

Nuclear, Missile & Space Digest

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A Fortnightly Newsletter from the Indian Pugwash Society

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A. India

Union Minister Dr Jitendra Singh discusses collaboration in Space Sector with his Brazilian counterpart Marcos Pontes after successful launch of Amazonia-1 Satellite by ISRO

PIB March 1, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said today that India's ascent to the World Comity of Nations will happen via Space Technology. In a virtual interaction with the visiting Brazilian Minister of Science, Technology and Innovation, Marcos Pontes, and the heads of the Brazilian Space Agency after the successful launch of Amazonia-1 satellite of Brazil by ISRO yesterday, Dr Jitendra Singh said that collaboration between the two countries mark a beginning of robust bonding and is a role model for other countries to follow. He said, the launch also marked the first dedicated mission of ISRO's commercial arm NewSpace India Ltd. (NSIL).

<https://pib.gov.in/PressReleasePage.aspx?PRID=1701712>

35 Space startups and industries are in consultation with ISRO for development of satellites, launch vehicles, develop applications, provide space based services: Dr Jitendra Singh

PIB, March 10, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said that Government of India announced reforms for opening up the space sector to private entities by creation of the Indian National Space Promotion and Authorization Center (IN-SPACe) under the Department of Space. In a written reply to a question in the Lok

Sabha today, he said, IN-SPACe will promote, handhold, regulate and authorize space activity by private sector which will result in enhanced private participation. This will also spur technological development and innovation within the country leading to self-reliance in the field of space technology, a step towards "Atmanirbhar Bharat".

<https://pib.gov.in/PressReleasePage.aspx?PRID=1703824>

Four Indian astronauts undergoing generic space flight training in Russia as part of Gaganyaan Programme nearing completion: Dr Jitendra Singh

PIB, March 10, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said that four Indian astronaut candidates are currently undergoing generic space flight training in Russia as part of Gaganyaan Programme. In a written reply to a question in the Lok Sabha today, he said, the astronaut training activities in Russia are nearing completion. Major modules such as survival training (snow, water and steppe), parabolic flights, theoretical classes on orbital mechanics, astro-navigation and some Soyuz systems have been completed.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1703826>

Higher budgetary allocations for Indian Space programme will be utilised towards meeting the future challenges and space preparedness: Dr. Jitendra Singh

PIB, March 10, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said

that Budget Estimates 2021-22 of Department of Space is proposed to Rs. 13,949 Crore, as against the allocation of Rs.9500 Crore in RE 2020-21, an increase of about Rs. 4,500 Crore.

In a written reply to a question in the Lok Sabha today, he said, higher budgetary allocations for Indian Space programme shall be utilised towards meeting the future challenges and space preparedness.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1703828>

Government aware of fraudsters selling products as Anti-Radiation Pack: Dr Jitendra Singh

PIB, March 10, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said, the Government is aware that certain fraudsters are selling material with dubious names of 'anti-radiation pack' and 'Rice-puller', etc. having radio-activity and certified by BARC/DAE. In a written reply to a question in the Lok Sabha today, he said that

Crisis Management Group (CMG), Department of Atomic Energy (DAE) and Bhabha Atomic Research Centre (BARC) keep getting alerts/intimation very frequently regarding fraudulent transactions involving certain material labelled as 'Rice-puller', 'Anti-radiation pack', etc.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1703830>

Eye on China, India's plan for 6 nuclear-powered attack submarines back on track

Shishir Gupta.

Hindustan Times, March 10, 2021

On March 8, the Defence Research Development Organization (DRDO) successfully carried out the final test of the

land based prototype of the Air Independent Propulsion (AIP) system in Mumbai. The AIP system, retrofitted by expanding the hull area, ensures that diesel attack submarines can remain under surface for a longer period and become more silent than a nuclear-powered submarine. The AIP system will be retrofitted into Kalvari class submarines, the third of which (INS Karanj) will be commissioned on Wednesday March 10.

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<https://www.hindustantimes.com/india-news/eye-on-china-india-s-plan-for-6-nuclear-powered-attack-submarines-back-on-track-101615327826084.html>

DAE plans to rope in private agencies for Nuclear Medicine: Dr Jitendra Singh

PIB, March 10, 2021

Union Minister of State (Independent Charge) Development of North Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said that Department of Atomic Energy (DAE), plans of sharing one of its facilities partially with private agencies for the weekly production of "Column Chromatography Generator Production". In a written reply to a question in the Lok Sabha today, he said, the Technology for the Production of important radiopharmaceuticals, like 18F-FDB for various cancer imaging and 18F-NaF for bone cancer imaging is available through Technology Transfer.

Dr. Jitendra Singh said, as a part of AtmaNirbhar Bharat the following initiatives have been taken by DAE:

The 30 MeV Medical Cyclotron at Variable Energy Cyclotron Centre (VECC), Kolkata is operational and carrying out regular commercial production and delivery of radiopharmaceuticals like, FDG (18F) and Sodium Fluoride (18F-NaF) by BRIT. The production of Gallium-68 (68Ga), Gallium-67 (67Ga), Thallium-201 (201Tl) based radiopharmaceuticals have also been done at Medical Cyclotron Facility of VECC, Kolkata. The 67Ga and 201Tl based radiopharmaceuticals, were hitherto imported.

BRIT has taken up two projects viz. Advanced Facility for Radio Pharmaceuticals Production (AFRP) and Fission Moly Project (FMP) for production of medical isotopes in large scale. Under AFRP project, BRIT is augmenting I-131 capsule production and I-131 MIBG production for diagnostic & therapeutic application for cancer treatment. In addition, the project is also contributing for GMP compliance of various facilities. FMP project has the capacity to produce 300 Ci/week (6day pre-calibrated) HSA Mo99 (High Specific activity) as API (Active Pharmaceutical Ingredient) for the large-scale production of Mo99-Tc99m Column chromatography Generator. Presently HSA Mo99 is an import dependent API.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1705490>

B. China

China enters heavy rocket race with planned 100-tonne launch vehicle

Kristin Huang

South China Morning Post, March 01, 2021

Rocket's payload will make it more powerful than world-leading SpaceX Falcon Heavy with development expected over next five years. Lunar exploration commander Luan Enjie said it will speed up the country's space programme including infrastructure building. China is developing a super heavy-

lift rocket that will be significantly more powerful than the SpaceX Falcon Heavy and capable of reaching the moon, according to the head of its lunar exploration programme. In an interview with state broadcaster CCTV, Luan Enjie said feasibility studies for the 100-tonne launch vehicle had been completed and the project was now at the follow-up research stage.

<https://www.scmp.com/news/china/science/article/3123623/china-enters-heavy-rocket-race-planned-100-tonne-launch-vehicle>

New ground-to-air missile weapon system commissioned to Army brigade

China Military Online, March 01, 2021

Recently, a new ground-to-air missile weapon system was commissioned to a brigade under the PLA 78th Group Army. The new weapon system can perform multiple operations for the field air defense with high mobility, quick response, high-precision interception and good counter-jamming performance, which will substantially promote the troops' capability to conduct diversified military tasks. Yang Hongsheng, a battalion commander under this brigade, said that they will give full play to the high-end information technologies of this weapon system, and conduct training with new methods in severe environments, aiming to form combat capability as soon as possible.

http://eng.chinamil.com.cn/view/2021-03/01/content_9993966.htm

China to conduct 40-plus space launches in 2021

An Puzhong and Wang Lingshuo

China Military Online, March 01, 2021

China Aerospace Science and Technology Corporation (CASC) released the 2020 blue paper on China's space exploration activities in Beijing on February 24, 2021, which reviewed the world's space activities in 2020 and unveiled the CASC's plan for space missions in 2021. As a

leading force in China's space industry, the CASC's Long March carrier rockets had conducted 34 space launch missions in 2020, sending a total of 82 spacecraft into space, accounting for 92.1% of the total number and 99.2% of the total weight launched by China in 2020. In this way, the CASA led its global peers in the volume of space launch missions.

According to the blue paper, China is expected to launch more than 40 times in 2021; the manned space station project will enter the stage of key technical verification and construction; the Tianwen-1, China's first Mars probe, will reach Mars to achieve orbiting, landing and roving; several civil space infrastructure satellites will be launched to meet China's needs for economic and technological development. It is learnt that China's crewed space exploration program has entered the stage of preparation for space station construction. The core module of the space station is planned to be launched by the Long March-5B rocket at China's Wenchang Satellite Launch Center this spring. The crewed space exploration program plans to complete a total of 11 space launch missions from 2021 to 2022 to send the space station's core module, experiment modules, crewed spacecraft and cargo vessel into space.

http://eng.chinamil.com.cn/view/2021-03/01/content_9993945.htm

Lunar soil sample on display at museum

Lin Qi

China Daily, March 01, 2021

A 100-gram sample of lunar soil was added to the collection of the National Museum of China on Saturday and unveiled for public viewing. It was among nearly 2 kilograms of lunar samples retrieved by China's Chang'e 5 mission late last year. Chang'e 5, launched from the Wenchang Space Launch Center in Hainan province on Nov 24, touched down on the moon on Dec 1. The 23-day mission, which brought back lunar rocks and soil, was China's first such space endeavor.

The lunar soil is on display inside a specially designed transparent container at the museum. The synthetic quartz vessel replicates a zun, a bronze wine holder often used at rituals in the Shang (c.16th century-11th century BC) and Western Zhou (c.11th century-771 BC) dynasties. The container is 38.44 centimeters tall, representing the average distance from Earth to the moon of 384,400 kilometers. The soil fills a globe, symbolizing the moon, in the center of the container, which has a map of China at the base. The sample is at the heart of an exhibition on the National Museum's ground floor that opened on Saturday and charts China's progress in space missions, especially lunar exploration.

<https://www.chinadaily.com.cn/a/202103/01/WS603c402ea31024ad0baabae2.html>

Three candidate names for China's Mars rover come out after global poll

Xinhua, March 02, 2021

Three possible names for China's first Mars rover have come out after a 40-day global online poll. "Zhurong," a fire god in ancient Chinese mythology, tops the list while "Nezha," a beloved Chinese mythological figure, and "Hongyi," which means having a broad and strong mind in Chinese, ranked second and third, respectively. The China National Space Administration in January unveiled a list of 10 selections for the name after a global naming campaign that kicked off in late July 2020. Netizens at home and abroad were invited to vote on 10 candidates from Jan. 20 to Feb. 28. The administration will decide the top three names based on public voting and expert opinions.

http://www.xinhuanet.com/english/2021-03/02/c_139777663.htm

China's commercial rocket SD-3 to make maiden flight in 2022

Xinhua, March 03, 2021

Smart Dragon-3 (SD-3), the third member of China's Dragon series commercial carrier rockets family, will make its

maiden flight in 2022, its developer said. A four-stage solid-propellant rocket, the SD-3 will be the largest and have the highest carrying capacity among the Dragon series, according to the China Academy of Launch Vehicle Technology. With a maximum diameter of 2.64 meters and a takeoff weight of 140 tonnes, the rocket is capable of sending a payload of 1.5 tonnes to the solar synchronous orbit at an altitude of 500 km.

To meet the large-scale commercial launch demands, the rocket's multi-satellite launch capability enables it to carry more than 20 satellites in a single mission, while the cost is just 10,000 U.S. dollars per kg, making it competitive in the market. The rocket maker said the SD-3 was designed for both land and sea launches. China's Dragon series rockets were launched in 2019 for commercial space launch market. The first-generation rocket SD-1 made its maiden flight in August 2019, and it is scheduled to conduct two to three launches this year.

[http://www.xinhuanet.com/english/202103/03/c_139780048.htm#:~:text=BEIJING%2C%20March%20%20\(Xinhua\),2022%2C%20its%20developer%20said%20Wednesday](http://www.xinhuanet.com/english/202103/03/c_139780048.htm#:~:text=BEIJING%2C%20March%20%20(Xinhua),2022%2C%20its%20developer%20said%20Wednesday)

China draws up plan for carbon emissions to peak by 2030, to take active, well-ordered steps to develop nuclear energy

Cao Siqi

Global Times, March 05, 2021

Aerial photo taken on Aug. 31, 2020 shows a panoramic view of Fuqing project in the city of Fuqing, southeast China's Fujian Province. Fuel loading started Friday at China's first nuclear power unit using Hualong One technology, a domestically developed third-generation reactor design, bringing the unit one step closer to operation. China will draw up an action plan for carbon emissions to peak by 2030 and take active and well-ordered steps to develop nuclear energy on the basis of ensuring its safe use, according to a government work report submitted Friday to the national legislature for deliberation.

China's industrial structure and energy mix will be improved. While promoting the clean

and efficient use of coal, we will make a major push to develop new energy sources, and take active and well-ordered steps to develop nuclear energy on the basis of ensuring its safe use, Premier Li Keqiang said while delivering the work report.

<https://www.globaltimes.cn/page/202103/1217411.shtml>

China should speed nuclear development to meet carbon goals: industry legislators

Reuters, March 08, 2021

China should accelerate development of nuclear power to help meet Beijing's pledges to bring greenhouse gas emissions to a peak before 2030 and become "carbon neutral" by 2060, according to industry delegates at the annual session of parliament. China said in its 2021-2025 five-year plan released on Friday that it would raise total nuclear capacity to 70 gigawatts (GW) by the end of 2025. Capacity reached 51 GW at the end of last year, falling short of its 58 GW target.

But Luo Qi, an expert with China's Atomic Energy Research Institute and member of parliament's advisory second chamber, warned that current targets did not match the country's climate ambitions, and construction should be stepped up. "By 2035, nuclear plants in operation should reach around 180 gigawatts, amounting to 5% of total capacity," he said in a proposal published by the state-owned China National Nuclear Corporation (CNNC). Gu Jun, CNNC's president and member of the National People's Congress, said the company was pushing for the "accelerated development" of the sector and the "bulk construction" of China's homegrown reactor design, known as the Hualong One. China's first Hualong One was completed and connected to the grid last year, and according to industry officials, at least six new units should be commissioned every year to benefit from economies of scale.

<https://www.reuters.com/article/idUSKBN2B00BY>

Nuclear power-related stocks rally despite huge market plunge

Global Times, March 08, 2021

Nuclear power-related shares rose on Monday after the Government Work Report said that China would enhance nuclear power development, even though domestic stock markets plunged on concerns that the central bank may drain liquidity from the market. The Government Work Report, released during the two sessions, vowed to push forward the use of clean energy and new energy sources, and to develop nuclear power on the premise of safety, contributing to the goal of curbing carbon emissions and reaching carbon neutrality by 2030.

Analysts said that it was the first time that the report had mentioned a development plan for nuclear power in 10 years. Buoyed by the news, the nuclear power sector witnessed a sharp rise at Monday's opening. Shares of nuclear power companies including Lanzhou LS Heavy Equipment Co, Taihai Manoir Nuclear Equipment Co and Taiyuan Heavy Industry Co all rose by the daily limit. CGN Nuclear Technology Development Co was up 1.99 percent at the close.

<https://www.globaltimes.cn/page/202103/1217744.shtml>

China adds 'aircraft hunter' field missile system to export weapons list

Kristin Huang

South China Morning Post, March 09, 2021

HQ-17AE carries eight short-range missiles designed to protect frontline units from drone and helicopter attacks. It is believed to be the export version of the HQ-17A which made its debut in the 2019 National Day military parade. The latest member of China's home-grown "Flying Mongoose" family of field air defence missile systems has been cleared for export. The HQ-17AE, dubbed a "low altitude aircraft hunter", is designed to keep up with frontline units like tank battalions and protect them from drone and helicopter attacks. It consists of a six-wheeled launch vehicle carrying eight short-

range air-defence missiles and a solid-state phased-array radar system.

<https://www.scmp.com/news/china/military/article/3124679/china-adds-aircraft-hunter-field-missile-system-export-weapons>

China makes important breakthrough in key technologies of powerful rocket engine

China Military Online, March 09, 2021

Recently the 500-tonne thrust liquid oxygen and kerosene rocket engine developed by China Aerospace Science and Technology Corporation (CASC) successfully passed the "half-system on full working condition" trial, marking an important breakthrough in the key technology of China's 500-tonne heavy-duty launch vehicle engine. It is reported the trial is the first full working condition trail run for this type of engine. The smooth start-up, shifting, changing conditions and shutdown process of the trial verified the engine design, manufacturing and trial plans, laying a foundation for the full engine trail run and the follow-up development work, according to the developer.

With fully digitalized design and management, the new engine is currently the world's most powerful twine-tube thrust chamber engine and its comprehensive performance indicators have reached the world's advanced standards, providing three times the thrust of a 120-tonne-thrust LOX kerosene high-pressure staged combustion engine, three percent more specific impulse, 25 percent higher thrust to weight ratio.

http://eng.chinamil.com.cn/view/2021-03/09/content_10000159.htm

Nuke technology to be utilized for exploring space, deep sea, assisting carbon neutrality: CNNC

Global Times, March 11, 2021

Nuclear power will provide reliable support in exploring space and deep sea, and achieving the goals of carbon

neutrality by 2060, Gu Jun, president of China National Nuclear Corporation (CNNC), told Global Times on Wednesday. "Our techniques have been demonstrated to be the most advanced in the world by International Atomic Energy Agency (IAEA)," said Gu, who is also a deputy to the National People's Congress (NPC). Gu said the domestically designed third-generation nuclear reactor Hualong One is a representative of China's 66-year-nuclear industry development, which had reached a world leading standard. "CNNC had been reached by more than 40 countries to discuss the new nuclear power generator, related techniques and industry chain," said Gu. CNNC had exported seven nuclear reactor sets in three decades, according to Gu.

"Nuclear power will be used in more areas such as space and deep sea," added Gu. He believed that nuclear power can support space travel and deep sea resource exploitation. "By the middle of the 21 century, humans may stay in space and at great depths underwater for a longer period utilizing nuclear power," said Gu.

<https://www.globaltimes.cn/page/202103/1218098.shtml>

China advances space cooperation in 2020: blue book

Forum on China Africa Cooperation, March 11, 2021

China actively promoted international space cooperation in 2020, offering satellite exports and launches, cooperative research and application services to the world, according to a recent report on China's aerospace industry. By the end of last year, 51 Chinese rockets had launched 59 foreign commercial satellites into space, said the 2020 Blue Book of China Aerospace Science and Technology. In January and November, China's Long March rockets took 12 commercial remote sensing satellites developed by Argentina's Satellogic into orbit. The company has agreed with the China Great Wall Industry Cooperation on plans to launch 90 satellites on Long March rockets.

In December, Ethiopia launched its second Chinese-backed satellite from the Wenchang Spacecraft Launch Site in south China's Hainan Province. The preliminary design of the satellite was done in Ethiopia, while a joint Ethiopian-Chinese engineering team did the technical and detailed design. The report said it set a new example of international aid on climate change. At the Johannesburg Summit of the Forum on China-Africa Cooperation in 2015, the Chinese government pledged to provide satellite television for 10,000 African villages. The report said 19 African countries completed project acceptance in 2020, covering 8,162 villages. The project also rolled out educational videos for primary and middle school students in countries like Kenya, South Africa, Ghana, Uganda, and the Democratic Republic of the Congo.

https://www.fmprc.gov.cn/zfhzlt2018/eng/zjfz_1/jmzx/t1859945.htm

China, Iran, North Korea seek support at U.N. to push back against unilateral force, sanctions

Michelle Nichols

Reuters, March 12, 2021

China, Russia, North Korea, Iran and others are seeking support for a coalition to defend the United Nations Charter by pushing back against the use or threat of force and unilateral sanctions, according to a letter seen by Reuters. The move by 16 countries and the Palestinians to create such a group comes as U.S. President Joe Biden's new administration boosts its multilateral engagement and with allies, reversing former President Donald Trump's favored unilateral approach as he focused on an "America First" policy. Biden has also pledged to take on China at the United Nations, where Beijing has been pushing for greater global influence in a challenge to traditional U.S. leadership.

<https://www.reuters.com/article/idUSKBN2B336H>

China comes back from 2020 rocket failure with Long March 7A and satellite payload launch

Kristin Huang

South China Morning Post, March 12, 2021

Technology verification satellite Shiyang-9 was sent to geosynchronous orbit. China plans to construct Tiangong Space Station through 11 launches carried out this year and next year. China's next-generation Long March 7A blasted off from its Wenchang launch site in the southern province of Hainan early on Friday, one year after a failed attempt. The launch sent a technology verification satellite, the Shiyang-9 developed by China Academy of Space Technology, into geosynchronous orbit, matching the Earth's rotation. China Aerospace Science and Technology Corporation (CASC), China's main space contractor, confirmed the launch was successful on its official social media account 40 minutes later.

<https://www.scmp.com/news/china/science/article/3125154/china-comes-back-2020-rocket-failure-successful-launch-long>

China launches medium-lift Long March-7A carrier rocket

Xinhua, March 12, 2021

China launched its Long March-7A Y2 carrier rocket on Friday from the Wenchang Spacecraft Launch Site in south China's island province of Hainan. The rocket blasted off at 1:51 a.m. (Beijing Time) from the launch site, sending an experimental satellite into the planned orbit. The satellite will be mainly used for in-orbit tests of new technologies including space environment monitoring. A modified version of the Long March-7 rocket, the launch vehicle represents the new generation of China's medium-sized high-orbit rocket. It has a carrying capacity of at least 7 tonnes for the geosynchronous orbit. This was the 362nd flight mission of the Long March rocket series.

http://www.xinhuanet.com/english/2021-03/12/c_139803827.htm

Chinese military: fourth aircraft carrier likely to be nuclear powered, sources say

Minnie Chan

South China Morning Post, March 13, 2021

China's next aircraft carrier is likely to be nuclear powered, according to two people close to the People's Liberation Army (PLA). After a two-year delay because of technical problems, construction work on the vessel resumed earlier this year, the South China Morning Post reported in January, citing a military source. "Shipbuilders and ship propulsion engineers are keen on making a significant breakthrough with the construction of the fourth carrier," a source close to the Chinese navy said on condition of anonymity.

<https://www.scmp.com/news/china/diplomacy/article/3125224/chinese-military-fourth-aircraft-carrier-likely-be-nuclear>

C. USA

U.S. destroyer docks in Sudan for the first time in decades

Reuters, March 1, 2021

A U.S. naval destroyer docked on Sudan's Red Sea coast on Monday in the latest sign of thawing relations with the United States, a day after a visit by a Russian frigate. The visits are a sign of international competition for influence in Sudan, which sits in a volatile region bridging the Horn of Africa, the Gulf, and North Africa, following the 2019 overthrow of long-time ruler Omar al-Bashir. Some 300 marines standing at attention aboard the USS Winston Churchill were greeted by a Sudanese military band in Port Sudan, a strategically important city on the Red Sea that serves as Sudan's main port. Russia plans to set up a naval base there capable of mooring nuclear-powered surface vessels, and on Sunday the Admiral Grigorovich frigate became the first Russian warship to enter the port, Interfax news agency reported.

Before Bashir's overthrow, both Qatar and Turkey had signed deals to restore the nearby Red Sea port of Suakin. The United States and Sudan have started to rebuild political and economic ties, and late last year Washington removed Sudan from a list of state sponsors of terror. Under Bashir, Sudan was accused of harbouring militant groups. "The reason I'm here is because I want to learn more about your country [and] develop partnerships with your navy," said Rear Admiral Michael Baze, director of maritime affairs for the U.S. Navy's Sixth Fleet.

<https://www.reuters.com/article/idUSKCN2AT32H>

X-energy formally begins SMR partnership with DOE

World Nuclear News, March 2, 2021

X-energy has signed the cooperation agreement which officially begins its participation in the US Department of Energy's (DOE) Advanced Reactor Demonstration Program (ARDP), a project the company says will enable it to build a commercial scale advanced nuclear reactor with Energy Northwest in Washington state. The company was announced by DOE in October 2020 as one of two awardees - the other being TerraPower - to receive USD80 million each of initial cost-shared funding to build an advanced reactor demonstration plant that can be operational within seven years. DOE selected X-energy to deliver a commercial TRISO fuel fabrication facility and a four-module version of its Xe-100 high temperature gas cooled reactor (HTGR), which the company plans to site at Energy Northwest's Columbia nuclear plant. DOE will invest approximately USD1.23 billion in X-energy's project over the seven-year period.

X-energy last year initiated a pre-licensing Vendor Design Review of the Xe-100 with the Canadian Nuclear Safety Commission. It is one of three grid-scale small modular reactor (SMR) technology developers selected last year by Ontario Power Generation (OPG) to advance engineering and design work, with the goal of identifying

options for future deployment. OPG is considering the deployment of an SMR development at its existing Darlington site as early as 2028.

<https://www.world-nuclear-news.org/Articles/X-energy-formally-begins-SMR-partnership-with-DOE>

Pentagon concerned by U.N. report indicating possible North Korea nuclear reprocessing

David Brunnstrom, Idrees Ali

Reuters, March 3, 2021

The Pentagon expressed concern about a U.N. report indicating possible reprocessing of nuclear fuel for bombs by North Korea, and said such activity could raise tensions with Pyongyang. Rear Admiral Michael Studeman, head of intelligence for the U.S. Indo-Pacific command, said North Korean activity highlighted this week by the International Atomic Energy Agency (IAEA) could be intended to get the attention of the Biden administration and as a bargaining chip to press for sanctions relief. The administration is currently reviewing U.S.-North Korea policy.

"We have our eye on this. And it is deeply concerning where North Korea wants to go," Studeman told an virtual event on technology and security. In a statement to the IAEA Board of Governors on Monday, the United Nations body's director general, Rafael Mariano Grossi, made reference to activity at North Korea's Yongbyong and Kangson nuclear facilities. He said there had been recent indications of operation of a steam plant that serves a radiochemical laboratory. North Korea has used its radiochemical lab at Yongbyon to reprocess plutonium from a reactor there for nuclear bombs. Grossi called North Korea's continued nuclear activity a clear violation of U.N. sanctions and "deeply regrettable." Referring to Grossi's statement, Studeman said: "the IAEA board of governors issued a notice that there had been evidence of the Koreans reprocessing perhaps nuclear fuel. "If that

is true, then that could put us into a different level of tension with Korea," he said. "This may be the start of something that's designed to influence the Biden administration; it may be the first way of getting the new administration's attention here, where perhaps (North Korea) would use this reprocessing development as a bargaining chip for sanctions relief of some sort."

<https://www.reuters.com/article/idUSL2N2L034M>

Biden's Iran approach praised as deft despite lack of progress

Arshad Mohammed, John Irish

Reuters, March 05, 2021

U.S. President Joe Biden's refusal to offer upfront sanctions relief to Iran may have angered Tehran's clerical rulers but it has won some praise at home despite his failure so far to draw Iran into nuclear talks or deter attacks on U.S. forces in Iraq. "Sensible," said Elliott Abrams, former President Donald Trump's special envoy for Iran, of Biden's unwillingness to give Tehran sanctions relief before any talks on both sides resuming compliance with the 2015 Iran nuclear deal.

"Negotiation is always a give and take but we should not pay them just for the pleasure of their company at the negotiating table," Abrams said. That the Democratic president should be commended by a Republican official is striking given the chasm between the U.S. political parties and illustrates Biden's balancing act as he tries to resuscitate the deal without being pilloried by U.S. conservatives. Analysts described Biden's approach to Iran as skillful in keeping the sanctions leverage he inherited from Trump and hence protecting himself from domestic criticism, while taking a harder line on rocket attacks by Iranian proxies in Iraq.

<https://www.reuters.com/article/idUSKCN2AW2S9>

Lawmakers gird for spending battle over nuclear weapons

Rebecca Kheel

The Hill, March 7, 2021

Nuclear weapons are emerging as one of the top political brawls in the brewing battle over next year's defense budget. Democrats have been introducing bills to curtail costly nuclear modernization programs, as well writing letters urging President Biden to support their efforts. But Republicans are shooting back with their own letters and op-eds calling on Biden to stay the course on programs that largely originated during the Obama administration. They're also working to pin down Pentagon nominees on where they stand. The back-and-forth over nuclear modernization is providing a lens into the larger fight that's taking shape as the Biden administration prepares to present its first defense budget in the spring. Expectations are that the administration will keep funding flat.

<https://thehill.com/policy/defense/541906-lawmakers-gird-for-spending-battle-over-nuclear-weapons>

U.S. admiral calls for ground-based offensive weaponry in western Pacific

Reuters, March 10, 2021

The United States military needs more long-range weaponry in the western Pacific, including ground-based arms, the top U.S. admiral for the Asia-Pacific said, underscoring U.S. concerns about China's growing military strength, particularly among its missile forces. President Joe Biden's administration has said the United States intends to compete with China's growing influence and military strength in the Asia-Pacific. The Pentagon is carrying out a review of its strategy in the region.

"A wider base of long-range precision fires, which are enabled by all our terrestrial forces - not just sea and air but by land forces as well - is critically important to stabilize what is becoming a more unstable environment in the western Pacific," Admiral Phil Davidson, commander for U.S. Indo-Pacific Command, told a Senate Armed Services Committee hearing. Davidson cited enthusiasm by the Army and Marine Corps "to embrace some of the capabilities that the Navy and Air Force have already developed." A budget document provided to Congress last month by the Indo-Pacific Command said the United States needed increased ground-based weapons along the first island chain, which would cost \$408 million in fiscal year 2022 alone and \$2.9 billion from fiscal years 2023 to 2027. The first island chain is the string of islands that run from the Japanese archipelago, through Taiwan, the Philippines and on to Borneo, enclosing China's coastal seas. While the United States has been able to use long-range weapons on ships and aircraft, there were limits placed on it because of an arms control treaty. But the United States pulled out of the Intermediate Nuclear Forces (INF) treaty with Russia in 2019.

<https://www.reuters.com/article/idUSL1N2L727E>

NRC chairman sets out vision for US nuclear regulation

World Nuclear News, March 10, 2021

Becoming a more modern, risk-informed regulator remains a key goal of the US Nuclear Regulatory Commission (NRC), its chairman Christopher Hanson said during his opening address to the regulator's 33rd Regulatory Information Conference. Hanson, who was sworn in as a commissioner in June 2020, was designated chairman of the NRC by President Joe Biden in January this year.

Becoming a "more modern, risk-informed regulator" remains a key goal for the NRC, Hanson said. "Reasonable assurance of adequate protection is still the standard to meet." The concept of risk-informed regulation could be broken down into three

questions he said. "What do we know? How do we know it - what is the basis of the knowledge? And what difference does it make - are we focused on gathering data and better understanding things that are actually important to safety?" The NRC needs to ensure the safety of the current nuclear fleet and uses, as well as new technologies. It must do this, not by confining itself to historical frameworks, but by identifying and focusing on the most risk-significant components and systems, he said.

<https://www.world-nuclear-news.org/Articles/Hanson-sets-out-vision-for-US-nuclear-regulation>

BWXT wins uranium processing and HALEU fuel contracts

World Nuclear News, March 11, 2021

The US Department of Energy (DOE) has awarded BWXT Nuclear Operations Group (BWXT NOG) two contracts worth a total of USD35 million. The first is for the recovery and conversion of uranium, while the second is for the completion of a new research reactor fuel line at its Lynchburg, Virginia facility. The DOE's US Naval Nuclear Propulsion Program has awarded BWXT NOG - a subsidiary of BWX Technologies (BWXT) - a USD17.4 million contract for the recovery of uranium from scrap, waste and unused product to be converted into fuel to feed future products under the programme. This work began at BWXT's facility in Lynchburg in January this year and is expected to be completed by June 2022. An additional option is expected to be awarded later this year.

BWXT owns the only two Category 1 nuclear facilities licensed by the US Nuclear Regulatory Commission to store and process highly enriched uranium (HEU). The DOE's National Nuclear Security Administration (NNSA) has awarded a USD17.9 million contract to BWXT NOG to complete the second phase of the construction of a new research reactor fuel line. The contract funds the repurposing of a portion of the Lynchburg

uranium processing facility to be used to manufacture uranium-molybdenum alloy High Assay Low Enriched Uranium (U-Mo HALEU) fuel.

<https://www.world-nuclear-news.org/Articles/BWXT-awarded-uranium-processing-and-HALEU-fuel-con>

US could operate a fusion plant by 2040, Academy says

World Nuclear News, March 12, 2021

NASEM's report, *Bringing Fusion to the US Grid*, published in February, builds on the work of the 2019 Final Report of the Committee on a Strategic Plan for US Burning Plasma Research. It identifies key goals and innovations needed to support the development of a US fusion pilot plant, many of which it says should be developed in parallel to meet the challenge of operating a pilot plant between 2035 and 2040. Results from its investments in the international ITER fusion project, coupled with Department of Energy (DOE)-funded research, mean the USA is positioned to begin planning its first fusion pilot plant now provided the requisite resources are prioritised and allocated, the Academy said.

"The US fusion community has been a pioneer of fusion research since its inception and now has the opportunity to bring fusion to the marketplace," said Richard Hawryluk, associate director for fusion at the Princeton Plasma Physics Laboratory and chair of the NASEM committee that wrote the report. Using fusion as an energy source will require the resolution of significant technical, scientific and economic challenges, NASEM said. "However, other countries and groups around the world are rapidly moving toward fusion pilot plants of their own. If the United States can overcome these challenges and provide the resources for a fusion pilot plant as outlined in the report, it has the opportunity to play a global leadership role to add fusion to its arsenal of low-carbon energy alternatives."

<https://www.world-nuclear-news.org/Articles/US-could-operate-a-fusion-plant-by-2040-Academy-sa>

North Korea unresponsive to behind-the-scenes Biden administration outreach - U.S. official

Phil Stewart

Reuters, March 14, 2021

North Korea has not responded to behind-the-scenes diplomatic outreach since mid-February by President Joe Biden's administration, including to Pyongyang's mission to the United Nations, a senior Biden administration official told Reuters. The disclosure of the so-far unsuccessful U.S. outreach, which has not been previously reported, raises questions about how Biden will address mounting tensions with Pyongyang over its nuclear weapons and ballistic missile programs. It also adds a new dimension to a visit America's top diplomat and defense secretary will make next week to South Korea and Japan, where concerns over North Korea's nuclear arsenal are expected to be high on the agenda.

The senior Biden administration official, speaking on condition of anonymity, offered few details on the diplomatic push. But the official said there had been efforts to reach out to the North Korean government "through several channels starting in mid-February, including in New York." "To date, we have not received any response from Pyongyang," the official said. North Korea's mission to the United Nations did not immediately respond to a request for comment.

<https://www.reuters.com/article/idUSL1N2LB0F0>

D. Europe

Europeans push IAEA Iran resolution despite warnings by Russia, Tehran

Francois Murphy

Reuters, March 1, 2021

Britain, France and Germany are pressing ahead with a U.S.-backed plan for a resolution by the U.N. nuclear watchdog's

board criticising Iran for curbing cooperation with the agency, despite Russian and Iranian warnings of serious consequences. The International Atomic Energy Agency's 35-nation Board of Governors is holding a quarterly meeting this week against the backdrop of faltering efforts to revive Iran's nuclear deal with major powers now that U.S. President Joe Biden is in office.

Iran has recently accelerated its violations of the 2015 deal in an apparent bid to raise pressure on Biden, as each side insists the other must move first. Tehran's breaches are a response to the U.S. withdrawal from the deal in 2018 and the reimposition of U.S. sanctions that had been lifted under it. The latest breach was to scale back cooperation with the IAEA last week, ending extra inspection and monitoring measures introduced by the deal, including the power given to the IAEA to carry out snap inspections at facilities not declared by Iran. The three European powers, all parties to the 2015 deal, circulated a draft resolution for the Vienna meeting voicing "serious concern" at Iran's reduced cooperation and urging Iran to reverse its steps. The draft, sent to IAEA board members and obtained by Reuters, also expresses "deep concern" at Iran's failure to explain uranium particles found at three old sites, including two that the IAEA first reported on last week.

<https://www.reuters.com/article/idUSKCN2AT23F>

France to push ahead with Iran censure resolution at IAEA - foreign minister

Reuters, March 02, 2021

France's Foreign Minister Jean-Yves Le Drian said on Tuesday that a censure resolution would be lodged at the International Atomic Energy Agency in the coming days to criticise Iran's decision to curb cooperation with the agency. Britain, France and Germany pressed on Monday ahead with a U.S.-backed plan for a resolution by the U.N. nuclear watchdog's board despite Russian

and Iranian warnings of serious consequences.

<https://www.reuters.com/article/idUSP6N2JU00K>

France's Macron tells Iran 'clear gestures' needed to revive nuclear deal

Reuters, March 02, 2021

French President Emmanuel Macron told Iranian President Hassan Rouhani that Tehran must make clear and immediate gestures to allow dialogue to resume on the 2015 nuclear deal, the Elysee palace said. "Having reminded (Rouhani) of the efforts made by France with its partners in the last years to reach a negotiated solution, the (French) head of state stressed it was important that Iran made clear and immediate gestures so that dialogue can resume with all parties to the Vienna deal," Macron's office said.

<https://www.reuters.com/article/idUSKCN2AU2IH>

Poland sees energy transformation costing \$120 billion by 2045

Reuters, March 03, 2021

Switching energy supplies from fossil fuels to cleaner sources of power will cost Poland an estimated 450 billion zlotys (\$120 billion) by 2045, the minister responsible for energy infrastructure said. Poland still generates most of its electricity from coal, but plans to reduce its share in power production amid rising carbon emission costs. "Transformation will cost us a lot. It is difficult to assess it exactly at the moment. We have calculated that by 2045 the transformation in the electricity system will cost around 450 billion zlotys," Piotr Naimski told private radio RMF.

He added that Poland would be closing its coal-burning power plants over the next 30 years, replacing them with gas-fuelled ones, offshore wind farms and nuclear

power plants. Naimski said the first nuclear plant would be built in the north of Poland - in Lubiatowo or Zarnowiec, and the second in Belchatow, central Poland, which is currently the site of Europe's biggest lignite coal power plant. A third will potentially be built in Patnow. Poland plans to have its first nuclear reactor operating in 2033. "We want to start construction in 2026," Naimski said.

<https://www.reuters.com/article/idUSL5N2L1279>

French power usage, carbon emissions fall amid COVID-19 pandemic

Reuters, March 03, 2021

French power consumption fell 3.5% last year as the COVID-19 pandemic cut demand more than during the 2008 financial crisis, grid operator RTE said. Electricity consumption fell to 460 terawatt hours (TWh), the company said. Production fell 7% when including the reduced availability of nuclear power plants, RTE added. Carbon emissions from the electricity sector fell nearly 9% and represented 5% of total emissions in France in 2020, it said.

The consumption drop came as large industry suffered from a sharp decline in demand during the pandemic, with certain sectors such as automotive, steel and rail transport seeing up to a 25% reduction in power consumption in 2020, the grid operator said. Consumption in the residential sector remained stable compared to 2019, RTE said. On the supply side, the extension of nuclear reactor maintenance times, combined with a rescheduling of shutdown dates and the closure of the Fessenheim plant led to an 11.6% reduction in power generated compared to the year before. In contrast, wind power generation rose 17% to 39.7 TWh and eclipsed gas-fired power plants to become the third-largest source of electricity production behind nuclear and hydraulic power, RTE said.

<https://www.reuters.com/article/idUSKBN2AV0ZQ>

Germany to pay nuclear operators 2.6 billion euros for plant closures

Reuters, March 04, 2021

The German government has agreed to pay four nuclear operators nearly 2.6 billion euros (\$3.1 billion) in compensation for forcing them to shut their nuclear plants early in response to the Fukushima disaster, ministries said. The Frankfurter Allgemeine Zeitung daily reported on Thursday that a sum of 2.4 billion euros will be made available from the general budget, citing government sources.

This excluded an additional sum of 181 million euros for Swedish state-owned Vattenfall specified by the environment, finance and economy ministries. The affected companies aside from Vattenfall are the German listed utilities RWE, which will get 880 million euros, E.ON, which will get 42.5 million euros, and mainly publicly-owned German EnBW, which will get 80 million euros. Vattenfall said it will get an originally reported 1.425 billion euros plus compensation for sales of production rights by Vattenfall to E.ON worth 181 million euros, arriving in total at 1.606 billion euros. "This is a conservative implementation of the court decisions in Germany that in the end is acceptable to us," Vattenfall Chief Executive Anna Borg said in a statement.

<https://www.reuters.com/article/idUSL5N2L32X5>

Hungary and Poland plan nuclear to replace coal

World Nuclear News, March 05, 2021

The secretary of state for the Development of Circular Economy, Energy and Climate Policy, Attila Steiner, announced a more ambitious target during a meeting of the Powering Past Coal Alliance (PPCA), to bring forward Hungary's phaseout of coal to 2025. Hungary is to receive support from the EU's new Just Transition Fund to support the transition of its coal regions, of which closure of the 884 MW Matra coal

power plant is a part. PPCA is a coalition of national and sub-national governments, businesses and organisations working to advance the transition from unabated coal power generation to clean energy. Hungary has four nuclear reactors generating about half of its electricity. In 2018, nuclear accounted for 49% of its electricity mix, natural gas for 23%, and coal for 15%.

The country has four nuclear units at Paks, which is 100 km south of Budapest. These are Russian-supplied VVER-440 pressurised water reactors, which started up between 1982 and 1987. Russia and Hungary signed an inter-governmental agreement in early 2014 for Russian enterprises and their international sub-contractors to supply two VVER-1200 reactors at Paks, including a Russian state loan of up to EUR10.0 billion (USD11.2 billion) to finance 80% of the project, which is known as Paks II. The Hungarian Energy and Public Utilities Regulatory Authority announced in November last year that it had approved Atomerõmû Zrt's plan to construct the two new units at the existing Paks plant site. A construction licence for the project is required from the nuclear regulator, the Hungarian Atomic Energy Authority, before building work can start.

<https://www.world-nuclear-news.org/Articles/Hungary-and-Poland-plan-nuclear-to-replace-coal>

Norway wealth fund to probe firms that could be using forced labour from Xinjiang

Gwladys Fouche

Reuters, March 10, 2021

Norway's \$1.3 trillion wealth fund will probe whether companies it is invested in may be using the labour of ethnic Uighurs and other Muslims linked to China's internment camp system in the country's Xinjiang region, the head of the fund's ethics watchdog told Reuters. The world's largest sovereign wealth, which has massive market influence because it owns 1.5% of the world's listed shares across 9,100 companies, operates under ethical guidelines set by parliament. Johan H. Andresen, chair of the

fund's Council on Ethics, said the fund had begun identifying companies that it said used workers that had been held in internment camps in Xinjiang. The fund is forbidden by parliament from investing in companies that produce nuclear weapons, landmines, or tobacco, or which violate human rights, among other criteria. Several textile companies have been excluded from the fund, most recently India's Page Industries, which produces swimwear for the Speedo brand. Page denies wrongdoing.

The Council is now turning its attention to companies that produce footwear, "a natural extension" of its work in the textile industry, Andresen said, given that the production processes are similar. "We are still at an early stage," he said. Forced labour, or modern slavery, is also becoming a growing issue that will dominate the council's work in the years ahead, he said. The council will this year commission a report from a non-governmental organisation to map out the extent of forced labour worldwide. The fund has already excluded companies, including security firm G4S, on those grounds. G4S said at the time it had engaged with the council and was making good progress on recruitment and welfare standards. Overall some 70 companies have been excluded by the fund, on various grounds, on recommendations from the Council on Ethics. Another 73 companies have been excluded directly by the central bank based on their dependence on coal.

<https://www.reuters.com/article/idUSL5N2L34FB>

Britain must boost cyber-attack capacity, PM Johnson says

David Milliken

Reuters, March 14, 2021

Britain needs to boost its capacity to conduct cyber attacks on foreign enemies, Prime Minister Boris Johnson said before the publication of a national security review next week. "Cyber power is revolutionising the way we live our lives

and fight our wars, just as air power did 100 years ago," Johnson said in a statement released by his office. Johnson is due to present a long-term review of national security strategy to parliament on Tuesday which media reports suggest could lead to a reduction in armed forces personnel.

"The review will set out the importance of cyber technology to our way of life - whether it's defeating our enemies on the battlefield, making the internet a safer place or developing cutting-edge tech to improve people's lives," Johnson's office said. The defence ministry said on Saturday that talk of cuts "at this stage is speculation". Johnson said the National Cyber Force - including spies, defence officials and scientists - would have a permanent base in northern England as the government tries to boost regional development outside London. The NCF targets threats including foreign air defence systems and the mobile phones of people the government views as serious criminals or terrorists. It was created last year alongside a dedicated army regiment focused on cyber warfare. In 2016 a National Cyber Security Centre was set up to advise the government and public on how to reduce the risk of cyber-attacks.

<https://www.reuters.com/article/idUSKBN2B50OL>

E. Russia

Rosatom develops fast reactor fuel, launches tender for pyrochemical processing study

World Nuclear News, March 2, 2021

The Bochvar Institute has developed a fuel rod design based on nitride uranium-plutonium fuel (MNUP-fuel) for the BREST-OD-300 fast neutron reactor. At the same time, Rosatom's nuclear fuel division is developing second-generation fuel rods for the BREST-OD-300 with a higher burnout level, which will be used when MNUP fabrication will shift to the re-fabrication stage. This means that irradiated fuel of the first load after irradiation and reprocessing will be used for fresh fuel fabrication. Meanwhile, Rosatom has launched a tender

to study the pyrochemical processing of used nuclear fuel from fast neutron reactors.

All of these activities are part of Rosatom's Proryv (Breakthrough) project, the ultimate aim of which is to demonstrate closing the nuclear fuel cycle. This project also includes construction of a Pilot Demonstration Energy Complex (PDEC) at the site of Siberian Chemical Combine (SCC), which is in Seversk, in the Tomsk region of Russia. The Bochvar Institute is a research facility of Rosatom's nuclear fuel manufacturing subsidiary TVEL, which said today that the MNUP-fuel project will be applied to the commercial manufacturing of nitride fuel to be launched as part of the PDEC. SCC is another TVEL subsidiary.

<https://www.world-nuclear-news.org/Articles/Rosatom-develops-fast-reactor-fuel-launches-tender>

Russian Su-27 fighter scrambled to intercept US strategic bombers over Baltic

TASS News Agency, March 3, 2021

A Russian Su-27 fighter jet was scrambled to intercept two B-1B Lancer strategic bombers of the US Air Force over the Baltic Sea, Russia's National Defense Control Center (at the Russian Defense Ministry) told reporters on Wednesday. Russian radars detected two air targets approaching the national sovereign airspace. A Su-27 fighter jet of the Western Military District's air defense units on duty was scrambled to intercept the aircraft.

"The crew of the Russian fighter aircraft identified the air targets as B-1B strategic bombers of the US Air Force and shadowed them over the Baltic Sea," the national center said. There was no unauthorized incursion into Russia's airspace. The National Defense Control Center pointed out that after the US aircraft had turned away from the Russian border, the Russian fighter jet safely returned to its home air base.

<https://tass.com/defense/1262441>

Russia may test-launch Tsirkon hypersonic missile from submarine in June – source

TASS News Agency, March 4, 2021

A Tsirkon hypersonic missile will be test-launched from an underwater carrier for the first time no sooner than June, a high-placed source in the domestic defense industry told TASS on Thursday. “The Tsirkon may be test-launched for the first time from the [Northern Fleet’s nuclear-powered submarine] Severodvinsk in June as the earliest date. There is no exact date for the start of trials so far,” he said.

Until now, Tsirkon hypersonic missiles were test-launched from the surface carrier of these weapons: the frigate Admiral of the Fleet of the Soviet Union Gorshkov. As another source told TASS, “a decision has been made to speed up as much as possible the Tsirkon trials that will now run from the surface and underwater carriers concurrently.”

<https://tass.com/defense/1262585>

Russia establishes special site to fabricate fuel for China’s CFR-600

Nuclear Engineering, March 4, 2021

A special production site to fabricate fuel for China’s CFR-600 fast reactor under construction has been established at Russia’s Mashinostroitelny Zavod (MSZ - Machine-Building Plant) in Elektrostal (Moscow region), part of Rosatom’s TVEL Fuel Company. As part of the project, MSZ had upgraded existing facilities for the production of fuel for fast reactors, TVEL said on 3 March. Unique equipment has been created and installed, and dummy CFR-600 fuel assemblies have already been manufactured for testing.

The new production site was set up to service an export contract between TVEL and the Chinese company CNLY (part of China National Nuclear Corporation - CNNC) for the supply of uranium fuel for CFR-600 reactors. Construction of the first CFR-600 unit started in Xiapu County, in China’s Fujian province in late 2017

followed by the second unit in December 2020. The contract is for the start-up fuel load, as well as refuelling for the first seven years. The start of deliveries is scheduled for 2023. “The Russian nuclear industry has a unique 40 years of experience in operating fast reactors, as well as in the production of fuel for such facilities,” said TVEL President Natalya Nikipelova. “The Fuel Division of Rosatom is fulfilling its obligations within the framework of Russian-Chinese cooperation in the development of fast reactor technologies. These are unique projects when foreign design fuel is produced in Russia. Since 2010, the first Chinese fast neutron reactor CEFR has been operating on fuel manufactured at the Machine-Building Plant, and for the supply of CFR-600 fuel, a team of specialists from MSZ and TVEL has successfully completed a complex high-tech project to modernise production,” she explained.

<https://www.neimagazine.com/news/newsrussia-establishes-special-site-to-fabricate-fuel-for-chinas-cfr-600-8566811>

Russia hopes for swift return to original Iran nuke deal, Lavrov says

TASS News Agency, March 4, 2021

Moscow hopes that it will soon be possible to revive the Joint Comprehensive Plan of Action (JCPOA) on Iran’s nuclear program in its original form, Russian Foreign Minister Sergey Lavrov said in an interview with the *Russkaya Mysl* magazine published in the UK.

“We hope that it will be possible to reverse the trend and return the process of implementing the JCPOA to the originally agreed on framework in the immediate future. Even more so, since Tehran has repeatedly spoken in favor of its willingness to completely unfreeze all of the plan of action’s provisions that it had suspended as soon as the forfeited balance of interests is restored. For our part, we are ready to provide all kinds of assistance in reaching agreements on that score,” Lavrov stressed when asked whether it

was possible to restore the Iran nuclear deal in cooperation with European countries. According to Russia's top diplomat, the window of opportunity for salvaging the nuclear deal has not been closed yet, the necessary condition is the full and consistent implementation of the 2015 agreements by all countries, which developed and attained them. Moscow is working closely with all the parties to the JCPOA to achieve that goal. Specifically, it has been in touch with its European partners to hammer out possible solutions, he noted.

<https://tass.com/politics/1262697>

Rosatom enters next stage of ATF development

World Nuclear News, March 4, 2021

The Research Institute of Atomic Reactors (NIAR) in Dimitrovgrad, in the Ulyanovsk region of Russia, has completed the second cycle of irradiation of the experimental fuel assemblies with VVER and pressurised water reactor fuel rods in the MIR research reactor. This marks the latest milestone in the development of Russian accident tolerant fuel, state nuclear corporation Rosatom announced today.

Each fuel assembly contains 24 fuel elements with four various combinations of cladding and fuel matrix materials. Fuel pellets were made from traditional uranium dioxide, as well as uranium-molybdenum alloy with increased density and thermal conductivity. Either zirconium alloy with a chromium coating or chromium-nickel alloy were used as the rod cladding material. After each irradiation cycle, several fuel rods from each fuel assembly were extracted for further post-irradiation studies, and the new non-irradiated samples were installed instead. All the irradiated fuel rods remain hermetically sealed.

Meanwhile, the Bochvar Institute, a research facility of Rosatom's nuclear fuel manufacturer subsidiary, has started a project to develop fabrication technology for uranium disilicide pellets (U₃Si₂) as another option for the ATF fuel matrix. An experimental U₃Si₂ ingot has been

manufactured for the further production of powder and pellets. This new parallel research into ATF is informed by the advantages of uranium disilicide, said Alexander Ugryumov, vice president for research, development and quality at TVEL.

<https://www.world-nuclear-news.org/Articles/Rosatom-marks-next-milestone-with-accident-tolerant>

Russian shipbuilders to lay down two advanced nuclear-powered subs in May

TASS News Agency, March 5, 2021

The Sevmash Shipyard in Russia's northwest will lay down the improved Project 955A (Borei-A) strategic nuclear-powered missile-carrying submarines Dmitry Donskoi and Knyaz Potyomkin in May this year, a source in the domestic defense industry told TASS on Friday. "The strategic subs, the new Dmitry Donskoi and the Knyaz Potyomkin will be laid down at the Sevmash by Victory Day on May 9, 2021," the source specified.

TASS has no official confirmation of this information yet. As the source said, the contract on the subs' construction was signed in 2020. The submarines are scheduled to be delivered to the Russian Navy in 2026 and 2027. Each submarine will carry 16 Bulava intercontinental ballistic missiles (ICBMs).

<https://tass.com/defense/1263001>

US readiness to return to original Iran nuclear deal pragmatic - Russia's envoy

TASS News Agency, March 6, 2021

The United States' willingness to return to the original Joint Comprehensive Plan of Action (JCPOA, known as the Iran nuclear deal) is a pragmatic and right approach, Mikhail Ulyanov, Russia's Permanent Representative to International Organizations, including the IAEA, in Vienna, said in a televised interview on

Rossiya-24 news channel on Friday. "Americans have shown a very responsible approach in this regard. They are ready at this stage to discuss the return to what it was. It is rational, pragmatic and correct," he said.

According to Ulyanov, "the ambitions" of Iran and the US are alarming. "In this situation, we see that either Tehran or Washington starts saying that the other side must make the first step. It is a road to nowhere. The only way to make progress is to synchronize practical steps so that nobody could assume they have lost face," he added.

<https://tass.com/politics/1263329>

Russian ambassador hands Putin's message for Iranian supreme leader - embassy

TASS News Agency, March 6, 2021

Russia's Ambassador to Tehran Levan Dzhagaryan has handed Ali Akbar Velayati, the chief adviser to Iran's supreme leader, a message from Russian President Vladimir Putin to Ayatollah Ali Khamenei, the spokesman for the Russian embassy in Tehran, Maksim Suslov, told TASS on Saturday.

"The Ambassador of the Russian Federation was invited to visit the foreign affairs advisor to the Supreme Leader. At today's meeting he handed the Russian president's message for Iran's religious leader," he said adding that "the message was devoted to the strengthening of bilateral relations and to international issues." According to the Russian embassy's spokesman, "the letter was a reply to Khamenei's message for Putin, which Speaker of Iran's Majlis (unicameral parliament - TASS) Mohammad Bagher Qalibaf handed during his meeting with State Duma Speaker Vyacheslav Volodin in early February."

<https://tass.com/politics/1263425>

Ostrovets unit 2 begins simulated fuel loading

World Nuclear News, March 8, 2021

The loading of 'dummy' fuel assemblies began yesterday at unit 2 of the new nuclear power plant in Ostrovets, Belarus. "This process is a prerequisite and, in a way, a dress rehearsal for the loading of nuclear fuel into the reactor," Russian state nuclear corporation Rosatom said. This process also includes the development of transport and technological operations to move the simulators of heat-emitting assemblies (ITVS) from a special fresh fuel storage facility to the reactor building, and confirmation of the unit's readiness for fuel loading.

"The simulators are an exact copy of fuel assemblies, in terms of weight, size and materials, but they do not contain nuclear fuel," said Vitaly Polyaniin, director of the Belarus NPP construction project and vice president of Rosatom subsidiary ASE. "They are intended for use during commissioning at the stage of cold-hot testing of the reactor." Once all 163 of the ITVS have been loaded, assembly of the reactor will be completed and then, on receipt of the relevant permits, hydraulic tests will begin. This stage "opens a huge cycle of mandatory and strictly regulated technologically complex processes carried out during the preparation of the power unit for physical start-up", Polyaniin said.

<https://www.world-nuclear-news.org/Articles/Ostrovets-unit-2-begins-simulating-fuel-loading>

Iran, US may develop synchronized steps to recover nuclear deal – Lavrov

TASS news Agency, March 9, 2021

Russia thinks that Iran and the US may develop synchronized steps to recover the Joint Comprehensive Plan of Action (JCPOA) on the Iranian nuclear deal,

Russian Foreign Minister Sergey Lavrov said on Tuesday during a joint press conference with UAE Foreign Minister Abdullah bin Zayed Al Nahyan.

“In order to resolve this immediate challenge, we find it rather possible to develop synchronized, simultaneous, stage-by-stage steps that must be taken by the Iranians and the US. Because right now, if we stick to discussing who should be first to return to their obligations, the negotiations may last forever,” Lavrov said.

<https://tass.com/politics/1263813>

Akkuyu Nuclear receives sustainability loans from Sovcombank

World Nuclear News, March 9, 2021

JSC Akkuyu Nuclear, a subsidiary of Russia’s Rosatom, said today it had received two loans of up to USD200 million and USD100 million, respectively, for a period of seven years from Sovcombank to finance the construction of the Akkuyu nuclear power plant in Turkey. The loans are being provided on special terms, Rosatom said, including a reduction in the interest rate “when the borrower fulfills its sustainable development covenants”. Sovcombank is one of Russia’s 10 biggest banks, with assets totalling RUB1.6 trillion (USD20.27 billion).

Rosatom’s Deputy Director General for Economy and Finance Ilia Rebrov said: “By committing to sustainable development obligations as part of the loan agreements, Rosatom, by means of the Akkuyu project, exemplifies the new level of responsibility assumed by nuclear companies in implementing the world’s sustainable development agenda.” Noting that nuclear energy produces no CO2 emissions, he said nuclear generation therefore plays a crucial role in ensuring that greenhouse gas emissions are reduced sufficiently to meet the goals of the Paris Agreement, and to achieve the UN’s Sustainable Development Goals.

“At the same time, compliance with sustainable development requirements makes it possible to provide these loans on special terms, allowing us to be confident about the economic feasibility and advantages of ‘sustainable’ financing. The timely implementation of our projects depends on reliable financing, and we are pleased with this expansion of our cooperation with Sovcombank,” he said. Anton Dedusenko, deputy chairman and managing director for sustainable development and shareholder relations at Akkuyu Nuclear, said the Akkuyu nuclear power plant construction project is a ‘flagship’ project in several ways.

<https://www.world-nuclear-news.org/Articles/Akkuyu-Nuclear-receives-sustainability-loans-from>

Rosatom targets 24 new reactor units in Russia by 2045

World Nuclear News, March 10, 2021

Rosatom has announced that implementation of Russian President Vladimir Putin’s decision to increase the share of nuclear power in the country’s energy mix to 25% by 2045 will require, according to preliminary estimates, the construction of 24 new reactor units, including in new regions.

The difficulties presented by the pandemic make this achievement, among others, “all the more valuable”, Likhachov said. “The environmental agenda and climate change are becoming increasingly important in the world. Domestic challenges are becoming more complex and voluminous. The President and the government are counting on our competences, increasingly using the state corporation in the technological rearmament of the domestic economy. The main thing is to go from the regime of the epidemic to the mode of development. In the near future, each division and all enterprises will present their programmes to increase revenue and reduce costs,” he said. The company’s strategy, Rosatom Vision-2030, which its

supervisory board updated last year, targets an increase in revenue to RUB4 trillion (USD54 billion) “with a significant expansion in the share of new products and foreign orders, new technologies with mandatory export potential and qualitative changes in Rosatom itself: erasing internal boundaries between enterprises and divisions, as well as the creation of an industry environment for the development of employees”, he added.

<https://www.world-nuclear-news.org/Articles/Rosatom-targets-24-new-reactor-units-in-Russia-by>

Putin says Akkuyu nuclear plant in Turkey to start work in 2023

Reuters, March 10, 2021

Russian President Vladimir Putin said on Wednesday that the Akkuyu nuclear plant in Turkey was scheduled to start working in 2023. Putin was speaking during a video link with Turkish President Tayyip Erdogan during a foundation-laying ceremony for the third reactor of the plant. Russian nuclear conglomerate Rosatom is building four reactors at the site on the Mediterranean.

<https://www.reuters.com/article/idUSKBN2B21KX>

El Dabaa NPP as significant as Aswan High Dam, says Russian ambassador

World Nuclear News, March 11, 2021

The importance of Egypt’s first nuclear power plant is comparable to that of the Aswan High Dam, Russia’s Ambassador to Egypt Georgy Borisenko said this week. Built across the Nile in Aswan, Egypt, between 1960 and 1970, the world’s biggest embankment dam was designed by the Moscow-based Hydroproject Institute. Borisenko made the comparison during a visit to the El Dabaa plant’s construction site, together with the chairman of Egypt’s Nuclear Power Plants Authority (NPPA), Amged El-Wakeel.

According to a Rosatom statement yesterday, Borisenko said: “The El Dabaa

NPP project is the largest joint project between Moscow and Cairo. Not only does it reinforce our traditional relations with dignity, but also brings them to a new strategic height. In importance, the implementation of this project is comparable to that of the Aswan Dam Hydroelectric Project, which was realised by our countries during the Soviet period. I am confident that the El Dabaa NPP project too will be a successful demonstration of the highest professionalism by Russian and Egyptian specialists and will make a significant contribution to Egypt’s social and economic development, providing the country with clean and affordable energy for decades to come.”

<https://www.world-nuclear-news.org/Articles/El-Dabaa-NPP-as-significant-as-Aswan-High-Dam-says>

Russian shipbuilders to float out 2nd Yasen-M-class nuclear-powered sub in August

TASS News Agency, March 12, 2021

The Sevmash Shipyard in Russia’s northwest will float out the improved Project 885M Yasen-M-class second serial-built nuclear-powered submarine Krasnoyarsk in August this year, a source in the domestic defense industry told TASS on Friday. “The Krasnoyarsk is scheduled to be taken from the slipway in August 2021,” the source said, adding that following this operation the shipbuilders would start work to complete the sub’s construction afloat, launch its dock trials and nuclear reactor tests. The nuclear-powered sub is due to be delivered to the Russian Navy in late 2022, the source specified. TASS has no official confirmation of this information yet. It was earlier reported that the Project 885M first serial-built nuclear-powered submarine Novosibirsk would be handed over to the Russian Navy in late 2021. Therefore, the Sevmash Shipyard (part of Russia’s United Shipbuilding Corporation) is planning to deliver the Project 885M lead submarine Kazan and first serial-build sub

Novosibirsk this year. Six more submarines of this type are at various stages of their construction at the Sevmash Shipyard.

<https://tass.com/defense/1265251>

Nuclear included in Russia's green Taxonomy

Nuclear Engineering, March 12, 2021

Nuclear energy will be included in Russia's list of green priority activities. A discussion of the draft national Taxonomy of green projects prepared by VEB.RF took place on 18 March at the Ministry of Economic Development attended by representatives of VEB.RF, the Bank of Russia, the Ministry of Industry and Trade, the Ministry of Natural Resources, the Ministry of Energy and representatives of the banking and business community. The document was developed along the lines of the European Union's Taxonomy of Sustainable Financing, but takes into account the specifics of the Russian economy. The main goal of the document is to stimulate "green" activities and projects aimed at combating climate change and increasing the efficiency of resource use.

The head of the Ministry of Economic Development, Maxim Reshetnikov, said that compared with the practice of other countries, the list of areas in which "green" projects can be implemented has been expanded and a unique national classification has been developed. The list of "green" activities includes nuclear power, the production of which does not produce direct CO2 emissions, which puts it on a par with renewable sources of generation. Other "green" projects include projects of ecotourism, hydrogen and gas engine transport, forestry and agricultural projects, transport infrastructure projects, as well as projects that reduce carbon dioxide emissions.

<https://www.neimagazine.com/news/newsnuclear-included-in-russias-green-taxonomy-8616765>

West Asia

F. Iran

Iran insists U.S. lift sanctions first to revive nuclear deal talks

Parisa Hafezi

Reuters, March 1, 2021

Iran said on Monday the United States should lift sanctions first if it wants to hold talks with Tehran to salvage the 2015 nuclear deal with world powers that former President Donald Trump abandoned. President Joe Biden has said Washington is ready for talks about both nations resuming compliance with the pact, under which Tehran secured an easing of sanctions by limiting its nuclear work. But each side wants the other to move first. The West fears Iran wants to build nuclear weapons, while Tehran says that has never been its goal.

"President Joe Biden's administration should change Trump's maximum pressure policy towards Tehran ... If they want talks with Iran, first they should lift sanctions," Foreign Ministry spokesman Saeed Khatibzadeh said. Washington said on Sunday it was disappointed by Tehran's refusal to hold talks but was ready to "re-engage in meaningful diplomacy" and would consult with major powers.

<https://www.reuters.com/article/idUSKCN2AT1KX>

Iran needs to address IAEA's concerns on uranium particles, U.S. says

Reuters, March 04, 2021

Iran has been given a chance to address the U.N. nuclear watchdog's concerns on uranium particles found at undeclared, old sites and Washington will watch closely, the United States told the watchdog's board."Iran has now been

given another opportunity by the Director General to offer up the necessary cooperation before this Board next meets," the U.S. statement to the board said, shortly after diplomats said plans for a resolution criticising Iran had been scrapped.

"The United States, like all Board members, will calibrate our views on the Board's next steps according to whether Iran seizes the opportunity now before it to finally and credibly address the IAEA's concerns," it added.

<https://www.reuters.com/article/idUSKBN2AW17D>

Iran gives positive signals on informal nuclear talks, time short: sources

John Irish

Reuters, March 04, 2021

Iran has given encouraging signs in recent days about opening informal talks with world powers and the United States, two European sources said on Thursday after European powers scrapped plans to criticise Tehran at the U.N. nuclear watchdog. "Things are moving in the right direction and we have had positive signals this week and especially in last few days," a French diplomatic source said. The source added the objective was to get everyone around the table before the start of Nowruz, the Iranian New Year, on March 20, when Iran slows down administratively. He added that the window would also narrow from mid-April when Iran's presidential election campaign kicks in. "We are putting all our efforts so that this (meeting) can take place in the days or coming weeks," the source said. A second European source also said there had been positive signals from the Iranian side.

"It's not a matter of giving an assurance of something that we'd do. It's sitting down and making sure that both sides do - as a first step, as a second step, whatever it is - that both sides are taking positive steps," a senior U.S. official told Reuters on condition of anonymity. "We can't tell them in advance what we're going to do if we don't know what they are going to do." An Iranian

official declined to comment. "Internal Iranian politics is causing constraints for the Iranian government which does not want to be at the same table as the Americans for the first time in years without being sure that it would lead at the end of this meeting to an effective process to lift sanctions," said the French diplomatic source. Iran's nuclear policy is decided by the country's top authority, supreme leader Ayatollah Ali Khamenei, and not the president or the government. Britain, France and Germany decided to pause the submission of a resolution critical of Iran at the International Atomic Energy Agency to not harm the prospects for diplomacy and after what they said were concessions gained from Iran to deal with outstanding nuclear.

<https://www.reuters.com/article/idUSKBN2AW1GX>

Iran looms over Senate hearing for Biden nominee for senior U.S. State post

Patricia Zengerle

Reuters, March 04, 2021

U.S. senators peppered President Joe Biden's nominee to be the No. 2 official at the State Department with questions about Iran on Wednesday, a sign she could face difficulty winning support from Republicans even as she warned against "nostalgia" for the Iran nuclear deal she helped broker. Wendy Sherman, who helped negotiate the international accord in 2015, promised a new approach to Iran at her Senate Foreign Relations Committee confirmation hearing. The 2015 deal, aimed at preventing Tehran from acquiring nuclear weapons, was fiercely opposed by Republicans and some Democrats, including Senator Bob Menendez, who is now the committee's chairman. Former Republican President Donald Trump withdrew from the pact in 2018.

Sherman said she did not expect the Democratic Biden administration to duplicate the approach to Iran of former

President Barack Obama, for whom Biden was vice president. Biden's approach must "be decided on the merits of where we are today, not nostalgia for what might have been," she said. The world had changed since 2016, when the deal was implemented, Sherman said. "The facts on the ground have changed, the geopolitics of the region have changed, and the way forward must similarly change," she said. Sherman said she did not know what the administration's ultimate Iran policy would be, but stressed that Biden was determined not to let Iran obtain a nuclear weapon. "Iran is a long way from compliance (with the nuclear agreement), as we well know," she said. Menendez said while he supported the Biden administration's decision to engage with Iran, any policy needed bipartisan support to succeed.

<https://www.reuters.com/article/idUSKCN2AV2J5>

Iran's Zarif to offer 'constructive' plan amid hopes of informal nuclear talks

Reuters, March 05, 2021

Iran will soon present a "constructive" plan of action, Foreign Minister Mohammad Javad Zarif said on Friday, after European sources said Tehran gave positive signs about opening informal talks about its nuclear programme. "As Iran's FM (foreign minister) & chief nuclear negotiator, I will shortly present our constructive concrete plan of action - through proper diplomatic channels," Zarif said on Twitter.

A French diplomatic source and another European source said on Thursday that Iran had given encouraging signs in recent days about opening the informal talks after European powers scrapped plans to criticise Tehran at the U.N. nuclear watchdog. Iran's nuclear policy is decided by the country's top authority, supreme leader Ayatollah Ali Khamenei, and not the president or the government.

<https://www.reuters.com/article/idUSKCN2AX23H>

Iran enriching with new set of advanced machines at Natanz - IAEA

Francois Murphy

Reuters, March 08, 2021

Iran has started enriching uranium with a third set of advanced IR-2m centrifuges at its underground plant at Natanz, the U.N. nuclear watchdog told its member states on Monday, a further breach of Tehran's 2015 deal with major powers. The deal allows Iran to enrich uranium only with first-generation IR-1 centrifuges at the underground, commercial scale Fuel Enrichment Plant (FEP) at Natanz. In November Iran started enriching there with a first set of IR-2m machines, which are far more efficient, and has since been adding to it. "On 7 March 2021, the Agency verified at FEP that: Iran had begun feeding natural UF₆ into the third cascade of 174 IR-2m centrifuges," the International Atomic Energy Agency said in a report obtained by Reuters, referring to uranium hexafluoride, the form in which uranium is fed into centrifuges to purify it.

"The fourth cascade of 174 IR-2m centrifuges was installed but had yet to be fed with natural UF₆; installation of a fifth cascade of IR-2m centrifuges was ongoing; and installation of a sixth cascade of IR-2m centrifuges had yet to begin," it added. In addition to its IR-1 machines, Iran is now using 522 IR-2m centrifuges to enrich uranium to up to 5% fissile purity at the FEP, the IAEA added. That is more than the 3.67% purity allowed under the deal but less than the 20% it is enriching to at another facility, Fordow. Uranium enriched to 90% purity can be used to make an atomic weapon.

<https://www.reuters.com/article/idUSKBN2B0262>

Iran's Zarif says time running out for U.S. to revive nuclear deal

Reuters, March 15, 2021

The United States should act quickly to revive Iran's nuclear deal, because once Iran's presidential election period kicks off it is unlikely much will happen until later this year, Iranian Foreign Minister Javad Zarif said on Monday. Speaking at the European Policy Centre think tank, Zarif repeated Tehran's longstanding demand that Washington return first to compliance by lifting sanctions. Former U.S. President Donald Trump abandoned the deal, known as the JCPOA, under which Iran accepted curbs to its nuclear programme in return for the lifting of sanctions. Since then, Washington has reimposed sanctions and Tehran has responded by violating some of the conditions of the deal.

President Joe Biden aims to restore the deal, but Tehran and Washington each want the other side to comply first. "The Europeans are used to compromise. Iran and the United States are not. The Americans are used to imposing, and we are used to resisting," Zarif said. "So now is the time to decide: will we both compromise and go back to the JCPOA, or will we go back to our own paths?" Zarif said that he had seen no change between the Biden administration and the Trump administration's policy of maximum pressure to force Iran back to the negotiating table. He said he saw no reason to hold preliminary talks, because the U.S. was making "extraneous" demands.

<https://www.reuters.com/article/idUSKBN2B70VV>

G. Turkey

Turkey considers purchasing 2nd regiment of Russian-made S-400 air defense systems

TASS News Agency, March 3, 2021

Ankara considers buying the second regiment of S-400 anti-aircraft missile systems from Russia, despite the US pressure, Head of Turkey's Defense Industries Ismail Demir said on Wednesday.

"Our work on the second [regiment] of S-400 systems continues," he said in an interview with the Turkish NTV television channel.

<https://tass.com/world/1262247>

Moscow, Ankara launch Turkey's nuclear plant and compete for Afghan peace

TASS News Agency, March 11, 2021

The construction of the Akkuyu Nuclear Power Plant will significantly enhance Turkey's energy security and help advance the country's further economic growth as well as provide consumers with cheap and environmentally friendly electric power, Russian President Vladimir Putin stated at a ceremony marking the launch of building the third unit of the NPP in Turkey's Mersin Province on Wednesday. The construction of last facility, unit four, is due to kick off as early as in 2022. So, Turkey's first NPP should start working by 2023, the 100th anniversary of the republic's foundation. Experts told Izvestia that the project is important in economic, environmental and political terms. It actually strengthens relations between Moscow and Ankara and also boosts Russia's positions in the region.

The Turkish leadership has huge energy plans, and they boil down to two tracks: reducing energy imports and becoming a vital hub for Europe, said Deputy Director General of the Institute of National Energy Alexander Frolov. According to him, the plant's construction will help achieve both these goals. "As for Russia, the Akkuyu NPP is another successful international project in the field of nuclear energy. Our country is one of very few world leaders in this area," the expert said.

<https://tass.com/pressreview/1264701>

H. Israel

Any new nuclear deal with Iran should be 'dramatically improved': Israel

Reuters, March 03, 2021

Any new nuclear deal between the West and Iran should be "dramatically improved" from the previous agreement, Israeli Energy Minister Yuval Steinitz said. Steinitz, a close ally of Prime Minister Benjamin Netanyahu, urged U.S. President Joe Biden to put "enormous pressure" on Iran to change its behavior and dismantle its nuclear program, which he said could affect not only the Middle East, but Europe and the United States. "All countries in the Middle East see eye to eye that this is a devastating threat that should be prevented in advance," Steinitz said at the CERAWEEK by IHS Markit online conference, speaking alongside counterparts from Egypt and the United Arab Emirates.

"Iran is a big shadow," Steinitz said referring to the effect of Iran's actions over its neighbors Iraq, Lebanon, Syria and Yemen. "They are violating all their commitments... The previous agreement is far from being sufficient." An eventual new agreement with the West over Iran's nuclear program "should be dramatically improved," he added.

<https://www.reuters.com/article/idUSKBN2AV27U>

U.S., Israel discuss Iran in first meeting of strategic group

Reuters, March 12, 2021

Senior U.S. and Israel officials focused on concerns about Iran during the first virtual meeting of a bilateral strategic group, the White House said, an issue on which Israeli Prime Minister Benjamin Netanyahu has differences with the new Biden administration. President Joe Biden's national security adviser, Jake Sullivan, and his Israeli counterpart, Meir Ben-Shabbat, headed the delegations, said Emily Horne, spokeswoman for the White House National Security Council. "During the discussion, the two sides shared perspectives on regional

security issues of mutual interest and concern, including Iran, and expressed their common determination to confront the challenges and threats facing the region," she said in a statement, which provided few details.

The Biden administration has depicted the meeting as part of its efforts to consult allies and partners as it seeks to draw Iran into talks about Tehran and Washington resuming compliance with the 2015 Iran nuclear deal. U.S. overtures to Iran have set the stage for possible new strains in the U.S.-Israel alliance. Biden's White House predecessor, Donald Trump, withdrew the United States from the world powers' agreement with Iran, deeming it too advantageous for Tehran - a view Israel shared - and reimposed U.S. sanctions. Netanyahu has made clear his opposition to a U.S. return to the deal. The State Department on Thursday repeated that the United States will not offer Iran unilateral incentives to attend talks that it has rejected so far about resuming compliance with the deal, which gave Tehran sanctions relief in return for limits on its nuclear program. Israel hopes to prevent personal tension between Netanyahu and Biden over their differences on the Iranian nuclear question by delegating talks on the topic to their senior staff, an Israeli official said late last month. "The National Security Advisors agreed on the importance of strategic interagency consultations and pledged to continue to these engagements," Horne said.

<https://www.reuters.com/article/idUSKBN2B3357>

Netanyahu to visit UAE Thursday in run up to Israeli election: Israel's Kan

Reuters, March 10, 2021

Prime Minister Benjamin Netanyahu will visit the United Arab Emirates on Thursday in an opportunity to showcase new Gulf ties before a closely contested election in Israel, its public broadcaster Kan said. Kan also said Netanyahu may meet Saudi Arabia's de facto ruler Crown

Prince Mohammed bin Salman there. It said he would hold talks with Abu Dhabi's Crown Prince Sheikh Mohammed bin Zayed al-Nahyan and that the Saudi crown prince might join them. The report was not immediately confirmed by Netanyahu's office or by the UAE. A Saudi official source denied the report and told Reuters that Prince Mohammed would not be visiting the UAE on Thursday and would not be meeting Netanyahu. Israel's Channel 12 TV said Netanyahu would spend two hours in the UAE, entirely at an Abu Dhabi airport. Israel established formal relations with the UAE and Bahrain last September - only its third and fourth normalisation deals with Arab states in over 70 years - as part of a U.S.-brokered agreement. The three countries share common concerns about Iran. Saudi Arabia, a Gulf powerhouse and Islam's birthplace, encouraged the rapprochement but stopped short of recognising Israel itself. In November, Israeli officials and sources familiar with the matter said Netanyahu and Prince Mohammed met covertly in the kingdom but Riyadh publicly denied the meeting. It was not immediately clear if Netanyahu, on what Israeli media said would be a one-day visit, would also go to Bahrain, as he had planned to do during a previously scheduled one-day trip to the Gulf in February which he postponed due to the coronavirus crisis.

Netanyahu, running in politically polarised Israel's fourth election in two years largely on his role in its rapid COVID-19 vaccination programme, has also made his drive to forge new relations in the Gulf region a centrepiece of his campaign. Israeli tourists and business executives flocked to the UAE before a national lockdown in Israel largely closed its main international airport, in Tel Aviv, in late January. Restrictions were eased. In an interview with Israeli Army Radio on Tuesday, Netanyahu called on voters to re-elect him on March 23 so that he could achieve "more peace agreements" in the area, while ensuring that Iran "doesn't arm itself with nuclear weapons". Iran denies its nuclear programme is aimed at developing atomic weaponry.

<https://www.reuters.com/article/idUSKBN2B21J5>

I. UAE

UAE licenses second unit of Barakah nuclear power plant

Lisa Barrington

Reuters, March 09, 2021

The nuclear regulator in the United Arab Emirates has issued an operating licence for the second unit of the Barakah nuclear power plant, an official from the regulator said. The plant in the Al Dhafrah region of Abu Dhabi, one of the seven emirates making up the UAE and the nation's capital, is the first nuclear power station in the Arab world and part of the Gulf oil producer's efforts to diversify its energy mix. Barakah's Unit 1 was connected to the national power grid in August and in December reached 100% of reactor power capacity during testing.

Unit 1's commercial operations are expected to start this year, Hamad Al Kaabi, deputy chairman of Federal Authority for Nuclear Regulation (FANR) and the UAE's representative at the International Atomic Energy Agency (IAEA), told journalists.

<https://www.reuters.com/article/idUSL1N2L70DT>

Testing begins at UAE's nuclear power plant - operator

Reuters, March 23, 2021

The United Arab Emirates's Barakah nuclear power plant testing will begin after the fuel load was completed at the second unit, as part of the process to start up the reactor, the operator said on Tuesday on Twitter. The plant in the Al Dhafrah region of Abu Dhabi, one of the seven emirates making up the UAE and the nation's capital, is the first nuclear power station in the Arab world and part of the Gulf oil producer's efforts to diversify its energy mix. "Our teams have successfully ensured all of the fuel assemblies are safely loaded into Unit 2 of the Barakah plant," said the Emirates Nuclear Energy Corporation. "Testing will

now begin as part of our process for reactor start-up.”

<https://www.reuters.com/article/idUSD5N2JU018>

East Asia

J. North Korea

IAEA chief: NK shows signs of operating steam plant at plutonium reprocessing facility

Yonhap

Korea Herald, March 2, 2021

North Korea has been showing signs of operating a thermal plant used to provide heat to a nuclear fuel rod reprocessing facility, the chief of the UN nuclear watchdog said, an indication that Pyongyang could try to harvest plutonium for nuclear weapons. During Monday’s session of the International Atomic Energy Agency’s Board of Governors, Director General Rafael Mariano Grossi took note of the indications at the Yongbyon complex, north of Pyongyang, calling the North’s continuing nuclear program “deeply regrettable.” As for the North’s uranium enrichment activities, Grossi said there are no indications of production at the main Yongbyon facility, though he noted indications of activity at another nuclear site in Kangson on the outskirts of Pyongyang.

“There are recent indications of operation of the steam plant that serves the radiochemical laboratory,” Grossi said according to a transcript posted on the IAEA website. “The DPRK’s nuclear activities remain a cause for serious concern. The continuation of the DPRK’s nuclear program is a clear violation of relevant UN Security Council resolutions and is deeply regrettable,” he added. DPRK stands for the North’s official name, Democratic People’s Republic of Korea.

http://www.koreaherald.com/view.php?ud=20210302000124&ACE_SEARCH=1

Signs of activities detected at NK’s nuclear site: IAEA

Ahn Sung-mi

Korea Herald, March 2, 2021

Signs of activity have recently been detected at some North Korean nuclear facilities, the UN nuclear watchdog chief said Monday, expressing “serious concern” at the reclusive regime’s continued activities. Rafael Grossi, director general of the International Atomic Energy Agency, told the board of governors that there was evidence that the regime has continued construction at an experimental light-water reactor at its main Yongbyon nuclear complex, including testing of the infrastructure for cooling water in late 2020.

http://www.koreaherald.com/view.php?ud=20210302000809&ACE_SEARCH=1

Satellite images show N. Korea built structure to conceal nuclear weapons site: CNN

Yonhap

Korea Herald, March 3, 2021

Recent satellite images show that North Korea may have taken steps to hide a facility that the US believes is used to store nuclear weapons, CNN reported. The images, captured by a US space technology company, Maxar, on Feb. 11, show new structures at the North’s Yongdoktong site to conceal entrances to two underground tunnels, the report said. “Yongdoktong has been previously identified by US intelligence as a suspected North Korean nuclear weapons storage facility and is still believed to be used for that purpose,” CNN reported, quoting an unidentified US intelligence official.

CNN added the site has been widely known to US experts and officials for years and that it has been identified as a nuclear weapons storage facility. Still, the network

noted the true intention or purpose of the newly added structure needed to be examined.

http://www.koreaherald.com/view.php?ud=20210303000123&ACE_SEARCH=1

US must use every tool to prevent N. Korea from advancing nuclear capability: Sherman

Yonhap

Korea Herald, March 4, 2021

The United States has to use every tool available, including pressure, to prevent North Korea from advancing its nuclear capability, a top State Department appointee said. Wendy Sherman, deputy secretary-designate, also highlighted the importance of China's cooperation in applying maximum pressure on the North.

"Because I have been out of the government, I don't know all that is in place now, but certainly we do want to ensure that North Korea understands that unless it comes to the table to really make progress in denuclearization that we will use every tool that we have to prevent them from doing so," Sherman said at her confirmation hearing before the Senate Foreign Relations Committee. The former under secretary of state noted the government was going through an extensive review of US policy toward North Korea that will determine the new administration's approach. Still, the seasoned diplomat stressed the importance of working with allies and partners, including China.

http://www.koreaherald.com/view.php?ud=20210304000092&ACE_SEARCH=1

'Robust' N. Korea sanctions needed to prevent nuclear proliferation: defense nominee

Yonhap

Korea Herald, March 5, 2021

The United States and others must continue to enforce sanctions on North Korea to prevent the North from proliferating its

nuclear capability, the nominee for US under secretary of defense for policy said. Colin Kahl also highlighted the need for South Korea and the United States to maintain their combined defense posture to deter North Korean threats. "I believe that it is the role of the Department of Defense to maintain a robust defense and deterrence posture, and to ensure that the United States is well-positioned with forces and assets throughout the region to detect and respond to DPRK threats," Kahl said in a written answer submitted to the Senate Armed Services Committee prior to his confirmation hearing. DPRK stands for North Korea's official name, the Democratic People's Republic of Korea. "We must also continue to pursue robust sanctions enforcement to mitigate the nuclear proliferation threat posed by North Korea," he added.

http://www.koreaherald.com/view.php?ud=20210305000099&ACE_SEARCH=1

K. South Korea

S. Korea launches advisory body on promoting nuclear exports

Yonhap

Korea Herald, March 4, 2021

South Korea on Thursday launched a new advisory body to promote its exports of nuclear power plants, which were boosted by its successful penetration into the Middle East market. The advisory body, composed of professors and industrial experts, will help South Korea set strategies in fostering nuclear energy as a new export engine, according to the Ministry of Trade, Industry and Energy. The country also launched a new website (www.k-next.kr), in which overseas partners can access information on South Korean suppliers and related companies. A separate website will provide comprehensive information on overseas projects for local businesses as well.

South Korea, which has been seeking to break away from nuclear and fossil fuel, and instead utilize more green sources

locally, nevertheless plans to continue to penetrate deeper into the overseas market.

http://www.koreaherald.com/view.php?ud=20210304000485&ACE_SEARCH=1

S. Korea, US closely monitoring NK nuclear facilities: defense ministry

Yonhap

Korea Herald, March 4, 2021

South Korea and the United States are closely following movements at North Korea's nuclear facilities, the defense ministry said Thursday, amid a report of new structures at one of the sites. CNN reported that the North may have taken steps to hide a facility at the Yongdokdong site that the US believes is used to store nuclear weapons, citing recent satellite images that show new structures.

"The intelligence authorities of South Korea and the US are closely monitoring activities related to North Korea's nuclear facilities," deputy ministry spokesman Col. Moon Hong-sik said during a regular briefing, without further elaboration. The ministry said last month North Korea has been expanding missile development facilities but has shown no unusual signs at its demolished Punggyeri nuclear testing site or the long-suspended nuclear reactor at Yongbyon complex. "Our government is putting utmost efforts on close cooperation with the international community to achieve the complete denuclearization of the Korean Peninsula," Moon said.

http://www.koreaherald.com/view.php?ud=20210304000734&ACE_SEARCH=1

State auditor finds no fault in process leading to govt.'s nuclear-free policy

Yonhap

Korea Herald, March 5, 2021

The state auditor said Friday it found no irregularities in the steps involved in drawing up the Moon Jae-in government's nuclear-free policy. The Board of Audit and Inspection conducted an investigation after

a former opposition lawmaker and 546 others asked the agency in June 2019 to look into potential irregularities in the Ministry of Trade, Industry and Energy's policymaking process. The group alleged that the ministry bypassed due procedure by revising a power supply plan before amending the overarching energy plan. "Following a review of relevant laws, court rulings and legal advice, we were unable to find illegalities or procedural flaws," the BAI said.

http://www.koreaherald.com/view.php?ud=20210305000714&ACE_SEARCH=1

S. Korea considers joining Quad Plus to steer US toward talks with N. Korea: policy adviser

Yonhap

Korea Herald, March 9, 2021

South Korea may be considering joining a US-led regional forum that it had previously shunned, in an effort to influence US policy toward North Korea, a member of South Korea's presidential policy advisory group said. Hwang Jihwan, a member of the president's commission on policy planning, said the Seoul government, just like the US government, does not aim for a sudden or complete removal of sanctions on North Korea but to do so gradually through a process of diplomacy and negotiations toward denuclearization.

"Seoul is thus trying to coordinate and influence the Biden administration's North Korea policy review process. South Korea is aware that the new administration has a host of domestic and foreign policy priorities more important to Washington than North Korea," the international relations professor from the University of Seoul said in an op-ed published by US magazine *The Hill*. "The South Korean president believes it is his duty to lay the groundwork for a sustainable inter-Korean reconciliation process," he added in the article, co-authored by Ramon Pacheco Pardo, Korea chair at Vrije Universiteit Brussel and associate professor in

international relations at King's College in London.

http://www.koreaherald.com/view.php?ud=20210309000118&ACE_SEARCH=1

L. Japan

Fukushima operator completes removal of second set of spent fuel rods

Aaron Sheldrick

Reuters, March 1, 2021

Tepco, the operator of Japan's wrecked Fukushima atomic plant, said it had successfully removed spent uranium fuel from a damaged reactor building in a key step in its clean up of the site after a nuclear disaster a decade ago. Formally known as Tokyo Electric Power, Tepco said it had transferred around 170 tonnes of spent uranium fuel from high up in the building to a safer location — the second successful operation of its kind and the first to be carried out by remote control, due to the high radiation in the reactor building.

It comes as Japan prepares to mark the tenth anniversary of the March 11, 2011 earthquake, tsunami and nuclear disasters. It will provide Tepco with important experience and data for the much tougher and time consuming task of extracting melted reactor cores and debris in the coming decades.

<https://www.reuters.com/article/idUSKCN2AT1DF>

BlackRock builds 5% stake in Toshiba, becomes third largest shareholder

Reuters, March 04, 2021

BlackRock Inc has built a 5.21% stake in Toshiba Corp, according to a regulatory filing by the U.S. asset manager, after the Japanese industrial conglomerate returned to the Tokyo Stock Exchange's top section. It becomes Toshiba's third-largest shareholder behind hedge funds Effissimo Capital Management and Farallon Capital

Management, a source familiar with the matter said. Toshiba, embroiled in a long-running row with activist shareholders including Singapore-based Effissimo, has said the return to the TSE's first section would lure buying from investors in stock indexes.

Toshiba rejoined Japan's Topix index of top tier shares on Feb 25. The Japanese company was relegated to the second section in 2017 after massive writedowns at its U.S. nuclear power business caused liabilities to exceed assets - a condition for automatic demotion.

<https://www.reuters.com/article/idUSKBN2AW0YO>

First Quad summit meeting likely this week: Japan government sources

Reuters, March 08, 2021

The United States, Japan, Australia and India plan to hold the first meeting of their leaders this week under the so-called Quad framework, three government sources in Japan said. The Quadrilateral Security Dialogue or Quad is considering holding its first summit in a virtual format on Friday or during the upcoming weekend, one of the sources told Reuters. The meeting would take place days before U.S. Secretary of State Antony Blinken and Defense Secretary Lloyd Austin plan to visit Japan and South Korea later this month.

The visit by Blinken and Austin will be the first to the Asian allies by the top U.S. foreign policy and defence officials since the Biden administration took office in January and reflects growing concerns about the challenge posed by a rising China and North Korea's nuclear and missile programmes. The United States is looking to strengthen ties with key allies as China takes an increasingly assertive foreign policy approach in the Indo-Pacific region and elsewhere in the world.

<https://www.reuters.com/article/idUSKBN2B00MN>

Japan scrambles jets to intercept nuclear-capable Russian bombers - Interfax

Reuters, March 11, 2021

Japan scrambled F-15 fighter jets to intercept two Russian nuclear-capable Tupolev Tu-95MS bombers that were flying over the Sea of Japan and the Pacific Ocean, the Interfax agency cited Russia's defence ministry as saying. The ministry was quoted as saying that the flight had been carried out over neutral waters and that it had been planned.

<https://www.reuters.com/article/idUSKBN2B312A>

M. Misc/World

Turn Challenges into Opportunities, says Debbie Gilley, an IAEA Radiation Protection Specialist

Allison Westervelt

International Atomic Energy Agency, March 2, 2021

In 1987 when Debbie Gilley started working as a safety inspector of healthcare facilities for the Florida Bureau of Radiation Control, which is responsible for the US state's radiological safety programme, she was one of only three women out of the 40 professional staff members at the organization. "My biggest challenge was earning the respect of my peers - the university degrees give you credibility, but being a man or a woman, it's your performance that validates your ability to perform the task," said Gilley. Now with a 40-year international career in radiation protection of patients, Gilley reflects: "I have tried to turn every challenge into an opportunity."

As part of the IAEA's commitment to achieving gender parity in the nuclear field, the Agency is putting the spotlight on women scientists to encourage other women to contribute their knowledge, leverage their skills and share their leadership abilities in realizing the full potential of nuclear science and technology to improve our daily lives.

To achieve this goal, the IAEA has also launched the Marie Sklodowska-Curie Fellowship Programme, which provides scholarships for women beginning their careers in nuclear science and technology.

<https://www.iaea.org/newscenter/news/turn-challenges-into-opportunities-says-debbie-gilley-an-iaea-radiation-protection-specialist>

New Threats Demand Nuclear Modernization

John A. Tirpak

Air Force Magazine, March 2, 2021

Nuclear modernization is an imperative, because the strategic environment has evolved dramatically since the last century, with more and different kinds of existential threats, senior U.S. military leaders said at AFA's virtual Aerospace Warfare Symposium. "Deterrence in the 21st century is wholly different than it was in the 20th century," Gen. John E. Hyten, vice chairman of the Joint Chiefs of Staff, explained in a panel discussion on strategic modernization. The primary reason, he said, is that "strategic attack can no longer just be defined as nuclear attack," but could be a cyber, chemical, biological, space, or conventional attack—think hypersonic—used against a crucial target that could "cause strategic problems for the United States," Hyten said. The National Defense Strategy states that such non-nuclear but nation-debilitating attacks may be answered "at a time, place, and [in] a domain of our choosing," he added.

Strategic deterrence must now be viewed in the context of that posture, taking missile defenses into account as well, he added. "It's going to be a difficult problem," Hyten observed, because "we've not fully thought it through." The academic community which came up with the old theory of deterrence "really has not embraced this new construct," nor has it worked through its ramifications, Hyten said.

<https://www.airforcemag.com/new-threats-demand-nuclear-modernization/>

Nuclear is integral to clean energy transition, says IEA's Birol

World Nuclear News, March 4, 2021

International Energy Agency (IEA) Director General Fatih Birol today highlighted the role that nuclear power can play in the global fight against climate change. Birol was speaking to delegates on a webinar for the launch of the IEA report *Energy Policies of IEA Countries: Japan 2021*. "Globally, nuclear energy is the second source of clean electricity today. It provides uninterrupted electricity service without providing emissions around the world, and if you look at the OECD economies - such as Japan, the US and Europe - nuclear is the number one source of clean electricity. And it has been so for the last three decades. So, therefore, when we think of electricity security, when we think of clean electricity to reach our climate targets, in my view nuclear should have an integral part in the countries where governments and citizens are part of the solution," Birol said.

<https://www.world-nuclear-news.org/Articles/Nuclear-is-integral-to-clean-energy-transition-say>

IAEA's Grossi reaches agreement for technical discussions with Iran

Nuclear Engineering International, March 9, 2021

International Atomic Energy Agency (IAEA) director general Rafael Mariano Grossi on 4 March told a press conference in Vienna that a new agreement had been reached with Iran for face-to-face meetings of technical experts to take place in early April. Grossi said the aim of the agreement is to tackle outstanding technical issues and for the agency and Iran to stop "talking past each other". He noted that some of the answers the IAEA had received from Iran regarding its nuclear activities had not been "credible" and that he wanted to be able to submit a final report to the IAEA Board of Governors in June. He stressed that the new agreement would be run in parallel with the 90-day bilateral technical understanding agreed in February during his trip to Tehran, which is already in force.

Grossi's February visit was prompted by the imminent implementation of a law passed by the Iranian parliament that would have effectively ended IAEA monitoring of Iran's nuclear programme at a time when diplomacy was underway to try to bring the USA back into the 2015 Joint Comprehensive Plan of Action (JCPOA) between Iran the P5+1 group of countries (the USA, UK, France, Russia, and China plus Germany) under which Iran agreed to limit its nuclear development in return for the lifting of sanctions. However, US President Donald Trump's decision to withdraw from the deal and reimpose sanctions in 2018 prompted Iran to revive its nuclear programme while informing the IAEA of the steps being taken. The new Iranian law would have ended that communication. The temporary understanding allows limited IAEA monitoring to continue.

<https://www.neimagazine.com/news/newsiaeas-grossi-reaches-agreement-for-technical-discussions-with-iran-8584827>

Nuclear technology's role in the world's energy supply is shrinking

Nature, March 9, 2021

Anniversaries of the Fukushima and Chernobyl disasters highlight the challenges of relying on nuclear power to cut net carbon emissions to zero. "It is not enough to take this weapon out of the hands of the soldiers. It must be put into the hands of those who will know how to strip its military casing and adapt it to the arts of peace." These stirring words, spoken in 1953 by then US president Dwight Eisenhower, are worth recalling as the world marks the anniversaries of two devastating tragedies involving nuclear technology: the Fukushima disaster in Japan on 11 March 2011, and the catastrophic accident at Chernobyl in what is now Ukraine on 26 April 1986.

Today, nuclear power supplies about 10% of the world's energy, down from 13% in 2010. Its use might continue to fall, although it will remain a part of the global energy mix for many decades, with a role

in decarbonizing energy supplies as the fossil-fuel age comes to a close. Clearly, nuclear energy will be with us for some time. New plants are being built and older ones will take time to decommission. But it is not proving to be the solution it was once seen as for decarbonizing the world's energy market. Nuclear power has benefits, but its continued low take-up indicates that some countries think these are outweighed by the risks. For others, the development of nuclear energy is unaffordable. If the world is to achieve net zero carbon emissions, the focus must be on renewable energies – and one of their greatest benefits is that their sources are available, freely, to all nations.

<https://www.nature.com/articles/d41586-021-00615-w>

World powers ignoring North Korea crimes against humanity amid nuclear programme focus: U.N. expert

Stephanie Nebehay

Reuters, March 10, 2021

World powers bear responsibility for ignoring crimes against humanity that may still be perpetrated by authorities in North Korea amid a focus on its nuclear programme, a U.N. human rights investigator said. Tomas Ojea-Quintana urged the U.N. Security Council to refer grave violations in the Democratic People's Republic of Korea (DPRK) to the International Criminal Court for prosecution. He voiced concern at reports of severe punishments imposed for breaking COVID-19 lockdown measures, including alleged orders to "shoot on sight" anyone trying to cross the border. "Crimes against humanity may be ongoing," Ojea-Quintana told the U.N. Human Rights Council.

He had received information confirming the findings of a landmark 2014 U.N. Commission of Inquiry on extermination, murder, enslavement, torture, rape, forced abortion, sexual violence, political persecution and "the inhumane act of knowingly causing prolonged starvation" in the isolated country. "The urgency to stop violations of such a scale, gravity and nature

cannot take a back seat to national interests or geopolitical interests," Ojea-Quintana told the Geneva forum. This was not justifiable under the U.N. Charter, he said, adding: "I believe that the Security Council bears responsibility for its inaction against the continuation of crimes against humanity in the DPR Korea." Ojea-Quintana presented his latest report, issued last week, which said that drastic measures taken by North Korea to contain the novel coronavirus have exacerbated abuses and economic hardship for its citizens, including reports of starvation. "We are concerned about increasing reports of starvation, imprisonment and summary executions," U.S. charge d'affaires Mark Cassayre told the council. Australia's deputy ambassador, Jeffrey Roach, said that North Korea's top priority should be improving the lives of its citizens. "Instead, the regime's focus remains on developing weapons of mass destruction and the vehicles for delivering them," he said. North Korea's mission to the U.N. in Geneva did not respond to Reuters' queries for comment. Pyongyang does not recognise the U.N. investigator's mandate and boycotted Wednesday's debate. It has previously rejected U.N. allegations of crimes against humanity.

<https://www.reuters.com/article/idUSKBN2B21WD>

National Nuclear Energy Plans for Clean Power, Heat and Hydrogen Showcased at IAEA-IEA Event

Matt Fisher

International Atomic Energy Agency, March 12, 2021

Several countries from Asia and Europe to North America are planning to use nuclear energy to facilitate the shift to low carbon power, heat and hydrogen and achieve net zero emissions by 2050, according to speakers at an event hosted jointly by the IAEA and the International Energy Agency (IEA) of the Organisation for Economic Co-operation and Development (OECD). Nuclear power remains the world's second largest source

of low carbon electricity after hydro, producing more than solar and wind combined. Without nuclear power's contribution, the clean energy transition will be more difficult and expensive, said IEA energy analyst Brent Wanner, who co-hosted the 2-3 March webinar, the latest initiative in a new partnership between the IAEA and the Paris-based IEA.

"Comprehensive decarbonization by 2050 is a gargantuan undertaking that will require the full range of low carbon energy sources," said Henri Paillere, Head of the IAEA's Planning and Economic Studies Section and a co-host of the event. "We will need massive amounts of low carbon electricity, heat and hydrogen, and nuclear power can contribute to producing all these provided there is clear policy support." The webinar, attended by over 125 participants from 20 countries, featured high-level officials from Canada, China, the European Union, Japan, Russia, the United Kingdom and the United States. Representatives of the IAEA, IEA, the Nuclear Energy Agency (NEA) of the OECD and the World Energy Council (WEC) also took part. The speakers showcased national plans for nuclear power in the energy transition, particularly to decarbonize industry and transport.

<https://www.iaea.org/newscenter/news/national-nuclear-energy-plans-for-clean-power-heat-and-hydrogen-showcased-at-iaea-iea-event>

N. Op-ed

China

China, Russia to jointly build lunar post

Zhao Lei

China Daily, March 10, 2021

China and Russia have agreed to join hands in building and running a robotic scientific outpost on the moon or in lunar orbit, according to the China National Space Administration. China and Russia have agreed to join hands in building and running a robotic scientific outpost on the moon or in lunar orbit, according to the China National Space Administration. The administration said in a statement on

Tuesday evening that its head, Zhang Kejian, and his Russian counterpart, Dmitry Rogozin, director-general of state space corporation Roscosmos, signed a memorandum of understanding on joint efforts to build an "international lunar research station" during a teleconference earlier that day after receiving approval from both governments.

The CNSA and Roscosmos will negotiate on matters about the station's planning, design, construction and operations, and will work together to build and run it. Both nations want to open the station to international cooperation so it can serve as a platform to boost scientific exchanges and foster peaceful exploration and development of outer space, according to the statement. It said that the station will be a base on the lunar surface or in a lunar orbit for comprehensive scientific research and technology demonstration.

<https://global.chinadaily.com.cn/a/202103/10/WS604801eda31024ad0baae0c6.html>

Pakistan

Headwinds from the US

Javid Husain

Dawn, March 2, 2021

THE inauguration of the Biden administration has predictably generated a heated debate on America's likely policy concerning Pakistan. Any analysis of the emerging scenario must be firmly grounded in strategic realities rather than in wishful thinking. Additional factors which will influence US policy on Pakistan are India's economic weight with a GDP of \$2.6 trillion, its increasing global political influence as evidenced by its current membership of the UN Security Council and G20, and its position as the world's largest democracy despite the setbacks caused by the rise of Hindutva under Narendra Modi. By way of comparison, Pakistan's economy is in dire straits with a GDP of only \$285 billion, there is political instability and its journey as a functioning democracy has been interrupted several times in the past. Still,

as a nuclear power with considerable military strength, Pakistan's importance in strengthening regional peace and stability cannot be ignored.

<https://www.dawn.com/news/1610267>

USA

Build back nuclear

The Hill, March 1, 2021

With the U.S. rejoining the Paris Agreement last Friday, it's puzzling to see what President Biden has actually announced he'll do to meet its goals. Mr. Biden seems to believe that adding boxes to a bureaucratic org chart and mingling with foreign officials at conferences may avert an environmental crisis: an executive order from his first week in office creates a White House envoy, a new Climate Policy Office, an international photo op branded as the Leaders' Climate Summit, and a heap of "draft action plans" for a government task force to review. This month also brought news that the Biden Treasury Department would set up a "climate hub" among its ranks. Draft actions plans don't write themselves, after all.

But hidden in this strategy, such as it is, lies one idea of consequence, and that is the president's goal to finance lower emissions in developing countries through organizations like the World Bank. While the Bank already seeks to do this, its hands have been tied in an area where it could make an enormous difference: nuclear energy. For the president's climate plan to be serious, it should prioritize nuclear support through the Bank and the other multilateral lenders where the U.S. is a top shareholder.

<https://thehill.com/blogs/congress-blog/energy-environment/540949-build-back-nuclear>

There's No Chance China Will Out-Nuke The United States

David Axe

Forbes, March 10, 2021

China has way fewer nuclear warheads than the United States does. And there's no realistic prospect that Beijing will expand its

atomic arsenal in a way that threatens America's ability to deter a nuclear attack by China.

But tell that to Tom Cotton, a Republican U.S. senator from Arkansas. At a Tuesday hearing with U.S. Navy Admiral Philip Davidson, commander of U.S. Indo-Pacific Command, Cotton tried to portray China as a rising nuclear power whose atomic stockpile threatens to surpass America's own stockpile. China "could possibly have nuclear over-match against the United States before the end of this decade, is that correct?" Cotton asked Davidson.

<https://www.forbes.com/sites/davidaxe/2021/03/10/theres-no-chance-china-will-out-nuke-the-united-states/?sh=6844b4c67eb2>

Europe

How Fukushima helped to transform Germany's power sector

Christoph Steitz, Vera Eckert, Tom Käckenhoff

Reuters, March 10, 2021

The Fukushima nuclear disaster 10 years ago has had a profound impact on the global power sector, but no other country abroad saw bigger changes to its energy laws, infrastructure and utility landscape than Germany. As a result of decisions taken in 2011 following the earthquake, tsunami and nuclear plant explosions in Japan, Europe's largest economy will soon switch off its remaining reactors. As a separate consequence of a faster decarbonisation schedule, it has also begun phasing out coal generation and mining up to the year 2038. Days after the first explosion at the Fukushima nuclear plant, Germany decided to immediately close the country's oldest reactors. The move, which has since been described by critics as an overreaction, eventually culminated in the accelerated shutdown of all remaining reactors by 2022, causing billions of euros of losses for the operators.

"There was great hysteria," Juergen Grossmann, CEO of Germany's largest

power producer RWE between 2008 and 2012, said subsequently. A year before the disaster in 2010, nuclear energy accounted for over a fifth of Germany's electricity generation, with renewables accounting for 17%. Grossmann, who earned the moniker "nuclear Rambo" during his tenure, once said developing solar energy in Germany made as much sense as growing pineapples in Alaska. But last year, renewables were Germany's biggest power source at 45%, while nuclear's contribution stood at a mere 11%, reflecting the vast expansion of solar and wind that has made Germany the world's No.5 in installed renewables capacity. The share of renewables is due to hit 65% by 2030.

<https://www.reuters.com/article/idUSL8N2L82NG>

Russia

Will Russia help the U.S. negotiate a nuclear deal with Iran?

Vera Michlin-Shapir

Institute of Modern Russia, March 2, 2021

In 2015, Russia claimed credit for helping the United States clinch the nuclear deal with Iran, which was upended by the Trump administration three years later. The Biden administration has already invited Tehran to restart nuclear talks, and Moscow is willing to act as a power broker again. But the Kremlin's influence over Iran is more limited than it would like to show. Iran, for its part, took a hard line, refusing to come back to negotiations. Following the exchange, it became apparent that getting Iran back into the negotiation process might be tricky, which provides an opportunity for Russia to act as a power broker due to its close relations with Iran and membership in the EU3+3 Iran talks format alongside Britain, Germany, France, China, and the U.S. Russia's willingness to cooperate might be pivotal for the eventual failure or success of this diplomacy.

Luckily for the U.S., despite strained relations with Russia and a new round of U.S. sanctions against it, Moscow's interests align with the Biden administration's plan

to revive the Iran nuclear deal. Hence, Russia is likely to try to assist; however, the real problem lies with its limited influence over Iran's position due to the latter's domestic political competition.

<https://imrussia.org/en/analysis/3240-will-russia-help-the-u-s-negotiate-a-nuclear-deal-with-iran>

West Asia

Iran

Iran slips record volume of oil into China, reaches out to Asian clients for trade resumption

Nidhi Verma, Shu Zhang

Reuters, March 08, 2021

Iran has quietly moved record amounts of crude oil to top client China in recent months, while India's state refiners have added Iranian oil to their annual import plans on the assumption that U.S. sanctions on the OPEC supplier will soon ease, according to six industry sources and Refinitiv data. U.S. President Joe Biden has sought to revive talks with Iran on a nuclear deal abandoned by former President Donald Trump in 2018, although harsh economic measures remain in place that Tehran insists be lifted before negotiations resume.

The National Iranian Oil Company (NIOC) has started reaching out to customers across Asia since Biden took office to assess potential demand for its crude, said the sources, who declined to be named because of the sensitivity of the matter. The sanctions caused a precipitous drop in Iranian exports to China, India, Japan and South Korea since late 2018. Those measures, and output cuts by fellow OPEC+ producers, have led to tight supplies of Middle East sour crude in Asia, the top global oil market. Asia imports more than half of its crude from the Middle East.

<https://www.reuters.com/article/idUSKBN2B00O6>

East Asia

Climbing without a map: Japan's nuclear clean-up has no end in sight

Sakura Murakami & Aaron Sheldrick

Reuters, March 15, 2021

For one minute last week, workers at the Fukushima nuclear station fell silent to mark the 10-year anniversary of a natural disaster that triggered the worst nuclear accident since Chernobyl. Then they went back to work tearing down the reactors melted down in the days after a tsunami on March 11, 2011. The job ranks as the most expensive and dangerous nuclear clean-up ever attempted. A decade in, an army of engineers, scientists and 5,000 workers are still mapping out a project many expect will not be completed in their lifetime. Naoaki Okuzumi, the head of research at Japan's lead research institute on decommissioning, compares the work ahead to climbing a mountain range - without a map.

"The feeling we have is, you think the summit's right there, but then you reach it and can see another summit, further beyond," Okuzumi told Reuters. Okuzumi and others need to find a way to remove and safely store 880 tonnes of highly radioactive uranium fuel along with a larger mass of concrete and metal into which fuel melted a decade ago during the accident. The robotic tools to do the job don't yet exist. There is no plan for where to put the radioactive material when it is removed.

<https://www.reuters.com/article/idUSL1N2LA0JF>

O. Think Tanks

Lessons from the Fukushima nuclear meltdown, 10 years on

Bill Finan and Yoichi Funabashi

Brookings, March 5, 2021

March 2021 marks ten years since an earthquake off Japan's Pacific Coast and the tsunami it caused led to reactors at the Fukushima Daiichi nuclear power plant to melt down, releasing radiation and forcing the government to evacuate over 100,000

residents in surrounding areas. As the author of a new book from the Brookings Institution Press writes, failures at all levels of Japan's government and private sector worsened the human and economic impact of the disaster and ensured that its consequences would endure for years to come.

On this episode of the Brookings Cafeteria, Brookings Press Director Bill Finan interviews Yoichi Funabashi, author of "Meltdown: Inside the Fukushima Nuclear Crisis." Funabashi, an award-winning Japanese journalist, columnist, and author, and now chairman of Asia Pacific Initiative, interviewed more than 300 government officials, power plant operators, and military personnel to provide a meticulous recounting and analysis of the struggle at all levels to contain the disaster.

<https://www.brookings.edu/podcast-episode/lessons-from-the-fukushima-nuclear-meltdown-10-years-on/>

Back to Basics on Russia Policy

Eugene Rumer and Andrew S. Weiss

Carnegie, March 9, 2021

The West's relationship with Russia is broken. Its policy toward Russia is broken, too. Today the United States, European Union, and Russia are locked into a mutual antagonism that, more than seven years since the pivotal moment of the Revolution of Dignity in Ukraine, has become the new status quo—an increasingly comfortable one for both sides. As President Joe Biden's administration takes flight, the transatlantic community is faced once again with the challenge of forging a sustainable—and effective—common policy toward Russia.

However, notwithstanding the fact that they generally agree that Russia poses a serious threat, there are still significant differences between the United States and the EU on this issue. In Washington, by far the prevailing view is that the adversarial relationship with Russia is here for the long run and that it should be met head-on. By contrast, there are competing

perceptions of how best to contend with a more assertive Russia among members of the EU, given their diverse historical legacies and geography and because European leaders already have their hands full dealing with other vexing problems.

<https://carnegieendowment.org/2021/03/09/back-to-basics-on-russia-policy-pub-84016>

Nuclear Notebook: How many nuclear weapons does Russia have in 2021?

Hans M. Kristensen, Matt Korda

Bulletin of Atomic Scientists, March 15, 2021

Russia is in the middle of a decades-long modernization of its strategic and nonstrategic nuclear forces to replace Soviet-era weapons with newer systems. In December 2020, President Vladimir Putin reported that modern weapons and equipment now make up 86 percent of Russia's nuclear triad (Russian Federation 2020a), compared to the previous year's 82 percent (Russian Federation 2019a). He additionally noted that he expects that number to rise to 88.3 percent in 2021. As in previous years, Putin's remarks emphasized the need for Russia's nuclear forces to keep pace with Russia's competitors: "It is absolutely unacceptable to stand idle. The pace of change in all areas that are critical for the Armed Forces is unusually fast today. It is not even Formula 1 fast—it is supersonic fast. You stop for one second and you start falling behind immediately" (Russian Federation 2020a).

Putin also noted his disappointment with the "deterioration" of the US-Russia arms control regime, and declared that the United States withdrew from the Anti-Ballistic Missile Treaty, the Intermediate-Range Nuclear Forces Treaty, and the Open Skies Treaty under "contrived pretexts." He also addressed the "uncertainty" around New START: "We have repeatedly stated our readiness to extend the treaty but there has been no response" (Russian Federation 2020a).

<https://thebulletin.org/premium/2021-03/nuclear-notebook-russian-nuclear-weapons-2021/>

P. Interviews/Reports

Reaction to North Korea's ballistic missile launch

Reuters, March 25, 2021

North Korea launched two ballistic missiles into the sea near Japan on Thursday, Japan's prime minister said, fuelling tensions ahead of the Tokyo Olympics and ramping up pressure on the new Biden administration in Washington.

Here are some reactions to the launch:

DUYEON KIM, ADJUNCT SENIOR FELLOW, CENTER FOR NEW AMERICAN SECURITY IN WASHINGTON:

"In light of today's ballistic missile test, the U.S. and South Korea should strengthen their deterrence posture to defend against these smaller missiles including returning to the normal scale and scope of joint military drills, minus U.S. strategic assets for now until there's a bigger provocation like ICBM and nuclear tests. "Washington doesn't need to appear eager to talk any time soon. It should, at the least, send an unambiguous message of its commitment to allies and call for an immediate UN Security Council emergency session with the aim of enforcing existing sanctions more effectively and comprehensively and to lay the groundwork for additional sanctions if Pyongyang continues to violate UN resolutions even though we're in a tricky situation with the pandemic. These should include secondary boycott sanctions including Chinese firms involved with illicit trade."

ZHAO TONG, NUCLEAR POLICY EXPERT, CARNEGIE-TSINGHUA CENTER FOR GLOBAL POLICY, BEIJING:

"North Korea has great motivation to continuously develop its strategic deterrence capability. It will likely start testing shorter-range and less provocative missiles like these, and proceed gradually to test longer-range ones, even intercontinental ballistic missiles. It had

displayed a series of new strategic missile systems at the last two parades, which it has not had the chance to test yet. "The exchange of a verbal message between the Chinese and North Korean leader on Monday showed that both sides want to strengthen the relationship. "North Korea needs the support of countries like China and Russia to circumvent international sanctions. As China faces harsher criticism from the whole western world, it is intrinsically motivated to seek international support, and North Korea has seized this chance to support China in areas where it has been criticised."

JAMES KIM, SENIOR FELLOW AT ASAN INSTITUTE FOR POLICY STUDIES, SEOUL:

"For the North Koreans, this recent launch accomplishes many things. For one, they tested over the weekend and there wasn't an immediate response so a follow-up is a good check to see if the allies' intelligence, surveillance, reconnaissance, and deterrence postures are functioning properly. Secondly, the policy review in the U.S. is coming out soon and they probably want to get ahead of that to see how the U.S. responds, they might even be interested in talks. "North Korean founder Kim Il Sung's birthday is also coming up in a few days ... they have their own spring exercise schedule so it is timed to that as well. U.S.-Republic of Korea exercises are also at about this time. So all of that nicely overlaps with this launch. I think the message reinforces the statements we got a few days ago - stop the belligerent act but if we do engage, we want to set the terms of that engagement."

YOJI KODA, FORMER ADMIRAL AND COMMANDER OF THE JAPANESE FLEET:

"North Korea wants to send a clear signal to the Biden Administration. One thing less discussed, though, is that today there is a South Korean-Russian event. It is the 30th anniversary of the start of diplomatic relations between South Korea and Russia. Yesterday was a big celebration day and Russian Foreign Minister Sergey Lavrov is in Seoul. It is some signal to Russia and

South Korea. "I would say this is just the beginning of North Korean fervour. North Korea may gradually launch several types of missiles. North Korea will confirm the response of the United States and then the next attempt would say be intermediate with a range of 3,000 or 4,000 kilometres (1,865 or 2,485 miles) and then North Korea will launch long range (missiles)."

HARRY KAZIANIS, SNR DIRECTOR OF KOREAN STUDIES, CENTER FOR THE NATIONAL INTEREST, WASHINGTON:

"This latest North Korean missile launch is most likely a reaction to U.S. President Joe Biden's downplaying and seeming to laugh off their weekend missile tests. The Kim regime, just like during the Trump years, will react to even the slightest of what they feel are any sort of loss of face or disparaging comments coming out of Washington. While Biden's comments and chuckle were clearly not meant to trigger a reaction, the North Koreans will use any pretext that is offered to raise the ante – moving us closer and closer to the dark days of 2017.

LEIF-ERIC EASLEY, PROFESSOR OF INTERNATIONAL STUDIES AT EWha WOMANS UNIVERSITY, SEOUL:

"With its return to testing different types of missiles, Pyongyang is flirting with the limits of what it can get away with under UN Security Council Resolutions. "The Moon government has doubled down on peace building engagement and the Biden administration is looking to complete a policy review before taking any major moves. Strategists in Tokyo worry that North Korea is taking provocative actions to undermine cooperation among Japan, South Korea and the United States. The three countries are trying to get on the same page about deterrence, sanctions and engagement. "North Korea's military activities after reaffirming ties with Beijing raise questions about how China is complicit in sanctions evasion and may be enabling the Kim regime's threats to the region. This will increase calls in the U.S. and elsewhere to sanction Chinese firms involved in illicit trade."

VIPIN NARANG, NUCLEAR AFFAIRS EXPERT, MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

“It serves multiple purposes for North Korea: regular testing is still necessary as North Korea tries to improve its conventional and nuclear missile technology and operations, it is a proportionate response to joint ROK-U.S. exercises, and it serves as a reminder to a Biden administration doing its North Korea review that Kim is still there expanding and improving his nuclear and missile force. “Should we torpedo diplomatic efforts over short range ballistic missile tests? Of course not. But just as with the end of the Trump Administration, every day that passes without a deal that tries to reduce the risks posed by North Korea’s nuclear and missile arsenal is a day that it gets bigger and badder.”

MARKUS GARLAUSKAS, A SENIOR FELLOW WITH THE ATLANTIC COUNCIL AND FORMER U.S. NATIONAL INTELLIGENCE OFFICER FOR NORTH KOREA:

“Downplaying North Korean ballistic missile tests will not help U.S. diplomacy with North Korea in any way, and would only encourage North Korea to further test the bounds of what the new administration can accept. “The Biden Administration’s response should include emphasising the seriousness of any ballistic missile launch by North Korea as prohibited by UN Security Council resolutions, and that any such launches are particularly serious now given Kim Jong Un’s claim in January that North Korea has tactical nuclear weapons. The response should be centered around mobilising the international community - ideally including Russia and China - to respond by imposing costs on North Korea’s regime.”

<https://www.reuters.com/article/idUSKBN2BH068>

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Indian Pugwash Society welcomes research articles from students, researchers and faculties on Space, Missile, nuclear technology, WMD proliferation, arms control, disarmament, export controls and other related issues. Articles should be crisply written and should address contemporary debates in the policy arena. Manuscripts submitted for the consideration of the Indian Pugwash Society should be original contributions and should not have been submitted for consideration anywhere else. For further assistance, please contact us at : indianpugwashsociety@gmail.com

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