

# Quarterly Uranium Market Report

2<sup>nd</sup> Quarter 2021

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## EU and International developments

The European Commission informed of its decision to include nuclear energy in a delegated act, complementing the one already adopted, concerning the EU Taxonomy .

FORATOM welcomes the updated EU Industrial Strategy, particularly "its focus on innovation, competition and Europe's potential to lead the green transition". FORATOM states the European nuclear sector has a key role to play in this respect, providing a stable and secure supply of low-carbon electricity.

The new Rules of the Euratom Supply Agency have been published. The Rules lay down the manner in which ESA - responsible for a regular and equitable supply of nuclear materials for all users within the Community - is to balance demand against supply of ores, source materials and special fissile materials.

IEA published the World Energy Investment 2021 report. From the report one can conclude that investments in nuclear energy stayed at the similar level compared to the years before COVID-19 pandemic and kept the same share of about 5% in the global investment in clean energy and energy efficiency.

The Reactor Harmonisation Working Group of the Western European Nuclear Regulators Association performed a review of its 2010 safety objectives for new NPPs, concluding these safety objectives are still valid and reflect the current state-of-the-art in nuclear safety.

G7 group agreed to eliminate support for coal by the end of 2021 to reduce emissions that contribute to climate change. The group also promised to focus on a technology-driven approach to decarbonize the power sector, including nuclear energy for those who choose to use it.

ENSREG - European nuclear safety regulators group decided to refine the topical peer reviews, improving public and stakeholder involvement.

## Developments in the Member States

### CZECHIA:

The Lower House of the Czech Parliament approved 'Lex Dukovany' related to the construction of a new reactor at the existing Dukovany NPP. The law formally prohibits Russian and Chinese companies from participating in the Dukovany NPP tender.

Dukovany II Power Plant distributed a security questionnaire to three potential bidders for the construction of a new nuclear unit at the Dukovany NPP. This marks the official start of a security assessment of EDF, Westinghouse and Korea Hydro & Nuclear Power.

### FINLAND:

TVO informed it completed the initial fuel core loading at Olkiluoto 3 EPR and found an agreement with Areva-Siemens consortium regarding the project completion. The plant is to start commercial operation in 2022.

TVEL developed new, more efficient fuel for Loviisa NPP.

### FRANCE:

The sixth Poloidal Field coil was inserted into the ITER's tokamak pit, marking the start of the assembly magnet system, which will control the shape and stability of plasma in ITER.

EDF Group and Rosatom signed an agreement to jointly promote clean hydrogen projects in Russia and Europe, aiming at electrolysis and steam conversion of methane using CO2 capture technologies.

### GERMANY:

France informed about negotiations with Germany concerning the return of intermediate-level radioactive waste from German spent fuel reprocessed at Orano's La Hague facility.

### LITHUANIA:

Ignalina NPP reported to be free of used fuel, after the transport of the final container with damaged used fuel to a temporary storage facility.

### POLAND:

Westinghouse Electric Company established "a global shared service centre" in Poland to "help Westinghouse to play an even stronger role in Poland's viable energy industry".

Westinghouse also launched Polish nuclear front-end engineering and design work "to progress" the nuclear energy programme in Poland.

### ROMANIA:

Romania drafted a new Energy Strategy covering period until 2026, amongst others planning completion of Cernavoda 3 and 4.

Romanian Senate approved nuclear cooperation agreement with US on cooperation for nuclear power projects at Cernavoda and in the civilian nuclear energy sector in Romania.

### SLOVAKIA:

Slovenské Elektrárne informed it received a permit to start commissioning of unit 3 of Mochovce NPP.

**SPAIN:**

Spanish Parliament approved an amendment to the draft climate change and energy transition bill that puts an end to the possibility of new applications for the exploration or exploitation of hydrocarbons as well as the mining of radioactive materials.

**... and worldwide****BELARUS:**

Ostrovets unit 1 entered commercial operation on 10 June 2020.

**BRAZIL:**

Brazilian dry storage spent fuel facility at Angra NPP officially started operation, planned for 50 years.

**CANADA:**

The Canadian Nuclear Safety Commission began a "formal licensing review" of application submitted by the Global First Power to develop a 5-MWe modular microreactor at Chalk River Laboratories in Ontario. The microreactor would be a high-temperature gas-cooled reactor to generate process heat using molten salt as the heat exchange medium. The plan is to have the reactor completed in 2026 as the world's first deployed microreactor.

**CHINA:**

China established an agency called the National Nuclear Safety Standardization Technical Committee to standardize regulatory efforts and promote the "active and orderly development" of nuclear power with the aim for China to meet its goals to reach peak carbon output by 2030 and carbon neutrality by 2060.

China's State Council approved China National Nuclear Corp.'s plans for construction of five new nuclear reactors: the ACP-100 SMR at the Changjiang NPP; Units 7 & 8 (VVER-1200s) of the Tianwan NPP; and Units 3 & 4 (VVER-1200s) of the Xudabao NPP.

China National Nuclear Corp. informed that Unit 6 of the Tianwan NPP was successfully connected to the power grid.

**IRAQ:**

Iraq announced it wants to build eight 1,000 MWe nuclear reactors by 2030 to reduce its energy dependence on foreign countries thus producing 25% of electricity by nuclear. The Iraqi government is currently in discussions with companies from Russia, South Korea, China, the U.S., and France intending to sign a contract by the end of 2021.

**JAPAN:**

Tokyo Electric Power Co. will be allowed to release radioactive water containing tritium from Fukushima I into the Pacific Ocean starting in 2023, according to Japan's Prime Minister.

Tepco estimates the decommissioning of four BWRs at Fukushima II could be finished by 2064, according to the plan approved by Japan's Nuclear Regulatory Authority. The units would be defueled into the new interim dry spent fuel storage facility at Fukushima II that Tepco plans to build by 2027.

**RUSSIA:**

It was reported that two new reactors are planned to be constructed at Leningrad-II NPP replacing Leningrad's aging RBMKs that are to be shut-down in late 2020s.

Rosatom received an approval to offer its floating NPP to KAZ Minerals to power the Baimskaya copper deposit in the Chukotka Autonomous District of Russia.

TVEL announced the start of construction of a 300 MW BREST-OD-300 lead-cooled fast reactor at the site of the Siberian Chemical Combine, in Seversk.

**SOUTH-KOREA:**

The Korea Atomic Energy Research Institute and Samsung Heavy Industries informed they plan to develop molten salt reactors for marine propulsion and floating nuclear power plants in an effort to reduce carbon emissions in shipping and power generation.

**UKRAINE:**

Ukraine's nuclear regulatory body issued a permit to SSE Chernobyl NPP to move undamaged used fuel from the ISF-1 interim used fuel wet storage facility, to the new ISF-2 of a dry type.

**UNITED ARAB EMIRATES:**

The unit 1 of Barakah NPP entered commercial operation on 6 April 2021.

**UNITED KINGDOM:**

EDF Energy decided to permanently shut down the Dungeness B NPP due to the "significant and ongoing technical challenges".

General Fusion of Canada plans to build and operate a fusion demonstration plant at UKAEA's Culham Campus near Oxford in the UK. Operations are expected to begin in 2025.

**USA:**

US President Biden announced a USD2 trillion American Jobs Plan to reshape the country's economy. Among the proposed investments to tackle climate change, the plan calls for funding of the development of advanced nuclear reactors.

The US State Department announced the launch of the Foundational Infrastructure for Responsible Use of Small Modular Reactor Technology programme to provide "capacity-building support to partner countries".

U.S. DOE informed about a new Advanced Research Projects Agency-Energy (ARPA-E) with a \$40 million funding to limit the amount of waste produced from advanced nuclear reactors.

The US \$6 trillion budgetary proposal for Fiscal Year 2022, supports the US advanced reactors with approx. \$100 million (increasing to \$3.5billion up to 2026), in addition to new support for the existing nuclear power fleet.

## Uranium production

Orano informed that the Akouta mine in Niger operated by Compagnie Miniere d'Akouta (COMINAK) ceased production after 43 years of service.

Cameco restarted production in April at its Cigar Lake uranium mine in northern Saskatchewan, suspended since December 2020 due to the COVID-19 pandemic.

The Canadian Nuclear Safety Commission renewed Cameco's licence for its Cigar Lake operation. The licence is valid until 30 June 2031.

Denison Mines Corp. informed about the "discovery of new high-grade unconformity-hosted uranium mineralization from the winter 2021 exploration program completed at the company's 22.5% owned McClean Lake Joint Venture (MLJV) in northern Saskatchewan, Canada. Three of the final four drill holes completed by Orano Canada Inc., 77.5% owner and operator of the MLJV, returned mineralization at the McClean Lake South target area, with the results high-lighted by drill hole MCS-34, which returned 5.04% U3O8 over 14.0 meters (including 14.86% U3O8 over 3.9 meters)."

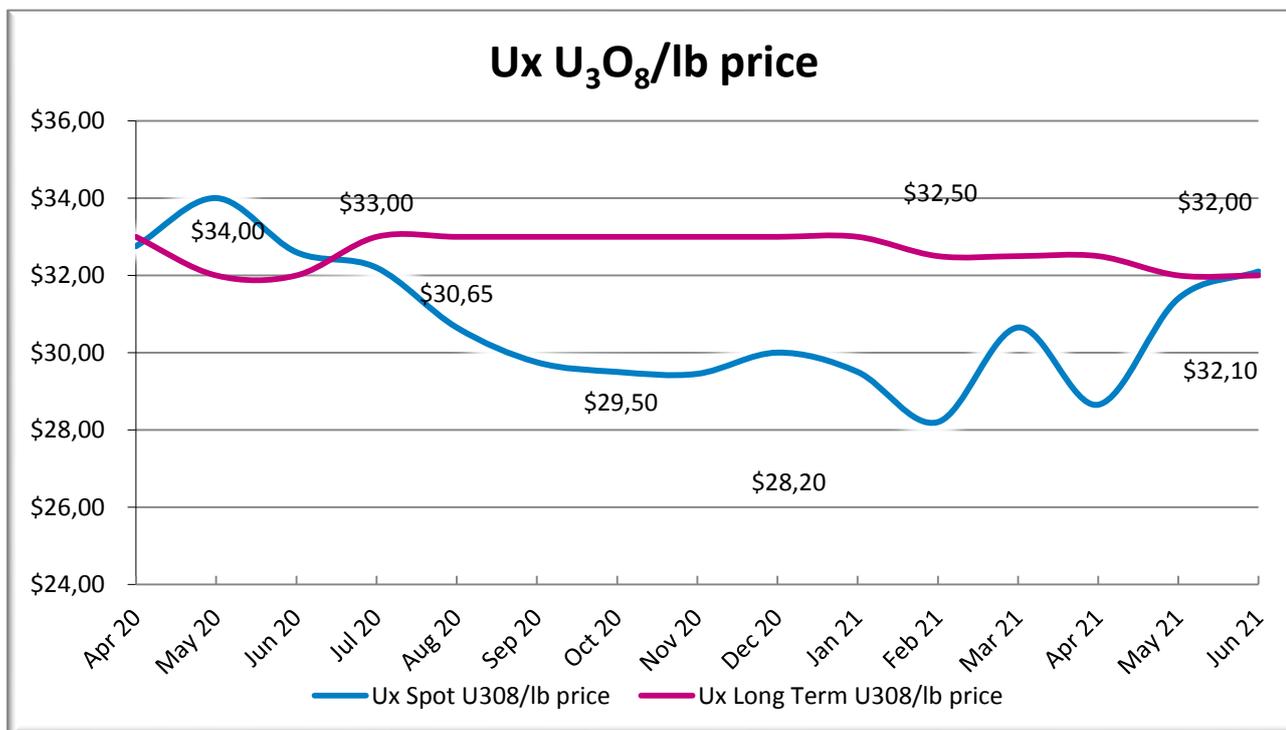
Orano decided to stop uranium exploration in Greenland as a response to the newly elected government's open opposition to uranium mining.

Vimy Resources completed the acquisition of the Alligator River Project from Cameco Australia and the company reported to be close to finalising the acquisition of Rio Tinto Exploration's interest in the King River-Wellington Range Joint Venture, after which Vimy will hold 100% of the Alligator River Project.

## Uranium prices<sup>1</sup>

The UX monthly spot uranium price increased by more than 4% comparing quarter to quarter and, at the end of June it accounted for USD 32.10/lb U<sub>3</sub>O<sub>8</sub>. It was down by more than 1% in an annual comparison.

The UX long term uranium price accounted for USD 32.00/lb U<sub>3</sub>O<sub>8</sub> at the end of June which is down more than 1% when compared quarter to quarter and no change in an annual comparison.

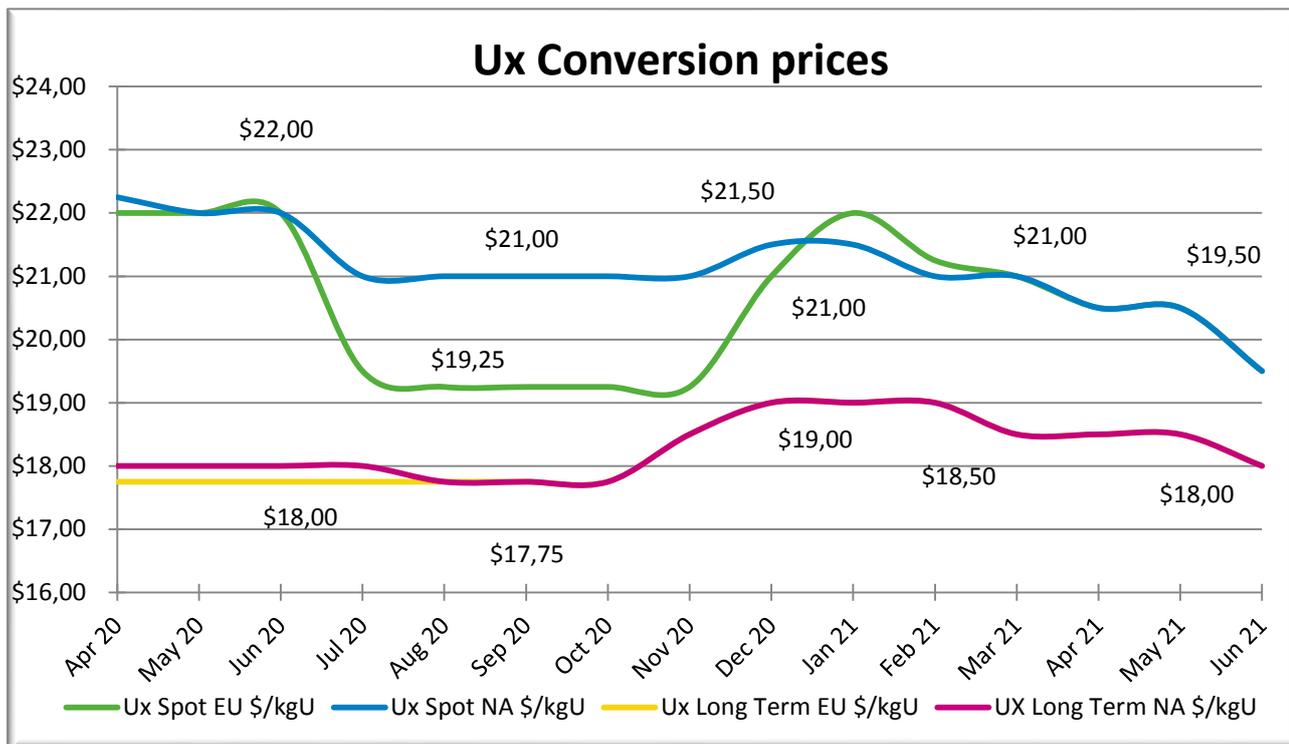


<sup>1</sup> The market price information in the following chapters: Uranium prices, Conversion and Enrichment is provided with permission of the Ux Consulting Company, LLC (UxC) [www.uxc.com](http://www.uxc.com). UxC does not bear any legal liability for the use of these data.

## Conversion

Spot conversion price in the European Union and in North America decreased by 7% compared to the previous quarter and amounted to USD 19.50/kg at the end of June. In an annual comparison, they decreased by 11% in the European Union and in North America.

UX long term conversion prices amounted to USD 18.00/kg in the EU and in North America, which means decrease by 3% in the European Union and in North America, when compared to the previous quarter. They increased by 1% in the European Union and did not change in North America in an annual comparison.

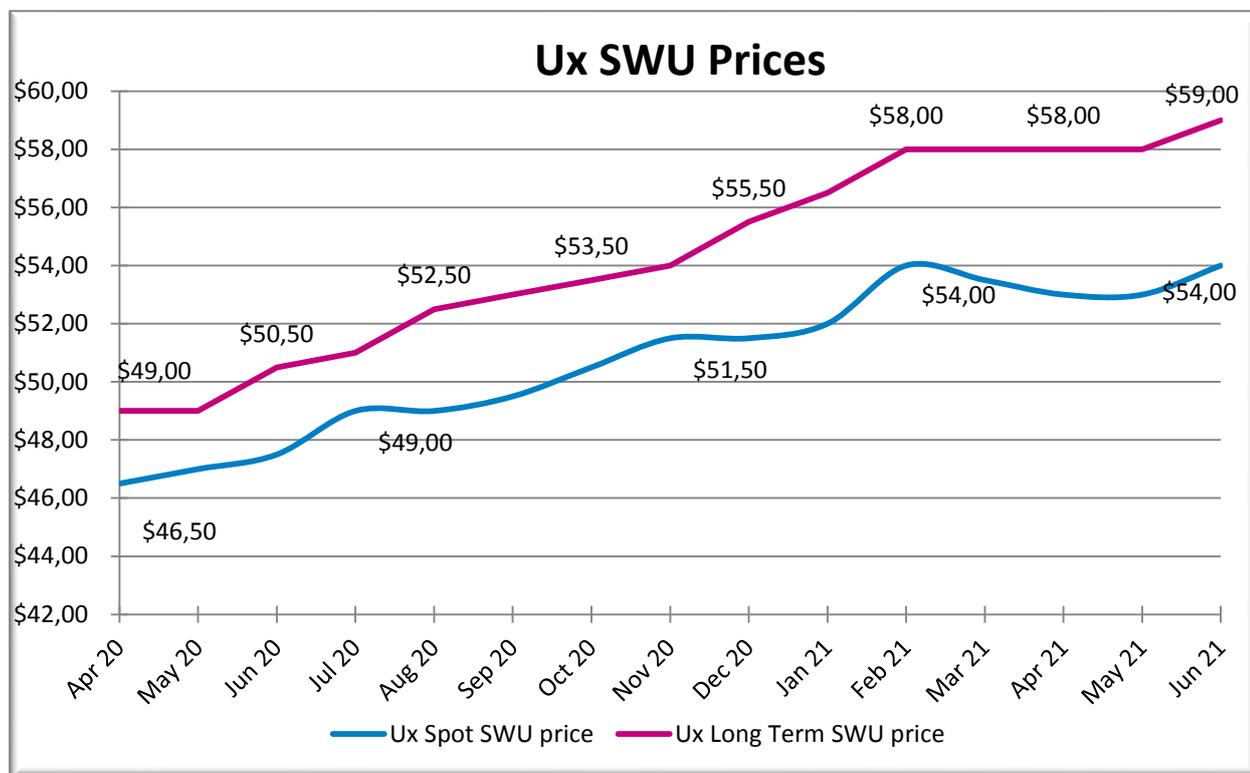


Honeywell International decided to restart its Metropolis uranium conversion plant in Illinois by 2023, after market analyses showed that there would be a significant supply gap if the plant maintained its status quo.

## Enrichment

At the end of June 2021, the UX spot SWU price amounted to USD 54.00 per SWU and it increased by almost 1% compared to the previous quarter. It was up by more than 13% in an annual comparison.

The UX long term SWU price amounted to USD 59.00 and it increased by almost 2% compared to the previous quarter and by almost 17% compared to the same quarter of 2020.



Urenco and Orano plan to increase the limits of their plants' enrichment levels to up to 10% of U-235, to meet expected demand from utilities that operate light water reactors that allegedly demand fuel designs with uranium enriched up to 10%.

Centrus Energy Corp received an amended license from the US Nuclear Regulatory Commission for production of high-assay, low-enriched uranium.

## Nuclear medicine

NorthStar Medical Radioisotopes received particle accelerators from Belgium, helping it to increase production of Mo-99 at its Beloit facility.

SHINE Medical Technologies LLC plans to build the medical isotope production facility in Veendam, the Netherlands, foreseeing the start of production in 2025.

In a joint position paper, Foratom and Nuclear Medicine Europe call for promotion of new research reactor capacity along with innovation in the sector and the design modification of the current fleet, to keep the level of the supply of medical radioisotopes.

Belgium's SCK-CEN and Dutch Quirem Medical informed about the first production of holmium-166 microspheres for patient use at the BR2 reactor in Mol, Belgium. QuiremSpheres, consisting of small radioactive spheres loaded with holmium-166, are used for liver cancer treatment.

## Concluded natural uranium contracts in the EU<sup>2</sup>

Quarter	ESA quarterly spot uranium price EUR/kgU	ESA quarterly spot uranium price USD/lb U <sub>3</sub> O <sub>8</sub>	ESA All Users quarterly spot uranium price EUR/kgU*	ESA All Users quarterly spot uranium price USD/lb U <sub>3</sub> O <sub>8</sub> *	Number of spot natural uranium contracts concluded by EU utilities**	Number of spot natural uranium contracts concluded by all parties**	Total number of contracts processed by ESA***
2020 Q2	-	-	-	-	4	9	65
2020 Q3	-	-	64.52	29.26	3	5	79
2020 Q4	-	-	-	-	4	7	69
2021 Q1	-	-	-	-	3	8	67
2021 Q2	-	-	-	-	1	1	60

\* prices converted with use of ECB reference exchange rate ([www.ecb.europa.eu](http://www.ecb.europa.eu))

\*\* including purchases, sales, exchanges and loans

\*\*\* including contracts, amendments and notifications on the front-end activities

### List of common abbreviations:

ESA	Euratom Supply Agency
IAEA	International Atomic Energy Agency
OECD	The Organisation for Economic Co-operation and Development
(US) DoE	United States Department of Energy
(US) EIA	United States Energy Information Administration
WNA	World Nuclear Association
NA	North America
USEC	United States Enrichment Corporation
NPP	Nuclear Power Plant
PWR	Pressurized Water Reactor
ABWR	Advanced Boiling Water Reactor
EPR	European Pressurised Water Reactor
VVER	Water-Water Power Reactor
SWU	Separative Work Unit
tU	tonne U (= 1 000 kg uranium)

<sup>2</sup> The statistics and data analysis provided by ESA are for information purposes only, and ESA does not bear any legal liability for using them. ESA ensures confidentiality and physical protection of the commercial data.