



Vol 15, No. 07, 01 FEBRUARY 2021

**OPINION – Fabian Hinz, Sahil Shah**

**A Nuisance to the West, a Life Insurance to the Islamic Republic: Can Biden Do Anything about Iran’s Missiles?**

In the United States, Europe, and the Middle East, a debate has emerged over the last few months on whether US President-elect Joe Biden should aim to get “more” out of Iran before re-entering the 2015 nuclear deal (JCPOA). Some believe that Biden has been gifted with leverage from the Trump administration’s sanctions pressure that could help gain concessions on Iran’s missile programme. Others contend that the gutting of US and European credibility in Iran over the past four years – and the subsequent loss of trust – means that even if leverage does exist, the conditions to use it in a results-oriented negotiation with Iran do not.

While it is now clear that the President will wisely stick to re-entering the nuclear agreement as a first priority, his incoming National Security Advisor Jake Sullivan recently stated that Iran’s ballistic missiles will need to be “on the table” during follow-on talks. If these talks are to be productive, the US and its allies in Europe and the Middle East must set out their priorities more clearly on what they seek to achieve and think through the incentives that could be brought to bear.

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Once deemed little more than pariah states’ favourite toys and potential nuclear delivery systems, ballistic missiles have been turned into a powerful conventional military capability through the proliferation of precision-guidance missile technology. Easy to hide and exceptionally hard to intercept, ballistic missiles offer countries a potent tool against otherwise technologically superior adversaries. It is exactly for this reason that Iran has invested substantial resources into its ballistic missile programme for more than three decades.

Over time, missiles and foreign, non-state armed groups have converged into a central pillar of

Iran's asymmetric defence capability. Iran's display of ballistic missiles during last week's Payambar-e Azam 15 (The Great Prophet 15) war games is the latest iteration of the prominent role these systems also play in regional power projection. For Iran's regional rivals, Iran's missiles – and its ability to transfer missile technology to non-state actors on their borders – present a more immediate threat to their security than its nuclear programme does. But in contrast to nuclear weapons, there is no agreed international regime to control ballistic missiles, which means the discussions about missiles are starting from a very different place.

Unilateral demands for Iran to curb its missile programme will not work without understanding and addressing the larger picture of regional security. Missiles are now seen in Iran as a prime guarantor of national security, making negotiating constraints on them a highly sensitive topic. Deeply rooted in their experiences of the eight-year Iran-Iraq War and regional politics in the decades afterwards, existential military threats are not a distant possibility but a lived reality in the minds of the Islamic Republic's elite.

At what price would Iranian elites agree to restrict what many of them see as their country's main deterrent and insurance against regime change? And who would guarantee limitations would not be a slippery slope to further restrictions of military capabilities? Iranian leaders regularly cite the examples of Iraq and Libya, both of which agreed to limitations to their missile force only to have their regimes subsequently overthrown by Western-led or supported military interventions.

It, therefore, comes as no surprise that Iran's Supreme Leader, president, and top military officials have continually declared negotiations on their missiles a red line.

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development of newer, more technically advanced systems?

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Tehran's strong views on missile negotiations are not the only obstacle ahead. While there is a variety of voices calling for including missiles in talks with Iran from now or sometime soon, rarely if ever, is it discussed what concrete, technical outcomes they are looking for. What exactly is to be restricted? Iran's ability to

deliver a hypothetical nuclear warhead? The numbers of missiles produced and deployed? Development of newer, more technically advanced systems? Considering the complete absence of trust in the region, any agreement would need to have powerful verification mechanisms that might not always be realistic to achieve. Limiting the number of missiles Iran produces and deploys would require intrusive inspections and monitoring of military bases and production facilities, which Iran would likely never accept. Ridding Iran of potential nuclear delivery systems seems equally unfeasible. Iran's Shahab 3/Ghadr missile, which would

be the system of choice for such a task, not only forms the backbone of Iran's ability to retaliate against potential Israeli attacks but is also a proven system that has been in mass production for a long time.

Absent a vast and massively intrusive inspection effort, verifying that Iran does not retain a basic nuclear delivery capability seems all but

impossible. Restricting flight-testing, which can be monitored non-intrusively, seems to be the only feasible way of verification. But this would limit potential restrictions to the improvement of existing systems and the development of new ones. Even if all of these challenges would be somehow overcome, it remains questionable whether the limited restrictions that could be realistically achieved would be enough of a concession to garner the support of US Iran hawks and regional allies.

As if these obstacles were not formidable enough, there is yet another potential challenge – Iran’s ability to escalate in the missile field. In the past two decades, Iran’s missile industry has made breathtaking technological advances, yet Iran decided to voluntarily restrict its missile range to 2000km – which still allows it to reach US bases in the region as well as most of its regional adversaries. While Iran might chisel at the edges of this self-imposed restriction, it so far has not tested any missile with a range to reach the United States nor an equivalent Space Launch Vehicle using militarily viable technology. However, there are worrying signs that Iran might already be working on such technology and could make faster progress than expected. Should the West increase its pressure on the missile issue, Iran might reply by escalating by testing missiles of longer ranges. As with nuclear research and development, the knowledge gained during such an escalation would not be reversible.

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a formidable spoiler. Even if it succeeded against all odds, the result would likely be either a toothless agreement or limitations that satisfy no one. Instead of concentrating on restricting Iran’s current missile programme, follow-on talks between the US and Iran should focus on preventing more provocative future developments in the form of potential ICBM flight testing, which would both address the US’s primary security concerns and be easily verified. Although not ideal, it would be valuable to work towards even an informal, face-saving understanding that Iran will reinforce its 2000km range cap and limit the use of militarily viable fuel technologies in its space programmes. A complementary understanding to limit or stop the provision of certain systems to non-state actors, such as ballistic and cruise missiles given to the Houthis, might be another avenue worth exploring.

The concerns that America’s allies in the region share should not be ignored, but the US and its partners need to find a different way of addressing them while also taking Iran’s threat perceptions into account. A few years ago, former US National Security Advisor John Bolton was widely derided for wanting to apply the “Libya model” to North Korean disarmament. Yet, all too often when talking about restricting Iran’s missiles people are thinking through a Libya-style prism as well – a pariah state under the pressure of sanctions will decide to come in from the cold and surrender a large part of its missile force. However, it seems dubious that such an approach can work with a middle power whose security in a volatile region largely depends on its sophisticated missile arsenal.

**In sum, the demand many made to restrict Iran’s missile programme as a precondition to the US re-entering the JCPOA would have likely acted as a formidable spoiler. Even if it succeeded against all odds, the result would likely be either a toothless agreement or limitations that satisfy no one.**

Perhaps it would be wise to take inspiration from the Cold War instead. Restricting Soviet military capabilities was not achieved by a sanctions-enabled quick fix but by mutually trading hard security concessions through long, laborious arms control negotiations and dialogue underpinned by confidence-building measures as well as military leverage. Doing so in the Middle East would be a monumental task given the number of actors and low levels of trust amongst them.

Yet, the forthcoming US return to the JCPOA might at least reduce the dramatic tension between the US and Iran and thus pave the way for positive initiatives on arms control in the region. In turn, Biden's current plan to not hold a US return to the Iran nuclear deal hostage to other issues such as Iran's missiles is a sensible and respectable approach to take. In order to reduce the risks resulting from the current conventional arms race and wider missile development and proliferation in the Middle East, creative, long-term strategic thinking will be required for future talks to bear fruit.

*Source: European Leadership Network, <https://www.europeanleadershipnetwork.org/commentary/a-nuisance-to-the-west-a-life-insurance-to-the-islamic-republic-can-biden-do-anything-about-irans-missiles/>, 18 January 2021.*

**OPINION – S.D. Pradhan**

**Emerging Sino-Pak-North Korea-Turkey Nexus for Nuclear Proliferation**

A series of developments have attracted the attention of the International Community to an emerging and worrisome phenomenon of Sino-Pak-North Korea-Turkey nexus for nuclear

proliferation. This group is clandestinely acquiring nuclear and missile technology to support the nuclear programme of Turkey. Turkish President Erdogan's efforts to acquire nuclear weapons and technology to achieve his geopolitical ambitions have been a major concern since September 2019, when he openly declared such intentions.

The latest development in this context was the meeting of the Turkish-Pakistan High-Level Military Dialogue Group on 22-23 December 2020. Pakistan's Defence Secretary Lt. Gen. (Retd.) Mian Muhammad

Hilal Hussain led the delegation from Islamabad, while Deputy Chief of Turkish Army General Selcuk Bayraktaroglu headed the Turkish team. Media reports indicate that one of the main topics on the agenda was the nuclear delivery technology and systems. The Pak delegation met top Turkish Army generals and bureaucrats dealing with missile production and aerial military hardware. It included Professor Ismail Demir head of Presidency of Turkish Defence

Industries and Temil Kotil, CEO of Turkish Aerospace Limited (TAI). The Pakistani defence delegation also visited top Turkish defence companies. In addition, on the 21st December 2020 Lt. Gen. Sahir Shamshad of Pakistani Army also met Lt. Gen. Wali Turkchi of Turkish Army in Ankara for the Second Round of Turkish-Pakistani Military Talks. Media reports indicated that transfer of missile technology and UAV were the focus of these talks.

On the 16th June 2020, a German report revealed that Pakistan and North Korea were involved in pursuing efforts to build nuclear weapons and delivery systems and were procuring material for such weapons and technology clandestinely from Germany and elsewhere in Europe. Such items were obtained via China or Turkey. The Sino-Pak-North Korea collaboration is well known over

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nuclear weapons and technology. Pakistan had supplied North Korea the nuclear weapons technology. In 1998, the details of the Pak nuclear tests were shared with North Korea. North Korea has shared the technology of the missiles. China had provided assistance to both Pakistan and North Korea for their nuclear weapon programmes. Pakistan had received the nuclear weapon grade Uranium from China initially.

On 3rd February 2020, the detention of a ship (Da Cui Yun) at the Kangla port bearing a Hong Kong flag and bound for Port Qasim in Karachi for wrongly declaring autoclave, which can be used in the launch process of ballistic missiles, as an industrial dryer, also suggested Sino-Pak-Turkish efforts for nuclear proliferation. Autoclave is critical for producing silica sheets under controlled pressure for the solid fuel to be used in the ballistic missiles. It is used in long and medium range missiles like Shaheen II and Nodong. Not only the item was wrongly declared but more importantly, the ship belonged to a Chinese company COSCO, which was earlier sanctioned by the US. The destination of the ship was Port Qasim in Karachi, where the Space and Upper Atmosphere Research Commission (SUPARCO), responsible for Pakistan ballistic missile programme, is based. It was assessed that the autoclave was meant for Turkey.

Importantly, this was not the first time that a Pak bound ship was detected carrying missile material and wrongly declaring them to avoid detection. During the Kargil conflict, the North Korean ship Ku Wol San was seized at the Kangla port. This ship was carrying missile components, metal casings and Scud missile manuals to Pakistan, which were declared as the water purifying equipment.

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centrifuge parts and shipped them to Pakistan and other countries. It is strongly believed that Turkey could be possessing a number of centrifuges, with the assistance from Pakistan.

In view of the above, it is assessed that China and North Korea are supplying nuclear technology and material for delivery systems to Turkey through Pakistan. Pakistan is rapidly supplying Turkey nuclear and missile technology and assisting in building the latter's capabilities in these fields. This nexus is developing very fast. This development needs to be viewed in the context of developing strategic relations between Pakistan-Turkey. Erdogan hopes to emerge as the pre-eminent global Islamic leader replacing the Saudi Arabian prince. The rifts within the Islamic nations are visible inside the OIC where the Saudi-led camp is at loggerheads with an emerging grouping comprising Turkey, Pakistan and Malaysia.

China's close relationship with Islamic countries like Pakistan and Turkey is driven by its strategic interests, though they are ideologically totally different. Pakistan and Turkey both realise that the Chinese clout would be helpful to them in achieving their strategic objectives. That is why these two countries do not oppose the Chinese 'genocide' of Muslims in Uyghurs. Whenever they find illegal migrants from Uyghurs in their countries, they quietly hand them over to China. China also hopes to control Muslims in Uyghurs through them.

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clandestine deals. This country though a signatory to the NPT and the CTBT, Erdogan has not made it secret that he does not entertain any restraint on Turkey imposed by nuclear powers. Erdogan perceives that Turkey needs nuclear weapons to have the same kind of protection which Israel enjoys.

Pakistan's clandestine activities in the context of nuclear proliferation are well-known. Media reports indicate that several Pak scientists are now working to support the Turkish nuclear programme. The growing nexus has serious security implications for the International Community and specially for India. Of late, China-Pak-Turkey group have been vocally opposing India's policy in J&K- a purely internal issue. Their criticism has become shriller. Their combined efforts are to push India out from Afghanistan and Central Asia. India needs to make diplomatic efforts to neutralise this group's combined efforts against India.

Source: *The Times of India*, <https://timesofindia.indiatimes.com/blogs/Chanakya Code/emerging-sino-pak-north-korea-turkey-nexus-for-nuclear-proliferation/>, 27 January 2021.

**OPINION – Yasaman Hadjibashi**

**The U.S. should Shift from the Nuclear Issue to Re-engage Iran**

Growing up in Tehran and becoming an American citizen, I've always been closely aware of the mistrust that dominates U.S.-Iran relations. This peaked when Donald Trump's administration made it a high priority to exit the Iran nuclear deal, which severely eroded the credibility of U.S. agreements and commitments.

Trump's ongoing "maximum pressure" strategy used unilateral economic sanctions, provocative rhetoric and military force, which soured trust and moved both countries closer to sustained conflict.

When the majority of UNSC members vocally opposed the U.S.' decision to reimpose all pre-nuclear deal sanctions on Iran, American influence on its allies officially diminished.

Leading Middle East and foreign policy experts such as Vali Nasr emphasized, "there is no easy path to a larger nuclear deal." Beyond restoring the 2015 JCPOA, the U.S. will need to "work with Europe, China, and Russia" to rebuild "trust and momentum for a new deal," Nasr wrote.

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How can the U.S. regain the support of its allies and rebuild consensus with Iran to not only resolve the nuclear issue but also form new ground for overcoming common future challenges? It's perhaps time to take a pause from the prevalent nuclear dispute and instead direct focus on joining

forces to combat the globally critical and economically detrimental shared threat of climate change. Iran recently announced that it is re-establishing its oil output to levels prior to Trump's sanctions, as it is getting ready to flood the market

with its crude oil and prompt its economic recovery.

The Biden administration in parallel has been asking Tehran to get back to compliance with JCPOA in order to re-start negotiations and provide sanctions relief as Treasury Secretary Janet Yellen stated on January 21. But Iran has been pushing for the opposite, which is first lifting sanctions affecting its international petroleum sales. The U.S. and Iran can switch diplomatic gears in this current dilemma and start a new dialog under the umbrella of climate change. The nuclear issue can also be prioritized but negotiated from a different lens, as part of a wider energy agenda discussion. This can be an opportunity for both sides to find common ground and set long-term objectives more easily.

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A strategy of green diplomacy, one that prioritizes economic collaboration for the production of “trusted” clean energies such as wind and solar, can lead both countries to reach consensus and diminish further conflict by triggering a much-needed migration away from polluting energy sources.

The Islamic Republic has repeatedly stated that its fundamental intent for pursuing a nuclear agenda is to use it as an energy source, not to develop a bomb. The international perception, however, is that the Iranian regime has been pursuing the agenda as a hidden geopolitical deterrent and economic power hedge. Green diplomacy would focus on three priorities to fully eliminate Iran's dependence on nuclear energy as an energy source.

First, the U.S. and its allies will need to lift sanctions that block the import of fuel additives into Iran. The country's air quality has deteriorated drastically as U.S. sanctions force the Iranian government to produce low-grade fuel with pollutants. These chemicals have contributed to rising rates of various diseases, costing the capital Tehran close to \$3 billion in health expenses each year. By rejoining the Iran nuclear deal and immediately lifting such sanctions, the U.S. will not only generate goodwill among the Iranian people but also bolster support for future international investments in clean energy.

Second, the U.S. will need to engage and prompt Iran to ratify the Paris climate agreement. Iran is the seventh-largest carbon dioxide emitting country in the world and has to this day not ratified the agreement.

The Iranian government has shown interest in foreign investments and technology to increase clean energy production. This drove the reduction in tariffs in 2016 on renewable energy sources, which was then announced by Iran's Ministry of Energy. If the U.S. can convince Iran to join the

climate agreement and in return provide them the right set of economic incentives, the two countries could enter a new chapter of committed collaboration on an urgent common global problem: the joint fight against climate change. The U.S. would also start gaining back its diplomatic credibility among the international community. Third, the U.S. could rally for multilateral clean energy joint ventures and consortiums with Iran through strong participation from the public and private sectors.

Iran has the world's fourth-largest oil and the second-largest natural gas reserves. The majority of its economic wealth depends on the monetization of these two resources. Without offering them the right economic incentives, technology investments and modern infrastructure funding, the U.S. will not witness Iran agree to move away from its dominant wealth in fossil fuels. Nor will it see Iran shift from the current political power hedge hidden in its nuclear agenda to instead pursue compliance, cooperation and a green future.

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The new Biden administration and its allies can incentivize American and foreign investments into the production of clean energies in Iran. This can be achieved by co-creating plans and setting multi-year targets with Iran, overseen by a governing body and open to global institutional investors for financing.

Former President Trump's “maximum pressure” strategy relied on creating immense economic turmoil so that the Iranian government would eventually give in to U.S. requests, yet this did not happen. The U.S. and Iran have a new unique opportunity under Biden to move forward more effectively with an alternative green diplomacy strategy. They have a chance to rebuild a new foundation of trust and collaboration by prioritizing the shared threat of climate change as a focus of new engagements and by committing to co-invest in a cleaner and safer future for both Americans and Iranians.

Source: Yasaman Hadjibashi is a foreign policy advisor who served for Julián Castro and Joe Biden's 2020 presidential campaigns. Newsweek, <https://www.newsweek.com/us-should-shift-nuclear-issue-re-engage-iran-opinion-1564659>, 27 January 2021.

**OPINION – Brad Glosserman**

**There are Only Bad Options for Dealing with North Korea**

North Korea has a history of testing new U.S. administrations, and experts anticipated leader Kim Jong Un would see how soon-to-be U.S. President Joe Biden responded to a provocation sometime soon after he took office. Kim didn't wait for the inauguration, announcing that the United States remained his country's "biggest enemy" and that his government would not give up its nuclear arsenal. As provocations go, it wasn't much, but Biden better prepare for more. North Korea will not let the new administration make it a low priority. Kim will demand Biden's attention and force difficult choices on the administration about its North Korea policy.

In a speech to the Congress of the Korean Workers Party (KWP), Kim charged the United States was hostile to North Korea and insisted, "No matter who is in power in the United States, the true nature of the U.S. and its fundamental policies toward North Korea never change." That obliged the North "to tirelessly strengthen or national defense capabilities in order to deter military threats from the United States and achieve peace and prosperity on the Korean Peninsula." Kim said his country would develop long-range missiles that can be launched at land or sea, and "develop the nuclear weapons to be

lighter and smaller...while continuing producing tactical nuclear weapons and super-large nuclear warheads."

All these moves would be in the service of defense and diplomacy. Weapons were intended, he said, to "drive diplomacy in the right direction and guarantee its success." But, Kim added, North Korea would not "misuse" its nuclear weapons and his policy would match that of the Biden administration, "responding to force with force, and to good will with good will."

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Little of this is new. The context has been transformed, however. North Korea now has a substantial arsenal of nuclear weapons — 30-40 warheads is the consensus estimate with the ability to make 6 or 7 more each year — and the means to put them on targets, even a long distance away. Worse, the world is accustomed to this situation. In other words, the status quo is a nuclear-equipped North Korea; disarming it has become the activist policy.

At his 2018 Singapore summit with Donald Trump, Kim committed to "work toward denuclearization of the Korean Peninsula." Trump took that as a pledge to disarm; he was mistaken. Evans Revere, a former diplomat who has labored for years on this problem, is bluntly dismissive of that

position: "'Denuclearization of the Korean Peninsula' does not mean North Korea's denuclearization and never has."

Rather, explained Revere, Pyongyang wants "acceptance of its nuclear weapons program by the United States, and U.S. willingness to engage in 'arms control talks' that might halt or constrain some elements of the DPRK's nuclear weapons program." In statements and in private meetings, North Korean officials have made it clear that their interpretation of denuclearization includes the "end

of the U.S.-ROK alliance, the withdrawal of U.S. troops from Korea, the end of the U.S. nuclear umbrella over the ROK and Japan and the elimination of the 'nuclear threat' posed by the U.S. tactical and strategic arsenal" he added.

Twenty-seven years after Pyongyang was caught cheating, the world continues to struggle with the North Korean nuclear issue. I see four ways to frame the problem. The first is as a "disarmament" problem. Having violated its obligations under the NPT, Pyongyang must disarm itself of its nuclear weapons. This is the traditional approach, made real in policies like "complete, verifiable and irreversible dismantlement" (CVID) by the George W. Bush administration or the "final, fully verified denuclearization" that the Trump administration pursued.

The second approach is that of "arms control/ nonproliferation," a view that acknowledges that North Korea violated the NPT but concedes that getting the regime to give up those weapons is a fantasy. Therefore, the smart policy is to work with Pyongyang to ensure that it does not proliferate weapons, components or the knowhow to make them, to ensure that the arsenal is safe and secure, and to cap its program at the lowest possible level. This policy bows to reality, but it leaves a bitter taste.

The third approach argues that this situation isn't a problem and that proliferation isn't a bad thing. Some prominent political scientists assert that more nuclear weapons might help keep the peace. The logic of this argument encourages self-help (proliferation) by nonnuclear powers and to me suggests the end of alliances: Why would a nuclear power extend a deterrent to allies with their own nuclear capability? The fourth and final frame is that of "regime change." Like the nonproliferation approach, this argument accepts that the current Pyongyang government can't be persuaded to give up its nuclear weapons. But those advocates won't accept a nuclear North Korea; instead, they want action — overthrow of the regime.

Each argument has drawbacks. "Dismantlement" has been tried for decades and failed miserably, despite efforts ranging from maximum pressure to the embrace of the "Sunshine policy." "Arms control" accepts violation of the NPT, risks emboldening Pyongyang to discard other international obligations, defenestrates the governments and institutions that insisted the North honor its commitments and would likely encourage other governments to copy North Korea. "No problem" has many of those same problems. It would certainly be the death knell for U.S. credibility in Northeast Asia. In closed-door meetings, Japanese participants have warned that a U.S. policy shift that accepted North Korea's nuclear status would force policymakers in Tokyo to reconsider their commitment to nonnuclear status. And "regime change" threatens war with a nuclear adversary.

As the Biden administration contemplates those options, it must navigate three grim realities. First, North Korea will not give up its weapons. It believes it needs them for national security; to defend itself but also to ensure that Pyongyang commands international attention and can threaten instability to win over potential protectors (like Beijing or even Seoul). Moreover, it has sacrificed too much to acquire them, and they are the only thing that the North has that the South does not.

Second, absent a gross provocation that cannot be waved away, Pyongyang will enjoy Chinese and Russian support. Both see the country as a distraction for the United States and a means to test U.S. alliances in Northeast Asia. China doesn't want instability or a thriving capitalist democracy on its border. Beijing will ensure that Pyongyang survives and a buffer exists.

Third, North Korea's continued possession of nuclear weapons will create regional instability. The government has proven unable to feed its people and its economy is a basket case. Kim warned in his KWP speech that the country is struggling with "a series of the worst of worst

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unprecedented crises." A failing state with nuclear weapons is a crisis in the making. And it is likely to encourage other countries to proliferate.

nuclear arsenal imperils rather than protects his regime, the world must prepare for a permanent expansion of the nuclear weapons club.

Revere argues that the only policy with a chance of succeeding is one that changes the North Korean calculus, demonstrating "to the DPRK leadership that nuclear weapons will not only not preserve the regime, but will lead to its downfall." This demands a maximum pressure campaign that imposes "massive pressure and bone crushing isolation and pain on North Korea." It means sanctions on the economy, on third-country businesses and officials, freezing foreign assets and implementing a real quarantine. Militarily, there would be an expansion of joint exercises and the introduction of new tactical assets into the theater along with demonstrations of U.S. military power. Finally, there would be covert actions to destabilize the economy, doing to North Korean companies and institutions what its hackers do to the West. The goal, explained Revere, is to take "the North Korean economy to the brink and show Kim that his current path will only lead to the end of his regime. He is nothing if not rational. I believe he would make the right decision."

It's a scary proposal, one that risks war, or short of that, splitting the U.S. from its regional allies, especially South Korea, which prefers engagement. Japan too would be nervous, especially given the belief in Tokyo that the North's nuclear weapons target this country. There is no indication that the Biden administration has the stomach to lean that far forward, especially given other priorities. And if there is any doubt about the U.S. commitment to staying the course, Kim will try to wait it out. Uncomfortable as it makes me, the logic seems unassailable. If Kim cannot be convinced that a

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*Source: Brad Glosserman is deputy director of and visiting professor at the Center for Rule-Making Strategies at Tama University. The Japan Times, <https://www.japantimes.co.jp/opinion/2021/01/12/commentary/world-commentary/north-korea-nuclear-weapons/>, 12 January 2021.*

**OPINION – John D. Maurer**

**To Meet Nonproliferation Goals, Biden Must Commit to Nuclear Modernization**

Alongside the tumultuous presidential transition, the incoming Biden administration faces a deteriorating international situation. Great power rivals in China and Russia increasingly challenge American global leadership, while American allies feel abandoned in a dangerous world.

In response to these global challenges, the Biden administration will be tempted to slow or halt the modernization of the American nuclear arsenal. But slowing nuclear modernization would have disastrous consequences for Biden's national security goals of maintaining deterrence, rebuilding arms control, and halting nuclear proliferation. Delaying modernization will not save money, and over the longer term will cause serious harm to American national security.

Nuclear modernization is essential to Biden's goal of strengthening America to meet the "strategic challenges" posed by China and Russia. Given American conventional military superiority, many Americans see nuclear weapons as a relic of a bygone age, increasingly out of step

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with the gray-zone threats and cyberattacks of the 21st century.

Yet American rivals do not agree. China and Russia are quickly modernizing their nuclear arsenals, which they see as key to coercing American and allied leaders during crises. Resisting this coercion will require that American and allied leaders stand together, confident in the deterrent capability of the American nuclear arsenal. Robust deterrence requires robust nuclear modernization.

Nuclear modernization is also necessary for future arms control. Biden has announced his intention to extend the New START Treaty, whose limits on the size of the American and Russian nuclear arsenals provide useful breathing room for rebuilding American nuclear forces. Yet beyond New START, the future of great power arms limitation remains uncertain.

Building a new arms control regime with rivals like China and Russia will require a whole-of-government effort. But it will also require American nuclear modernization, without which adversaries will have no incentive to negotiate. Proposals to advance arms limitation by slowing American nuclear modernization are thus self-defeating; Chinese and Russian leaders will not take American proposals to limit their nuclear forces seriously if they can simply wait for the United States to disarm unilaterally. If Biden hopes to build on his New START extension, he will need the leverage that current modernization plans provide.

Finally, modernization aids nuclear nonproliferation, another of Biden's priorities. In addition to deterring attacks upon American soil, the United States also extends a "nuclear umbrella" over its allies. By reassuring allies of the American commitment to defend them – by nuclear force, if necessary – the United States removes a key rationale for partners to build their own nuclear weapons, thus keeping the number of nuclear-armed states low even as international tensions run high. This "strategy of nuclear inhibition" has proven remarkably successful, but

relies on the credibility of American reassurances against nuclear threats.

Slowing nuclear modernization erodes said credibility – conveying, instead, that the United States does not take adversary nuclear capabilities seriously, and will not maintain past commitments to extending nuclear deterrence. By failing to invest in its nuclear commitments, the United States would push allies to pursue their own independent capabilities against growing threats.

Slowing nuclear modernization is superficially tempting in an era of budget austerity and transnational challenges, but the Biden administration must resist that pull. Despite lurid

headlines of trillion-dollar bills, nuclear modernization is not a serious cost driver, so trimming a few programs will do little to balance the budget. On the other hand, delaying nuclear modernization would seriously undermine Biden's goals of deterrence,

arms control, and nonproliferation. To ensure American security, Biden should quickly signal his commitment to fully modernizing the American nuclear triad.

*Source: John D. Maurer is a professor at the School of Advanced Air and Space Studies at Air University. Defence News, <https://www.defensenews.com/opinion/2021/01/22/to-meet-nonproliferation-goals-biden-must-commit-to-nuclear-modernization/>, 23 January 2021.*

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**NUCLEAR STRATEGY**

**RUSSIA**

**Vladimir Putin Signs Bill to Extend Nuclear Treaty with US**

Russian President Vladimir Putin on 29 January signed a bill into law ratifying a five-year extension of the New START with the US, one of the last major arms reduction treaties signed since the end of the Cold War. The validity period of the New START will be extended by five years to February 5, 2026, Xinhua news agency quoted the Kremlin as saying in a statement issued on 29 January.

On 26 January, Moscow and Washington exchanged notes on extending the key arms control pact. Presidents Vladimir Putin of Russia and Joe Biden of the US welcomed the move in a telephone call. The same day, Putin submitted a bill on the extension in the State Duma (the lower house of parliament). On 27 January, the Russian Parliament approved it.

The extension of the treaty meets Russia's national interests, makes it possible to preserve the transparency and predictability of Moscow-Washington strategic relations, helps to maintain strategic stability in the world, positively affects the international situation, and contributes to the nuclear disarmament process, the Kremlin said.

In response to the development, a US State Department representative told Russia's TASS News Agency said: "There are still steps that should be finalized. But we are optimistic that the extension, which obviously meets our national security interests, will be finalized before expiration on February 5." ...

Source: [https://www.business-standard.com/article/international/russia-vladimir-putin-signs-bill-to-extend-nuclear-treaty-with-us-121013000355\\_1.html](https://www.business-standard.com/article/international/russia-vladimir-putin-signs-bill-to-extend-nuclear-treaty-with-us-121013000355_1.html), 30 January 2021.

## **RUSSIA-USA**

### **Russia, US Exchange Documents to Extend Nuclear Pact**

Russia and the United States exchanged documents to extend the New START nuclear treaty, their last remaining arms control pact, the Kremlin said. The Kremlin readout of a phone call between US President Joe Biden and Russian President Vladimir Putin said they voiced satisfaction with the move. "In the nearest days,

the parties will complete the necessary procedures that will ensure further functioning" of the pact, the Kremlin said. Lawmakers in the Kremlin-controlled parliament said it would complete the necessary moves to extend the pact. Biden proposed a five-year extension of New START, which is set to expire on Feb. 5, and the Kremlin quickly welcomed the offer.

The treaty, signed in 2010 by President Barack Obama and Russian President Dmitry Medvedev, limits each country to no more than 1,550 deployed nuclear warheads and 700 deployed missiles and bombers, and envisages sweeping on-site inspections to verify compliance. Biden indicated during the campaign that he favoured the preservation of the New START treaty, which was negotiated during his tenure as US vice president.

Russia has long proposed to prolong the pact without any conditions or changes, but the Trump administration waited until last year to start talks and made the extension contingent on a set of demands. The talks stalled, and months of bargaining have failed to narrow differences. The negotiations were also marred by tensions between Russia and the United States, which have been fuelled by the Ukrainian crisis, Moscow's meddling in the 2016 US presidential election and other irritants. After both Moscow and Washington withdrew from the 1987 Intermediate-Range Nuclear Forces Treaty in 2019, New START is the only remaining nuclear arms control deal between the two countries.

Earlier this month, Russia also announced that it would follow the US to pull out of the Open Skies Treaty, which allowed surveillance flights over military facilities to help build trust and transparency between Russia and the West. While Russia always offered to extend New

**The extension of the treaty meets Russia's national interests, makes it possible to preserve the transparency and predictability of Moscow-Washington strategic relations, helps to maintain strategic stability in the world, positively affects the international situation, and contributes to the nuclear disarmament process.**

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START for five years — a possibility that was envisaged by the pact at the time it was signed — Trump charged that it put the US at a disadvantage and initially insisted that China be added to the treaty, an idea that Beijing bluntly dismissed. Trump's administration then proposed to extend New START for just one year and also sought to expand it to include limits on battlefield nuclear weapons.

*Source: Business Standard, [https://www.business-standard.com/article/international/russia-us-exchange-documents-to-extend-nuclear-pact-says-report-121012700060\\_1.html](https://www.business-standard.com/article/international/russia-us-exchange-documents-to-extend-nuclear-pact-says-report-121012700060_1.html), 27 January 2021.*

## **PAKISTAN**

### **Not Bound by Treaty for Prohibition of Nuclear Weapons, Says Pakistan**

Pakistan on 29 Jan said that it does not consider itself bound by any of the obligations enshrined in the Treaty on Prohibition of Nuclear Weapons (TPNW). This comes as the nuclear weapons ban treaty had taken effect last 29 January amid the lack of signatures from the major nuclear powers, Dawn reported. According to the United Nations, this treaty seeks a legally binding instrument to prohibit nuclear weapons, which includes a set of prohibitions on participating in any nuclear weapon activities.

Pakistani Foreign Office Spokesperson Zahid Hafeez Chaudhri on 29 January stated that this treaty neither forms a part of nor contributes to the development of customary international law in any manner. ...The Pakistani spokesperson argued that the Treaty...which was adopted in July 2017, was negotiated outside the established UN disarmament negotiating forums. None of the nuclear-armed states took part in the negotiations of the treaty which failed to take on board the legitimate interests of all stakeholders, Radio Pakistan reported. Zahid Chaudhri further claimed that many non-nuclear armed states have also

refrained from becoming parties to the treaty, adding that it is indispensable for any initiative on nuclear disarmament to take into account the vital security considerations of each and every state. ...

*Source: [https://www.business-standard.com/article/current-affairs/not-bound-by-treaty-for-prohibition-of-nuclear-weapons-says-pakistan-121013000105\\_1.html](https://www.business-standard.com/article/current-affairs/not-bound-by-treaty-for-prohibition-of-nuclear-weapons-says-pakistan-121013000105_1.html), 30 January 2021.*

## **SOUTH KOREA**

### **S. Korea Proposes Plans for Nuclear Submarine, Backpedals after Stirring Up Controversy**

South Korean government agencies have suggested using nuclear technology in future submarines, the latest in several references to this fraught subject. The idea came up in a list of conceptual weapon systems proposed by the Defense Acquisition Program Administration (DAPA) and the Agency for Defense Development (ADD). One of the items on the list was a nuclear-powered unmanned nuclear depot ship. When the idea stirred up controversy, the ADD backpedaled by releasing a statement asserting that the conceptual submarine's source of propulsion hasn't been determined.

**The almanac described this as a "submarine depot ship that can operate without personnel through the use of a next-generation nuclear system that runs on low-enriched uranium and a next-generation concept of intrinsically safe nuclear power.**

On the morning of Jan. 20, the ADD posted on its website an almanac of defense systems proposed in a defense project that seeks to develop technology to meet future challenges. The 14th conceptual weapon system in the almanac, which was jointly published by DAPA, was a nuclear-powered submarine depot ship. The almanac described this as a "submarine depot ship that can operate without personnel through the use of a next-generation nuclear system that runs on low-enriched uranium and a next-generation concept of intrinsically safe nuclear power."

The almanac summarized the proposed ship's operations as follows. "This would be deployed on reconnaissance and search and rescue

operations, as well as on antisubmarine and mine-laying operations. In an emergency, its missions would be to launch torpedoes and lay mines capable of quickly striking enemy submarines and surface ships and to carry out surveillance and reconnaissance in specific areas and identify danger signals."

Despite being unmanned, this ship would apparently be equipped to carry out all the missions of the manned submarines currently operated by the South Korean Navy. "In times of peace, drones would be deployed to operate a reconnaissance system capable of surface, underwater, and aerial surveillance," the almanac also said, explaining that, as a depot ship, the vessel could carry around reconnaissance drones for deployment in the air, on the surface and underwater when necessary. The almanac's mention of a nuclear-powered unmanned submarine depot ship was notable since it followed suggestive comments about nuclear submarines made by both South and North Korea.

In his project report for the 8th Congress of the Workers' Party of Korea (WPK), North Korean leader Kim Jong-un officially acknowledged that the North is developing a submarine capable of launching nuclear weapons. Kim said that research on the submarine design was complete and that the design had now entered the final review stage. South Korean officials have hinted that they intend to develop a nuclear-powered submarine. "The next-generation submarine will be equipped with an engine that uses nuclear fuel," said Kim Hyun-chong, second deputy director of the National Security Office, in an interview in July 2020.

In a press release about the almanac's publication, ADD President Nam Se-gyu said that the almanac would "provide the guidance needed for developing high-tech weapon systems of the future that would apply the technologies covered

in this project." "We hope the almanac will help us imagine innovative changes in the battlegrounds of the future," Nam said. The information published in the almanac suggests that the government is inching closer to developing nuclear-powered submarines.

But when critics drew a connection between the almanac and that possibility, the ADD released a statement on the afternoon of Jan. 20 explaining that the reference to a "nuclear-powered submarine depot ship" had actually been a mistake for a "multipurpose unmanned submersible." "The almanac that was initially posted was an interim draft rather than the final approved version, leading to this misunderstanding. Nuclear power is one of the options for the propulsion of the multipurpose unmanned submersible, but no decision has been made yet" an ADD spokesperson said.

**The almanac that was initially posted was an interim draft rather than the final approved version, leading to this misunderstanding. Nuclear power is one of the options for the propulsion of the multipurpose unmanned submersible, but no decision has been made yet.**

The almanac also introduces 17 technological objectives, including designing and producing a cluster of synthetic-aperture radar (SAR) microsatellites and acquiring operational capabilities. The technological objectives were identified by the "future challenges" defense project, launched in 2018. The almanac goes on to describe how those technologies could be applied to 21 conceptual weapon systems, including a comprehensive surveillance and reconnaissance system and an AI-based multifunction radar.

*Source: Hankyoreh, [http://english.hani.co.kr/arti/english\\_edition/e\\_national/979849.html?](http://english.hani.co.kr/arti/english_edition/e_national/979849.html?), 21 January 2021.*

### BALLISTIC MISSILE DEFENCE

#### INDIA

##### **New Centre at Kalam Missile Complex**

Vice President M. Venkaiah Naidu inaugurated the Integrated Weapon System Design Centre at the

DRDO's Dr APJ Abdul Kalam Missile Complex here in the presence of DRDO chairman and secretary of defence research and development G. Satheesh Reddy on 25 January. The facility is to enhance the capability in design and development of command and control systems for SAM systems and BMD systems. It is also expected to give a thrust to the overall system design and evaluation methodology for state-of-the-art missile systems and will help in improving the performance of missiles. This will play a major role in the realisation of highly complex futuristic and aerospace and defence systems, said a press release.

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Addressing the DRDO fraternity, Mr. Naidu complimented scientists for their hard work and dedication even during the lockdown and stated that efforts of DRDO have led to the phenomenal technological advancements in the form of a series of successful missions of modern advanced weapons systems including various missiles. The effort should be to become a top exporter in the field of missiles.

DRDO is an 'epitome and torchbearer' of scientific social responsibility and a place of eternal learning and its role during the pandemic has set an example for others to emulate, he said and pointed out that the development of a range of indigenous defence systems by DRDO has given confidence to the government for banning import of 101 items.

The V-P praised the scientists for maintaining the legacy of Dr Abdul Kalam and said the former president wanted India to become a superpower and mentioned that the scientists have the calibre to make the 'Atmanirbhar Bharat' vision successful. It is also important to hold hands of young techno-preneurs, industries, academia, guide them and

move together to build a strong and technologically superior country, Mr Naidu said. A new missile technology exposition and seminar hall was also opened to display missile technologies and weapon systems. Director General of Missiles and Strategic Systems M.S.R. Prasad was present on the occasion.

*Source: The Hindu, <https://www.thehindu.com/news/cities/Hyderabad/new-centre-at-kalam-missile-complex/article33662426.ece>, 25 January 2021.*

### **India Sticking to S-400 Deal with Russia Despite Threat of Possible US Sanctions**

India is sticking to its guns on the \$5.4-billion deal with Russia for S-400 air defence systems despite reports of possible US sanctions, an issue with the potential for becoming an early irritant with the new Biden administration. India's decision to acquire the S-400, instead of other air defence systems offered by the West, was based on a thorough evaluation and national security requirements, including already delayed plans to create a ballistic missile defence shield over key cities, people familiar with developments said on condition of anonymity.

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The lingering standoff with China in Ladakh has seen India deploy a raft of weapons and systems in the sector, including hardware bought from the US, Russia and France, to strengthen its military deployments. "India's strategic interests are supreme and it is for us to decide what weapons we buy and from whom to pursue those interests. If the US has concerns about procurements from Russia, the latter is also upset over military equipment we are importing

from the US," a senior government official said on condition of anonymity. "We buy platforms factoring in the security threats we face," the official said, adding the US and Russia understand India's complex security challenges.

A second official, who too declined to be named, acknowledged India is walking a fine line in defence cooperation with Russia and the US, which are both strategic partners.

"But the more important point is the country's independent foreign policy and strategic autonomy to decide defence purchases in line with national security interests," the second official said. Though India has been procuring US military hardware in growing numbers, including Apache and Chinook helicopters and P-8I maritime surveillance aircraft, about 60% of the inventory of the three services continues to be of Russian-origin. Russia is set to train the first group of Indian military specialists in operating the S-400 and the first batteries are expected by September. ...

*Source: Rezaul H Laskar, Rahul Singh, Hindustan Times, <https://www.hindustantimes.com/india-news/india-sticking-to-s-400-deal-with-russia-despite-threat-of-possible-us-sanctions-101611754305999.html>, 27 January 2021.*

## **ISRAEL**

### **Israel Allows US to Deploy Iron Dome Missile Defence System in the Gulf**

The United States is expected to soon begin deploying the Israeli-manufactured Iron Dome missile defence system in its bases in the Gulf States, according to an Israeli newspaper. Three weeks ago, Israel handed over a second Iron Dome battery developed by the country's Rafael Advanced Defence Systems to the US Defense Department as part of an agreement for two Iron

Dome batteries signed between the US and Israel in August 2019, Haaretz reported.

The report comes against the backdrop of recent normalisation accords between Israel and the United Arab Emirates and Bahrain, and two large US arms deals, one with the UAE and the other with Saudi Arabia. "I am certain that the system will help the US army defend American soldiers against

ballistic and aerial threats," said Israeli Defence Minister Benny Gantz at the time of ceremony for delivering the second battery. Haaretz said Israeli officials were refusing to reveal in which countries the Iron Dome system would be deployed but that behind closed doors Israel gave its tacit agreement to the US to place the batteries in order to defend its forces from attacks by Iran and its proxies.

In September 2018, a Saudi newspaper reported that Riyadh had signed an agreement to purchase an Iron Dome battery from

Israel with the US acting as a mediator. The Israeli defence ministry quickly denied any deal had been signed but did not deny that the Saudis had asked to purchase the system.

After an attack on oil refineries and facilities of national oil company Aramco in Saudi Arabia in September 2019, the Saudis and other countries again raised their requests to buy the missile system to defend against an Iranian threat, defence officials told Haaretz. The newspaper said Israeli officials denied that providing Iron Dome systems was part of the recent normalisation agreements because the purchase of the Iron Dome batteries by the US was signed in 2019, well before the accords.

*Source: Middle East Eye, <https://www.middleeasteye.net/news/israel-gulf-us-iron-dome-missile-defence-system>, 24 January 2021.*

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**NUCLEAR ENERGY**

**CHINA**

**China's first Hualong One Nuclear Reactor Begins Operations**

China National Nuclear Corp. said its first nuclear power unit that uses Hualong One, a third-generation nuclear reactor, started commercial operations on 30 January. The reactor, located in the city of Fuqing city in China's southeastern Fujian province, was designed to have a 60-year lifespan, with its core equipment domestically produced. Each unit of the Hualong No. 1 has a capacity of 1.161 million kilowatts and can meet the annual domestic electricity demand of 1 million people in moderately developed countries, according to China National Nuclear Corp, or CNNC.

"With Hualong One online, China is now at the forefront of third generation nuclear technology in the world, alongside countries like the United States, France and Russia," said CNNC President Yu Jianfeng. Yu said the commercial use of Hualong One will also reduce carbon emissions and help achieve China's low-carbon goals such as carbon neutrality before 2060. A second Hualong One unit is due to be completed later this year.

Source: <https://timesofindia.indiatimes.com/world/china/chinas-first-hualong-one-nuclear-reactor-begins-operations/articleshow/80600342.cms>, 30 January 2021.

**GENERAL**

**International Energy Agency Call for "Decisive Action"**

The head of the IEA has called for decisive action over the next decade to achieve world energy

transformation of "unprecedented speed and scale". This would mean, by 2030: increasing electric cars' share of annual sales from 3% to over 50%; expanding the production of low-carbon hydrogen from 450,000 tonnes to 40 million tonnes; and boosting investment in clean electricity four-fold from \$380 billion to \$1.6 trillion.

Following this, the head of the World Nuclear Association at an Atlantic Council meeting has pointed out that based on

a recent IEA report, "Nuclear energy is currently the most cost-effective way to provide low-carbon dispatchable electricity, that is 24/7 electricity." It can be deployed on large or small scale. Furthermore, nuclear energy is the only energy source able to provide low-carbon heat directly through heat production or indirectly through

provision of clean hydrogen.

Source: World Nuclear News, <https://mailchi.mp/world-nuclear-news/weekly-digest-22-january-2021?e=66ff4977f4>, 20 January 2021.

**INDIA**

**India Debuts Largest Domestically-Built**

**Nuclear Reactor with More Planned**

India's success in connecting its largest domestically-built nuclear reactor to the grid is a boost for plans to deploy the technology to help the world's third-biggest polluter limit emissions, according to the official overseeing the plans. The 700-megawatt pressurized heavy water reactor of the Kakrapar Atomic Power Station in Gujarat is the first of 16 planned units that will help balance the grid against growing intermittent renewable generation, according to K.N. Vyas, India's atomic energy secretary.

"Renewables are less capital intensive and can be implemented much more quickly. Yet, they need to be balanced with more stable power," Vyas said

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**Nuclear energy is currently the most cost-effective way to provide low-carbon dispatchable electricity, that is 24/7 electricity." It can be deployed on large or small scale. Furthermore, nuclear energy is the only energy source able to provide low-carbon heat directly through heat production or indirectly through provision of clean hydrogen.**

in a phone interview. "Nuclear provides clean base load power and that makes it an important element of our climate strategy." India is counting on its nuclear program to help meet its Paris climate commitments to reduce the emissions intensity of its economy by a third from 2005 levels by 2030. So far, domestic built reactors have avoided cost-run-ups that have hit projects planned with overseas technologies, said Debasish Mishra, a Mumbai-based partner at Deloitte Touche Tohmatsu.

NPCIL, which connected the reactor to the grid, expects to start five more units through March 2027, and is placing orders for another ten to be commissioned by 2031. The combined cost of the fleet is estimated at about 1.5 trillion rupees (\$20.4 billion), according to the state monopoly.

India considers nuclear power a "safe, environmentally benign and economically viable source" of energy, it said in its Intended Nationally Determined Contributions at the Paris climate summit in 2015. The nation strives to achieve 63 gigawatts of nuclear power capacity by 2032 if there is enough fuel to run the plants, according to the document. The South Asian nation has 6.8 gigawatts of existing nuclear generation capacity, which accounts for roughly 2 per cent of the nation's total capacity. Coal-fired generation makes up about 53 per cent of India's installed base, although its share has been declining in favor of cleaner generation and renewable power.

Source: *Bloomberg*, <https://energy.economictimes.indiatimes.com/news/power/india-debuts-largest-domestically-built-nuclear-reactor-with-more-planned/80345133>, 19 January 2021.

### **Sustainable Progress in Nuclear Energy**

The recent grid synchronisation of the third unit at Kakrapar Atomic Power Project (KAPP), near

Surat in Gujarat, is notable indeed. The 700 MW unit is now our largest-capacity nuclear reactor, and the first of at least 16 units planned to balance the grid as we duly rev up green renewable power generation, intermittent and variable in nature.

... Note that KAPP has two smaller PHWRs, each of 220 MW capacity. Domestic resource endowments — rather small uranium reserves and bountiful availability of nuclear-fertile material thorium — have prompted India to adopt its well-known three-stage nuclear programme.

The stated target is to achieve 63 GW of nuclear power capacity by 2032; uranium imports are no longer a constraint, thanks to the Indo-US civil nuclear agreement, agreed upon in circa 2005 and concluded in 2008. The ongoing development of a chain of nuclear reactors here appears to have avoided costly time and cost overruns, reportedly due to modular design, standardisation and proven buildup of expertise over the years.

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The country embarked on its second-stage nuclear programme with the successful operation of a research reactor labelled FBTR. Fastbreeder reactors produce more fissile material than they consume. And the 500-MW PFBR is slated to be commissioned later this year. The advanced reactors would enable conversion of thorium into fissile uranium in the third stage.

Source: <https://economictimes.indiatimes.com/blogs/et-editorials/sustainable-progress-in-nuclear-energy/>, 30 January 2021.

### **USA**

#### **US Move to Small Reactors for Military**

The US Administration prior to inauguration of the new president issued an Executive Order on Promoting Small Modular Reactors for National Defense and Space Exploration, which it says will

further revitalise the US nuclear energy sector and reinvigorate its space exploration program. The Order includes directives to demonstrate the use of civil-licensed microreactors on military bases and also to ensure a viable US-origin supply of high-assay low-enriched uranium (HALEU). Microreactors - less than 10 MWe - have the potential to enhance energy flexibility and energy security at military installations in remote locations.

In the 1960s the US Army built eight nuclear reactors, five of them portable or mobile. A 2018 report from the Army analysed the potential benefits and challenges of mobile nuclear power plants with very small modular reactor technology. The purpose is to reduce

supply vulnerabilities and operating costs while providing a sustainable option for reducing petroleum demand and consequent supply challenges. The reactors would be portable by truck or large aircraft and if abroad, returned to the USA for refuelling after several years. The Department of Defense has since solicited proposals and has awarded contracts to three developers: Westinghouse, X-energy and BWX Technologies.

Source: *World Nuclear News*, <https://mailchi.mp/world-nuclear-news/weekly-digest-22-january-2021?e=66ff4977f4>, 13 January 2021.

### URANIUM PRODUCTION

#### GENERAL

#### **Global Atomic Renews Six Uranium Exploration Permits in Niger**

Canadian resource company Global Atomic has received three-year permit extensions for each of the six uranium exploration properties in Niger. Covering a total area of 729.8km<sup>2</sup>, the exploration permits include Adrar Emoies 3 (AE3), Adrar Emoies 4 (AE4), and Tin Negouran 1, 2, 3, and 4.

According to the company, there is significant

potential within the AE3 exploration permit to extend the known resources of the high-grade Dasa deposit. A further potential was identified along strike of the Isakanan prospect on the adjacent AE4 exploration permit. Global Atomic plans to drill and test in-situ recovery (ISR) potential of the formation, which was defined following Isakanan prospect drilling.

In order to determine the potential for open pit mining at the Tin Negoran exploration permits, the company plans to further test areas of the extensive outcropping and near-surface mineralization. The company's all six uranium exploration permit areas are located within the Tim Mersoi Basin, which produced uranium for the last 50 years. Concurrently, Global Atomic

has received an environmental compliance certificate from the Government of the Republic of Niger for the Dasa Uranium Project.

Source: <https://www.mining-technology.com/news/global-atomic-renews-six-uranium-exploration-permits-in-niger/>, 29 January 2021.

### NUCLEAR COOPERATION

#### CANADA-EUROPE

#### **Canadian and European Nuclear Industries Agree to Partnership**

The MoU, which was signed by CNA President and CEO John Gorman and Foratom Director General Yves Desbazeille, addresses the need for greater dialogue and exploration of nuclear's role in effective environmental stewardship, the organisations said. This includes advocating for more explicit and prominent inclusion of nuclear power in energy and environmental policies, including sustainable finance; support for innovation in nuclear energy, specifically the development and deployment of SMRs and advanced reactors; and implementing initiatives where the two organisations could work together to promote nuclear as a clean source of energy to

meet climate change goals, reduce emissions and improve quality of life.

... The climate challenge is a global one, Desbazeille said. "This is why it is important that all regions of the world work together to find solutions. Together, we will be able to send a coordinated message to our policymakers with the goal of demonstrating the important role which different nuclear technologies can play."

Deputy Director-General DG Energy in the European Commission Massimo Garribba said the MoU confirmed the "willingness" of CNA and Foratom to help industry collaboration on the safe use of nuclear energy, in particular in the context of decarbonisation priorities, "an issue which the EU is very much committed to". "We need nuclear to reach net-zero by 2050," Canada's Minister of Natural Resources Seamus O'Regan said. "We are working with our international counterparts to safely expand nuclear technologies, such as SMRs, and meet our climate change goals." ...

Source: <https://www.world-nuclear-news.org/Articles/Canadian-and-European-nuclear-industries-agree-par>, 28 January 2021.

## **JAPAN-UK**

### **Japan, UK Team Up for Nuclear Robotics and Automation Research**

The four-year, GBP12 million (USD16 million) UK-Japanese robotics project - referred to as LongOps - will support delivery of faster and safer decommissioning at Tepco's damaged reactors at the Fukushima Daiichi plant in Japan and at the Sellafield complex in the UK, using long-reach robotic arms.

The collaboration will be funded equally by UK Research and Innovation (UKRI), the UK's Nuclear Decommissioning Authority (NDA) and Japan's Tepco. The UK Atomic Energy Agency's Remote Applications in Challenging Environments (RACE) facility will lead the project, design strategy and

deliver new robotic capabilities with global potential. Direct benefits, such as employment opportunities, advances to "fusion-adjacent" technologies, upskilling of the UK and Japanese scientific and engineering capabilities are all expected.

A feature of the LongOps programme will be the deployment of sophisticated "digital twin" technology - virtual models where the pairing of the virtual and physical worlds allows for highly detailed analysis of data, and the forecasting of potential maintenance and operational issues.

The software created will allow RACE to show how such machines are controlled in real-time during remote operations.

Developments from LongOps will also be applied to the upgrading, maintenance and dismantling of fusion devices, such as the Joint European Torus, once their operations have ended.

"Robotics offers us new ways to tackle our complex work safely, securely and cost-effectively," said Adrian Simper, group strategy and technology director at the NDA. "This unique international collaboration allows us to pool expertise and experience from Japan, working together and investing in cutting edge ways to find solutions to our shared problems and benefit our clean-up mission." ...

Source: *World Nuclear News*, <https://world-nuclear-news.org/Articles/Japan-UK-team-up-for-nuclear-robotics-and-automati>, 20 January 2021.

## **NUCLEAR SECURITY**

### **GENERAL**

#### **U.N. Treaty Banning Nuclear Weapons Takes Effect, without the U.S. and Other Powers**

A U.N. treaty outlawing nuclear weapons went into effect on 22 January, having been ratified by at least 50 countries. But the ban is largely symbolic: The U.S. and the world's other nuclear powers have not signed the treaty. "For the first time in history, nuclear weapons are going to be illegal in

international law," Elayne Whyte, Costa Rica's former U.N. ambassador who oversaw the treaty's creation, tells NPR's Geoff Brumfiel.

The ban prohibits countries from producing, testing, acquiring, possessing or stockpiling nuclear weapons. It also outlaws the transfer of the weapons and forbids signatories from allowing any nuclear explosive device to be stationed, installed or deployed in their territory. The Treaty on the Prohibition of Nuclear Weapons was adopted in the summer of 2017, in hopes of bringing new momentum to the push to curb the deadliest armament in the world. But even then, it was seen more as a moral statement than an enforceable ban.

The treaty is a 96-page reminder to nuclear weapons states, Whyte said, that "they need to be moving forward" with disarmament. "How did the international community deal with slavery, colonialism? Once you delegitimize that conduct, it completely has an impact on the policymaking process," she said.

The problem with the ban, global security analysts say, is that while dozens of countries say an outright prohibition is the best way to move ahead with disarmament, others — particularly those who possess nuclear weapons — disagree. The new treaty has also been seen as potentially undercutting the Nuclear Non-Proliferation Treaty that took effect in 1970. But its backers argue that nonproliferation has stagnated, decades after the U.S. and others agreed to that treaty.

"Supporters of the ban treaty say it serves to delegitimize nuclear weapons and reinforce global norms against use," the Nuclear Threat Initiative's Isabelle Williams wrote in 2017. She added later, "the new treaty is clear evidence of the worrying polarization of states — polarization driven, in part, by a perceived complacency among the nuclear-armed states and unwillingness to

take serious steps to reduce the risks posed by nuclear weapons."

The treaty currently has 86 signatories. It has been ratified in 51 of those member states. Early signatories included the Holy See, New Zealand, Thailand and Austria. In the past year, countries such as Belize, Benin and Ireland have ratified or approved the treaty. Nations that signed the treaty cite "the catastrophic humanitarian consequences that would result from any use of nuclear weapons,"

including by accident or miscalculation, saying those effects would transcend international borders.

Detonating a nuclear weapon, the signatories say, would "pose grave implications for human survival, the environment, socioeconomic development, the global economy, food security and the health of current and future generations, and have a disproportionate impact on women and girls, including as a result of ionizing radiation." The treaty sets the goal of achieving a nuclear-weapon-free world, saying it would serve "both national and collective security interests." Any use of nuclear weapons, it adds, "would be contrary to the rules of international law" for armed conflict.

*Source: Bill Chappell, National Public Radio, <https://www.npr.org/2021/01/22/959583731/u-n-treaty-banning-nuclear-weapons-takes-effect-without-the-u-s-and-others>, 22 January 2021.*

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## **NUCLEAR PROLIFERATION**

### **GENERAL**

#### **New Tools are Proposed to Prevent Nuclear Proliferation**

Little by little, a nation or a subnational or terrorist group aspiring to build a nuclear weapon will acquire necessary technologies, materials, and

precision equipment that by themselves may be innocuous. Those items include maraging steels, used to fabricate gas centrifuges for enriching uranium, and CNC (computer numerical control) milling machines that can shape weapons components within tight tolerances.

In concert with most of the world's nuclear powers, the US restricts and closely monitors exports of such dual-use items, so-called because they have legitimate non-weapons purposes. The Department of Commerce (DOC) maintains a list of more than 1000 "entities"—companies, government agencies, and individuals that are suspected proliferators—to which exports of countless items included in a 77-page single-spaced index are barred. Some 330 Russian and 260 Chinese entities are included. Iran is well represented on the list, as are Pakistan, Turkey, Malaysia, and many other nations. A surprising number of entities are located in Canada.

Nongovernmental organizations that are active in nonproliferation, such as the James Martin Center for Nonproliferation Studies, the CSIS, 38 North, and Kings College London's Project Alpha, have become adept at using satellite imagery to expose suspicious activities. But vast quantities of other public data could be exploited, including shipping manifests, corporate registry filings, procurement tenders, and vessel or aircraft position data.

In a new report, researchers from the NTI and the Center for Advanced Defense Studies (C4ADS) describe how they used machine learning and other data-analysis tools to sift through more than 4 million transactions in publicly available trade

records. They ultimately uncovered 10 new entities that were added to the DOC list. The researchers say that using multiple data sources helped to fill gaps in individual sources or corroborate details from third-party data sets, which may vary in their scope, completeness, or reliability.

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The report "identifies certain limited cases where machine learning proves useful in processing massive quantities of publicly available trade data to identify signals of potentially illicit activities," says Edwin Lyman, director of nuclear power safety at the Union of Concerned Scientists, who did not contribute to the report.

Six of the newly listed entities were detected during a 2019 C4ADS exercise that scoured trade records to map Pakistan's nuclear procurement infrastructure. The nonprofit began with the 55 known entities in Pakistan that the DOC and the Japanese Ministry of Economy, Trade, and Industry had identified as procuring on behalf of Pakistan's nuclear program. Using publicly available trade data such as bills of lading, C4ADS identified all overseas companies from which the known Pakistani entities were procuring goods. Then C4ADS identified all the previously unknown companies in Pakistan that had procured materials from the same overseas suppliers. Analysts used a variety of social-network analyses and investigative techniques to assess each company's risk.

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... In a separate exercise, NTI and C4ADS used an autoencoder, a type of deep-learning model often used to detect credit card fraud. Engineers trained the model to detect proliferation as an anomaly using records of all shipments excluding those from companies with known associations to a country's weapons of mass destruction program.

Then, when the model analyzed shipments by entities that weren't known to be of concern, it flagged possible dual-use items as anomalies. Further screening of the flagged shipments by subject-matter experts led to the addition of four entities to the DOC list.

... The report recommends that leaders of nuclear nonproliferation efforts around the world integrate publicly available information more deeply into their existing monitoring and verification regimes, use machine learning and other analytical approaches to plumb big data, and allow analysts to access shared data internationally.

*Source: David Kramer, <https://physicstoday.scitation.org/doi/10.1063/PT.6.2.20210129a/full/>, 29 January 2021.*

## **IRAN**

### **Iran Rejects New Talks or Parties in Nuclear Deal**

Iran's foreign ministry has rejected any new negotiations or changes to the participants of Tehran's nuclear deal with world powers, after French President Emmanuel Macron said any new talks should include Saudi Arabia. "The nuclear accord is a multilateral international agreement ratified by UN Security Council Resolution 2231, which is non-negotiable and parties to it are clear and unchangeable," Iranian Foreign Ministry spokesman Saeed Khatibzadeh was quoted by state media as saying on 30 January.

Iran began breaching the deal's limits on uranium enrichment activity after Washington withdrew from the pact in 2018 under then-President Donald Trump and reimposed economic sanctions on Tehran. President Joe Biden's new administration has said it will rejoin the deal but only after Tehran resumes full compliance with its terms. But Iran has rejected US demands to reverse its

acceleration of the nuclear programme before Washington lifts sanctions on Tehran.

Saudi Arabia and its ally the UAE have said that Gulf Arab states should be involved this time in any talks, which they say should also address

**Iran's foreign ministry has rejected any new negotiations or changes to the participants of Tehran's nuclear deal with world powers, after French President Emmanuel Macron said any new talks should include Saudi Arabia.**

Iran's ballistic missile programme and its support for proxies around the Middle East. Saudi Arabia, which is locked in several proxy wars in the region with Tehran including in Yemen, supported Trump's "maximum pressure"

campaign against Iran.

**Response to Macron:** In his comments on 29 January, cited by Al Arabiya television, Macron stressed the need to avoid what he called the mistake of excluding other countries in the region when the 2015 deal was negotiated and should include Saudi Arabia. Macron said any new talks on the nuclear deal with Iran would be very "strict" and that a very short time remained to prevent Tehran from having a nuclear weapon.

Earlier this month, Iran resumed enriching uranium to 20 percent at its underground Fordow nuclear plant – a level it achieved before the accord. Iran's parliament, dominated by hardliners, passed legislation last month that forces the government to harden its nuclear stance if US sanctions are not eased within two months.

**The IAEA said Iran had informed it that it had begun installing equipment for the production of uranium metal. It said Tehran maintains its plans to conduct research and development on uranium metal production are part of its "declared aim to design an improved type of fuel."**

*Source: <https://www.aljazeera.com/news/2021/1/30/iran-rejects-new-talks-or-parties-in-nuclear-deal>, 30 January 2021.*

### **Europe Grows Wary over Iran's Uranium Production**

Germany, France and Britain pressed Iran on 16 January to back off the latest planned violation of its 2015 nuclear deal with world powers, saying that Tehran has "no credible civilian use" for uranium metal. The IAEA said Iran had informed it that it had begun installing equipment for the

production of uranium metal. It said Tehran maintains its plans to conduct research and development on uranium metal production are part of its "declared aim to design an improved type of fuel." Uranium metal can also be used for a nuclear bomb, however, and research on its production is specifically prohibited under the nuclear deal - the so-called Joint Comprehensive Plan of Action - that Tehran signed with Germany, France, Britain, China, Russia and the United States in 2015.

**Iran has no credible civilian use for uranium metal," it said. "The production of uranium metal has potentially grave military implications." "We strongly urge Iran to halt this activity, and return to compliance with its JCPOA commitments without further delay if it is serious about preserving the deal.**

Since the unilateral American withdrawal from the deal in 2018, the other members have been working to preserve the accord. Iran has been using violations of the deal to put pressure on the other signatories to provide more incentives to Iran to offset crippling American sanctions reimposed after the US pullout.

A joint statement from the German, French and British foreign ministries said they are "deeply concerned" by the latest Iranian announcement. "Iran has no credible civilian use for uranium metal," it said. "The production of uranium metal has potentially grave military implications." "We strongly urge Iran to halt this activity, and return to compliance with its JCPOA commitments without further delay if it is serious about preserving the deal," the statement added. The ultimate goal of the deal is to prevent Iran from developing a nuclear bomb, something Iran insists it does not want to do. President-elect Joe Biden, who was vice president when the deal was signed during the Obama administration, has said he hopes to return the US to the deal.

*Source: Associated Press, The Free Press Journal, [https://www.freepressjournal.in/world/europe-grows-wary-over-irans-uranium-production-germany-france-britain-warn-tehran-against-](https://www.freepressjournal.in/world/europe-grows-wary-over-irans-uranium-production-germany-france-britain-warn-tehran-against-violating-nuclear-deal)*

*violating-nuclear-deal, 16 January 2021.*

### **Iran will Take Steps Next Month to Curb Short-notice IAEA Inspections: Official**

Iran threatened to block short-notice inspections of its nuclear facilities, demanding Washington reverse economic sanctions before it returns to compliance with a nuclear deal that President Joe Biden aims to restore. Biden, who took office, aims to reverse a decision by his predecessor Donald Trump

to pull out of the 2015 agreement between Iran and world powers.

The agreement lifted sanctions on Iran in return for curbs to Iran's nuclear programme, but after Trump quit and reimposed sanctions, Iran violated its conditions. Biden says Tehran should return to compliance before sanctions are lifted; Iran wants the sanctions lifted first.

Under the accord, the IAEA was given wide-ranging access to gather information on Iran's nuclear activities, including the right to demand short-notice inspections of any site it deems necessary. Iranian government spokesman Ali Rabiei said the first steps to restrict those inspections would begin in the week from Feb. 19. "Our law is very clear regarding this issue," he told a televised news conference. "But it does not mean Iran will stop

**Iran threatened to block short-notice inspections of its nuclear facilities, demanding Washington reverse economic sanctions before it returns to compliance with a nuclear deal that President Joe Biden aims to restore.**

other inspections by the International Atomic Energy Agency."

Iran's hardline-dominated parliament passed a law in December that obliges the government to harden its nuclear stance if U.S. sanctions are not lifted in two months. Iran has repeatedly said it can quickly reverse its violations of the deal if U.S. sanctions are removed. Foreign Minister Mohammad Javad Zarif reiterated that possibility

at a news conference in Moscow on 26 January. "If favorable actions are taken before that time...Iran will not interfere with the admission of (IAEA) inspectors under the additional protocol," he said.

In a later tweet, Zarif repeated that it was up to Washington to make the first move: "Why on earth should Iran—a country that stood firm & defeated 4 years of a brutal US economic terrorism imposed in violation of JCPOA & UNSC Resolution—show goodwill gesture first?" "It was the US that broke the deal—for no reason. It must remedy its wrong; then Iran will respond."

Iran this month resumed enriching uranium to 20% fissile strength at a nuclear plant, a level Tehran achieved before striking the deal. A French presidential official said Iran must end its provocations and return to the terms of the deal if it expects the United States to rejoin it.

"If they are serious about negotiations and if they want to obtain a re-engagement of all the stakeholders in the JCPOA, they firstly need to refrain from further provocations and secondly respect what they no longer respect, that's to say their obligations," the official told reporters on condition of anonymity. The official did not spell out how a lifting of sanctions during a return to compliance would work, but said the French and U.S. administrations were clear on what needed to be done.

*Source: Reuters, <https://www.reuters.com/article/us-iran-nuclear/iran-will-take-steps-next-month-to-curb-short-notice-iaea-inspections-official>, 26 January 2021.*

**U.S. will Join Nuclear Deal if Iran Complies with Provisions: Blinken**

**Iran this month resumed enriching uranium to 20% fissile strength at a nuclear plant, a level Tehran achieved before striking the deal. A French presidential official said Iran must end its provocations and return to the terms of the deal if it expects the United States to rejoin it.**

The United States is ready to rejoin the Iranian nuclear deal and start negotiations with it only if Tehran joins and complies with its provisions, U.S. Secretary of State Tony Blinken said on 27 January. The JCPOA, popular as the Iranian nuclear deal, was one of

the key foreign policy achievements of the Obama-Biden Administration. The Previous Trump Administration withdrew from it.

"With regard to Iran, President (Joe) Biden has been very clear in saying that if Iran comes back into full compliance with its obligations under the JCPOA, the United States would do the same thing and then we would use that as a platform to build, with our allies and partners, what we called a longer and stronger agreement and to deal with a number of other issues that are deeply

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problematic in the relationship with Iran" Mr. Blinken said. "But we are a long way from that point. Iran is out of compliance on a number of fronts," he said.

With regards to how the US would engage in this issue if Iran decides to come back into compliance, Mr. Blinken said the administration will build a strong team of experts and bring to bear different perspectives on

the issue.

"One of the things that I feel very strongly about is that in any of the issues we're engaged on, in any of the issues that we're tackling and that our foreign policy has to confront, that we are constantly questioning our own assumptions and premises, that we do not engage in groupthink, that there is as much self-criticism and self-reflection as we get from, appropriately, the

outside, whether it's from you or whether it's from people who disagree with the policies we're pursuing," he said. "So I think you can expect to see that as we move forward both with regard potentially to Iran and, for that matter, to just about any other issue we tackle," Mr. Blinken said.

Source: *The Hindu*, <https://www.thehindu.com/news/international/us-will-join-nuclear-deal-if-iran-complies-with-provisions-blinken/article33681021.ece>, 28 January 2021.

## NORTH KOREA

### North Korea Dangerous but not Unpredictable, Says US Intelligence Official

North Korea is not the unpredictable mystery many consider it to be — but it is more dangerous than some assume, especially some in South Korea, U.S. intelligence official Sydney Seiler said. Seiler, who has over 37 years of experience related to Korean affairs, is the national intelligence officer for North Korea at the National Intelligence Council. Before that, he was a senior analyst at the U.S. Forces Korea (USFK), the U.S. special envoy for the Six-Party Talks and the director for Korea on the National Security Council (NSC). "What I find with North Korea is strategic continuity, marked by tactical surprise," Seiler said during an online event hosted by the CSIS.

Seiler added that we have now been observing North Korea for decades — and Kim Jong Un for about 10 years — and we can therefore draw some conclusions "based upon well-established patterns." "The types of provocations and types of engagement can change," he said. "They're well choreographed to maximize effect. But at the end of the day, the pursuit of this goal has been consistent for these

decades. Every engagement in diplomacy has been designed to further the nuclear program, not to find a way out of the nuclear program."

**They're well choreographed to maximize effect. But at the end of the day, the pursuit of this goal has been consistent for these decades. Every engagement in diplomacy has been designed to further the nuclear program, not to find a way out of the nuclear program.**

It is therefore important, he said, "not to let the tactical ambiguity obstruct the strategic clarity about North Korea." We should therefore not be overly optimistic if Kim proposes talks in the near future, he recommended, nor overly

pessimistic if Kim tests an ICBM. "The fundamentals of North Korea aren't really changing," Seiler said. "And that's, again, not surprising." But, he added, it is a mistake to conclude that Pyongyang will never use its nuclear weapons simply because, as some suppose, "they know that if they use them, that's the end of the regime." "I would challenge that," Seiler said, "and say we have to begin to worry at a certain point."

North Korea has amassed an impressive nuclear arsenal with an estimated stockpile of up to 60 nuclear warheads, an array of ICBMs — including possibly the world's largest, the Hwasong-16, which was unveiled during an Oct. 10 military parade — and SLBMs, among other military assets. "This is a force far more formidable than one simply asking to be left alone," said Seiler. "And that's where the real risk of inaction comes in."

**There's little worry North Korea would use nukes first or unprovoked," Jenny Town, deputy director at 38 North and a fellow at the Stimson Center, told NK News. "The bigger concern is whether their increased capabilities makes the more adventurous to do small scale activities — like what we saw in 2010 against South Korea — which could escalate quickly.**

This does not necessarily suggest North Korea will use its arsenal in a preemptive manner, though it may become a greater

regional threat. "There's little worry North Korea would use nukes first or unprovoked," Jenny Town, deputy director at 38 North and a fellow at the Stimson Center, told NK News. "The bigger concern is whether their increased capabilities makes the more adventurous to do small scale activities — like what we saw in 2010 against

South Korea — which could escalate quickly.”

Seiler focused on the direct threat to South Korea, saying that in some circles, the threat is underestimated — or pushed off as being merely a U.S. concern. But, he added, “It’s clear that as North Korea develops full-orb nuclear capabilities that any delusion in South Korea that the North Korean nuclear program is a U.S.-DPRK issue should be disappearing.”

Experts say this should come as no surprise since South Korea has always been under a more immediate threat by Pyongyang’s growing military might. “North Korea’s nuclear-capable missiles ranged South Korea before they ranged the United States,” said Ankit Panda, a senior fellow at the Carnegie Endowment for International Peace. “I think Seoul understands that it can’t sit on the sidelines. This is an issue that affects all three countries.” Panda added that it was the two Koreas that in 1992 first signed an agreement on denuclearization.

But while inter-Korean talks have recently stalled, there is hope for the future. For one thing, Seiler said, Moon Jae-in has made real progress with the North by working to “prove to the South Korean people and the North Korean people that Seoul need not be seen by the North as a threat” and to demonstrate “that, fundamentally, permanent peace is the desire of all Korean people.”

This does not mean peace at all costs, however, because the two countries cannot fully move forward until the denuclearization issue is resolved. To this end, Seiler said, North Korea must rethink its weapons program. A lot of apparent progress with the North is often “rent-seeking” and “probing” progress, Seiler said, “from which they ultimately back down.” Therefore, “there can be no sustained

improvement in North-South relations until North Korea gets serious about denuclearization.”

But with the Biden administration signaling a return to multilateralism by the U.S., there is now a greater chance of achieving this end. “Strength in numbers,” said Sung-Yoon Lee, professor of Korean studies at Tufts University’s Fletcher School, who notes that even the George W. Bush administration, which was heavily criticized for its purported unilateralism, avoided bilateral negotiations with North Korea and called instead for multilateralism with the Six-Party Talks. ...

**A lot of apparent progress with the North is often “rent-seeking” and “probing” progress, Seiler said, “from which they ultimately back down.” Therefore, “there can be no sustained improvement in North-South relations until North Korea gets serious about denuclearization.**

*Source: David Volodzko, NK NEWS, <https://www.nknews.org/2021/01/north-korea-dangerous-but-not-unpredictable-says-us-intelligence-official/>, 22 January 2021.*

**NUCLEAR SAFETY**

**GENERAL**

**Radiation Safety in Use of Nuclear Gauges: IAEA Issues Recommendations**

Nuclear gauges are devices with a radioactive source or radiation generator, which are used to measure parameters such as thickness, density and moisture in materials like pavements, petroleum and plastic. Several hundred thousand nuclear gauges are in operation globally, and the IAEA has released its latest guide in its Safety Standards Series: Radiation Safety in the Use of Nuclear Gauges (No. SSG-58).

**Nuclear gauges contain small amounts of radioactive material, so it’s essential that operators conduct their work using carefully controlled methods, to protect themselves, the public and the environment against exposure to radiation.**

“Nuclear gauges contain small amounts of radioactive material, so it’s essential that operators conduct their work using carefully controlled methods, to protect themselves, the public and the environment against exposure to radiation” said Haridasan Pappinisseri, an IAEA

Radiation Protection Specialist in charge of the preparation of this publication.

Industries such as construction, oil and gas, engineering, architecture, and food and beverage rely on nuclear gauges to measure variation in, and density of, materials and to detect moisture levels below ground. This high-performance, non-intrusive and non-contact technology saves time, energy and materials. Regulatory and operational challenges in managing nuclear gauges include the design and operation of various interrelated components, safe use of equipment, proper safety assessment, optimization of radiation exposure, adequate marking and labelling, safe storage and movement of gauges as well as routine maintenance.

The new guide addresses these issues and also provides clear, practical instructions on how to design radiation safety training and qualification programmes for nuclear gauge workers; monitor workers and the workplace for radiation exposure; prepare for, use and dispose of portable nuclear gauges, including the safe transport, use and disposal of radioactive sources and waste, and prepare for radiological emergencies.

It also contains examples of incidents involving nuclear gauges and lessons learnt that cover emergency procedures to be incorporated into national legislation, widening awareness on the safe use of nuclear gauges and their implementation by following the specific procedures.

Aayda Al Shehhi, Director of the Federal Authority for Nuclear Regulation in the UAE and member of the IAEA Radiation Safety Standards Committee, said: "In my country, nuclear gauges are used in

various sectors ranging from analytical applications in laboratory-type environments to industrial applications. They are also used in education and training. This specific safety guide will assist us in communicating radiation safety

goals and ways to meet regulatory requirements when using nuclear gauges to a diverse group of stakeholders, who quite often are accustomed to different regulatory approaches."

Radiation Safety in the Use of Nuclear Gauges is part of the IAEA Safety Standard Series (No. SSG-58), which serve as a global reference for nuclear regulators in many specialist industries. It aims to help IAEA member countries to meet the requirements specified in the IAEA's Safety Standards Series No. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards. These safety standards are widely recognised as international norms and benchmarks for safety practices involving radioactive material.

*Source: Joanne Burge, IAEA Department of Nuclear*

*Safety and Security, <https://www.iaea.org/newscenter/news/radiation-safety-in-use-of-nuclear-gauges-iaea-issues-recommendations>, 26 January 2021.*

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**The European Repository Development Organisation (ERDO) has been launched by Denmark, Norway and the Netherlands, with other countries, notably Italy, Slovenia, Croatia and Austria, expected to join soon. It aims for member countries to collaborate in safely managing long-lived radioactive wastes, including establishing shared multinational geological repositories.**

## **NUCLEAR WASTE MANAGEMENT**

### **GENERAL**

#### **International Waste Repository Organisation Launched in Europe**

The European Repository Development Organisation (ERDO) has been launched by Denmark, Norway and the Netherlands, with other countries, notably Italy, Slovenia, Croatia and Austria, expected to join soon. It aims for member

countries to collaborate in safely managing long-lived radioactive wastes, including establishing shared multinational geological repositories. All have small individual requirements. Previously the national organisations had worked together for ten years in the ERDO Working Group. This was founded with support of 10 EU Member States in 2009. It followed comprehensive feasibility studies (the SAPIERR projects) into multinational disposal in Europe, organised by the Arius Association and funded by the European Commission. Fourteen European countries were involved in SAPIERR and 13 are, or have been, involved with ERDO work over the past decade. SAPIERR was based on a recognition in the EU that implementing 25 national repositories would not be optimal economically or for safety and security.

While there is clear and unequivocal understanding that each country is ethically and legally responsible for its own waste, there have been several proposals for regional and

international repositories for disposal of high-level nuclear waste, and in 2003 the concept received strong endorsement from the head of the International Atomic Energy Agency. The default position is that all nuclear waste will be disposed of in each of the 50 or so countries concerned. The main ingredients of high-level nuclear waste are created in the nuclear reactors which make the electricity in 31 countries and function as neutron factories in many more. They are not simply left-overs from imported uranium. There is thus no obligation on uranium suppliers in respect to the waste, other than that involved in safeguards procedures.

Apart from ERDO which is focused on small volumes of waste, there have been proposals for large-scale international repositories, most recently from the South Australian Royal Commission into the Nuclear Fuel Cycle in 2016.

*Source: World Nuclear News, <https://world-nuclear-news.org/Articles/European-organisation-launched-for-cooperation-in>, 08 January 2021.*



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 K.K Nohwar, PVSM VM (Retd).

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