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OPINION-Manpreet Sethi

The North Korean Nuclear Knot and China's Dilemma

The relationship between China and North Korea has often been described as similar to that between lips and teeth. Besides sharing the political ideology of communism, China is important for North Korea for sustaining its economy, especially in the face of increasingly severe economic sanctions as Pyongyang continues its nuclear and missile advancements. China ensures that its neighbour's economy remains sufficiently afloat, even as it stands as a bulwark against global criticism of North Korea's actions.

Meanwhile, North Korea, particularly with its nuclear capability, is important for China not only as an instrument to complicate US security concerns, but also as an effective buffer against perceived hostile elements in the region. Therefore, in order to secure its own interests, China remains deeply invested in North Korean stability. Beijing's preference is for a Pyongyang that is internally politically stable, fairly economically viable, ideologically in sync with the Chinese Communist Party (CCP), headed by a leader who is personally obliged to China, and whose interactions with the world can be dictated and moderated by Beijing. In other words, a

North Korea, particularly with its nuclear capability, is important for China not only as an instrument to complicate US security concerns, but also as an effective buffer against perceived hostile elements in the region. Therefore, in order to secure its own interests, China remains deeply invested in North Korean stability.

CONTENTS

- ☞ OPINION
- ☞ STATEMENT
- ☞ NUCLEAR STRATEGY
- ☞ BALLISTIC MISSILE DEFENCE
- ☞ URANIUM PRODUCTION
- ☞ NUCLEAR ENERGY
- ☞ NUCLEAR COOPERATION
- ☞ NUCLEAR NON-PROLIFERATION
- ☞ NUCLEAR DISARMAMENT
- ☞ NUCLEAR TERRORISM
- ☞ NUCLEAR SAFETY
- ☞ NUCLEAR WASTE MANAGEMENT

country that is proficient in handling its domestic business to avoid any spill-over of socio-economic instability across the border, but that listens to China on other matters.

While China is keen that North Korea remains stable, it nevertheless prefers a state of managed instability for the region, with the controls of calibrating that instability resting in its own hands. In the creation of a nuclear North Korea, China hoped to be able to tailor its nuclear capability in such a way as to be of concern for others, but still under some sort of Chinese control. It wanted it to be sufficiently distracting for Washington without making it

overly concerned to contemplate military actions in the region. It is worth noting that when Pyongyang conducted its first two nuclear tests in 2006 and 2009, China was relatively quiet. But the next four tests met with greater Chinese criticism and support for UN sanctions. China could sense its strategic asset turn into a liability as a nuclear Pyongyang showed quite a mind of its own.

Over the past decade, Supreme Leader Kim Jong-un has continued his country's nuclear and missile programmes for greater self-sufficiency and independence. His expressed nuclear doctrine signals brinkmanship of a high order. This becomes a matter of concern for China. A reckless leader, when facing a crisis he fears being overwhelmed in conventionally, or losing his small nuclear capability to a first strike, could be tempted to use nuclear weapons. The ensuing exchange would result in a humanitarian and ecological disaster in China's backyard, the consequences of which it could hardly hope to escape.

Therefore, too independent a nuclear North Korea is an issue for China. It fears that such a country could become an albatross around its neck and a drag on its own great power aspirations. In this context, it is interesting that despite the 1961 Mutual Aid and Cooperation Friendship Treaty, China has added conditions on when it would be obliged to intervene in case of a conflict. Chinese neutrality in case a conflict is initiated by North Korea is one of them. The treaty is coming up for renewal in 2021 and it will be worth watching how China negotiates this space.

China is quite certain that North Korean denuclearisation is well-nigh impossible. It does not want it, either. What it would not mind is a

freeze on the programme in exchange for lifting of some economic sanctions. This would be a win-win from Beijing's perspective in at least three ways. One, it would halt further North Korean nuclear growth; two, it could pave a way to address missile defence deployments in South Korea and Japan that are perceived to pose a threat to China's own nuclear deterrence; and three, allow Beijing to expand the economic relationship with Pyongyang towards increased interdependence and concomitant leverages which have dwindled in the current sanctions-riddled relationship.

An unbridled expansion of North Korean nuclear capability is not in China's interest. But, it is beyond

its individual capacity to rein this in given the nature of the current leadership in Pyongyang. Such an opportunity may arise in case Kim Jong-un's much-rumoured ill-health leads to a change in the top position and China is able to slide in somebody who is far more mindful of its instructions. In the absence of such an eventuality, however, China will look to the US to bell the North Korean nuclear cat. The 2021 occupant of the White House could find a greater convergence of interest with China in untangling the North Korean nuclear knot than has existed in the past.

Source: http://www.ipcs.org/comm_select.php?articleNo=5728, 28 September 2020.

OPINION- Saurav Jha

Improving Resilience of India's Fleet

Post-Fukushima safety reviews conducted in India revealed that the country's existing fleet of power generating reactors had sufficient 'defence in depth' (DiD) to withstand design basis events such as earthquakes and floods, even those that would

result in extended station blackout (SBO) and loss of the heat sink.

New safety measures were agreed subsequent to these reviews to enhance the resilience of India's plants to beyond design basis events, as well as to bolster severe accident mitigation capabilities. Deploying these measures across the fleet is in keeping with India's ethos of embracing nuclear safety and regulation as continuously evolving, informed by national and international experience and strengthened through a large, active domestic research & development (R&D) programme on prevention, monitoring and mitigation.

India's willingness and ability to incorporate worldwide operational experience is evidenced by the fact that indigenous designs currently under construction have anticipated the move towards inherent and passive engineered features to maintain fuel cooling and restrict radioactive release in the event of a severe accident. It continues to invest in dedicated safety development facilities, with modelling and simulation supplementing experimental analysis. The Nuclear Power Corporation of India (NPCIL) claims over 500 reactor years of safe operation. NPCIL stands proudly amongst its peers in the World Association of Nuclear Operators (WANO).

Keeping NPCIL and its parent the Department of Atomic Energy (DAE) on their toes is the Atomic Energy Regulatory Board (AERB), which is independent of DAE and is responsible for monitoring and enforcing safety in Indian reactors. AERB discharges these functions via an multi-tier review and authorisation process for nuclear, industrial and radiation safety. Indian nuclear plants are typically licensed for a maximum period of five years by AERB with renewal subject to a comprehensive safety review (CSR) that takes place every five years and a periodic safety review (PSR) that is conducted every ten years. PSRs are designed to address ageing management concerns and evaluate the state of the plant with respect

to current safety requirements and practices.

Since the second extraordinary meeting of the Convention of Nuclear Safety in 2012, AERB has been updating its regulatory requirements on reactor siting and design to fully incorporate the lessons learnt from Fukushima 2011. These requirements are in accord with the latest International Atomic Energy Agency (IAEA) standards and other international benchmarks. India is committed to the Vienna Declaration on Nuclear Safety and the IAEA's Action Plan endorsed by member States in September 2011.

In addition to CSRs and PSRs, AERB's regulatory framework also includes a system of special safety reviews (SSRs) undertaken after any major nuclear event. It is the SSR conducted by AERB after Fukushima, alongside NPCIL's own in-house reviews, which formed the basis for the three distinct sets of short, medium and long-term safety measures that have been applied to Indian reactors since late 2011.

It is worth noting that the AERB and NPCIL reviews reconfirmed 'the inherent strengths in design, practices and safety regulation followed in India'. In general, DAE believes that the pressurised heavy water reactors (IPHWRs), which account for 18 of India's 22 power generating reactors, have advantages in being able to slow down accident progression. This is for two reasons. The steam generators are located above the core in IPHWRs and this enables the removal of decay heat through thermosiphoning of the primary system and the boiling water in the steam generators. In IPHWRs, water can be supplied to depressurised steam generators via diesel pumps even in SBO conditions. Moreover, steam discharge valves can depressurise the steam generators even during station blackout and with compressed air unavailable. Second, the core is always enveloped by water at low temperature and pressure water in the calandria and the calandria vault, which serves as a heat sink that can delay the progression of a severe accident.

The Nuclear Power Corporation of India claims over 500 reactor years of safe operation stands proudly amongst its peers in the World Association of Nuclear Operators.

The post-Fukushima reviews resulted in short, medium and long-term measures to ensure that certain minimum safety functions remain available even in the aftermath of extreme beyond design basis events, and to improve severe accident mitigation capabilities in general. The short-term measures were limited in scope: providing external hook-up points for adding water to reactor systems and the spent fuel bay; deploying emergency lighting backed up by solar cells; reviewing and revising emergency operating procedures and operator training.

Medium-term measures included: introducing automatic seismic trip functions in older reactors, providing additional backup diesel-generators at a higher elevation; strengthening the ability to monitor critical parameters under prolonged loss of station power using battery powered devices; deploying diesel-driven pumps to transfer water from the deaerator storage tank to the steam generators; additional mobile pumps and fire tenders; seismic strengthening; and increasing onsite water storage to cover decay heat removal for 30 days. NPCIL finished implementing the short and medium-term safety measures on a fleet-wide basis by 2015/16, so most upgrades have been in place for a while now.

Site-specific safety upgrades

Alongside these measures, additional plant-specific upgrades were also undertaken. For instance, flood defences were strengthened at the Madras IPHWR site to protect the plant against future tsunamis higher than that of 2004. The Tarapur 1&2 BWRs, which are older than Fukushima Daichi 1 and had already been upgraded to ensure continuous cooling during site blackouts, were modified to allow nitrogen injection into the containment in the event of a hydrogen build-up.

The long-term safety measures relate to severe accident management. They include: creating

station-specific accident management guidelines approved by AERB; strengthening hydrogen management provisions; providing filtered venting of the containment; and setting up on-site emergency support centres capable of withstanding natural calamities such as earthquakes, cyclones and floods.

As of today, station-specific accident management guidelines are in place across the board at NPCIL and personnel are trained. Meanwhile, indigenously developed passive catalytic recombiner devices (PCRD) are now being installed alongside facilities for homogenising the containment atmosphere. These installations were greenlighted once the PCRD housing and the catalyst-bearing panels (CBPs) received seismic

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qualification on the basis of shake-table tests performed a couple of years ago. The PCRDs underwent development testing at a hydrogen recombiner test facility (HRTF), which has an instrumented 60m³ vessel in which high

concentrations of hydrogen, steam or air can be contained safely. A new cordierite-based PCRD is under development.

An indigenously developed containment filtered venting system (CFVS), which operates on the wet-scrubbing principle, is also being deployed fleet-wide after it was granted approval by AERB. A full-scale system has been operational at Tarapur 3 (540MWe) for some time. NPCIL is also deploying iodine scrubbing through a containment spray system on which tests using different aerosols have been conducted and removal rate measurements recorded.

All the safety measures adopted after Fukushima are now part of the standard design of IPHWRs and will therefore feature on the six 700MWe IPHWRs (IPHWR-700s) now under construction, as well as the ten more IPHWR-700s to be built in 'fleet mode' over the next decade. In fact, once ready, the iodine scrubbing CSS mentioned above

will be added to the IPHWR-700s under construction.

The IPHWR-700 design is a step-up in safety over older IPHWRs. While the greater power output has been achieved by allowing partial boiling at the coolant channel outlet, the IPHWR-700 features the interleaving of primary heat transport system feeders, regional over-power protection, a containment spray system, a mobile fuel transfer machine, a steel liner on the inner containment wall and a passive decay heat removal system. The IPHWR-700's ECCS consists of passive high-pressure injection, followed by an active long-term recirculation phase for removal of decay heat, using 'all-headers' injection for this purpose. The injection is initiated automatically upon sensing a fall in reactor inlet header pressure below 40kg/cm² (g) along with the presence of high calandria level or high pump room pressure.

Bolstering safety at India's PFBR

The sodium-cooled prototype fast breeder reactor (PFBR) in Kalpakkam, which is currently at its early commissioning stage, has a passive decay heat removal capability, by way of natural circulation through dedicated heat exchangers. The PFBR features the 'warm roof' concept in order to minimise the risk of sodium aerosol deposits, has two-independent fast-acting shutdown systems, applies 'leak before break' for the main vessel, sodium piping and steam generators; and a robotic device for in-service inspection of the main vessel.

Fuel failures will be detected through continuous monitoring of the cover gas fission product activity and delayed neutron detection in the primary coolant. Being built by Bhavini, the PFBR has also cleared post-Fukushima safety reviews. However, the PFBR's designers (Indira Gandhi Centre for Atomic Research, a part of DAE) is currently developing and evolution of the design in the form

of the 500MWe Commercial Fast Breeder Reactor (CFBR), in which the sodium void reactivity value will be kept lower than 1 \$, or near zero, as compared to 2.4 \$ for the PFBR.

Safety enhancements in the CFBR include in-vessel sodium purification, additional passive features in existing shutdown systems such as a stroke-limiting device, a third shutdown system which would be liquid poison-based and improved decay heat removal capability with greater capacity for natural circulation.

Looking ahead to AHWR

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Arguably the safest design being developed in India is the thorium-based 300MWe Advanced Heavy Water Reactor (AHWR).

The AHWR uses natural circulation to cool the reactor core at all times. Eliminating major components such as primary coolant pumps and drive motors, and their control and power supply equipment, should make the AHWR more reliable and safer than IPHWRs.

Arguably the safest design being developed in India is the thorium-based 300MWe Advanced Heavy Water Reactor (AHWR).

The AHWR has a slightly negative void coefficient of reactivity, passive safety systems, a 8000m³ heat sink in the form of a gravity-driven water pool near the top of the reactor

building, direct injection of cooling water by the ECCS inside the fuel cluster, two independent shutdown systems and passive poison injection into the moderator in the event that both shutdown systems are unavailable.

While a reduction in the material inventory of nuclear reactors is certainly welcome, the fact remains that a reactor design will ultimately be only as good as the quality of components that are used to build it. In this context, studies are underway at DAE to determine realistic failure modes under the large magnitude reversing cyclic loads that may be experienced during a severe beyond design basis event such as a major earthquake.

One set of tests and analyses focused on several dozen pipes and elbows. The result is a set of rational design criterion and simplified procedures for integrity assessment against cyclic-tearing and ratcheting-fatigue. These are now being used to refine current design codes for nuclear components. The ultimate goal is to develop additional design provisions that will ensure that basic safety functions are not impaired even, during the most severe earthquakes.

Source: <https://www.neimagazine.com/features/>, 24 September 2020.

OPINION-Borislav Boev

Nuclear Power and the Energy Transition in Bulgaria

Over the last few years, the EU has made significant efforts to develop energy transformation strategies. The underlying principle of these policies is to reduce the carbon intensity of the economy. The updated European Green Deal strategy of 16 September 2020 aims to reduce carbon emissions by 55% in 2030 compared to 1990 levels. The achievement of such an ambitious goal in such a short time will require a significant transformation of entire sectors of the economy.

Electricity generation, as a primary activity in the energy sector, is the main source not only of carbon dioxide, but also of far more harmful and dangerous to human health gases and substances such as sulphur dioxide, nitrogen oxides, fine dust particles, etc. Therefore, it is very important that electricity producers tackle this issue which poses an immediate danger to human health.

As a Member State of the EU, Bulgaria must adhere to the general strategy for development of the energy sector. However, Brussels' intentions for a relatively rapid decommissioning of coal-fired power plants has the potential to create huge imbalances in Bulgaria's electricity system as the

country now depends heavily on this type of electricity generation. Coal-fired power plants account for 45% of the country's electricity production and can rightfully be defined as a key factor for national security. Together with the Kozloduy nuclear power plant, which produces 35% of the country's electricity, these plants constitute the backbone of Bulgaria's energy sector.

The transition from coal to cleaner sources in

countries like Bulgaria must first and foremost be smooth and carefully planned. To maintain the stability of the electricity generation system (EGS), coal must be substituted with sources that are as similar as possible in terms of their technical, technological and economic characteristics. Thus, nuclear energy generation will play a major role in the process of energy transformation.

There are several opportunities for development of Bulgaria's nuclear power generation sector:

First of all, the Belene NPP

The project for construction of a second nuclear power plant was initiated 40 years ago. Since then, it has been discontinued twice due to various organisational, managerial and economic problems. Bulgaria currently owns brand new nuclear island equipment (VVER-1000 reactors under the AES-92 project), and in the last two years the Bulgarian government has been trying to restart the procedure for selection of a strategic investor with whom to negotiate the construction of the plant.

The potential challenges associated with this procedure stem from the need for a new notification to the European Commission in the event of a change in the structure of the investment project in accordance with the Euratom Treaty. Moreover, a number of expired licenses must be renewed in accordance with national regulations.

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The signing of a Memorandum of Understanding between the main candidates in the procedure for a strategic investor - Rosatom, Areva and General Electric - a few months ago is considered a positive market signal. However, it should be pointed out that the project has a long way to go because along with opportunities it faces a number of challenges as well. The economic crisis caused by COVID-19 further complicates the procedure and is likely to delay some important activities.

Secondly, units 7 and 8 of Kozloduy NPP

The construction of new units at the existing NPP in Kozloduy is another option that should not be neglected because it has the technical infrastructure to support the new facilities. The construction of new reactors on an existing site has obvious advantages in all aspects - technical, technological, financial, economic, administrative, and personnel qualification.

The existing grid connections and transmission capacity would reduce the cost of connecting the units to both the country's electricity grid and ENTSO-E, and will have a direct effect on the overall investment cost. Moreover, Kozloduy NPP has qualified staff and an established system for training and education of its employees. The NPP has its own on-site training centre and has already established a well-functioning partnership with leading secondary schools and higher educational institutions. These factors provide a number of competitive advantages for the project to construct units 7 and 8 at Kozloduy.

Thirdly, small modular reactors

Small modular reactors (SMRs) are an option that is still not very well-known in Bulgaria. However, the need for compact, standardised and portable reactors will grow, especially in markets with slower rates of growth in demand for electricity. The forthcoming decommissioning of coal-fired power plants naturally raises issues related to the construction of alternative generation capacities. SMRs can bridge this gap and at the same time meet the requirements for low emissions. Moreover, their standardised design and compact size lower the investment costs,

thus making them not only attractive but also a feasible option for extending the life of the former coal-fired facilities.

SMRs can be built not only on the sites of the decommissioned coal-fired plants in the Maritza Iztok Complex. Such reactors can also be installed on existing sites both in Kozloduy and Belene. The benefits of using SMRs must be taken into account because in the future the energy systems will require more versatile and portable generation facilities.

Bulgaria will undoubtedly need new nuclear capacity in view of the forthcoming closure of its large coal-fired facilities. In the short run, a priority for the country is to extend the operation of units 5 and 6 of Kozloduy NPP, which, after a successful modernisation programme, are technically operational for the next 30 years. In the medium and long run, however, the country needs to consider building additional capacities. According to its current energy plans, 2000 megawatts of nuclear power will be added after 2030, but it is still not clear where these facilities will be installed. The potential challenges to building new nuclear capacities can be grouped as follows:

European Challenges

The unclear role of nuclear energy in the EU's strategic energy documents is still baffling to potential investors and the Member States that rely on nuclear energy. The EU has set ambitious targets to reduce drastically its carbon footprint from electricity generation, but nuclear generation is not included in its development plans as a clean and sustainable source that can help the energy transition. The lack of support for the development of the sector at the pan-European level, and the adoption of stricter regulations, will jeopardise the implementation of plans for the construction of new nuclear facilities and would send a bad market signal to potential investors. That is why the EU needs to reconsider its nuclear energy policy because it has a key role in the development of cleaner electricity generation. In this respect Bulgaria must seek alliances with the EU Member States that openly support the development of nuclear energy.

...These problems are mostly organisational and managerial in character and are related to policymakers' lack of strategic thinking. Lack of management capacity and excessive red tape can also slow down the implementation of projects and, under certain conditions, be the main cause of their failure. This problem can be tackled by developing a national energy doctrine, which will put the development of nuclear energy at the heart of the upcoming energy transition in the country and the planned activities to be implemented, no matter what government is in power.

Traditionally, nuclear projects have a relatively long implementation period, which usually exceeds the mandate of one government. That is why the government officials responsible for the energy sector must not think only in the short term. The development of nuclear energy generation largely depends on the strategic management of this sector.

The EU's plans to reduce energy sector emissions seem overly ambitious as they require the transformation of rigid systems, which is a difficult goal to achieve in the short and medium term. However, the electricity sector emissions can only be reduced by expanding nuclear energy generation as one of the lowest-emission energy sources. Presently, nuclear power plants produce 40-50% of low-emission electricity across the EU, which is proof of their contribution to cleaner energy production.

Bulgaria, as a full member of the EU, can increase its contribution to the energy transformation by expanding its nuclear energy sector. However, implementation of these plans requires an increase in its energy management capacity and alliances with other Member States who share the same vision for Europe's nuclear future."

Source: Borislav Boev is a PhD student at D A Tsenov Academy of Economics, World Nuclear News, 29 September 2020.

STATEMENT- PRESIDENT TRUMP

New Restrictions on Iran's Nuclear, Ballistic Missile, and Conventional Weapons Pursuits

Today, I am taking new actions to restrict Iran's nuclear, ballistic missile, and conventional weapons pursuits. My Administration will never allow Iran to have a nuclear weapon, nor will we allow Iran to endanger the rest of the world with a fresh supply of ballistic missiles and conventional arms. To ensure this cannot happen, I am issuing a new Executive Order, restoring United Nations (UN) sanctions on Iran, and imposing new sanctions and export controls on more than two dozen entities and individuals that support Iran's nuclear, missile, and conventional arms-related activities.

The Executive Order I am issuing today blocks the property, and interests in property, in the US of those who contribute to the supply, sale, or transfer of conventional arms to or from Iran, as well as those who provide technical training, financial support and services, and other assistance related to these arms.

The Executive Order I am issuing today blocks the property, and interests in property, in the US of those who contribute to the supply, sale, or transfer of conventional arms to or from Iran, as well as those who provide technical training, financial support and services, and other assistance related to these

arms. This Executive Order is critical to enforcing the UN arms embargo on Iran. The order will greatly diminish the Iranian regime's capacity to export arms to terrorists and dangerous actors throughout the region, as well as its ability to acquire weapons to build up its own forces. Today, my Administration is also imposing new sanctions and export control measures on 27 entities and individuals connected to Iran's proliferation networks. These actions target the Atomic Energy Organization of Iran for its role in Iran's nuclear escalation, the Iranian missile organization Shahid Hemmat Industrial Group for facilitating ballistic missile development, and two Iranian entities for their involvement in the transfer and acquisition of conventional arms.

The US has now restored UN sanctions on Iran. The Iranian regime has repeatedly lied about its secret nuclear weapons archive and denied access to international inspectors, further exposing the

deep flaws of the last administration's failed nuclear deal from which I withdrew the US. The world cannot afford to sit idly by as Iran builds a nuclear weapon. My Administration is restoring these sanctions as part of our efforts to ensure that never happens.

My actions today send a clear message to the Iranian regime and those in the international community who refuse to stand up to Iran. The US will not allow the Iranian regime to further advance capabilities to directly threaten and terrorize the rest of the world. My Administration will use every tool at our disposal to stop Iran's nuclear, ballistic missile, and conventional weapons pursuits. The Iranian regime must change its behavior if it hopes to provide what the Iranian people so desperately want and deserve: a thriving and prosperous Iran.

Source: Whitehouse Statement and Releases, 21 September 2020.

STATEMENT- Rafael Mariano Grossi

IAEA Director General's Introductory Statement to the Board of Governors

...Highlights since the last meeting of the Board of Governors included the continued roll-out of COVID-19-related assistance to Member States in the largest operation ever mounted by the IAEA, and last month's agreement between Iran and the Agency on the resolution of some key safeguards issues. Following the lockdown, we have returned to regular staffing levels at the VIC, with remote working still available for staff considered vulnerable. Physical distancing and other measures to mitigate the spread of COVID-19 are in place. All non-essential travel and events have been cancelled until the end of September. We are continuously monitoring the situation and will take appropriate decisions at the right time. More than 1,260 consignments of equipment for virus detection and diagnosis and other supplies have been delivered, or are in transit, to 123 countries.

...My report on Verification and monitoring in the Islamic Republic of Iran in light of United Nations

Security Council resolution 2231 covers our activities in the last few months in verifying and monitoring Iran's implementation of its nuclear-related commitments under the Joint Comprehensive Plan of Action. The Agency continues to verify the non-diversion of nuclear material declared by Iran under its Safeguards Agreement. Evaluations regarding the absence of undeclared nuclear material and activities for Iran continue. You have also received my report entitled NPT Safeguards Agreement with the Islamic Republic of Iran, which describes the Agency's efforts to clarify questions relating to the correctness and completeness of Iran's declarations under its Safeguards Agreement and Additional Protocol.

The Agency continues to verify the non-diversion of nuclear material declared by Iran under its Safeguards Agreement.

Last month, I had discussions in Tehran with

President Rouhani and other senior officials aimed at making concrete progress in addressing the Agency's outstanding questions, and in particular at resolving the issue of access to two locations in Iran.

We reached agreement on the resolution of the safeguards implementation issues raised by the Agency. The Agency subsequently conducted a complementary access, under the Additional Protocol, at one of the two locations specified by us. Our inspectors took environmental samples which will be analysed. A complementary access at the second specified location will take place later this month. I welcome the agreement between the Agency and Iran, which I hope will reinforce cooperation and enhance mutual trust. The number of States with safeguards agreements in force has not changed since the last Board. It stands at 184, while 136 of these States have brought additional protocols into force.

...The Agency continues to monitor the nuclear programme of the Democratic People's Republic of Korea, using open source information including satellite imagery. During the reporting period, some nuclear facilities continued to operate while others remained shut down. There were indications consistent with the production of

enriched uranium at the reported centrifuge enrichment facility at Yongbyon. It is also likely that the DPRK has continued internal construction activities at the experimental LWR.

However, the 5MW(e) nuclear reactor and the Radiochemical Laboratory continued to show no indications of operation. The DPRK's nuclear activities remain a cause for serious concern. The continuation of the

There were indications consistent with the production of enriched uranium at the reported centrifuge enrichment facility at Yongbyon. It is also likely that the DPRK has continued internal construction activities at the experimental LWR.

country's nuclear programme is a clear violation of relevant UN Security Council resolutions and is deeply regrettable. I call upon the DPRK to comply fully with its obligations under Security Council resolutions, to cooperate promptly with the Agency in the full and effective implementation of its NPT Safeguards Agreement and to resolve all outstanding issues, especially those that have arisen during the absence of Agency inspectors from the country. The Agency is intensifying its readiness to play its essential role in verifying the DPRK's nuclear programme.

As far as implementation of safeguards in the Syrian Arab Republic is concerned, no new information has come to the knowledge of the Agency that would affect our assessment that it was very likely that the building destroyed at Dair Alzour was a nuclear reactor that should have been declared by Syria. I urge Syria to cooperate fully with the Agency in connection with all unresolved issues. I am ready to talk to Syria constructively and cooperatively. Let's engage!

DPRK's nuclear activities remain a cause for serious concern. The continuation of the country's nuclear programme is a clear violation of relevant UN Security Council resolutions and is deeply regrettable.

...Turning now to nuclear energy, the 442 nuclear power reactors operating in 31 countries today provide approximately 390 gigawatts of installed capacity, supplying over 10% of the world's electricity and around a third of all low-carbon electricity. There are 53 reactors under construction in 19 countries, which are expected to provide 56 gigawatts of additional capacity. Two newcomer countries that have

worked closely with the Agency in developing nuclear power programmes have recently achieved major milestones. The United Arab Emirates connected the first of four planned reactors to the grid. Belarus completed fuel loading in the first of two reactors which it is constructing.

The latest IAEA annual projections show that nuclear power will continue to play a key role in the world's low-carbon energy

mix, with global nuclear electrical capacity seen nearly doubling by 2050 in our high case scenario. Climate change mitigation remains a key potential driver for maintaining and expanding the use of nuclear power...

Source: <https://www.iaea.org/>, 14 September 2020.

NUCLEAR STRATEGY

RUSSIA

Russia Rejects US Terms, Sees 'Minimal' Chance to Extend New START Nuclear Pact

Russia sees minimal chances of extending the New START treaty with the US - their last major nuclear arms pact - as it does not accept conditions set out by Washington, Deputy Foreign Minister Sergei Ryabkov was quoted...He spoke

came after Marshall Billingslea, the US Special Presidential Envoy for Arms Control, told a Russian newspaper that Moscow must accept a joint agreement with Washington on extending the treaty before the US

presidential election in November 2020.

"I suspect that after President Trump wins re-election, if Russia has not taken up our offer, that the price of admission, as we would say in the US, goes up," Billingslea told Kommersant newspaper in an interview. Ryabkov said that position constituted an ultimatum and lowered the chances of reaching any kind of agreement to

extend the deal, which expires in February 2021. "We cannot talk in this manner," TASS news agency quoted Ryabkov as saying. Another news agency, RIA, quoted him as saying the chances of a treaty extension were "minimal".

...Billingslea said the US side was looking for a framework political accord on extending New START. This framework, which would not have to be ratified by the US Senate, would stipulate that a successor to New START must be multilateral and include China, he told Kommersant. Ryabkov called that a "deliberate distortion of our position." He said China's decision on whether to take part in the talks was exclusively Beijing's to make. "We have not taken and do not intend to take any steps to bring China into these talks, something we have told our American colleagues on multiple occasions," TASS quoted Ryabkov as saying. New START is a successor to the original Strategic Arms Reduction Treaty (START I) signed in 1991 between the then-Soviet Union and the US.

Arms deals between President Ronald Reagan and Soviet leader Mikhail Gorbachev in the 1980s, and their successors George H.W. Bush and Russian President Boris Yeltsin in the 1990s, underscored growing trust between the superpowers at that time and proved a contributor towards ending the Cold War.

Source: Gabrielle Tétrault-Farber, Reuters, September 21, 2020.

USA-SOUTH KOREA

Discussions on US Intermediate Missile Deployment in S. Korea Premature: US Envoy

The US is not ready yet to talk with allies about deployment of its specific military capabilities, a senior US official said..., as Washington is considering deploying intermediate-range missiles in East Asia to counterbalance China's growing capabilities. The trip came as the US has

been considering deploying intermediate-range missiles in Asia to counter China after withdrawing from the 1988 INF last year (2019) amid speculation that South Korea could be one of the candidate sites.

Claiming that China test-fired missiles 225 times last year alone, which is more than the number of launches by all the other countries in the world combined, Billingslea called on China to come forward and discuss the matter with the US, which is not a request but its legal obligation.

South Korea is already home to a US missile defense system called THAAD which was installed in Seongju, North Gyeongsang Province, some 300 kilometers southeast of Seoul, in 2017 despite strong protests from China. "We have had no discussions with the US on the possible hosting of US intermediate-range missiles," a defense ministry official said. "No official request from the US side for discussions regarding the issue has been made."

...Earlier in the day, the US envoy held talks with Ham Sang-wook, deputy foreign minister for multilateral and global affairs, and the two sides agreed to hold high-level talks on arms control in Washington at an early date, according to the foreign ministry. During the talks, they also exchanged views on key international regimes on arms reduction and nonproliferation, including the NPT and discussed ways for further cooperation in that field, it added. "The two sides agreed to hold a South Korea-US senior-level meeting on arms control and nonproliferation and also agreed to continue to strengthen communication on key related issues at each level," the ministry said in a press release....

Source: <https://en.yna.co.kr/>, Yohnap News Agency, 28 September 2020.

The US side was looking for a framework political accord on extending New START. This framework, which would not have to be ratified by the US Senate, would stipulate that a successor to New START must be multilateral and include China.

We have not taken and do not intend to take any steps to bring China into these talks, something we have told our American colleagues on multiple occasions.

BALLISTIC MISSILE DEFENCE

JAPAN

Japan to Develop New 'Missiles Defence Systems'; Will Remove US' Aegis By 2020

As reported by Kyodo News, a Tokyo based news agency, Abe, who took the decision to resign last month due to health issues, called for a review of the security policy due to growing regional threats from North Korea. "I believe we must improve our deterrence and reduce our country's risk of attacks by ballistic missiles and other means." While holding sufficient discussions with the ruling parties, (the government) will set an appropriate path within the year to deal with the difficult security environment surrounding Japan," said Abe, in a statement released just days before his departure.

It is reported that the country's defense minister and others at the National Security Council are discussing ways to make the country's deterrence stronger, which involves considering plans to improve strike capabilities with the US. However, his statement did not specify guidelines for the National Defense Program or medium-term defense program, both of which are expected to be revised before the beginning of 2021.

The move comes at the back of the Japanese government's decision in June to scrap the plan of deploying the land-based US-made Aegis Ashore Missile Defence Systems, which were designed to detect and counter North Korean ballistic missiles. Japanese Defence Minister Taro Kono, while briefing a press conference, had said that he took the decision to stop the deployment due to the technical issues as well as the cost.

"I made a decision on Friday to suspend the process. For the time being, Japan will continue to counter (the threat) with Aegis-equipped ships" said Kono. According to defense ministry documents, the planned cost for the operation and maintenance for the two systems for the next 30

years was around \$4.1 billion, which piled huge pressure on the government's finances that have been hit by the Coronavirus pandemic.

Located in Akita city and in Yamaguchi prefecture of southern Japan, the two proposed Lockheed Martin Co radar sites would have had radars more powerful than the ship-based version of Aegis operated by Japan currently. The systems were touted to have helped reduce the burden on Japan's overstretched Navy by countering recent missile advances by North Korea.

The decision to scrap the deployment could not have come at a worse time with both Japan and the US trying to enhance their strategic ties in light of China and North Korea continuing to bulk up inventories including the latest ballistic missiles. Initially conceived as an integral part of the European Phased Adaptive Approach designed to protect Europe from missiles attacks from the Middle East, the deadly Aegis Ballistic Missile

Defence System (ABMDS) consists of the AN/SPY radar, the Standard Missile (SM), and the Aegis Combat System. The systems enable warships to shoot down enemy ballistic missiles by expanding the Aegis Combat System with

the addition of the AN/SPY-1 radar and Standard missile technologies.

Source: <https://eurasianimes.com/japan>, 12 September 2020.

RUSSIA

Third Batch of Lethal S-400 Triumph Missile Defence Systems Delivered to Russia

Almaz-Antey Air and Space Defense Corporation JSC delivered the third batch S-400 Triumph missile defence system to the Russian Ministry of Defense this year ahead of time, Tass quoted the company press service. "Within the framework of its obligations under the state defence contract, the Almaz-Antey Air and Space Defense Corporation JSC handed over another (the third in the year 2020) regiment set of the S-400 missile air defence systems to the Ministry of Defense ahead of time," the announcement reads.

It is reported that the country's defense minister and others at the National Security Council are discussing ways to make the country's deterrence stronger, which involves considering plans to improve strike capabilities with the US.

According to the press service, the commissioning trials with target missiles took place at the Kapustin Yar proving ground. There were no complaints as to the equipment; the crews performed their task to the "A" grade. The corporation specialists accompanied the state customer's representatives throughout the trials. The S-400 Triumf system, developed and produced by Almaz-Antey, is designed for highly efficient protection from airstrikes, cruise, tactical and operational ballistic missiles, as well as intermediate-range missiles in radio jamming environment.

Source: <https://eurasianimes.com/>, 24 September 2020.

USA

Boeing Assembles Team to Bid for Next-Gen Missile Defense Interceptor

Boeing has assembled a team with General Atomics Electromagnetic Systems and Aerojet Rocketdyne to bid to build the Missile Defense Agency's Next Generation Interceptor (NGI). The agency decided last year to scrap its plans to redesign the kill vehicle of its current Ground-Based Interceptors (GBI) that is part of the Ground-Based Midcourse Defense (GMD) system designed to defend the homeland against possible intercontinental ballistic missiles from North Korea and Iran. The MDA is holding a competition instead to design a brand new interceptor for the GMD system.

The company has an extensive history with the GMD system in place at Fort Greely, Alaska, and Vandenberg Air Force Base, California, having held the development and sustainment contract for years. That contract is set to expire in 2023 and MDA is weighing options to break up that contract to foster competition that promotes

increased capability.

"The Boeing-led team will deliver critical technology to enhance our homeland missile defense," Norm Tew, Boeing Missile and Weapon Systems vice president, said in a Sept. 24 statement. "Combined, we bring decades of expertise in proven missile and weapon systems." An NGI "requires a new way of thinking supported by a proven ability to deliver pioneering solutions," Scott Forney, president of GA-EMS, said in a separate company statement issued Sept. 24. "We are excited to partner with Boeing to deliver the disruptive technologies needed to help MDA rapidly deploy an interceptor system that bolsters the nation's missile defense network and ensures that the US, our allies, and partner nations maintain military overmatch against ever evolving threats from adversaries."

Aerojet Rocketdyne will supply the propulsion system. "As the country's premier hit-to-kill propulsion provider, we're able to deliver low-cost, high-performance systems by leveraging our skilled workforce and strategic investments in innovative technology and materials," Eileen Drake, Aerojet Rocketdyne CEO, said in the Boeing statement.

...Also according to the statement, Northrop Grumman will serve as a "component supplier" on the Boeing team. Northrop is also teaming up separately with Raytheon to compete against the Boeing team and Lockheed Martin. Raytheon was the developer of the now-canceled RKV. MDA aims to downselect to two companies later this year, who will then compete for the right to build the interceptor. Proposals were due July 31, but MDA noted in its request for proposals that there may be some give in that schedule due to the ongoing COVID-19 coronavirus pandemic. The agency

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requested \$664.1 million in fiscal year 2021 for the NGI program, as part of a \$4.9 billion five-year budget plan.

Source: <https://www.defensenews.com/2020/09/24/>, 24 September 2020.

URANIUM PRODUCTION

UZBEKISTAN

Uzbekistan Produces 3,500 Tons of Uranium Annually: Official

Uzbekistan, a resource-rich Central Asian nation, produces 3,500 tons of uranium annually and holds 139,200 tons of uranium reserves, an Uzbek official has said. Deputy Director General of Navoi Mining and Metallurgical Combine (NMMC) Nurmat Julibekov told local magazine Economic Reviews that Uzbekistan does not process uranium locally and exports its entire produced stock to other countries. NMMC is the only uranium operator in Uzbekistan, and it is the first time that Uzbekistan has disclosed figures on its uranium production. Julibekov said that the main partners for uranium exports are Japan's Marubeni-Itochu Steel Inc. and the US' Nukem Inc. Uzbekistan, the world's fifth largest uranium producer, also exports uranium to France, Canada and China,...

Source: <http://www.xinhuanet.com/english/>, Xinhua, 24 September 2020.

NUCLEAR ENERGY

GENERAL

IAEA Report: Nuclear Power to Continue to Play Key Role in Low-Carbon Electricity Production

The International Atomic Energy Agency (IAEA) has released its latest projections for energy, electricity and nuclear power trends through 2050. Compared with the previous year, the 2020 projections are largely unchanged. Under the high case scenario, IAEA analysts expect an increase of global nuclear electrical generating capacity

by 82% to 715 gigawatts. Under the low case scenario, it will fall by 7% to 363 gigawatts.

"The latest IAEA annual projections show that nuclear power will continue to play a key role in the world's low-carbon energy mix, with global nuclear electrical capacity seen nearly doubling by 2050 in our high case scenario. Climate change mitigation remains a key potential driver for maintaining and expanding the use of nuclear power," IAEA Director General Rafael Mariano Grossi said.

The 40th edition of Energy, Electricity and Nuclear Power Estimates for the Period up to 2050 provides detailed global trends in nuclear power by region.

The report presents its projections for nuclear electrical generating capacity as low and high estimates. They reflect different scenarios for the worldwide deployment of this low carbon energy source. From 2019 to 2050, global electricity generation is expected to more than double, exceeding nuclear

generation capacity growth also in the high case scenario. Therefore, IAEA experts expect the share of nuclear power amongst all sources of electricity to remain either stable or decline. In 2019 nuclear power generated 10.4% of global electricity.

According to the report, immediate and concerted action is required for nuclear power to reach a share of 11% in electricity production by 2050, as seen in the high case scenario. In the low case scenario, the share of nuclear energy relative to global electricity production could decline to about 6%. Commitments made under the 2016 Paris Agreement on climate change and other initiatives could support nuclear power development, provided the necessary energy policies and market designs are established to facilitate investments in dispatchable, low carbon technologies. Furthermore, nuclear power could provide solutions for electricity consumption growth, air quality concerns, the security of energy supply and price volatility of other fuels.

The report lays out that about two thirds of nuclear power reactors have been in operation for over 30

The latest IAEA annual projections show that nuclear power will continue to play a key role in the world's low-carbon energy mix, with global nuclear electrical capacity seen nearly doubling by 2050. Climate change mitigation remains a key potential driver for maintaining and expanding the use of nuclear power

years, highlighting the need for significant new nuclear capacity to offset retirements. Uncertainty remains regarding the replacement of the large number of reactors scheduled to be retired around 2030 and beyond, particularly in North America and Europe. Ageing management programmes and long-term operation are being implemented for an increasing number of reactors. Since it was first published 40 years ago, the IAEA projections have been continually refined to reflect an evolving global energy context. Over the past decade, nuclear power development has remained within the range of projections described in prior editions.

Source: <https://www.iaea.org/>, 16 September 2020.

NUCLEAR COOPERATION

INDIA-USA

Discussions Underway for Nuclear Plant in Andhra Pradesh's Kovvada

The Union government has revealed that discussions are underway with US-based Westinghouse Electric Company for the establishment of six nuclear power reactors with a capacity of 1,208 megawatts (MW) each at Kovvada in Srikakulam

district. In a reply to a query filed by TDP Rajya Sabha MP Kanakamedala Ravindra Kumar, Minister of State for Personnel, Public Grievance and Pensions, and Prime Minister's Office Jitendra Singh said, "The site at Kovvada was selected after carrying out extensive studies by specialised national agencies and evaluation by the Standing Site Selection Committee (SSSC), Government of India, in accordance with the criteria laid down in the Atomic Energy Regulatory Board (AERB) code on site evaluation of nuclear facilities."

Kovvada nuclear plant was proposed about a decade ago. The local fishermen and environmentalists strongly opposed the project, even as the state government managed to acquire about 450 acres of land as against the required 2,000 acres. The project remained a non-starter as the US firm, Westinghouse electric Company, almost went bankrupt in 2017. Later, as it was acquired by another firm in 2018, the talks have gained pace.

Source: *Indian Express*, 23 September 2020

INDIA- FRANCE

French Firm EDF Looks to Set Up 'Centre Of Excellence' in Civil Nuclear Space in Maharashtra

France-based EDF Group said it has signed a memorandum of understanding with I2EN and city-based educational institute VJTI to conduct a pre-feasibility study for the establishment of a centre of excellence in the civil nuclear sector in Maharashtra. The I2EN is an umbrella organisation that brings together French stakeholders involved in nuclear education and training.

EDF, which is engaged in the development and construction of the biggest nuclear plant in the world, with six EPR (European Pressurised Reactor) reactors totalling close to 10,000 MW at Jaitapur, along with state-run NPCIL, is aiming to develop a large pool of diversified skills in

India to support the project, the company said in a statement. "Through this initiative, EDF, I2EN and VJTI intend to contribute to consolidating the Indo-French bilateral cooperation in the field of civil nuclear at the

institutional, industrial and academia level, enhancing best industrial practices, highest standards in safety and advanced training approaches," it said.

The Centre of excellence will target the development of all the skills necessary for the implementation of the Jaitapur project at the stages of design, procurement, construction, commissioning and operational activities. "Inviting and involving the most knowledgeable academics, scientists and industrial experts, the Centre will train engineers and technicians from Indian companies and suppliers which will be participating in the development of this EPR project in India," the company said. Commenting on the tie-up, VJTI Director Dhiren Patel said, "This Centre will provide a networked platform for the specific skills as required in relation to EPR technology."

The project remained a non-starter as the US firm, Westinghouse electric Company, almost went bankrupt in 2017. Later, as it was acquired by another firm in 2018, the talks have gained pace.

The Jaitapur project is expected to create nearly 25,000 direct employment opportunities during the construction phase of two EPR units. I2EN will contribute to collaborate with VJTI and other Indian nuclear stakeholders, its Director Henri Safa said.

“We are convinced that this Centre of excellence will foster the growth and consolidation of the specific set of skills needed for the EPR technology development in India while contributing to the employability of Indian technicians and engineers in the near future,” EDF Group Senior Vice President in Charge of New Nuclear Development Vakis Ramany said.

Source: <https://www.cnbctv18.com/energy/>, 14 September 2020.

NUCLEAR NON-PROLIFERATION

EU-IRAN

Europe Won't Compromise with US Over Iran Sanctions: Macron

French President Emmanuel Macron said... that Europe would not compromise with the US over Washington's attempt to reactivate sanctions on Iran, warning the so-called snapback could undermine the UNSC and increase Middle East tensions. Macron assailed the “maximum pressure” policy of US President Donald Trump, saying it had failed, AFP reported... “This would undermine the unity of the Security Council and the integrity of its decisions, and it would run the risk of further aggravating tensions in the region,” he warned. The Trump administration says it is “snapping back” virtually all UN sanctions on Iran lifted under the nuclear accord with Tehran, negotiated under former president Barack Obama but which Trump abandoned in 2018. Washington says it can reimpose the sanctions because it is still a “participant” in the accord, a position denounced by Europe as legally untenable.

Through this initiative, EDF, I2EN and VJTI intend to contribute to consolidating the Indo-French bilateral cooperation in the field of civil nuclear at the institutional, industrial and academia level, enhancing best industrial practices, highest standards in safety and advanced training approaches.

Macron insisted that France, along with its European allies Britain and Germany, would keep up its demand for “full implementation” of the Iran nuclear deal. Iran began gradually rolling back parts of its obligations under the deal a year after the US unilateral pullout to push the European parties to live up to their own commitments and protect Iran against sanctions.

Source: <http://www.irandaily.ir/News/274601.html>, Iran Daily, 23 September 2020.

USA-IRAN

Pompeo Says 'Maximum Pressure' Campaign to Continue Until Iran Stops 'Bloodshed'

US State Secretary Mike Pompeo reiterated that the “maximum pressure” campaign of the US on Iran will continue until it stops “bloodshed.” Pompeo's statement comes amid US' attempt to return all Iranian sanctions which are set to expire in mid-October under the JCPOA.

...“America's maximum pressure against Iran, in its political and legal aspects, has turned into America's maximum isolation,” Rouhani said during a televised cabinet meeting. Iranian Foreign Minister Javad Zarif had urged the global community to oppose the “bullying” nature of the US sanctions or expect to face similar sanctions in future. The Iranian foreign minister claimed that Tehran will be able to fulfil its weapon

requirements with the help of strategic partners like Russia and China.

EU Rejects US Declarations

EU High Representative for Foreign Affairs Josep Borrell rejected the unilateral decision of the US to return all sanctions on Iran through “snapback mechanism”. Borrell said in a statement that the US unilaterally ceased participation in the Joint Comprehensive Plan of Action (JCPOA) in May 2018 and has not participated in any JCPOA-related activities since then.

Europe would not compromise with the US over Washington's attempt to reactivate sanctions on Iran, Macron insisted that France, along with its European allies Britain and Germany, would keep up its demand for “full implementation” of the Iran nuclear deal.

Borrell, the coordinator of the JCPOA Joint Commission, said that the commitment of lifting arms embargo continues to apply and he will do everything possible to ensure the preservation and full implementation of the Iran nuclear deal. He stressed that the JCPOA remains a key pillar of the global non-proliferation architecture as it addresses Iran's nuclear programme in a comprehensive manner. "It cannot, therefore, be considered to be a JCPOA participant State and cannot initiate the process of reinstating UN sanctions under the UN Security Council resolution 2231," the statement read.

Source: Kunal Gaurav, <https://www.republicworld.com/world-news/>, 21 September 2020.

USA-KAZAKHSTAN

Kazakhstan, US Sign Statement to Minimize High Enriched Uranium, Promote Nuclear Nonproliferation

The Kazakh Energy Ministry and the US National Nuclear Safety Administration of the Energy Department signed a ...joint statement on the minimization of high enriched uranium (HEU) at the 64th session of the IAEA General Conference in Vienna, the Kazakh Energy Ministry press service reported.

The Kazakh and US state agencies reaffirm their intent to cooperate in eliminating HEU and converting research reactors to low enriched uranium (LEU) fuel to ensure nuclear safety and strengthening the nuclear nonproliferation plan...According to Kazakh Energy Minister Nurlan Nogayev, the project then "entered the practical stage of implementation." Kazakhstan "is carrying out the conversion of research reactors and highly enriched uranium disposal works" as part of the Global Initiative to Reduce Nuclear Threats, he said addressing the conference participants. "The IAEA LEU Bank in Kazakhstan, a last-resort mechanism intended to give (member) countries confidence that they will be able to meet their future needs for nuclear fuel, is now fully stocked and operational," said IAEA

Lifting arms embargo continues to apply and he will do everything possible to ensure the preservation and full implementation of the Iran nuclear deal.

Director General Rafael Mariano Grossi.

Kazakhstan has been a member of the IAEA since 1994. In that time, the country has signed many fundamental international treaties on nuclear disarmament, non-proliferation and peaceful use

of atomic energy. In 2019, Kazakhstan became the 26th country that ratified the Nuclear Weapon Ban Treaty. Kazakh President Kassym-Jomart Tokayev signed the Act on the issues of Civil-Law responsibility

of operators for nuclear damage on May 14 to implement the provisions of the Vienna Convention.

Source: Aidana Yergaliyeva, <https://astanatimes.com>, 24 September 2020.

NUCLEAR DISARMAMENT

MALTA

Malta Ratifies UN Nuclear Weapon Ban Treaty

Malta has become the 45th state party to the Treaty on the Prohibition of Nuclear Weapons. It deposited its instrument of ratification on 21 September 2020 as world leaders met to commemorate the 75th anniversary of the United Nations. The move also coincided with Malta's Independence Day, which marks the date on which

the country declared its independence from the UK, a nuclear-armed state, in 1964.

Malta's permanent representative to the UN, Ambassador Vanessa Frazier, signed the treaty on 25 August 2020, less than

a month before the country ratified it. The foreign ministry stated that its decision to become a party to the treaty underscored "Malta's unwavering commitment towards nuclear non-proliferation, and highlights its commitment towards achieving prosperity through peace".

Malta participated in the negotiation of the nuclear weapon ban treaty in 2017 and was among 122 nations that voted to adopt the final text. The treaty comprehensively and categorically outlaws

nuclear weapons and establishes a legal framework for the elimination of existing stockpiles. It also mandates assistance to victims of the use and testing of nuclear weapons.

In 2016, Malta was a co-sponsor of the UN General Assembly resolution that established the formal mandate for states to commence the negotiations in 2017 on "a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination". A year earlier, it was among 127 states that endorsed a "humanitarian pledge" to cooperate "in efforts to stigmatise, prohibit, and eliminate nuclear weapons".

Source :<https://www.bignewsnetwork.com/news/266468855/malta-ratifies-un-nuclear-weapon-ban-treaty>, 22 September 2020.

NUCLEAR TERRORISM

SAUDI ARABIA

Saudi Arabia Donates \$10 Million for Combatting Nuclear Terrorism

Saudi Arabia has contributed \$10 million (Dh36.7 million) to the IAEA for setting up of a specialised centre to combat nuclear terrorism, said Prince Abdullah Bin Khalid Bin Sultan, Saudi Arabia's ambassador to Austria... Prince Abdullah said Saudi Arabia has transferred the funds to begin the work on the Seibersdorf centre in Austria.

Saudi Arabia has also donated 500,000 euros (Dh2.1 million) for the project to modernise the IAEA laboratories in Seibersdorf. Prince Abdullah affirmed that the kingdom's government is seeking to benefit from the expertise of the IAEA in introducing nuclear energy to contribute to the national energy mix, and what this requires of human capacity development in order to build an integrated and sustainable national system for the energy sector, following the agency's standards...

Prince Abdullah pointed out that the position of the kingdom's government is based on the principle of the right of states to benefit from the peaceful uses of nuclear energy in all its fields, without

prejudice to their obligations under the NPT. It also supports positive initiatives calling for the creation of geographical areas free of nuclear weapons, and renewed its call to work with the international community to make the Middle East a zone free of these weapons. He also renewed the kingdom's concern over Iran's exploitation of the nuclear agreement, its continuing violations of the JCPOA, as well as its failure to implement the safeguards agreement concluded with the IAEA in accordance with the NPT and the need for the international community to take a firm stance towards Iran, and dealing seriously with its excesses related to its nuclear programme.

Source: Samir Salama, <https://gulfnews.com/world/gulf/>, 24 September 2020.

NUCLEAR SAFETY

GENERAL

Two Countries Join Multilateral Treaties in Nuclear Safety and Security

On the sidelines of the IAEA General Conference..., Angola and Côte d'Ivoire deposited legal instruments expressing their consent to be bound by treaties strengthening nuclear safety and security worldwide. Angola joined the Convention on Nuclear Safety and the Convention on the Physical Protection of Nuclear Material, together with its Amendment, and Côte d'Ivoire joined the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

Universal adherence to these treaties is of key importance, said IAEA Director General Rafael Grossi at the annual Treaty Event, where the deposits took place. The event aims to promote adherence to treaties concluded under the IAEA's auspices. Angola joins one nuclear safety treaty, one nuclear security treaty and its amendment.

Angola's Ambassador to Austria, Croatia and Slovenia and Permanent Representative to International Organizations in Vienna, deposited

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an instrument of accession to the CPPNM and of ratification of its Amendment. "With this event, Angola reinforced its commitment to use nuclear technology for peaceful purposes," said Ambassador Coelho. "It is good for us to take these opportunities that the Agency gives to our country and other State parties."

...The Convention on Nuclear Safety, adopted in 1994, commits Contracting Parties operating land-based civil nuclear power plants to maintain a high level of safety by establishing fundamental safety principles to which Contracting Parties subscribe. It obliges Parties to submit reports on the implementation of their obligations for "peer review" at meetings that are normally held at IAEA Headquarters. Following Angola's accession, the Convention has now 89 parties.

In addition, following Angola's treaty actions, the Convention on the Physical Protection of Nuclear Material (CPPNM) has now 162 Parties, 125 of which, including Angola, are also party to its Amendment. The CPPNM focuses on the physical protection of nuclear material used for peaceful purposes during international transport. In 2005, the State Parties to the Convention adopted the Amendment to CPPNM to widen its scope to also include physical protection requirements for nuclear facilities and nuclear material in domestic use, storage and transport. Along with expanding the existing offences identified in the CPPNM and introducing new ones, the Amendment, which entered into force in 2016, also provides for expanded cooperation and information sharing between States to locate and recover stolen material and in the case of sabotage.

Côte d'Ivoire joins treaties on assistance and early notification of a nuclear accident. Côte d'Ivoire's Ambassador to Austria and several countries in the region and Resident Representative to the UN in Vienna, Roger Albéric Kacou, deposited instruments of ratification of the Convention on Early Notification of a Nuclear Accident and of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The

Convention on Early Notification of a Nuclear Accident, which was adopted in 1986 following the Chernobyl nuclear plant accident, strengthens the international response to nuclear accidents by providing a notification system for rapid information exchange to minimize transboundary radiological consequences. In the event of an accident, the State where the accident occurs must promptly provide States that are or may be physically affected and the Agency with relevant information. Côte d'Ivoire became the 127th Party to the Convention.

The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency provides a mutual assistance mechanism to minimize the consequences of a nuclear accident or radiological emergency and to protect life, property and the environment against the effects of radioactive releases. The Convention, which was also adopted in 1986, sets out an

On the sidelines of the IAEA General Conference, Angola and Côte d'Ivoire deposited legal instruments expressing their consent to be bound by treaties strengthening nuclear safety and security worldwide.

international framework for cooperation among State Parties, with the IAEA facilitating prompt assistance and support. It requires States to notify the IAEA of their available experts, equipment and materials for providing

assistance. In case of a request, each State Party decides whether it can render the requested assistance as well as its scope and terms. With the deposit by Côte d'Ivoire, there are now 122 Parties to the Convention.

Source: Lu Han, <https://www.iaea.org/newscenter/>, 21 September 2020.

NUCLEAR WASTE MANAGEMENT

GERMANY

Germany Launches New Search for Permanent Nuclear Waste Disposal Site

Germany has named 90 locations that could safely house containers of radioactive nuclear waste permanently. The controversy over what to do with waste from the country's nuclear power plants has been long and divisive. BGE, the nation's waste management organization, named 90 areas around the country as possible candidates for the permanent waste disposal. It said in a long-awaited report that a location needs to be found

by 2031. The aim is to start storing containers of radioactive waste at the site by 2050. Germany is seeking a safe place to store 1,900 containers of waste. The containers make up only 5% of the country's nuclear waste but 99% of its radioactivity, according to BGE chairman Stefan Studt.

Regions in Bavaria and Baden-Württemberg in southern Germany, as well as Lower Saxony and states in eastern Germany, are among the potential waste disposal sites. The locations suggested "favorable geological conditions for the safe disposal of radioactive waste," the BGE said. The sites will now be vetted to account for other factors, including population density.

Not on the list of possible storage sites is Gorleben, a small settlement in Lower Saxony of 650 residents, and the location of a salt mine which had been earmarked as a site for nuclear waste disposal almost forty years ago. The dispute that led to so much bitterness in Germany over the years began on 22 February 1977: the State Premier of Lower Saxony, the conservative Ernst Albrecht, father of the current European Commission President Ursula von der Leyen, made an announcement: Gorleben, near the border to what was then East Germany, was to be the site of Germany's facility for permanent nuclear waste storage.

Locals never accepted the decision, arguing that the salt in the ground could weaken containment structures and cause radioactive leaks. Gorleben became the focus of Germany's anti-nuclear movement. Protestors staged sit-ins at the building site and rallied round the farming community in the region. In subsequent years, every transport of nuclear waste to Gorleben was accompanied by major demonstrations.

Despite these massive protests, construction work on a new mine began there, in which the salt dome's geological characteristics were to be explored. This mine alone, which never produced a grain of salt or any other natural resource, has already cost the German tax-payer 1.6 billion

euros (\$1.9 bn.) So much money has been spent conducting research there that the announcement by Kanitz that the salt dome's surface cover is not intact and that the chemical composition of the ground water is unsuitable, amounts to a political bombshell. This is exactly what opponents of nuclear power have been saying for years.

The debate is almost certain to keep reverberating. But Monday's announcement in Berlin by Stefan Kanitz, managing director of the state "Federal Society for Permanent Nuclear Waste Storage" still marks a milestone: "Gorleben is not the best possible location," he said.

Abandoned coal mines are seen as possible storage sites because they have all the transport infrastructure needed but they are also prone to earthquakes. Following decades of debate which, above all, fueled the rise of the anti-nuclear Green Party, the German government decided after the reactor disaster at Fukushima in Japan in 2011 to permanently phase out nuclear power. Of the roughly 20 nuclear power plants once built, many have already been disconnected from the grid. Currently, six are still in use. They are all scheduled to be decommissioned by the end of 2022.

Germany is likely to run into resistance from local politicians at whichever waste disposal site it chooses. Bavaria's state government has already insisted that it is unsuited for permanent waste disposal. The plan now is to discuss things step by step with the local communities in the 90 regions shortlisted. That is one reason why the process is scheduled to take so long. Construction is to begin on a new permanent storage facility for nuclear waste in 2031. That's eleven years from now.

...If all goes to plan, the new permanent storage site will accommodate the spent fuel rods and other waste from Germany's nuclear power plants for thousands of years. At the moment, however, most of this waste is in temporary storage at the power plant sites. It's also hoped that the low-

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level and intermediate-level waste that was practically dumped in the scandal-ridden mine of Asse for decades can also be moved to permanent storage. Apart from the indiscriminate disposal of nuclear waste, that mine is also in danger of collapsing.

The German Environment Minister, Svenja Schulze (SPD), welcomed the development. She and 2 state environment ministers co-wrote an opinion piece on Spiegel: "We are confident that this process will enable us to find a location that provides the greatest

Abandoned coal mines are seen as possible storage sites because they have all the transport infrastructure needed but they are also prone to earthquakes. If all goes to plan, the new permanent storage site will accommodate the spent fuel rods and other waste from Germany's nuclear power plants for thousands of years. At the moment, however, most of this waste is in temporary storage at the power plant sites.

possible safety and security - not just for the next 50,000 years, rather for a million years or more." If nuclear waste can actually be disposed at the new facility starting 2050, that would still put Germany in the international vanguard: 70 years after humankind began using nuclear energy, not a single permanent waste storage site has been officially opened anywhere in the world.

Source: <https://www.dw.com/en/germany-launches-new-search-for-permanent-nuclear-waste-disposal-site/a-55077967>, 28 September 2020.



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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