking a 2% stake in the plant....

Source: https://world-nuclear-news.org/Articles/Dome-installed-at-second-San-ao-unit, 03 October 2023.

GENERAL

Russia and China Dominating the Race for Nuclear Electricity Generation

...Russia, China, France, and Finland have emerged as the leaders in nuclear power generation to achieve continuous uninterruptible, affordable, and zero emission electricity. According to recent reports, Russia and China are currently leading the world in nuclear electricity generation which also happens to be continuous uninterruptable zero-emissions electricity. About 60 nuclear power reactors are currently being constructed in 15 countries, notably China, India, and Russia. Together, China and Russia account for 70 percent of new nuclear plants....

According to recent reports, Russia and China are currently leading the world in nuclear electricity generation which also happens to be continuous uninterruptable zero-emissions electricity. About 60 nuclear power reactors are currently being constructed in 15 countries, notably China, India, and Russia. Together, China and Russia account for 70 percent of new nuclear plants.

The dominance of Russia and China is likely to continue for the foreseeable future as they invest heavily in new technology and expand their nuclear power programs. Many of the next generation nuclear plants will require a new form of enriched uranium – called High-Assay, Low-Enriched Uranium (HALEU). Russia is currently the only country to produce HALEU which may not be comfortable for America's national security. Global demand for affordable, reliable, secure, and clean electricity is soaring because of rising security concerns and ambitious climate commitments.

The US was once the dominant global supplier of civil nuclear technologies, but that market position has since eroded with the emergence of new international vendors, led by Russia and China. Accordingly, America's ability to compete in the nuclear market impacts our national security and democracy that are on the line.

Today, both Russia and China lead the US in terms of the number of agreements with sales of their nuclear energy hardware and their services attached. Two of America's primary competitors for zero emission generated electricity also happen to be major geopolitical rivals: for Russia and China, nuclear exports are not just lucrative, they are an effective means of entrapment and exerting geopolitical influence.

When Russian and Chinese state-owned nuclear companies export nuclear hardware and equipment, they get to set the standards on safety, security, and non-proliferation. Also, Russia and China usually structure their deals with long-term financing and nuclear fuel supply, meaning they are an avenue to cementing long-term ties and exporting their *values* as well. The US was once the dominant global supplier of civil nuclear technologies, but that market position has since eroded with the emergence of new international vendors, led by Russia and China. Accordingly, America's ability to compete in the nuclear market impacts our national security and democracy that are on the line....

The Russian and Chinese governments will use various diplomatic instruments—ranging from preliminary MOUs to more comprehensive cooperative agreements—to support their respective state nuclear companies in winning overseas deals. Moscow and Beijing use collaborative R&D arrangements to familiarize partners with their respective technologies. Through these arrangements, Russia and China invite students from partner countries to train and study at domestic universities and institutes. Ultimately, these efforts can influence the decision of client states once the procurement of civil nuclear technologies begins in earnest.

Russia and China are leading in hard agreements, and their presence in international markets is

growing. The data is consistent with assessments from the last several years that Russia is by far the world's leading exporter in nuclear power plants in terms of reactors planned and under construction—Russia has hard MOUs with 45 different countries. Russia's Grip on Nuclear-Power Trade Is Only Getting Stronger. Even though its emergence as a global nuclear supplier has been relatively recent, *even China leads the US on hard agreements with 13.*

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China is also planning ambitious buildouts of nuclear domestically, giving it a significant industrial base for export. Not only are many of these foreign countries ready for significant nuclear generated electricity deployment, demand for nuclear energy, is soaring globally as electricity security concerns become paramount and the imperative to decarbonize grows. Competition in the international nuclear energy market is high politics. To rise above the competition, America would need a coherent and strategic vision to guide their policies on nuclear energy and civil nuclear exports, to compete with Russia and China....

Source: https://www.newgeography.com/content/007958-russia-and-china-dominating-race-nuclear-electricity-generation, 08 October 2023.

IAEA Raises Nuclear Growth Projections

In the latest edition of its annual *Energy, Electricity and Nuclear Power Estimates for the Period up to 2050*, the IAEA has revised upwards its global growth projections for a third straight year. In both its high and low case scenarios, the IAEA now sees a quarter more nuclear energy capacity installed by 2050 than it did as recently as 2020. In the high case scenario of the new outlook, nuclear installed capacity is seen more than doubling by 2050 to 890 GWe, compared with the current 369 GWe. In the low case, capacity increases to 458 GWe.

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Compared with last year's outlook, the high and low cases have risen by 2% and 14%, respectively. In 2021, the IAEA revised up its projections for the first time since the 2011 accident at the Fukushima Daiichi plant in Japan. Since the 2020 outlook, the high case projections to 2050 have now increased by 178 GWe, a 24% increase. The report's low case projections have seen even higher growth of about 26%.

"More and more countries are considering or already embarking upon the introduction or expansion of nuclear power, amid mounting concerns not only over climate change, but also energy access and security of energy supply," IAEA DG Grossi told delegates at the opening session of the *2nd International Conference on Climate Change and the Role of Nuclear Power* in Vienna. He added: "Our new projections are only slightly above what the International Energy Agency, in its latest Net Zero Roadmap released last week, sees as the required contribution of nuclear power to achieve the Paris Agreement's goal of limiting the rise in global temperatures to 1.5°C above pre-industrial levels."

"Despite the optimistic outlook, challenges inherent in climate change, financing, economic considerations, and supply chain complexities persist and might hamper the industry's growth,"

the IAEA warned. "While international collaboration and other efforts are under way to overcome these obstacles ... much remains to be done to achieve a fair and enabling investment environment for new nuclear projects." the IAEA said. "'Nuclear is too expensive and too slow' is a false narrative. 'Nuclear energy or renewables' is a false narrative," Grossi said.

"Those false narratives are to the detriment of everyone, especially when it comes to achieving a fair and enabling investment environment for new nuclear projects. We are not at a level playing field yet when it comes to financing nuclear projects. I believe international financial institutions, development banks, and private banks and investors should take a fresh look at this issue. We know that nuclear power is a winning investment for the environment and for energy access and security of supply. It can also be a winning financial investment over the long term." Grossi said.

Nuclear power needs to be regarded simply as a viable low-carbon technology". He added: "To be pro-nuclear is to be pro-environment. To be pro-nuclear is to be in favour of wise investments. To be pro-nuclear is to take our long-term responsibility to this planet and its future generations seriously.

Grossi said financing decisions need to be taken from a "technologically agnostic view that is based on science, fact and reason. Outdated ideology and misplaced fear should not stand in the way. Nuclear power needs to be regarded simply as a viable low-carbon technology". He added: "To be pro-nuclear is to be pro-environment. To be pro-nuclear is to be in favour of wise investments. To be pro-nuclear is to take our long-term responsibility to this planet and its future generations seriously." World Nuclear Association Director General Sama Bilbao y León, also speaking at the conference, said there was a clear need for action to address the climate emergency. "We need to be taking major decisions now to minimise the damage that is already being done to our ecosystems, and ensure we have a cost-effective decarbonisation strategy that makes the best use of limited resources." Sama said. Sama added: "If we are going to achieve a net-zero economy by 2050, we are going to need a huge expansion in nuclear capacity. This is not just to supply more clean electricity; the potential of nuclear technology goes far beyond this, helping to decarbonise the entire economy."

Nuclear technologies can help achieve environmental goals while also accelerating socio-economic development and increasing quality of life and equity for all, she added. "But this political will must be turned into urgent action to deliver practical programmes of new build and to extend the operation of our existing nuclear plants. Governments may set the policy to facilitate the investment, but it will be the nuclear industry that will be responsible for delivering this expansion in global nuclear capacity." Sama said.

Bilbao y León highlighted the *Net Zero Nuclear* initiative launched in early September by World Nuclear Association and the Emirates Nuclear Energy Corporation, with support from the IAEA's *Atoms4NetZero* and the UK government. It 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. ...

Source: https://www.world-nuclear-news.org/Articles/IAEA-raises-nuclear-growth-projections, 09 October 2023.

IAEA's Atoms4NetZero Models Energy Scenarios that Include Nuclear Power's Full Potential

To forge credible pathways to net zero, policy makers need comprehensive, science-based data to make informed choices about their national energy future. Yet nuclear power, despite its proven role in mitigating climate change and enhancing energy security and sustainable development, currently has a limited role in energy scenario studies used by governments and investors to chart the transition to net zero. The IAEA's Atoms4NetZero initiative bridges that gap

by providing decision makers with comprehensive, data-driven energy scenario modelling that also includes the full potential of nuclear power in contributing to net zero emissions. Launched by IAEA DG Grossi at COP27 last year, Atoms4NetZero was showcased at a side event last month during the 67th IAEA General Conference in Vienna that featured speakers from Africa, Asia, Europe and North America....

"Energy modelling scenarios that are considered within the framework of Atoms4NetZero are important because, in Africa especially, we are facing a serious energy deficit situation, and our policy makers are looking at different options," Enobot Agboraw, Executive Secretary of the African Commission on Nuclear Energy (AFCONE), said at the side event. "They're looking at nuclear power; they're looking at renewables, and it is very important that they are properly informed in order to be able to make the best possible decisions. Energy modelling provides, scientifically based evidence so that they can make decisions that are not based on hearsay or emotion, but solid decisions that would enable us to address this issue of climate change and energy deficit." Enobot said....

Yet nuclear power, despite its proven role in mitigating climate change and enhancing energy security and sustainable development, currently has a limited role in energy scenario studies used by governments and investors to chart the transition to net zero. The IAEA's Atoms4NetZero initiative bridges that gap by providing decision makers with comprehensive, data-driven energy scenario modelling that also includes the full potential of nuclear power in contributing to net zero emissions.

Modelling scenarios incorporate real constraints countries face as they seek to build energy systems to meet their net zero objectives, according to Kathryn Huff, Assistant Secretary, Office of Nuclear Energy at the US Department of Energy.... "Decisions at the policy level absolutely have to be data informed," Huff said. Atoms4NetZero will also help assess the potential contribution of advanced nuclear reactors, including SMRs, to long term national energy strategies... . "We're really excited to see the Atoms4NetZero initiative move forward," added Huff. "We think there are going to be a lot of very interesting results to come out of that, which is important for a lot of nations." Huff said.... "Atoms4NetZero emissions of carbon is very important for the future," said Zheng Mingguang, President of the Shanghai Nuclear Engineering Research and Design Institute, which is the nuclear technology innovation and project construction platform of China's State Power Investment Corporation.... .

"In the coming months, we will be engaged to develop some specific scenarios where we have to see the added value of nuclear energy for a country where there is, of course, and there will be a deeper and deeper penetration of renewables," said Stefano Monti, President of the Italian Nuclear Association. "One of the tasks, also using the energy modelling offered by Atoms4NetZero, is to look at how to integrate nuclear with renewables." Stefano said. Beyond energy modelling for net zero, Atoms4NetZero encompasses several other areas of activity to support countries in their clean energy transition. These include expert missions to support long term energy strategy development, workshops and training for capacity building, as well as outreach and stakeholder engagement....

Source: https://www.iaea.org/newscenter/news/iaeas-atoms4netzero-models-energy-scenarios-that-include-nuclear-powers-full-potential, 06 October 2023.

70 Years Later, the Legacy of the "Atoms for Peace" Speech

This year marks the 70th anniversary of President Eisenhower's "Atoms for Peace" speech to the UNGA in New York. The speech inspired the creation of the IAEA, which was founded in 1957 to promote the application of nuclear science and technology for peace and development around the world "for the benefit of all mankind."...

The President of Ghana Nana Akufo-Addo, the US Secretary of Energy Jennifer Granholm and Susan Eisenhower, granddaughter of President Eisenhower, joined IAEA DG Grossi on evening of 26 September 2023 to discuss the legacy of the speech and the impact of the IAEA. "This speech should have been Eisenhower's first presidential speech; however, it became a message for the United Nations. I think it was a turn of the destiny which was very important because of its scope. It was an inspiration that these multilateral places after the wars have at the end today a very big role as vehicles for peace, for satisfaction of these basic needs and aspirations," said Mr Grossi. The speech's enduring influence is also reflected in the IAEA's activities in the field of human health, Mr Grossi said... .

Since the 1953 speech and establishment of the Agency, the IAEA, which has 177 Member States, has helped people around the world benefit from the peaceful uses of nuclear science and technology. "Personally, having worked in the field of national security and arms control, and now nuclear energy, I admire the work of the IAEA," Granholm said.

The Importance of Communication: ... Furthermore, "we should be giving voice to the young generation and using their voices on social media to promote the use of nuclear and its role in combating climate change," Secretary Granholm said. Earlier this month, the IAEA launched an essay competition for young adults. The competition is designed to commemorate Eisenhower's speech and to posit ways the IAEA and the international community can address today's biggest challenges within the IAEA mission of "Atoms for Peace and Development."

New industrial techniques are driving down construction times and undermining a common argument against nuclear power stations—that they take too long to build. At an event on the side lines of the 67th IAEA General Conference, three freshly completed nuclear construction projects were showcased by representatives explaining just how they cut down their time scales—while battling the challenges of a global pandemic.

Since the 1953 speech and establishment of the Agency, the IAEA, which has 177 Member States, has helped people around the world benefit from the peaceful uses of nuclear science and technology. "Personally, having worked in the field of national security and arms control, and now nuclear energy, I admire the work of the IAEA," Granholm said. Ms Eisenhower said. "I think Dwight Eisenhower would be so gratified to see how this Agency has managed some of the most important issues facing our globe. Not only has it provided the safeguards around illegal development of nuclear weapons, but the IAEA is also at the cutting edge of solutions for the future. This is exactly what my grandfather hoped for in that speech in 1953."

Source: https://www.iaea.org/newscenter/news/70-years-later-the-legacy-of-the-atoms-for-peace-speech, 02 October 2023.

Successful Techniques to Cut Nuclear Construction Times Showcased at IAEA General Conference

New industrial techniques are driving down construction times and undermining a common argument against nuclear power stations—that they take too long to build. At an event on the side lines of the 67th IAEA General Conference, three freshly completed nuclear construction projects were showcased by representatives explaining just how they cut down their time scales—while battling the challenges of a global pandemic....

Similar to Fuqing, the building of Leningrad-2 Unit 2 was informed by the analysis and feedback from Leningrad-2 Unit 1, completed in 2018, and other reactors. In total, this knowledge helped shorten the schedule and testing of Unit 2 by 27 days, according to Alexander Katsman, Deputy Director General for

New Units Commissioning at Rosenergoatom.

At Unit 2, the construction team used an Open-Top technique which saw the installation of large reactor components through a temporary roof opening in the unfinished reactor building, giving the project a head start on its installation and welding phase. Parallel welding of all four loops of the coolant system further reduced timescales by 19 days.... "This kind of knowhow is so vital right now because we need to make construction faster and cheaper by gathering, sharing and ultimately applying the experience and lessons of new construction technologies and techniques to ensure nuclear power's contribution to net zero by 2050," said Ed Bradley, the IAEA's Team Leader of NPP Operation and Engineering Support....

Source: https://www.iaea.org/newscenter/news/successful-techniques-to-cut-nuclear-construction-times-showcased-at-iaea-general-conference, 02 October 2023.

SWEDEN

Government Moves to Change Law

"The proposals mean that the provision in the Environmental Code which states that the government may only authorise a new nuclear power reactor if it replaces a permanently closed reactor and is built on a site where one of the existing reactors is located is removed," the government said. "It must be possible to allow more than ten reactors in operation at the same time and in other locations than before. A consequential change is proposed in a provision in the Act on Nuclear Activities which contains a reference to the prohibitions in the Environmental Code." the government said.

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The changes to the law are proposed to enter into force on 1 January 2024... . "This is the first of several steps aimed at enabling and facilitating new nuclear power investments in Sweden," noted Tobias Andersson, chairman of the economic committee. "The voters who appointed this government expect new nuclear power reactors and we are determined that it will happen." Tobias said.

Source: https://www.world-nuclear-news.org/Articles/Swedish-nuclear-Government-moves-to-change%C2%A0legisl, 05 October 2023.

10 New Reactors Discussed as Sweden Looks to Expand Nuclear Power

Sweden has joined the growing list of countries discussing nuclear power as part of a strategy to produce more electricity while also decarbonizing power generation. Lawmakers in June adopted new targets as part of their energy plans, looking at fossil-free and renewable energy to help meet power demand pegged at about 300 TWh by 2040. The country also wants to reach net-zero carbon emissions from the power sector by 2045.

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The strategy includes building more nuclear reactors—as many as 10 units have been discussed—a departure from Sweden's previous stance, as the country voted in 1980 to phase out nuclear power. Later government moves enabled some reactors to continue operating, and a new government coalition has said nuclear power is essential to meet decarbonization goals while also increasing the electricity supply.

Lawmakers, in an effort to spur development of new projects, have said the government will help finance new nuclear power plants to support their construction. "Sweden and the rest of Europe will not meet their energy transition goals unless a substantial increase in nuclear power is part of the diversified energy mix," said Seth Grae, CEO of Lightbridge, a U.S.-based nuclear fuel technology development company....

Reliably generating dispatchable power 24/7, nuclear is an ideal partner to wind and solar. The IAEA is following developments in Sweden with great interest and stands ready to provide any support that may be requested.

IAEA DG Grossi, who met with officials in Stockholm in his first visit to Sweden since taking office four years ago, said, "My discussions in Stockholm with senior government, regulatory, and industry officials have demonstrated a shared understanding that the world needs more nuclear energy to be able to fight the climate crisis effectively. Reliably generating dispatchable power 24/7, nuclear is an ideal partner to wind and solar. The IAEA is following developments in Sweden with great interest and stands ready to provide any support that may be requested. I'm very encouraged by what I'm seeing here."

Nuclear power provided about 30% of Sweden's electricity last year. Officials in promoting nuclear power have said the technology will count toward the country's goal of producing all its energy from renewable resources by 2045. ... Vattenfall, Sweden's state-owned utility, has said it is looking at building at least two SMRs, and is prepared to extend the operating life of the country's existing reactors as part of the nuclear-focused strategy. Anna Borg, Vattenfall's CEO, said the SMRs could be built near the Ringhals nuclear power plant, while noting that "all fossil-free energy types will be needed to meet the increasing demand for electricity in Sweden."...

... W.A. "Art" Wharton III, a nuclear professional, and CEO and president of Studsvik Scandpower, a Swedish nuclear reactor software analysis company, Wharton said "Sweden is a very practical nation and will likely look toward newer LWR (light water reactor) technologies including large and small modular reactors, but the recent focus appears to be on SMRs. One recent partnership of note is Kärnfull Next with GE Hitachi for the potential to build BWRX-300 units at the Studsvik site. Additionally, they have new reactor technology companies in Sweden including Blykalla [literal translation: "lead cold"] which is developing a Gen IV reactor using molten lead coolant. U.S. nuclear companies have a strong footprint in Sweden, so they'll likely be involved in one or more of the projects."...

Grossi said the IAEA recently conducted two nuclear safety review missions in Sweden, and he noted the importance of securing financial support for nuclear power projects. "Nuclear energy in general—and SMRs in particular—is generating lots of excitement among companies and utilities. We see a natural partnership between the IAEA and industry in these areas," he said.

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Source: https://www.powermag.com/10-new-reactors-discussed-as-sweden-looks-to-expand-nuclear-power/, 02 October 2023.

SMALL MODULAR REACTOR

JORDAN

IAEA Assesses Jordanian Plans for SMR Deployment

Jordan is considering using a SMR to provide the electricity to operate a reverse osmosis desalination plant.... The IAEA expert review mission, held at its Vienna headquarters in August

2023, comprised 18 IAEA and three external experts. It evaluated whether reports submitted by Jordan Atomic Energy Commission (JAEC) include all the necessary information to support the decision-making for deploying an SMR for power generation and desalination…. "This endeavour exemplified an agency-wide collaborative effort that addressed all aspects of the feasibility study, providing essential guidance on IAEA services that Jordan could benefit from in enhancing the assessment and progress of our SMR project," said Khalid Khasawneh, Commissioner for Nuclear Power Reactors at JAEC.

The IAEA expert review mission, held at its Vienna headquarters in August 2023, comprised 18 IAEA and three external experts. It evaluated whether reports submitted by Jordan Atomic Energy Commission (JAEC) include all the necessary information to support the decision-making for deploying an SMR for power generation and desalination.

The IAEA said Jordan was one of a growing number of countries that have expressed interest in SMRs. To better assist countries, IAEA DG Grossi established the SMR Platform in 2021 to provide coordinated, agency-wide support on all aspects of SMR development, deployment and oversight…. "Both this expert mission and the workshop are prime examples of the kind of support that the IAEA can provide to countries through the SMR Platform," said Dohee Hahn, Coordinator of the IAEA SMR Platform.

…"The IAEA support for Jordan's nuclear programme, particularly the SMR project, is highly valued and plays a pivotal role in enhancing our capabilities and advancing our endeavors," Dohee said… . "In many ways, Jordan's interest helps to explain why small modular reactors and their applications are of such intense interest around the world right now," said Mikhail Chudakov, IAEA Deputy Director General and Head of the Department of Nuclear Energy. "SMRs offer not only lower upfront costs, but greater flexibility for a variety of users and applications and are set to play an important role in helping to ensure energy security as well as supporting the clean energy transition." Mikhail said.

Source: https://www.world-nuclear-news.org/Articles/IAEA-assesses-Jordanian-plans-for-SMR-deployment, 06 October 2023.

UK

Six Companies Through to Next Stage of Nuclear Technology Competition

Six companies' designs for the next generation of nuclear reactors have been selected to progress in a government competition supporting the development of this innovative technology for greater energy security. EDF, GE-Hitachi Nuclear Energy International LLC, Holtec Britain Limited, NuScale Power, Rolls Royce SMR and Westinghouse Electric Company UK Limited have been chosen for the next stage of the process.

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The SMR competition is part of the government's plan to revive nuclear power and for the UK to lead the global race to develop cutting-edge technologies to rapidly deliver cleaner, cheaper energy and greater energy security. The government's ambition is for up to a quarter of all UK electricity to come from nuclear power by 2050. Unlike conventional nuclear reactors that are built on site, SMRs are smaller, can be made in factories, and could transform how power stations are built by making construction faster and less expensive. The designs chosen today are considered by the government and Great British Nuclear - the government-backed body driving forward nuclear projects across the country - the most able to deliver operational SMRs by the mid-2030s… .

Energy Security Secretary Claire Coutinho said: Small Modular Reactors will help the UK rapidly expand nuclear power and deliver cheaper, cleaner, and more secure energy for British families and businesses, create well-paid, high-skilled jobs, and grow the economy. This competition has attracted designs from around the world and puts the UK at the front of the global race to develop this exciting, cutting-edge technology and cement our position as a world leader in nuclear innovation....

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Gwen Parry-Jones, CEO of Great British Nuclear said: ...This is a hugely exciting day for the nuclear industry, with 6 companies taking the first step towards delivering sustainable power for Britain. For companies who were not successful in this initial process, the next opportunity could be the government's consultation on alternative routes to market for nuclear technologies which is due to be launched soon. This will look at how to support newer technologies so that Britain can benefit from them as well....

The NuScale Power Module on which the VOYGR nuclear power plants are based is a pressurised water reactor with all the components for steam generation and heat exchange incorporated into a single 77 MWe unit. The company offers a 12-module VOYGR-12 power plant capable of generating 924 MWe as well as the four-module VOYGR-4 (308 MWe) and six-module VOYGR-6 (462 MWe) plants and other configurations based on customer needs.

Source: https://www.gov.uk/government/news/six-companies-through-to-next-stage-of-nuclear-technology-competition, 02 October 2023.

ROMANIA

Romania Sets Out Roadmap for Licensing of NuScale VOYGR

...CNCAN said the approval "represents a key milestone of the SMR project, which will facilitate the implementation of the licensing process for all the stages of the NuScale power plant in Romania". The Licensing Basis Document (LBD) establishes the licensing requirements for the six-module power plant project, the applicable domestic and international regulatory documents, codes and standards, as well as the project characteristics that ensure the fulfilment of the nuclear safety requirements and criteria.

The LBD maps out the licensing basis of the reference design in the US NRC Design Certification for NuScale's Standard Plant Design and the correspondence with the Romanian licensing requirements and nuclear safety regulations issued by CNCAN in order to establish the authorisation framework for all the stages of development of the proposed nuclear power plant project.

Furthermore, the LBD enables the transition towards the next stages of the project, as it establishes the foundation to initiate the second phase of the Front-End Engineering and Design (FEED) study. CNCAN's approval of the Licensing Basis Document provides a licensing plan to meeting critical milestones of the project – siting, construction, commissioning and operation....

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Nuclearelectrica signed a teaming agreement to deploy a 462 MWe NuScale VOYGR-6 power plant in Romania by the end of the decade… .

Source: https://www.world-nuclear-news.org/Articles/Romania-sets-out-roadmap-for-licensing-of-NuScale, 02 October 2023.

NUCLEAR SECURITY

GENERAL

Strengthening Nuclear Security Worldwide Through A/CPPNM and ICSANT

The synergies between the CPPNM and its Amendment (A/CPPNM) and the ICSANT in strengthening nuclear security globally were discussed at a side event during the 67th IAEA General Conference. The event was jointly organized by the IAEA and the United Nations Office on Drugs and Crime (UNODC) as part of their efforts in further promoting the universalization and effective implementation of the A/CPPNM and ICSANT.

In his opening remarks, Anthony Wetherall, Head of the Nuclear and Treaty Law Section at the IAEA underlined that "as we harness the peaceful uses of nuclear technology for the benefit of all, we must, at the same time, make sure that we recognize and address the threats posed by the potential misuse of nuclear material, other radioactive material and associated facilities by malicious non-State actors. This side event will reinforce the importance of a solid and robust legal framework as a foundation for effective nuclear security."

The CPPNM and A/CPPNM 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 and its Amendment also require criminalization of certain offenses involving or directed at nuclear material and nuclear facilities, and provide for international cooperation related to physical protection and preventing and responding to criminal acts. The ICSANT complements the A/CPPNM in covering all radioactive material and establishing a foundation for the criminalization of further offenses involving nuclear as well as other radioactive material.

"The A/CPPNM is pertinent for all countries, not just those with nuclear facilities or nuclear material. It provides for a strengthened international framework to combat nuclear terrorism and secure nuclear material, thus reducing the likelihood of malicious acts and enhancing the national security of each country," said Elena Buglova, Director of the IAEA's Division of Nuclear Security. She also highlighted the importance of joint efforts on promoting universalization and effective implementation of both A/CPPNM and ICSANT….

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Paraguay's Ambassador Juan Francisco Facetti emphasized the importance of the A/CPPNM and ICSANT and their synergies. "The A/CPPNM enhances the security of nuclear material, reducing the risk of it falling into the wrong hands. ICSANT ensures that those who attempt to use such material for malicious purposes are prosecuted and held accountable. Their synergy creates a robust framework that addresses the full spectrum of challenges, from physical protection to legal prosecution" he said, adding that "in a world where the movement of people, goods, and information knows no borders, the threat of nuclear terrorism transcends national boundaries. Understanding this means we must embrace the spirit of cooperation and shared responsibility embedded within these conventions."…

Source: https://www.iaea.org/newscenter/news/strengthening-nuclear-security-worldwide-through-acppnm-and-icsant, 04 October 2023.

IAEA Training Centre for Nuclear Security Opens Doors to Build Expertise in Countering Nuclear Terrorism

The IAEA opened on 3 October 2023 a unique nuclear security training centre, the first international facility of its type, to support the growing efforts to tackle global nuclear terrorism. IAEA DG Grossi officially opened the IAEA Nuclear Security Training and Demonstration Centre during a ceremony at the Agency's Seibersdorf laboratories in Austria, attended by representatives from 45 countries and territories.

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The centre will provide more than 2000 square meters of specialized technical infrastructure and equipment for course participants to learn about the physical protection of nuclear and other radioactive material, as well as detection and response to criminal acts involving nuclear material and facilities. "Nuclear security is one of the most important areas of our work to make sure that nuclear material never falls into the wrong hands," IAEA DG Grossi said. "The international nuclear security centre of excellence - opened today - is where experts on nuclear security and the physical protection of nuclear material from all over the world will be trained to hone their skills." Grossi said....

Source: https://www.iaea.org/newscenter/pressreleases/iaea-training-centre-for-nuclear-security-opens-doors-to-build-expertise-in-countering-nuclear-terrorism, 03 October 2023.

NUCLEAR COOPERATION

HUNGARY–RUSSIA

Hungary Reiterates Commitment to Nuclear Cooperation with Russia

On September 11, the Hungarian ambassador to Russia, Norbert Konkoly, declared that Budapest remains fully committed to further cooperation with Moscow on nuclear energy. Konkoly's statement was meant to dispel the rumors that Hungary may replace Russian nuclear fuel for the operating reactors of the Paks Nuclear Power Plant in central Hungary with the help of French suppliers. The Hungarian ambassador's declaration coincided with the commencement of preparatory work for the new VVER nuclear units to be built by Russia's Rosatom under the Paks-2 expansion project....

Hungary currently has four operating nuclear reactors, all based on the Russian VVER-440 design and originally connected to the grid back in the 1980s. The units operate with nuclear fuel supplied by Russia's TVEL. This Russian company also provides fuel for the other Russian VVER blocks in the European Union (Finland, Czech Republic, Slovakia, and Bulgaria).

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The Hungarian companies overseeing the Paks NPP, nevertheless, remain committed to Russian fuel supplies. Most recently, Hungary reiterated its stance on September 22 when Hungarian Deputy Foreign Minister Levente Magyar remarked that his country "does not see any alternative" to Russian nuclear fuel supplies at the moment... . Hungary's commitment to its energy alliance with Moscow effectively prevents the European Union from sanctioning Rosatom and other Russian

energy companies following Russia's full-scale invasion of Ukraine. The Hungarian government reiterated earlier this year that it strictly opposes any restrictions on Russian nuclear energy, leaving little hope for a course correction in the near future. So long as Hungary does not replace Russian fuel with supply from an alternate source or abandon the Paks-2 project, Budapest's position on future EU sanctions packages against Russia will not change.

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Source: https://jamestown.org/program/hungary-reiterates-commitment-to-nuclear-cooperation-with-russia/, 02 October 2023.

NUCLEAR PROLIFERATION

IRAN

US Report: Iran can Make a Nuclear Weapon in Less Than Two Weeks

Iran is not pursuing nuclear weapons at this time, but has the infrastructure in place and the know-how to make a nuclear weapon in less than two weeks, a new US report finds. "It is assessed that Iran is not pursuing a nuclear weapons program at this time, but has the capacity to produce enough fissile material for a nuclear device in less than two weeks," said the US Department of Defense's 2023 Strategy for Countering Weapons of Mass Destruction report, as quoted by JNS....

It is assessed that Iran is not pursuing a nuclear weapons program at this time, but has the capacity to produce enough fissile material for a nuclear device in less than two weeks," said the US Department of Defense's 2023 Strategy for Countering Weapons of Mass Destruction report.

In August, it was reported that Iran has significantly slowed the pace at which it is accumulating near-weapons-grade enriched uranium and has diluted some of its stockpile. The IAEA confirmed those assessments in a report published last month....

Source: https://www.israelnationalnews.com/news/377748, 02 October 2023.

NUCLEAR SAFETY

GENERAL

Protecting Our Ocean: Nuclear Techniques for Marine Emergency Response to Oil Spills

Marine and coastal ecosystems play a critical role in the health of the ocean and the planet, but their delicate balance must be maintained. One of the major threats to this balance comes from oil spills, which can have devastating impacts on these ecosystems and the communities that depend on them. When faced with oil spills, countries need as many tools and as much information as possible to help mitigate the environmental impacts, identify the source of spills and evaluate seafood for contamination from toxic substances.

Using nuclear and isotopic techniques, the IAEA Marine Environment Laboratories in Monaco support them in achieving these goals. "Each oil spill is different and requires unique sets of questions to be asked," said Philippe. Bersuder, Head of Marine Environmental Studies Laboratory at the IAEA. "Using nuclear and isotopic techniques to accurately measure and trace oil spills, we provide countries with the tools they need to mitigate the damage and assess the risk to human health."...

Source: https://www.iaea.org/newscenter/news/protecting-our-ocean-nuclear-techniques-for-marine-emergency-response-to-oil-spills, 05 October 2023.

JAPAN

IAEA to Conduct First Extensive Sampling of Marine Environment Near Fukushima Daiichi Since Start of Treated Water Release

IAEA scientists and international scientific

observers will visit Japan next week to take marine samples near the Fukushima Daiichi Nuclear Power Station (FDNPS). The Agency's samples will be used to corroborate Japan's environmental monitoring and to assess the country's relevant technical capabilities. This work supports the IAEA's ongoing monitoring and assessment activities in Japan under the Agency's overall safety review of the ALPS treated water discharges which is assessing whether TEPCO and the Government of Japan are applying the relevant international safety standards.

IAEA scientists and international scientific observers will visit Japan next week to take marine samples near the Fukushima Daiichi Nuclear Power Station (FDNPS).

The results from the new samples will also be compared against samples taken last year to determine whether any changes have occurred in the levels of radionuclides in the marine environment since the ALPS treated water discharges began in August this year. The mission will also provide samples for the Agency's project initiated in 2014 to support the quality assurance of broader marine environmental monitoring by Japanese laboratories related to the decommissioning of FDNPS. Reports from this work can be found on the IAEA website.

From 16-23 October, the IAEA team will observe the collection and processing of seawater, marine sediment and fish samples from coastal waters in the vicinity of the FDNPS. Two staff from the IAEA Marine Environment Laboratories in Monaco, as well as experts from laboratories in Canada, China and Republic of Korea, will participate in the sample collection. The team will also take part in the sampling of fish from markets in the Fukushima Prefecture. Identical samples will be sent to all laboratories participating in the comparison study and analyzed for radioactivity.

Additionally, the IAEA Task Force conducting the safety review of Japan's release of the ALPS treated water will reconvene and conduct its first mission to Japan since the start of the water discharges.

The results of the analyses done by Health Canada, the Third Institute of Oceanography, China, and the Korea Institute of Nuclear Safety – members of the network of Analytical Laboratories for the Measurement of Environmental Radioactivity – and those obtained by the participating Japanese laboratories, will be submitted to the IAEA for the evaluation of the results for any statistically significant differences, and publication. Additionally, the IAEA Task Force conducting the safety review of Japan's release of the ALPS treated water will reconvene and conduct its first mission to Japan since the start of the water discharges. It is the next in a series of missions that began in 2021 and will continue throughout the IAEA's safety review of the discharges.

Source: https://www.iaea.org/newscenter/pressreleases/iaea-to-conduct-first-extensive-sampling-of-marine-environment-near-fukushima-daiichi-since-start-of-treated-water-release, 10 October 2023.

UKRAINE

Update 186 - IAEA Director General Statement on Situation in Ukraine

Ukraine's Zaporizhzhya Nuclear Power Plant (ZNPP) is now once again using reactor unit 4 to generate steam for various safety functions at the facility after the repair of a water leak detected in mid-August, IAEA DG Grossi said on 4 October 2023. After completing the transition of unit 4 to hot from cold shutdown on 30 September 2023, the ZNPP placed reactor unit 6 – which had temporarily been producing such steam during the repair work – in cold shutdown, which was reached on the morning of 3 October 2023....

In addition, the IAEA has been strongly encouraging the ZNPP to find an alternative source of steam generation to cover the plant's needs, including for processing liquid radioactive waste, and allow for all the reactors to be maintained in a cold shutdown state. After it reached cold shutdown, the ZNPP began maintenance activities of unit 6, starting with its unit transformer and

one of its safety trains in order to clean the heat exchangers.

The ZNPP reactors each have three separate and independent redundant systems – known as safety trains – comprising the units' safety systems, which are normally in stand-by mode ready to activate if needed to maintain safety. Separately, a new team of IAEA experts arrived at the ZNPP on 3 October 2023 to replace their colleagues who have been there for the past several weeks, the twelfth such mission since Grossi on 1 September 2022 established a permanent Agency presence at the site to help prevent a nuclear accident during the conflict in Ukraine.

The ZNPP reactors each have three separate and independent redundant systems – known as safety trains – comprising the units' safety systems, which are normally in stand-by mode ready to activate if needed to maintain safety.

"Once again, our experts have crossed the frontline to help ensure nuclear safety and security at Europe's largest nuclear power plant which is caught up in the middle of the war. We should all be grateful for their determination to do everything they can to achieve this important task. Their presence is necessary to monitor the situation at the site and to provide impartial and timely information to the international community," Grossi said…. "These vehicles and dedicated personnel are essential for ensuring the safety of IAEA staff during rotations to and from the plant. They will also allow us to conduct our missions with full logistical independence," Grossi said.

Once again, our experts have crossed the frontline to help ensure nuclear safety and security at Europe's largest nuclear power plant which is caught up in the middle of the war. We should all be grateful for their determination to do everything they can to achieve this important task. Their presence is necessary to monitor the situation at the site and to provide impartial and timely information to the international community," Grossi said.

The new IAEA team continues to request access to all six turbine halls on the same day, one after the other, to be able to confirm the absence of any materials and equipment that may contravene the five concrete principles for the protection of the ZNPP… . The IAEA on 2 October 2023 completed its 26th delivery of equipment and other items designed to enhance nuclear safety and security in Ukraine, providing the Rivne NPP with equipment for measuring the dissolved hydrogen concentration in primary water samples at the plant. The equipment was procured using Japanese extrabudgetary contribution.

Source: https://www.iaea.org/newscenter/pressreleases/update-186-iaea-director-general-statement-on-situation-in-ukraine, 04 October 2023.

NUCLEAR WASTE MANAGEMENT

CANADA

Canadian Integrated Radioactive Waste Management Strategy Accepted

The Integrated Strategy for Radioactive Waste was submitted for ministerial consideration in June by Canada's Nuclear Waste Management Organization (NWMO). Informed by more than two years of engagement with Canadians, indigenous peoples, waste generators and owners, as well as detailed studies of technical considerations and international best practices, the strategy's two key recommendations address gaps in long-term waste disposal plans, NWMO said.

Minister of Energy and Natural Resources Jonathan Wilkinson signalled the government's acceptance of the strategy in a public statement released on 5 October. "As Canada advances toward a low-carbon future, nuclear energy will continue to be an important contributor of reliable, non-emitting power for millions of Canadians. Canada is a global leader in the nuclear sector, including in the safe and environmentally sound management of

radioactive waste," Minister said....

Most of Canada's radioactive waste is already managed through "world-class" long-term disposal plans, NWMO said. The strategy ensures that planning is done to support the responsible management of all other radioactive waste, particularly low-, intermediate- and non-fuel high-level wastes. NWMO is already working to implement a deep geological repository for the long-term disposal of Canada's used nuclear fuel, for which a consent-based siting process began in 2010. Two areas - both in Ontario - remain in the site selection process, with a final preferred site expected to be announced in 2024.

NWMO is already working to implement a deep geological repository for the long-term disposal of Canada's used nuclear fuel, for which a consent-based siting process began in 2010. Two areas - both in Ontario - remain in the site selection process, with a final preferred site expected to be announced in 2024.

The Integrated Strategy for Radioactive Waste is separate from this effort, but NWMO has said it will benefit "greatly" from the organisation's expertise and past lessons learned. NWMO President and CEO Laurie Swami said the organisation will now develop a consent-based siting process for a repository for intermediate-level and non-fuel high-level waste. "Canada's leadership in nuclear energy technology creates a responsibility for the long-term management of the waste generated. We have heard clearly that Canadians and Indigenous peoples want action for its long-term management taken now, rather than leaving it to future generations," she said.

NWMO President and CEO Laurie Swami said the organisation will now develop a consent-based siting process for a repository for intermediate-level and non-fuel high-level waste. "Canada's leadership in nuclear energy technology creates a responsibility for the long-term management of the waste generated.

Waste generators and waste owners will be responsible for managing the disposal of low-level wastes in multiple near-surface disposal facilities, with oversight provided by federal government. Such waste - which mostly comes from power plants and medical, academic, industrial and other commercial uses of radioactive materials - requires containment and isolation for up to a few hundred years.

Source: https://world-nuclear-news.org/Articles/Canadian-integrated-radioactive-waste-management-s, 06 October 2023.

JAPAN

Japan Starts 2nd Release of Nuclear-Contaminated Wastewater into Ocean Despite Protest

Japan on 5 October 2023 started the second round of release of nuclear-contaminated wastewater from the crippled Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean. Despite mounting concerns and opposition among local fishermen as well as other countries, the discharge commenced at around 10:30 a.m. local time, according to the Tokyo Electric Power Company (TEPCO), the plant's operator. TEPCO said it plans to carry out the release over 17 days to discharge 7,800 tons of the radioactive wastewater, roughly the same amount as the first discharge, which ended on Sept. 11. The ocean discharges have been facing severe backlash both at home and abroad.

A group of 150 people in Japan, including fishery workers in Fukushima Prefecture, filed a lawsuit against the Japanese government and TEPCO last month to call a halt to the controversial ocean discharge.... There is a lot of uncertainty about the cumulative effect caused by the release of large quantities of radionuclides into the sea, said the Chinese nuclear official, noting that Japan has failed to give a credible and scientific response to the international outcry. ...The built-up distrust among the Japanese public would, of course, extend to how the government handles the nuclear-contaminated wastewater, which is now the ocean discharge of the so-called treated water, according to Taki.

Source: https://english.news.cn/20231005/9a7cec316c0e425598e2e689192c4635/c.html, 05 October 2023.

UK

Nuclear Waste Services Eliminates Allerdale from Waste Repository Process

UK government body Nuclear Waste Services (NWS) has decided not to take Allerdale in Cumbria, northwest England, further in the UK's geological disposal facility (GDF) siting process due to limited suitable geology. NWS said it had been engaging with the Allerdale community about the potential for hosting a disposal repository for the UK's most radioactive waste. As part of this process NWS obtained existing data and undertook assessments to understand if six siting factors – safety and security, community, environment, engineering feasibility, transport and value for money – could be supported if a GDF were sited in Allerdale. "Following a comprehensive and robust evaluation of information it was concluded only a limited volume of suitable rock was identifiable and the geology in the area was unlikely to support a post closure safety case," a statement said. ...

NWS said it had been engaging with the Allerdale community about the potential for hosting a disposal repository for the UK's most radioactive waste. As part of this process NWS obtained existing data and undertook assessments to understand if six siting factors – safety and security, community, environment, engineering feasibility, transport and value for money – could be supported if a GDF were sited in Allerdale.

Source: https://www.nucnet.org/news/nuclear-waste-services-eliminates-allerdale-from-waste-repository-process-10-1-2023, 02 October 2023.

Centre for Air Power Studies

The Centre for Air Power Studies (CAPS) is an independent, non-profit think tank that undertakes and promotes policy-related research, study and discussion on defence and military issues, trends and developments in air power and space for civil and military purposes, as also related issues of national security. The Centre is headed by Air Marshal Anil Chopra, PVSM AVSM VM VSM (Retd).

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