



OPINION – Thorsten Benner

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### Germany is Rethinking Everything Nuclear

The incoming German government, rattled by the prospect of U.S. President Trump withdrawing security guarantees, is preparing a fundamental readjustment of its defense posture. The new coalition of Christian Democrats (CDU/ CSU) and Social Democrats (SPD) has already agreed to push for changes to the debt brake that would pave the way to dramatically higher military spending. Germany’s likely next chancellor, CDU leader Friedrich Merz, stated that “in view of the threats to our freedom and peace on our continent,” the government’s new motto needs to be “whatever it takes.”

A litmus test for how serious these efforts are is whether the new government will pursue a Plan B for a possible end to the U.S. nuclear security umbrella for Germany and Europe. Berlin needs an ambitious nuclear policy rethink that includes a push to recreate nuclear sharing at the European level — with the continent’s nuclear powers, France, and the U.K. — to deter Russia and other adversaries. It is also essential for Germany to invest in civilian nuclear research to maintain nuclear latency as a hedge. Fortunately, Merz has signaled willingness to do both.

As part of NATO nuclear

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sharing, Germany hosts about 20 U.S. B 61 nuclear bombs at the Büchel airbase. For much of the past few decades, a majority of Germans were in favor of getting these nuclear weapons out of Germany. This was part and parcel of the German desire to exit everything nuclear, be it

military or civilian. As late as mid-2021, a survey published by the Munich Security Conference found that only 14 percent of Germans favored nuclear weapons on German soil.

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Panorama magazine expressed support for keeping or even increasing U.S. nuclear weapons in Germany. Russia's attack against nonnuclear power Ukraine, which included the threat of using such weapons to deter Europe and the U.S. from supporting Kyiv, clearly left a mark on the German population.

In light of such threats, it seems that a majority of Germans have concluded that it is better to be directly under a nuclear umbrella. After Russia's invasion, German Chancellor Scholz decided

to pursue a 10 billion euro (\$13.85 billion) deal with the U.S. to buy F 35s to replace the aging Tornado fleet that would carry the U.S. nuclear bombs stored at Büchel airbase. With this deal, Scholz sought to lock in U.S. commitments to German defense. Of all recent German chancellors, Scholz probably pursued the closest relationship with the Washington. He tried to stick to this path even after the return of President Trump to the White House. At the Munich Security Conference in mid-February, Scholz said: "We will not agree to any solution that leads to a decoupling of European and American security."

That statement sounds decisive, but only if you ignore that the decision to decouple from European security lies in the hands of the U.S. Berlin has no veto power here. Scholz's likely successor, Merz, strikes a very different tone. Before official results had been announced on the night of the Feb. 23 election, he stated: "My absolute priority will be to strengthen Europe as quickly as possible so that, step by step, we can

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**The Merz-Macron alignment provides a solid political base for discussions on Europeanizing nuclear sharing further. Of course, there are many obstacles, risks, and unanswered questions, as critics of these proposals in the German debate have been quick to point out. It is easy to belittle "somewhat panicky policy suggestions" by an "increasing chorus of pundits and policy-makers from across the mainstream political establishment that fear US abandonment," as German arms control researcher Ulrich Kühn has done.**

really achieve independence from the USA." Merz also said that it was unclear whether "we will still be talking about NATO in its current form" by the time of the bloc's planned summit in June, "or whether we will have to establish an independent European defense capability much more quickly."

Merz is convinced that this needs to include a Plan B for the possible end of the U.S. nuclear umbrella. The chancellor-in-waiting has proposed discussions with France and the U.K. on whether the two are willing to engage in a nuclear-sharing arrangement with Germany. That is a sea change in the German debate. Former Chancellors Angela Merkel and Scholz had consistently ignored French President Macron's offers to engage in a strategic dialogue on nuclear deterrence in Europe. In a televised

address on March 5, Macron responded positively to what he referred to as Merz's "historic call." The French president said that he had decided "to open the strategic debate on the protection of our allies on the European continent by our [nuclear] deterrent."

The Merz-Macron alignment provides a solid political base for discussions on Europeanizing nuclear sharing further. Of course, there are many obstacles, risks, and unanswered questions, as critics of these proposals in the German debate have been quick to point out. It is easy to belittle "somewhat panicky policy suggestions" by an "increasing chorus of pundits and policy-makers from across the mainstream political establishment that fear US abandonment,"

as German arms control researcher Ulrich Kühn has done. But given the havoc that the Trump administration has caused in only seven weeks, it is not “panicky” to think through a potential U.S. exit from the trans-Atlantic alliance. Not seriously pursuing a Plan B would be grossly irresponsible at this point.

A first requirement is a shared vision of a realistic political arrangement for Europeanizing extended deterrence and nuclear sharing. One option would be to recreate NATO’s nuclear planning group at the European level, with France and the U.K. as its nuclear anchor powers. To allow for U.K. participation, this should be done outside the formal EU framework. At its core, the planning group should include a handful of key European countries (Poland, Italy and Germany would be certain to be among). The EU could be collectively represented through the European Council president or the EU foreign affairs chief. Leaders of Germany and Poland have already expressed openness to concrete nuclear sharing arrangements, like having French capabilities stationed in German or Polish soil.

Of course, the final decision on any nuclear weapons use would remain with France and the U.K., as Macron also stressed during his comments on March 5. This mirrors the current arrangement with the U.S. Members engaged in nuclear sharing would contribute financially to the burden of maintaining the French and British nuclear arsenal. As early as 2019, Bruno Tertrais — one of France’s foremost nuclear strategists—discussed such an arrangement. Mindful of the obstacles, he also debunked some of the most common criticisms. For example, even combined, the limited French and U.K. arsenals would not be a full substitute for U.S. extended deterrence based on an arsenal many times that size. But that does not mean that a France- or U.K.-based deterrent would not be credible, per se. As Tertrais

argued, “a small arsenal can deter a major power provided that it has the ability to inflict damage seen as unacceptable by the other party.”

It is also unconvincing to claim that a focus on Europeanizing nuclear deterrence distracts from the necessary investments in conventional deterrence (including deep precision-strike capabilities). Tertrais contended that Europeans simply need to pursue both. And yes, the U.K. does rely on Washington for key elements of its own nuclear arsenal. But the French capabilities are fully autonomous, which is crucial for credibility in light of a possible U.S. turn against Europe. To claim that a push to Europeanize nuclear sharing would incentivize nuclear proliferation globally seems far-fetched. South Korea, Saudi Arabia, or Turkey will make their own determinations about going nuclear based on their own assessments of their security situations. And in the medium and long term, Germany and Europe also need to think about arms control and confidence-building measures with Russia.

Of course, Germans and others now looking to France and the U.K. for nuclear protection might ask themselves how stable and reliable these European nuclear powers are politically. That is a valid question. After all, in the U.K. Nigel Farage — the leader of the far-right Reform U.K. party — is making steady gains. France may be just one election away from having a president from a far-right or far-left party hostile to sharing the French nuclear deterrent. That said, the only other option for Germany aside from a European nuclear umbrella would be to pursue its own nuclear weapons. At this stage, given the political fallout, the financial burden and the time that it would take to make a German bomb is not a cost-effective alternative. Yet, as a hedge, Germany needs to invest in maintaining nuclear latency — that is, having the basic capabilities in place to

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pursue its own nuclear weapons program in a situation where it is left with no other alternative.

To this end, Germany needs to recommit to civilian nuclear research — and that should be a no-brainer for other reasons in an age of energy-intensive artificial intelligence and the need to phase out fossil fuels amid ongoing climate change. A leading economy such as Germany

simply needs to be at the forefront of civilian nuclear research. During the early days of Trump's first term, Merkel declared that "we Europeans must truly take our destiny into our own hands." Yet, little to no action followed. Today, we are seeing the dramatic consequences of finally taking that statement seriously. Merz is very much right to call for switching to "hoping for the best and still preparing for the worst." However uncomfortable this might be for many in Germany, this strategy has to include a Plan B for nuclear deterrence.

Source: <https://gppi.net/2025/03/11/germany-is-rethinking-everything-nuclear>. 11 March 2025.

**OPINION – Larry Liston**

**Colorado Needs Nuclear Now**

Good ideas sometimes take a while to gain acceptance; but eventually the wisdom of their merits can no longer be ignored, and the good idea takes hold. So it might be, at long last, for the promise of nuclear energy in our state. HB25-1040 passed the Colorado House of Representatives early last week, on a strongly bipartisan vote, and has now been introduced in the Senate, where it will soon be heard in the Transportation and Energy Committee. If passed, the bill will simply include "nuclear energy" under

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the statutory definition of "clean energy." If you were to ask the average person on the street if they believe that nuclear power is clean, nearly every one you speak to would reply "yes." This bill just cements common sense into statute. This is a small, but crucial, first step toward making reliable, abundant, carbon-free electricity a reality for Colorado.

This bill paves the way forward, not for a single nuclear technology, but for multiple nuclear alternatives to be permitted to deliver energy to our state under "clean energy" mandates. These alternatives might include, but are not limited to, small modular nuclear reactors, liquid fuel reactors (such as innovative molten salt reactors) — even

reactors that do not require uranium to generate electricity.

While some of these specific technologies might be new or still being fully developed, nuclear power as an abundant carbon- and emission-free source of electricity capable of meeting current and future

demands on our society's electrical grid is not. Nuclear power has been viable, safe, and ready for several decades now. France, in fact, gets almost all of its electricity from nuclear power, and has so for more than 40 years. The only thing that has kept nuclear power from gaining a similar foothold in the U.S. has been political and regulatory resistance. This bill is the first step in reversing that unreasonable, anti-scientific, superstitious official prejudice against this technology.

Why is this so important? Well, for a few reasons. To start with, Colorado has adopted energy standards that call for rash and extreme reductions on greenhouse gas emissions from electrical generation; in fact, state law is to adopt



zero-carbon electrical generation by 2050. Like it or not — wise or not — under our democratic system that is the law of the land. The question for the time being is, “how do we get there?” The answer, for the time being, is “we can’t.” Renewable energy sources—predominantly wind and solar — are simply incapable of fully meeting even current electrical demand, never mind future demand.

Wind and solar are “non-dispatchable” generation sources; meaning that they cannot be dialed up or down depending on the demand at the moment, unlike dispatchable sources such as coal, natural gas, or nuclear. We cannot turn up the sun or increase the wind to generate more electricity during periods of higher demand. Compounding the problem is the fact that we do not have efficient methods to store wind and solar energy — they are generated as they are created.

Power plants fueled by coal and natural gas, on the other hand, can react to fluctuations on demand, simply by adding more coal or gas to the furnaces. Those sources, however, also generate considerable greenhouse gas, and will be essentially outlawed in a couple of short decades. Nuclear power offers the best of both worlds — a dispatchable source that can be ramped up as needed to meet demand, while simultaneously generating no emissions, harmful or otherwise. Simply put, nuclear is the only option. The other reason, of course, is that even without the state clean energy mandates, the fact remains that electrical demand is increasing exponentially.

There are several factors contributing to that rise in energy demand: a growing population, improved standards of living, and the advent of energy intensive new technologies are among the most important. The expansion of artificial intelligence, data centers, and the domestic manufacturing of high-tech components such as semiconductors add up to a greater demand for electricity. Even more traditional industries such

as agriculture are more electricity-intensive than they were in the past. A single hospital these days uses more electricity in any given time frame than some small towns did a few short decades ago. It simply makes sense that we as a society ought to be looking for new ways to generate that energy,

ways which allow us to maintain our way of life, and not inflict undue harm on our natural heritage. Nuclear power is the way forward.

In Colorado, the biggest obstacle to nuclear energy in our state is ourselves. It is interesting how France can manage to get upwards of 70% of its energy from

nuclear, with no waste problem—they recycle 99% of the spent fuel—simply because they do not have the regulatory hurdles we have inflicted on ourselves. Many countries, in fact, have figured this out, including Slovakia, Argentina and Turkey. Even Bangladesh is building two nuclear power plants. China is building nuclear plants almost as fast as they are building new coal plants. A report published last summer by the Information Technology & Innovation Foundation revealed that not only was China building 27 nuclear power plants — each of which they build in an average of seven years but that the U.S. is as much as 15 years behind Communist China in terms of nuclear energy technology.

It is indeed alarming that America’s principle global adversary is that far ahead of us, but it is also important to note that this is a position that we as a nation have chosen to be in. America is the birthplace of the harnessing of nuclear energy — we have the ability and the capability to not only catch up to China, but to lead, if only our public policies are updated to enable us to get out of our way.

Expanding nuclear power generates extensive economic benefits as well, beyond the provision of abundant, reliable, and clean electricity; the nuclear industry, and its many facets, provides good, high paying careers for Coloradans, particularly in the economically hard-hit areas of

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southeastern and northwestern Colorado, where the impact of the closure of coal plants has been most keenly felt.

Despite the benefits, there remains some stubborn resistance to the idea from the environmental extremist crowd. These Luddites, if they had their way, would have us shivering in the dark, burning dung from whatever cows were left to keep warm. Their opposition is puzzling, to say the least, given that many of these groups have been among the loudest proclaiming the existential danger of carbon emissions. With a viable, carbon free dispatchable alternative now available, their continued opposition seems to be more a resistance to 21st century standards of living than to true environmental stewardship. If Colorado is to thrive and adapt in the 21st century, with the expansion of data centers, electric vehicles, advanced air-mobility and other modern innovations, we will need to abandon old, discredited superstitions and modernize our electrical generation — that means finally embracing nuclear energy. I am excited to be a part of this bill, not just for the good people of Colorado Springs, but for the state. HB25-1040 sends a signal that Colorado is open to accepting the challenge of adopting 21st century energy.

*Source: [https://gazette.com/opinion/perspective-colorado-needs-nuclear-now/article\\_d6a32fee-fa99-11ef-986a-abc11f20ba88.html](https://gazette.com/opinion/perspective-colorado-needs-nuclear-now/article_d6a32fee-fa99-11ef-986a-abc11f20ba88.html). 09 March 2025.*

**OPINION – Tom Sauer**

**Towards a Eurobomb: The Costs of Nuclear Sovereignty**

The Trump administration’s recent isolationist statements, amid the talks of war in Europe, have revived discussions on Europeanizing French (and possibly British) nuclear weapons. After 75 years of NATO, concerns over US abandonment are increasingly shaping European foreign policy

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discussions. In the past, the French idea of a “dissuasion concertée (concerted deterrence) was mostly met with silence, especially in Germany. This time around, the conservative leader Friedrich Merz seems in favor despite the fact that NATO is still alive and the US still has 100,000 soldiers and 100 tactical nuclear weapons in Europe. These weapons are stationed in Türkiye, Germany, Italy, the Netherlands, and Belgium. If the soldiers or the tactical nuclear weapons are withdrawn, the odds are that the Europeanization of the French (and maybe British) nuclear weapons in one way or another may

indeed become reality.

There are different scenarios imaginable. The first step is for European nuclear states to declare that their “national interests” align with “European interests,” a principle already reflected in the Lisbon Treaty. The latter, by the way, also contains a collective defense clause similar to NATO’s Article 5. Further steps could be imagined to make these statements more credible: information exchange, consultation, joint planning, joint exercises, and co-financing. Another step could involve deploying French dual-capable aircraft in Germany or Poland. A final step would be the creation of an EU nuclear bomb in a European Defense Union (EDU). It remains, however, still to be seen how the Ukraine war will accelerate the pace towards such an EDU.

**What are the costs of Europeanization of nuclear weapons?** First of all, the assumption that nuclear deterrence works is uncertain. Advocates of nuclear weapons believe that it works. They forget that in history many nuclear weapon states (including Israel, India, the UK) have been attacked by non-nuclear weapon states. In theory, it is very hard to make it work as it assumes for instance a rational enemy. It also assumes that the possessor is really prepared to use them. However, if used on a massive scale, it means the annihilation of the planet. In the war in Ukraine, French President Macron for that reason stated that even if Russia

uses a tactical nuclear weapon in Ukraine, France would not retaliate with nuclear weapons.

Secondly, emerging and disruptive technologies (like AI) and weapon systems (like hypersonic missiles) will further undermine the so-called nuclear stability. Ideally, conventional deterrence (using hypersonic missiles) could and should replace nuclear deterrence on the condition that all nuclear states agree. Thirdly, extended nuclear deterrence, read the atomic umbrella, is even more incredible. As early as the 1970s, Henry Kissinger cautioned Europeans against assuming that the US would employ nuclear weapons for their defense. That is also the reason why France did not want to shelter under the US umbrella, and why it built its own nuclear arsenal in the 1950s. Ironically, France now offers its umbrella to its European partners.

Fourthly, as long as there is no EDU, the question will be whose finger will be on the button. Macron is very clear: it will be his finger. The question then becomes whether German taxpayers would be interested in co-financing a strategic weapon system that they cannot control in times of war. Fifthly, by Europeanizing the French nuclear weapons, the EU legitimizes nuclear weapons. This complicates the fight against proliferation. How sustainable is it to ask Iran not to produce nuclear weapons when the EU itself is setting up a nuclear arsenal? There are also concerns about whether Europeanization aligns with the NPT, particularly if Germany and Poland were to develop their own nuclear capabilities. Both ideas also go against the spirit and the letter of the TPNW (2017) that in the meantime has been signed by more or less 100 states.

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Sixthly and lastly, it would be much better if the leaders of the EU spend as much time on diplomacy with Russia than in building up European defense. It is high time that the war in Ukraine ends, not only for humanitarian but also economic reasons. A peace agreement ideally includes a beginning of a restructuring of the European collective security

architecture that includes both Russia and Ukraine, either in a transformed NATO or an upgraded Organization for Security and Cooperation in Europe (OSCE). If such an agreement is reached, there would be little justification for further fragmenting European defense into over 25 separate, small-scale military forces. Nowadays already the European NATO member states spend \$485 billion on defense, much more than Russia (\$120 billion). The primary challenge for EU defense today is not the absence of a Eurobomb but the lack of coordination in pooling, sharing, and specialization. Instead of investing in weapons of mass destruction, making EU defense more efficient should be the priority as well as integrating Russia into a larger collective security organization.

*Source: <https://www.aa.com.tr/en/opinion/opinion-towards-a-eurobomb-the-costs-of-nuclear-sovereignty/3505915>. 11 March, 2025*

**OPINION – Matthew Karnitschnig**

**It's Time for Europe to Go Nuclear**

The willingness of European leaders to ignore Donald Trump's mendacity and humiliate themselves with displays of fealty to the American president on live television can be explained in two words: nuclear umbrella. The implosion of the transatlantic relationship over the past two weeks

has policy makers across Europe wondering if they can still count on the nuclear shield, which has served as the foundation of their security for decades. As they say in America, 'If you have to ask, you already know the answer'. That's particularly true for the Baltic countries, which are rightly concerned that Trump would not be willing to enter into a nuclear confrontation with Russia over a region smaller than Oklahoma.

Given the threat Russia poses with its stockpile of nearly 6,000 warheads, Europe has no choice to but to invest in expanding the continent's nuclear capabilities. At the moment, only the UK and France have nuclear weapons. But their total arsenal – 550 warheads –

is dwarfed by Russia's and cannot replace the roughly 5,200 in America's stocks. French President Macron signalled this week that Paris might be willing to extend its nuclear deterrent to the rest of Europe. Even if that happens, it won't be enough. "That's not going to scare away Putin," says Maximilian Terhalle, a German military and security expert who has done extensive research on Europe's nuclear capabilities. "We need a new way forward."

The problem is deeper than just the number of bombs. To begin, the British arsenal is dependent on American technology and collaboration, making the French Europe's only option for building an independent alternative. An even bigger issue is that both countries are heavily reliant on American reconnaissance, via US intelligence's giant network of satellites. Fixing these shortcomings will take years, if not decades. A big hurdle will be Germany, which needs to abandon its aversion to all things nuclear and acknowledge just how exposed Europe now is. It's only a matter of time before Putin or another Russian leader takes advantage of Europe's weak defences. Berlin will have no choice but to respond with what Terhalle calls "harsh Realpolitik". The old-world order is dead and Europe is alone. The choice for Europe's leading

nations is simple: Go nuclear or perish.

Source: <https://www.euractiv.com/section/politics/opinion/the-brief-its-time-for-europe-to-go-nuclear/>. 06 March, 2025.

**BALLISTIC MISSILE DEFENCE**

**UKRAINE**

**Ukrainian Air Defence Downs Iskander-M Ballistic Missile and 79 UAVs Overnight**

The Russians have attacked Ukraine with an Iskander-M ballistic missile and 126 Shahed attack UAVs and decoy drones of various types since the evening of 10 March. The missile and 79 drones have been downed. "As of 08:00, an Iskander-M ballistic missile and 79 Shahed attack UAVs and other types of drones have been confirmed shot down over Kharkiv, Poltava, Sumy, Chernihiv, Kyiv, Zhytomyr, Vinnytsia, Dnipropetrovsk, Zaporizhzhia, Odesa and Kherson oblasts. In addition, 35 enemy decoy drones disappeared from radar (without causing adverse effects)." The missile was

launched from the Russian city of Taganrog, while the drones were launched from the Russian cities of Oryol, Shatalovo, Millerovo, Kursk, Bryansk and Primorsko-Akhtarsk. Aircraft, anti-aircraft missile forces, electronic warfare units and mobile fire groups from the Air Force and the rest of Ukraine's defence forces were involved in repelling the attack.

Source: <https://www.pravda.com.ua/eng/news/2025/03/11/7502249/>. 11 March 2025.

**EMERGING TECHNOLOGIES AND DETERRENCE**

**CHINA**

**China Builds Giant Anti-Hypersonic Radar that can Track Every Small and Big Indian Missile from 5,000 Km Away**

China has established a powerful new radar system capable of monitoring India's ballistic missile launches in real-time. The Large Phased Array Radar (LPAR), deployed in Yunnan province, near

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the China-Myanmar border, significantly enhances Beijing's surveillance capabilities. The system, with an estimated range exceeding 5,000 km, can track missile tests conducted from India's Dr APJ Abdul Kalam Island off the Odisha coast, a key site for testing Agni-V intercontinental ballistic missiles and K-4 submarine-launched missiles. Indian security agencies have raised the alarm, warning the government that China's radar placement gives it an unprecedented intelligence advantage. "This system allows Beijing to detect, track, and analyse every missile test India conducts, giving them insights into our strategic capabilities," said a senior defence official.

***A Game-Changer in Early Warning Technology:***

Unlike conventional radars that rely on mechanical rotation, LPARs use electronically controlled antennas that scan vast areas almost instantly. This allows them to track multiple objects with precision, making them a crucial component of modern air defence networks. All ballistic missiles, including those armed with nuclear warheads, travel through low-earth orbit before re-entering the atmosphere. Advanced radar systems like LPAR are specifically designed to track these trajectories. The Indian missile testing site is approximately 2,000–2,200 km southwest of China's new radar station. This places it well within LPAR's detection range, allowing Beijing to pick up signals of all missile launches. China has already deployed similar radars in Korla and Xinjiang, which monitor northern India. The addition of the Yunnan-based radar extends China's surveillance reach to the Indian Ocean and Bay of Bengal.

***The Strategic Importance of Yunnan's Radar:*** This radar is reportedly under the command and control of 'Base 37', a specialised unit of the People's

**The Large Phased Array Radar (LPAR), deployed in Yunnan province, near the China-Myanmar border, significantly enhances Beijing's surveillance capabilities. The system, with an estimated range exceeding 5,000 km, can track missile tests conducted from India's Dr APJ Abdul Kalam Island off the Odisha coast, a key site for testing Agni-V intercontinental ballistic missiles and K-4 submarine-launched missiles.**

**This radar is reportedly under the command and control of 'Base 37', a specialised unit of the People's Liberation Army Aerospace Force (PLAAF) responsible for monitoring foreign space objects and providing early missile warning. Base 37 is also a hub for space situational awareness (SSA), processing vast amounts of orbital data. In recent years, China has ramped up its radar deployments as part of its military modernisation.**

Liberation Army Aerospace Force (PLAAF) responsible for monitoring foreign space objects and providing early missile warning. Base 37 is also a hub for space situational awareness (SSA), processing vast amounts of orbital data. In recent years, China has ramped up its radar deployments as part of its military modernisation. According

to the South China Morning Post, LPAR stations like these play a critical role in China's anti-missile defence strategy. Military analyst Song Zhongping stated, "Early warnings are crucial—gaining time to mobilise countermeasures is key." He further noted that China is likely integrating these systems to track hypersonic missiles, an emerging class of ultra-fast weapons that traditional radars struggle to detect.

***China's Expanding Surveillance Network:***

Chinese state media recently aired footage of an advanced long-range radar system, reinforcing Beijing's growing focus on missile detection. During President Xi's Lunar New

Year address to the military, the PLA showcased a ground-based phased-array radar station with troops from the army, navy, air force, and aerospace force standing in formation before it. Taiwanese defence analyst Joseph Wen identified this facility as the Jamusi Monitoring and Early Warning Station, located in Heilongjiang Province. Originally constructed before 2011, the site underwent significant upgrades and was completed in 2021. A September 2024 report by the China Aerospace Studies Institute (CASI), a think tank of the US Department of the Air Force, indicated that Jamusi houses a deep-space radar operated by the Chinese Academy of Sciences.

CASI's report suggests that Jamusi's LPAR system is now under the command of Base 37. However,

tensions exist within China's military over control of these critical assets, with both the PLAAF and the PLA Aerospace Force vying for dominance. If China develops two parallel LPAR networks, their separate command structures could create inefficiencies in tracking foreign missile activity and space-based threats.

### India's Growing Security Concerns:

China's new radar is not just about missile tracking. LPAR stations are known to have electronic warfare capabilities, meaning they could potentially interfere with communication systems, including radio, GPS signals, aviation navigation, and military communications.

China has also placed strategic emphasis on the Bay of Bengal and Malacca Strait, two key maritime regions for India's trade and naval operations. By integrating its new Yunnan radar with existing systems in Korla and Xinjiang, Beijing now has a wider surveillance net over India's eastern and northern fronts.

In response, Indian defence experts have urged the government to strengthen its own early warning and surveillance systems. India has developed radar networks such as Swordfish, an advanced long-range tracking radar, but analysts say more investment is needed to counter China's growing technological edge.

**Military Readiness and Rising Tensions:** As China expands its radar network, its military leadership is also ramping up combat preparedness. In January 2025, top PLA officials General Zhang Youxia and General He Weidong visited troops and emphasised the need for heightened readiness.

They cited military tensions "on multiple fronts, including the border with India and the Taiwan Strait." China's rapid advancements in radar

technology, coupled with its increasingly assertive military posture, add to the complexities of regional security. For India, the challenge lies not just in countering Beijing's surveillance but also in ensuring that its own missile defence and strategic capabilities remain protected.

Source: <https://www.msn.com/en-in/news/India/china-builds-giant-anti-hypersonic-radar-that-can-track-every-small-and-big-indian-missile-from-5-000-km-away/ar-AA1ABbG2>. 10 March 2025.

## INDIA

### India De-Classified 1,500-km BM-04 Tactical Missile with a Hypersonic Stage

India's DRDO has unveiled its latest missile development, the BM-04, featuring a hypersonic booster stage. The weapon was showcased at the locally-held Vigyan Vaibhav 2025 arms exhibition, along with earlier undisclosed key specifications. The BM-04

represents DRDO's long-term efforts to develop hypersonic technology and is a promising attack weapon with a range of 1,500 km. It has some potential to penetrate enemy missile defenses due to its hypersonic glider, the Common Hypersonic Glide Body — a similar approach to that used in the American Dark Eagle missile system, which is set to enter service with the U.S. Army this year.

**China's new radar is not just about missile tracking. LPAR stations are known to have electronic warfare capabilities, meaning they could potentially interfere with communication systems, including radio, GPS signals, aviation navigation, and military communications. China has also placed strategic emphasis on the Bay of Bengal and Malacca Strait, two key maritime regions for India's trade and naval operations. By integrating its new Yunnan radar with existing systems in Korla and Xinjiang, Beijing now has a wider surveillance net over India's eastern and northern fronts.**

**China's rapid advancements in radar technology, coupled with its increasingly assertive military posture, add to the complexities of regional security. For India, the challenge lies not just in countering Beijing's surveillance but also in ensuring that its own missile defence and strategic capabilities remain protected.**

From a technical perspective, BM-04 is a two-stage, solid-propellant missile with a launch weight of 11.5 tons. It measures 10.2 meters in length and 1.2 meters in width. The missile carries a 500 kg warhead and achieves an accuracy of within 30 meters, guided by satellite navigation and an inertial navigation system. It is launched from a transport-launch container.

The development of the BM-04 marks a significant milestone in India's missile

technology advancements and reflects the growing expertise that Indian engineers have fostered under the state strategic program.

That is impressive considering that India's journey into medium-range ballistic missiles began only in the mid-1980s, resulting in the nation's first MRBM, the Agni-I. That missile, capable of striking targets up to 1,200 km away with a reduced-weight warhead, had its final prototype flight in 2002 and was adopted into military service in 2007. DRDO has not yet disclosed a timeline for completing BM-04 testing. However, a poster at the exhibition featured an image of a test launch, suggesting that the missile has already entered the live-fire testing phase.

Source: [https://en.defence-ua.com/weapon\\_and\\_tech/india\\_de\\_classified\\_1500\\_km\\_bm\\_04\\_tactical\\_missile\\_with\\_a\\_hypersonic\\_stage-13749.html](https://en.defence-ua.com/weapon_and_tech/india_de_classified_1500_km_bm_04_tactical_missile_with_a_hypersonic_stage-13749.html). 06 March 2025.

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**Tokyo began work on the Hyper Velocity Gliding Projectile in the late 2010s amid increasing concerns on the defense of its remote islands, particularly those in the East China Sea along the Ryukyus chain. The missile has also been known as the "Hyper Velocity Gliding Projectile for island defense." Japan plans to field the weapon by next year. Chinese forces have sent frequent patrols to the remote island chain. Tokyo's concerns also involve Chinese aspirations over Taiwan, which could see Japanese Southwestern islands be targeted due to their strategic importance.**

## USA

### U.S. Set for \$200M Sale in Support of Japanese Hypersonic Missile Program

The State Department notified Congress this week of a potential \$200 million foreign military sale to support Japan's Hyper Velocity Gliding Projectile program – an indigenously developed hypersonic missile that could target ships. "The Government of Japan has requested to buy equipment and services in

support of its indigenous Hyper Velocity Gliding Projectiles (HVGP) capability, including test preparation, test, and transportation support; coordination meetings in the U.S. and Japan; etc," stated the Defense Security and Cooperation Agency release.

According to the release, equipment and services related to the sale would be provided by the U.S. However, no further details were provided on what this support entailed. "The proposed sale will improve Japan's capability to meet current and future threats by providing defense for remote islands. Japan will have no difficulty absorbing this equipment and services into its armed forces," stated the release.

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The Pentagon claimed that the hypersonic support sale “will not alter the basic military balance in the region.” Alongside the activation of new missile and sealift units in the region was a major missile development and procurement program that aimed to deliver “counterstrike” capabilities to the Japan Self-Defense Force. Aside from foreign procurements, including a 400 Tomahawk missile order last year, Japan has been developing an improved version of its Type 12 anti-ship missile and a submarine-launched capability.

According to a *Naval News* report, Japan will create two variants of the Hyper Velocity Gliding Projectile, with the Block 1 providing training and development opportunities for Japanese forces. Block 2’s design reportedly includes a seeker that will enable the hypersonic missile to target warships up to 1,242 miles away, and a future Block 2B aims to increase range up to 1,800 miles. A video released by the Acquisition, Technology & Logistics Agency includes a conceptual deployment of the Hyper Velocity Gliding Projectile against an aircraft carrier configured for short take-off but arrested recovery—similar to China’s first aircraft carriers. A test last March in California saw the hypersonic weapon travel 570 miles.

*Source: <https://news.usni.org/2025/03/11/u-s-set-for-200m-sale-in-support-of-japanese-hypersonic-missile-program>. 11 March 2025.*

## NUCLEAR ENERGY

### INDIA

#### **Nuclear Energy is Critical for India’s Net Zero Goal, Major Expansion Planned: Dr. Jitendra Singh**

Addressing a post-budget webinar organized by NITI Aayog, Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences, and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh emphasized that Nuclear Energy

**Dr. Jitendra Singh emphasized that Nuclear Energy is critical for India’s Net Zero goal. He highlighted the Union Budget 2024-25’s vision for India’s nuclear power expansion, which sets a target of achieving 100 GW by 2047. Pointing out the crucial role of nuclear energy in India’s transition to clean energy and achieving Net Zero emissions by 2070, he called for private sector participation, regulatory reforms, and sustained public engagement.**

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public engagement.

Highlighting the growing energy demand, Dr. Jitendra Singh stated that India’s electricity needs are expected to increase four to five times by 2047. While renewable energy sources are expanding, they alone cannot meet the base-load demand, making nuclear power a key component of India’s energy strategy. “Achieving 100 GW of nuclear power will require a focused and determined approach, adding around 4 GW annually from now onwards,” he said, expressing confidence in meeting the goal with proper planning and execution.

A major shift in India’s nuclear policy is the proposed involvement of the private sector in designing, building, and operating nuclear power plants. Dr. Jitendra Singh acknowledged that legislative amendments to the Atomic Energy Act, Civil Liability for Nuclear Damage Act, and



Electricity Act would be required to enable this participation. "Opening up the nuclear sector will send a strong policy signal to industry players, boosting investor confidence and encouraging long-term investments," he noted. He also highlighted that NPCIL, along with its subsidiaries, aims to contribute nearly half of the 100 GW target by leveraging domestic and international partnerships. Meanwhile, NTPC's joint venture, Ashwini, has already taken the lead in constructing four 700 MWe PHWRs at Mahi-Banswara.

The Minister further announced the launch of a SMR R&D Mission, with the objective of developing five SMRs by 2033. These reactors, known for their adaptability, could be deployed in industrial zones, remote areas, and hard-to-abate sectors like cement and steel manufacturing. Dr. Jitendra Singh emphasized that India's nuclear energy journey, pioneered by Dr. Homi Bhabha, was often met with skepticism, both domestically and internationally, due to restrictive global policies and misplaced concerns over nuclear proliferation. However, he noted that under Prime Minister Modi's leadership since 2014, India has witnessed a paradigm shift, with greater acceptance of its nuclear energy program as a key component of clean and sustainable power generation. He pointed out that unlike in the past, the announcement of a 100 GW nuclear target has not faced any negative implications, reflecting India's growing credibility in the global nuclear community and the recognition of its responsible and transparent approach to nuclear energy development.

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a nationwide awareness campaign to address public concerns regarding nuclear energy. "A much more vigorous and sustained public outreach program is necessary to dispel fears and highlight nuclear power as a safe and clean energy source," he said, urging collaboration among government agencies,

private players, and environmental groups. With a roadmap now being formulated in consultation with stakeholders, the Minister affirmed that while challenges exist, achieving the 100 GW target by 2047 is both ambitious and achievable.

*Source: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2108130>. 04 March 2025.*

## **INDONESIA**

### **Thorcon Applies to Build Indonesia's First Nuclear Power Plant**

PT Thorcon Power Indonesia (PTTPI) - a subsidiary of Thorcon International, a Singapore-based company - submitted its Site Evaluation Programme (PET) and Site Evaluation Management System (SEMET) documents for approval to Indonesia's Nuclear Energy Regulatory Agency (BAPETEN) during a meeting held on 13 February at BAPETEN's

Jakarta office. It was presented by Thorcon Chief Nuclear Officer Kun Chen to BAPETEN's Deputy Chairman Haendra Subekti.

"With this submission, PT TPI officially becomes the first NPP licence applicant in Indonesia's history, positioning the country for a

new era of nuclear energy innovation and development," Thorcon said. It added that it is "fully committed to addressing any feedback from BAPETEN during the review process to ensure a swift and thorough evaluation."

The submission follows almost two years of pre-

licensing consultations. In March 2023, PT TPI and BAPETEN signed an agreement to officially start a '3S' (safety, security and safeguards) consultation in preparation for licensing a demonstration 500 MWe Thorcon molten salt reactor. The consultation included: a review of the master plan document for the construction of the plant; consultation on the roadmap related to the reactor prototype and the Non-fission Test Platform (NTP) facility; preparation of technical and non-technical documents related to the reactor prototype and NTP required for licensing; and consultation on reactor design approval.

PT TPI's proposed plant is based on technology developed by the USDOEOak Ridge National Lab in the 1960s. It will feature the Thorcon 500, a 500 MWe molten salt reactor (MSR) power plant, comprised of two low-enriched-uranium-fueled 250 MWe reactors in two replaceable, sealed 'Cans'. At any one time, just one of the Cans of each power module is producing thermal power. After eight years of operation, the nuclear module is disconnected, replaced with a new one, and towed to a maintenance centre for Can replacement.

MSRs use molten fluoride salts as primary coolant, at low pressure. They may operate with epithermal or fast neutron spectrums, and with a variety of fuels. Much of the interest today in reviving the MSR concept relates to using thorium (to breed fissile uranium-233), where an initial source of fissile material such as enriched uranium needs to be provided. "Designed for modular manufacturing, the Thorcon 500 aligns with the highest international safety standards

and is expected to play a key role in Indonesia's energy transition," the company said. "After the initial plants is successfully deployed, Thorcon intendsto develop a local manufacturing assembly line for Thorcon reactors, fostering the growth of a new industrial sector in Indonesia."

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A preliminary site survey conducted on Kelasa Island, located in Central Bangka in Bangka Belitung Province has identified the site as "a strong candidate" for the plant, Thorcon said. "The survey focused on safety, ecological, and site suitability factors, with

initial results showing promise for further studies." "We are thrilled to announce that PT TPI has become the first applicant for a nuclear power plant licence in Indonesia," said Chen. "This submission marks a historic moment for Indonesia, and we are proud to be leading the charge in

**The Indonesian government has committed to implementing an energy transition to reduce climate change and achieve net-zero emissions by encouraging research and development of renewable power generation technologies. The government is targeting 8 GWe of installed capacity to come from nuclear power plants in 2035, increasing to 54 GWe in 2060.**

bringing innovative nuclear energy solutions to the nation. We are fully prepared to collaborate with BAPETEN and undergo a rigorous evaluation process. Our commitment is to bring Indonesia's first operational nuclear power plant online by 2032 or earlier, supporting the country's economic growth, energy security, and sustainability."

"We recognise and appreciate the efforts of PT TPI for their proactive consultations within the 3S framework," BAPETEN's Subekti said. "This approach ensures that all safety and security aspects are addressed and will help minimise technical and administrative obstacles as the licensing process continues."

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renewable power generation technologies. The government is targeting 8 GWe of installed capacity to come from nuclear power plants in 2035, increasing to 54 GWe in 2060. PT TPI said its proposed plant “will provide a stable, low-cost source of baseload electricity that will complement renewable energy sources like solar and wind”.

Source: <https://www.world-nuclear-news.org/articles/thorcon-applies-to-build-indonesias-first-nuclear-power-plant>. 05 March 2025.

## **KAZAKHSTAN**

### **Kazakhstan Nuclear Power Plant Project Moving Ahead**

According to a decree officially published on the Minister of Justice’s website, a government decision was made on 30 December on the construction area, with the resolution entering into force “on the day of its first official publication”. Kazakhstan has well-developed plans for new nuclear, with more than 71% of people who voted in a referendum in October answering yes to the question: “Do you agree with the construction of a nuclear power plant in Kazakhstan?” In an update, the Ministry of Energy reported that Energy Minister Almassadam Satkaliyev said a national strategy for the nuclear industry up to 2050 was under development. He added that, following the decision on the proposed facility’s location, in 2025 “it is planned to select a technology supplier (or consortium) for the construction of a nuclear power plant, as well as conclude an intergovernmental agreement and

**In an update, the Ministry of Energy reported that Energy Minister Almassadam Satkaliyev said a national strategy for the nuclear industry up to 2050 was under development. He added that, following the decision on the proposed facility’s location, in 2025 “it is planned to select a technology supplier (or consortium) for the construction of a nuclear power plant, as well as conclude an intergovernmental agreement and relevant contracts”.**

relevant contracts”. There are reported to be four technology suppliers being considered - China National Nuclear Corporation (HPR-1000), France’s EDF (EPR1200), Korea Hydro and Nuclear Power (APR-1000/APR-1400) and Russia’s Rosatom (VVER-1200 reactor).

Source: <https://www.world-nuclear-news.org/articles/kazakhstan-nuclear-power-plant-project-moving-ahead>. 26 February 2025.

## **SOUTH KOREA**

### **KHNP, Samsung C&T Team Up for Global Nuclear Projects**

According to the agreement - signed by KHNP President Joo-ho and Samsung C&T President Se-cheol in Seoul - the two companies agreed to collaborate on: joint proposals for new nuclear power projects utilising business-to-business (B2B) cooperation; strengthening competitiveness for large nuclear power bids; and collaboration on SM Rs for the development of new overseas nuclear power projects. In particular, they plan to closely cooperate to

identify nuclear power plant projects in the Asia Pacific region, where demand is expected to surge.

“In this changing global business environment, we will strive to build a stable partnership with Samsung C&T and open up new markets by utilising various business models,” said Hwang Joo-ho. “If the

two companies, which have experience in managing nuclear power plants, the ability to

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execute large-scale infrastructure projects, and an international network and understanding, join forces, we will be able to create a more competitive business model.”

Oh Se-cheol added: “In order to lead the global nuclear power plant market, it is essential to establish a differentiated business model that suits each country’s energy policy and demand. We expect to create innovative synergy through mutual cooperation based on the technological prowess and global experience accumulated by both companies in large-scale nuclear power plants and small modular reactors.” In January, KHNP announced it had signed memorandums of understanding on cooperation with Norway’s Norsk Kjernekraft and Sweden’s Kärnfull Next to “strengthen its foothold in the European market with its innovative SM R(i-SM R).”

**The CANDU reactor, a natural uranium-fuelled and Canadian-designed technology, has played a pivotal role in Canada’s energy infrastructure and has been exported to numerous countries seeking clean and reliable energy solutions. With this modernisation initiative, the government aims to provide an updated, cost-effective CANDU reactor design that will bolster both domestic and international nuclear energy expansion.**

KHNP said the agreements reflect changes in the global market. Recently, it said, the SM R market has been attracting attention for its new business structure led by energy consumers and developers, moving away from the existing business model centred on nuclear power plant operators. In December last year, Samsung C&T - Samsung C&T - which worked on the construction of the Korean-supplied Barakah nuclear power plant in the UAE - announced it had signed an MoU with Kärnfull Next to advance the deployment of SM Rs in Sweden.

Source: <https://www.world-nuclear-news.org/articles/khnp-samsung-ct-team-up-for-global-nuclear-projects>. 11 March 2025.

**SM ALL M ODULAR REACTORS**

**CANADA**

**Canada Announces Major Investments in CANDU Reactor and SM R Technology**

Canada is reinforcing its leadership in nuclear power with significant investments in its homegrown CANDU reactor technology. Recognised globally for its reliability and

efficiency, CANDU reactors have long played a crucial role in Canada’s energy landscape. With rising demand for secure, non-emitting electricity, the Canadian Government is taking decisive action to modernise and expand this technology – ensuring a resilient energy future for both domestic and international markets. Jonathan Wilkinson, Minister of Energy and Natural Resources, recently announced a preliminary agreement with AtkinsRéalis to support the development of a new large-scale CANDU nuclear reactor.

Major investment in CANDU reactor development: As part of this agreement, the Government of Canada will provide up to \$304m over four years to finance half of AtkinsRéalis’ design project for the next-generation CANDU reactor, known as MONARK. This effort will also engage Atomic Energy of Canada Limited (AECL),

which owns the CANDU intellectual property, along with operators and the broader Canadian supply chain. The CANDU reactor, a natural uranium-fuelled and Canadian-designed technology, has played a pivotal role in Canada’s energy infrastructure and has been exported to numerous countries seeking clean and reliable energy solutions. With this modernisation initiative, the government aims to provide an updated, cost-effective CANDU reactor design that will bolster both domestic and international nuclear energy expansion. ...

Strengthening Canada’s nuclear supply chain: CANDU reactors are uniquely advantageous due to their entirely Canadian-based design and supply chain. They create long-term, well-paying jobs across Canada, particularly in manufacturing and uranium mining. Unlike many other nuclear technologies, CANDU reactors use natural uranium mined in Saskatchewan, eliminating the need for enrichment and ensuring energy independence. Modernising the CANDU reactor will strengthen Canada’s energy security while supporting its allies in transitioning to cleaner electricity generation.



Investments in small modular reactors: Beyond CANDU reactor advancements, Canada is also investing in emerging nuclear technologies like SMRs. Minister Wilkinson announced \$55m in funding from the Future Electricity Fund to support Ontario Power Generation's Darlington New Nuclear Project. This project will advance three GE Hitachi BWRX-300 SMRs, each capable of generating 300 megawatts of zero-emission electricity – enough to power approximately 900,000 homes. Additionally, funding for Saskatchewan's SaskPower SMR development has increased from \$24m to \$80m, supporting pre-engineering studies, environmental assessments, and community engagement efforts. ...

*Expanding nuclear capacity across Canada:* **The Government of Canada is also investing \$52.4m in projects that support the development and deployment of both CANDU reactors and SMRs across Saskatchewan, Alberta, and Ontario. These investments aim to decarbonise energy grids, expand nuclear capacity, and position Canada as a global leader in clean energy solutions. With strategic investments in nuclear energy, Canada is reinforcing its role as a key energy supplier while ensuring a sustainable and resilient power grid for the future. By modernising CANDU reactor technology and supporting SMR innovation, the country is paving the way for a cleaner, more secure energy landscape.**

*Source: <https://www.innovationnewsnetwork.com/canada-announces-major-investments-in-candu-reactor-and-smr-technology/56176/>. 06 March 2025.*

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## GENERAL

### Data4 Signs Nuclear SMR Deal with Westinghouse

European data center firm Data4 is looking to deploy nuclear smaller modular reactors (SMRs) from Westinghouse. Brookfield-owned Data4 this week announced it has signed a MoU to explore the use of

Westinghouse Electric Company's AP300 SMR to power future data centers in Europe. Under the agreement, Data4 will use the AP300 SMR as its technology of choice to evaluate deployment at one of its future data centers in Europe and reduce reliance on fossil fuels. Further details were not shared. "The data center industry is undergoing a profound transformation. With the rise of AI,

energy supply is evolving rapidly. In the past, data centers relied solely on traditional power utilities. Today, we are entering an era where the campuses of the future will be powered by multiple intelligent sources, seamlessly integrating on-site generation, traditional grid supply, and energy storage," said Olivier Micheli, Data4's CEO. "By integrating a solution such

as the Westinghouse AP300 SMR, these campuses will gain greater energy autonomy, reducing their reliance on traditional grids and helping to alleviate pressure on public power networks. This marks a major step toward a more resilient, sustainable, and self-sufficient data center infrastructure."

The design of the AP300 SMR technology is based on Westinghouse's larger already operating advanced Generation III+ reactor, the AP1000 unit. The AP300 SMR is expected to be in operation by the early 2030s. Based on pressurized light water technology, each will offer 330MWe of nuclear

capacity. Westinghouse announced the AP300 last year, saying it would utilize identical AP1000 technology, including major equipment, structural components, passive safety, proven fuel, and I&C systems. Each offers more than 1GW of capacity, the first AP1000 unit launched in 2018; there are a dozen in operation or construction globally, with 19 more planned.

Westinghouse last year signed an agreement with Community Nuclear Power Limited for the delivery of four AP300 small modular reactors to the North Teesside region of northeast England. "As technology centers and cloud providers expand data infrastructure to meet increasing demand, small modular reactors offer a promising solution for powering the next generation of energy-intensive computing," said Patrick Fragman, President and CEO of Westinghouse. "Our AP300 modular reactor can provide data centers with a dedicated, on-site power source for reliable and carbon-free energy."

Established in 2006 by Colony Capital (now DigitalBridge) and owned by Brookfield since April 2023, Data4 currently operates around 30 data centers in France, Italy, Spain, Poland, and Luxembourg. The company is set to invest some €20bn (\$20.7bn) expanding in France over the next five years. Amid a desire for large amounts of reliable baseload power available quickly, micro and SMR have become hot topics in the data center market. Companies including Edged, Amazon, Google, Oracle, Sabey, Prometheus Hyperscale, Equinix, Switch, and others have signed deals to procure SMRs from various providers.

Source: <https://www.datacenterdynamics.com/en/news/data4-signs-nuclear-smr-deal-with-westinghouse/>. 11 March 2025.

## MYANMAR-RUSSIA

### Myanmar and Russia Sign SMR Cooperation Agreement

The agreement sets out the terms and main areas of interaction between the parties and the possibility of a further expansion of capacity to 330 MW. It was signed by Rosatom Director General Likhachev and Myanmar's Science and Technology Minister Kyaw. A memorandum of cooperation in the field of nuclear and radiation

safety was also signed. Agreements on establishing cooperation between the two countries in the peaceful use of nuclear technology were signed in February 2023, with other agreements also now in place covering workforce training and infrastructure.

Although Myanmar was a founding member of the IAEA, it does not have any nuclear energy at the moment. It signed a country programme

framework with the IAEA in 2016 and also joined the Convention on Nuclear Safety in the same year. It has been a signatory of the NPT since 1992. In 2019, Myanmar produced 24.3 TWh of energy with 13.7 TWh from fossil fuels and 10.5 TWh from hydro - Rosatom is also working with Myanmar on a 200 MW wind power plant in the country.

After talks with Myanmar's Prime Minister Hlaing, Russian President Putin told reporters the two countries were "exploring opportunities for cooperation in the energy sector ... including the use of renewable energy sources" and said the intergovernmental agreement relating to the SMR "paves the way for providing Myanmar's economy with affordable and environmentally friendly energy. This will serve as a strong impetus for further economic growth, the creation of thousands of new jobs, and the development

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of highly skilled national personnel". Russia already has a land-based SMR under construction and a sea-based one operating and it sees considerable export potential. Last year Uzbekistan signed a contract for a six-unit SMR plant, featuring six of the 55 MW RITM-200N

**Russia already has a land-based SMR under construction and a sea-based one operating and it sees considerable export potential. Last year Uzbekistan signed a contract for a six-unit SMR plant, featuring six of the 55 MW RITM-200N pressurised water reactors adapted from the RITM-200 used in Russia's nuclear icebreakers.**

"Small modular reactors will support our mission to become a clean energy superpower. That's why we are backing new nuclear technology to help secure our energy independence and grow the economy."

Source: <https://www.world-nuclear-news.org/articles/uks-smr-selection-process-into-final-stage>. 28 February 2025.

pressurised water reactors adapted from the RITM-200 used in Russia's nuclear icebreakers.

Source: <https://www.world-nuclear-news.org/articles/myanmar-and-russia-sign-smr-cooperation-agreement>. 05 March 2025.

## UK

### UK's SMR Selection Process 'Into Final Stage'

GE Hitachi, Holtec, Rolls-Royce SMR and Westinghouse have been issued with an Invitation to Submit Final Tenders, with Great British Nuclear saying it remains on track to select the chosen technology before the summer. There were initially six companies shortlisted by Great British Nuclear (GBN) - the arms-length body set up to oversee the UK's plans for new nuclear - with the four shortlisted companies entering negotiations last September. The aim is for GBN to select one or two of the technologies, with the intention of supporting the deployment of multiple units of a company's SMRs at a site. GBN currently owns land for potential new nuclear at Wylfa in Anglesey in North Wales, and at Oldbury in Gloucestershire in southwest England, but other sites could also be chosen. Simon Bowen, GBN chairman, said: "This is an exciting moment for Great British Nuclear and the UK as we reach the final stage of the technology selection process for the Small Modular Reactor programme." Energy Security and Net Zero Secretary, Ed Miliband, said:

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## NUCLEAR COOPERATION

### HUNGARY-USA

#### Hungary to Strengthen Nuclear Cooperation with the US

Hungarian Foreign Minister Szijjártó and US State Secretary Rubio discussed the possibilities for developing Hungarian-US energy cooperation, with special focus on nuclear energy. "We discussed

the possibilities for developing Hungarian-US energy cooperation, with nuclear energy as the primary area of interest," Minister Szijjártó wrote on Facebook. "Hungary and the U.S. both see nuclear energy as an important element in guaranteeing energy security, which is why the possibility of technological cooperation

in this field is a natural one."

Szijjártó highlighted Westinghouse, as one of the world's leading companies in nuclear technology, which can play an important role in the breakthrough to create SMR that can be built in shorter timeframes. Minister Szijjártó is responsible for the Paks II investment, which was launched in early 2014 by an intergovernmental agreement between Hungary and Russia for two VVER-1200 reactors to be supplied by Rosatom. However, Szijjártó nowadays often talks about SMRs and alternative nuclear suppliers,

like recently in the UK.

Source: <https://ceenergynews.com/nuclear/hungary-nuclear-cooperation-us/>. 06 March 2025.

**NUCLEAR NON-PROLIFERATION**

**GENERAL**

**IAEA Chief Fears Nuclear Non-Proliferation Treaty Won't Survive**

The head of the IAEA has told CGTN that he's concerned about the NPT, and whether it can survive in its current form. Speaking to CGTN correspondent Johannes Pleschberger, Rafael Grossi said it was debatable whether or not nuclear weapons were the "ultimate guarantor of peace" that people think they are. He was responding to a speech on Friday by Polish Prime Minister Tusk, who said his country "must reach for the most modern capabilities also related to nuclear weapons and modern unconventional weapons."

Tusk told the Polish parliament that Ukraine had given up nuclear weapons and was now being attacked by Russia. Germany's next chancellor, Friedrich Merz, has also talked about Germany coming under the French-UK "nuclear umbrella." Like most countries, Germany and Poland do not possess nuclear weapons. Both are signatories to the NPT – which prohibits nations that were not among five declared nuclear powers in 1970 from acquiring atomic weapons.

In the five-and-a-half decades since that treaty came into force, only four other nations have declared themselves to possess nuclear weapons. But now, things have changed dramatically.

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**In the five-and-a-half decades since that treaty came into force, only four other nations have declared themselves to possess nuclear weapons. But now, things have changed dramatically. Europe's ability to defend itself has been thrust into the spotlight since Donald Trump's return to the White House. The U.S. President has long called on America's NATO partners to pay more into the alliance, to cover the cost of collective defense. It was a key message of Trump's first term – a policy that achieved some limited results.**

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But the conflict in Ukraine has brought a hyper-accelerated agenda from Trump 2.0 – with many seeing his administration's aggressive moves on Ukraine as a geopolitical shift, a sign that America is turning its back on its traditional allies. Several commentators have warned of the ultimate breakup of NATO itself. Grossi told CGTN that it was important "not to lose the objective of limiting the number of countries with nuclear weapons."

However, in an apparent contradiction of that statement, Grossi also highlighted that Poland and Germany have had American nuclear missiles stationed on their territory for decades, and appeared to suggest that it wouldn't matter if they were replaced by European weapons. "One has to make a distinction between developing domestic nuclear weapons and or having the benefit of other countries' nuclear weapons for protection," he told CGTN. "This I would say, is not new. Remember that in Europe there are American nuclear weapons that have been stationed for many, many years. Here the debate is more of whose nuclear weapons should be providing this protection. Should they be from America or from other countries?"

Source: <https://newseu.cgtn.com/news/2025-03->



*12/IAEA-chief-fears-nuclear-non-proliferation-treaty-won-t-survive-1BFjDFw3d4c/p.html. 12 March 2025.*

**NUCLEAR DISARMAMENT**

**KAZAKHSTAN**

**UN Nuclear Weapons Ban Conference Chaired by Kazakhstan Concludes with Key Agreements**

The Third Conference of States Parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW), chaired by Kazakhstan, concluded on March 7 at UN headquarters. The Ministry of Foreign Affairs press service reported that discussions under Kazakhstan's presidency fostered constructive dialogue and led to consensus on key documents to strengthen the treaty's implementation. The conference reaffirmed the global commitment to nuclear disarmament, with delegates adopting a Political Declaration condemning nuclear threats and emphasizing the severe humanitarian and environmental consequences of nuclear weapons.

First Deputy Minister of Foreign Affairs Akan Rakhmetullin, serving as the conference president, emphasized the immediate need for nuclear disarmament, citing the devastation caused in Hiroshima and Nagasaki, as well as nuclear testing at the Semipalatinsk Test Site. According to him, "the elimination of nuclear weapons is not a matter of the distant future but a practical and urgent task."

One of the key outcomes of the conference was the approval of a proposal by Kazakhstan and Kiribati to establish an International Trust Fund. The initiative aims to assist victims of nuclear weapons use and testing while supporting environmental rehabilitation of contaminated areas. Delegates agreed to finalize the fund's framework by mid-2026, with plans to launch it

at the 2026 TPNW Review Conference.

Participants also agreed on measures to expand the number of TPNW states parties and enhance cooperation with parliaments, scientific institutions, and civil society to advance disarmament efforts. Delegates commended Kazakhstan's leadership and long-standing commitment to nuclear disarmament. They highlighted the country's consistent foreign policy under President Tokayev, recognizing it as a reliable partner in promoting global security and non-proliferation.

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The conference also featured thematic events and exhibitions on nuclear disarmament. Kazakhstan's side event, "Semipalatinsk Test Site: The Cost of Nuclear Weapons – A Warning to the World," included contributions from the National Nuclear Center of Kazakhstan, Semei Medical University, and Goodwill Ambassador Karipbek Kuyukov. The

"Echoes of the Polygon" exhibition and the documentary film "I Want to Live On" provided personal accounts from witnesses and survivors of nuclear testing.

Kazakhstan's presidency at the conference reaffirmed its leading role in the global anti-nuclear movement. In the year marking the UN's 80th anniversary, the country's effective leadership further solidified its reputation as a middle power with an independent and balanced foreign policy. Adopted in 2017 and entering into force in 2021, the TPNW is the first legally binding international mechanism aimed at the complete elimination of nuclear weapons. Having voluntarily renounced the world's fourth-largest nuclear arsenal and closed the Semipalatinsk Nuclear Test Site, Kazakhstan remains one of the global leaders in the anti-nuclear movement.

*Source: <https://astanatimes.com/2025/03/un-nuclear-weapons-ban-conference-chaired-by-kazakhstan-concludes-with-key-agreements/>. 11 March 2025.*

**NUCLEAR SAFETY**

**CHINA**

**Passive Safety Modules Installed at Chinese Units**

The passive water tank of the reactor building has been installed at unit 3 of the Xudabao nuclear power plant in China's Liaoning province. Meanwhile, the first module of the passive reactor cavity water injection tank has been installed at unit 3 of the Zhangzhou plant in Fujian province. In the event of leakage in the primary circuit the passive heat removal system assures the transition of steam generators to operation in the mode of condensation of the primary circuit steam. As a result, the condensate from steam generators arrives at the core providing additional cooling.

The passive water tank of the reactor building of Xudabao unit 3 consists of four modules, each of which is composed of reinforced concrete slabs, stainless steel cladding, penetrations, heat exchangers, and wall reinforcements. The four modules were hoisted into place on 25 February, China National Nuclear Corporation (CNNC) subsidiary China Nuclear Power Engineering Company Limited (CNPEC) announced. The hoisting weight of a single water tank module is 325.9 tonnes. The completed tank features 33 penetrations and 16 heat exchangers arranged within it. The installation of the tank marks "a key step in the main civil construction work of the nuclear island building of unit 3, creating favourable conditions for subsequent major nodes such as cold tests and hot tests", CNPEC said.

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**Zhangzhou 3 is the third of four Hualong One units being built at the site. Construction of Zhangzhou 1 began in October 2019, with that of unit 2 starting in September 2020. Unit 1 entered commercial operation on 1 January this year, while unit 2 is scheduled to enter commercial operation by the end of 2025.**

In June 2018, Russia and China signed four agreements, including for the construction of two VVER-1200 reactors at the new Xudabao (also known as Xudapu) site. Agreements signed in June 2019 included a general contract for the construction of Xudabao units 3 and 4, as well as

a contract for the supply of nuclear fuel. Construction of Xudabao unit 3 began in July 2021, with that of unit 4 starting in May 2022. Commissioning of the units is scheduled for 2027 and 2028, respectively. The Xudabao plant is owned by Liaoning Nuclear Power Company Limited, a joint venture between CNNC (70%), Datang International Power Generation Company

(20%) and State Development and Investment Corporation (10%).

*Module installed at Zhangzhou 3:* CNNC announced the first module of the passive reactor cavity water injection tank of reactor building of Zhangzhou

unit 3 was successfully hoisted on 2 March. "Based on the experience gained from the construction of the first phase of the Zhangzhou Nuclear Power Project, CNNC Zhangzhou Energy continues to promote the fully modular construction technology of stainless-steel water pools," it said.

The passive reactor cavity water injection tank is an important component of the reactor cavity cooling system. The water tank is a fully enclosed fan-shaped structure. During its construction, cutting-edge technologies such as automatic welding technology for stainless steel coverings, customised support trusses, and overall modular construction technology were applied. It was hoisted into place as a whole by a 2000-tonne crawler crane.

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In September 2022, China's State Council approved the construction of two Hualong One units as Phase II - units 3 and 4 - of the Zhangzhou plant. Construction of unit 3 began in February last year, with that of unit 4 starting in September. The Zhangzhou project - with a total investment of over CNY100 billion (USD14 billion) - is owned by CNNC-Guodian Zhangzhou Energy Company, a joint venture between CNNC (51%) and China Guodian Corporation (49%).

Source: <https://www.world-nuclear-news.org/articles/passive-safety-module-installed-at-chinese-units>. 06 March 2025.

### UZBEKISTAN

#### IAEA to Assist Uzbekistan in Joining Nuclear Safety Treaties

On March 5 in Vienna, Uzbekistan's Atomic Energy Agency (Uzatom) Director Azim Akhmedkhadjjev and IAEA Director General Grossi discussed Uzbekistan's potential accession to international legal documents related to nuclear safety. "The IAEA expressed its readiness to send a group of international lawyers to assist in the implementation of international obligations and the adaptation of legislation to modern requirements," the press service said, News.Az reports citing Interfax. The press service said that special attention at the meeting was paid to the projects and initiatives of the Uzbek side in the area of radiation and isotope technologies.

Additionally, a proposal was discussed to organize a school on small modular reactors in the Tashkent branch of the National Research Nuclear

University MEPHl in order to improve the qualifications of specialists, the press service said. Following the meeting, Grossi positively assessed the strategic initiatives of Uzbekistan in the area of nuclear energy and nuclear technologies, noting their prospects, and he confirmed the status of Uzbekistan as a key partner of the IAEA in the region, the press service said.

Uzbekistan plans to build the country's first nuclear power plant. JSC Atomstroyexport, the engineering division of Rosatom state nuclear energy corporation, and Uzbekistan's State Unitary Enterprise Directorate for Construction of Nuclear Power Plants under the Agency for Atomic Energy under the Cabinet of Ministers in May 2024 signed a contract on construction a small-capacity nuclear

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power plant (SNPP). The project envisages constructing a SNPP in the Jizzakh Region based on a Russian design with capacity of 330 MW, totaling six reactors with capacity of 55 MW each. Rosatom will act as the general contractor for the construction of the station, and local companies will also be involved in the construction. Uzatom and

Atomstroyexport in early September signed a protocol on commencing work at the construction site of the future station. Uzatom intends to obtain permission in early 2026 for the construction. Commissioning the facilities is planned in stages from 2029 to 2033.

Source: <https://news.az/news/iaea-to-assist-uzbekistan-in-joining-nuclear-safety-treaties>. 06 March 2025.

### URANIUM PRODUCTION

#### KAZAKHSTAN-SOUTH KOREA

#### KHNP to Collaborate with Kazakhstan on Uranium Research

Korea Hydro & Nuclear Power has signed two agreements to collaborate with Kazakhstan on the

utilisation of uranium resources dissolved in seawater and groundwater. The company signed memorandums of understanding with Al-Farabi National University on 3 March, and with the Institute of High Technologies (IHT) on 4 March. IHT is the research arm of Kazatomprom. The MOUs aim to facilitate technological exchange and joint research between the two countries to identify promising water resources for uranium extraction, KHNP said. Under the agreements, Korea Hydro & Nuclear Power (KHNP), Al-Farabi University, and IHT will jointly investigate uranium concentrations and distribution in Kazakhstan's seawater and groundwater. They will also conduct performance evaluations of uranium adsorbents, a key technology currently under development by KHNP.

KHNP said it is actively researching efficient uranium extraction from seawater and is developing adsorbents as one of the key methods for this process. If these collaborations confirm the feasibility of utilising Kazakhstan's water resources for uranium extraction, further technological cooperation between the two countries is expected to expand significantly, it added. "This agreement will further strengthen technological cooperation between our two nations in the field of seawater uranium resource utilisation," Shin Ho-cheol, director of KHNP's Central Research Institute, said.

*Source: <https://world-nuclear-news.org/articles/khnp-to-collaborate-with-kazakhstan-on-uranium-research>. 07 March 2025.*

**NUCLEAR WASTE MANAGEMENT**

**FINLAND**

**Finland Completes Key Trial for World's First Deep Geological Nuclear Waste Repository**

Finland has made progress toward the permanent disposal of spent nuclear fuel, completing the first trial run at Posiva's Onkalo final repository encapsulation plant, a statement said on Tuesday. Posiva said five spent nuclear fuel canisters had been encapsulated during the trial. Those were subjected to inspections and transferred successfully to the underground storage at a depth of 430 metres.

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According to Posiva's production director Karri Osara, staff is now ready to begin the trial run phase for the repository facilities located underground. A full-system trial run at Onkalo began on 30 August 2024 to test all equipment and related systems working together for the first time. The first stage of the trial in September involved transferring an empty test cask for spent fuel from nuclear operator Teollisuuden Voima's (TVO) interim storage to Posiva's encapsulation plant. In the final disposal facility, spent fuel assemblies will be encapsulated and placed in the bedrock at a depth of about 400 metres. The facility comprises two sections: the above-ground encapsulation plant for the encapsulation of the spent fuel in canisters, and the final repository deep in the bedrock, with tunnels in which the spent fuel will be placed. Posiva said it has been using non-radioactive test elements instead of actual spent nuclear fuel during the trials.

According to the company, the trial run of final



disposal is a final demonstration of the functionality of the final disposal process as a whole and of the readiness of the personnel for commercial operation. Posiva has been working for several decades at the Onkalo site to develop a concept for final disposal and demonstrate long-term safety. In May 2021, excavation began of final disposal tunnels while Posiva has also built the above-ground encapsulation plant for used fuel at the Onkalo site. Onkalo will become the first operational deep geological disposal facility in the world with full startup scheduled for the mid-2020s.

Source: <https://www.nucnet.org/news/finland-completes-key-trial-for-world-s-first-deep-geological-nuclear-waste-repository-3-2-2025>. 04 March 2025.

## **SOUTH KOREA**

### **South Korea Enacts Legislation on High-Level Waste**

South Korea's National Assembly has passed an act that stipulates the construction of interim storage facilities for high-level radioactive waste by 2050 and permanent disposal facilities by 2060. The High-Level Radioactive Waste Special Act was passed by the National Assembly during a plenary session on 27 February. It was enacted through an agreement between the ruling and opposition parties nine years after discussions on the legislation first began.

The act includes provisions for the construction and operation of interim storage facilities and permanent disposal facilities for high-level radioactive waste, and support for hosting areas. It includes the establishment of the High-Level Radioactive Waste Management Committee under the Prime Minister, the establishment of a procedure for selecting a high-level radioactive waste storage site, as well as measures for collecting opinions and supporting them in surrounding areas when installing storage

facilities on nuclear power plant sites. It also calls for the construction of underground research facilities for research purposes for technology development and verification required for construction and operation of disposal facilities.

The bill stipulates that the high-level radioactive waste interim storage facility will be operated before 2050 and the disposal facility before 2060, "so the government plans to begin the site selection process in earnest in line with the enforcement of the law," the Ministry of Trade, Industry and Energy said. The legislation states that upon completion of the interim storage facility, used nuclear fuel will immediately be removed from on-site storage facilities, and the introduction of used fuel from other nuclear power plants into the on-site storage facilities would be prohibited.

"As the spent nuclear fuel currently temporarily stored

in nuclear power plants is expected to gradually reach saturation, starting with the Kori and Hanbit nuclear power plants in 2031, a management facility that can safely dispose of and permanently isolate spent nuclear fuel has been established, and a support plan has been established for the areas hosting the facilities," the National Assembly said. ...

Source: <https://world-nuclear-news.org/articles/south-korea-enacts-legislation-on-high-level-waste>. 04 March 2025.

## **USA**

### **A Serious Risk: DOGE Targets America's Only Underground Nuclear Waste Disposal Site**

Elon Musk's DOGE appears to have targeted a building lease for the Carlsbad field office overseeing the country's only underground nuclear waste disposal site, prompting immediate censure from members of New Mexico's congressional delegation. The Department of Energy Carlsbad

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Field Office is in the Skeen-Whitlock building, a 90,000 square foot facility that houses 200 workers who manage the Waste Isolation Pilot Project – better known as WIPP. WIPP itself is not at the Skeen-Whitlock building. The underground waste depository lies in a saltbed about 26 miles east of Carlsbad and is the nation's only storage site for defense-related nuclear waste. Most of the items disposed of are soiled with elements heavier than uranium – such as plutonium.

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nuclear waste effectively,” Vasquez said. “It is imperative that DOE and GSA provide immediate clarity on this issue and work collaboratively to ensure that WIPP's mission is not compromised.” U.S. Sen. Ben Ray Luján (D-N.M.) also issued a statement Tuesday, saying he will fight the closure of the facility.

Members from Vasquez's office sent an email to the U.S. General Services Administration, which manages the federal government's leases, writing that the closure

The building was listed as one of the more than 7,000 leases listed as terminated by DOGE, but there is no additional information. Members of the U.S. the Department of Energy national and Carlsbad Field Office did not respond Tuesday morning to a request for information. The building's potential closure poses risks to both the environment and national security, U.S. Rep. Gabe Vasquez (D-N.M.) said in a written statement.

was “deeply concerning.” “The Carlsbad Field Office has already lost approximately 30% of its staff in the past month. This office is home to WIPP emergency response staff, who play a critical role in ensuring the safe management of defense-related nuclear waste,” legislative assistant Emily Hartshorn wrote. “Closing this facility would pose a serious risk to national security.”

*Source: <https://www.msn.com/en-us/news/us/a-serious-risk-doge-targets-americas-only-underground-nuclear-waste-disposal-site/ar-AA1Af7iM>. 04 March 2025.*

“The abrupt closure of the Skeen-Whitlock building would further strain our ability to manage



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P-284

Arjan Path, Subroto Park,

New Delhi - 110010

Tel.: +91 - 11 - 25699131/32

Fax: +91 - 11 - 25682533

Email: capsnetdroff@gmail.com

Website: [www.capsindia.org](http://www.capsindia.org)

**Edited by: Director General, CAPS**

**Editorial Team:** Dr. Sitakanta Mishra, Dr. Ngangom Dhruba Tara Singh, Prahlad Kumar Singh, Javed Alam, Rishika Singh, Sanaa Alvira.

**Composed by: CAPS**

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