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Uranium Report 2022

Everything you need to know about uranium!



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Editorial Deadline: 04/15/2022

Cover: AdobeStock_303118821
Page 13: Blue Sky Uranium
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Preface

Dear Readers,

With this edition of the Uranium Report 2022, we are already in the sixth year of this special report series. And we are now right on target, because uranium has recently shown a lot of relative strength, which can be seen in the great imbalance of falling supply and rising demand at the same time. First and foremost, the uranium ETF Sprott Physical Uranium Trust, but also other market players ensured that the uranium spot market was literally swept dry, the spot price rose to over US\$ 60 per pound and the shares of many uranium stocks also shot up. The purpose of these new types of uranium ETFs is very simple: in addition to creating an opportunity for investors to profit directly from the price of uranium, the main aim is to take uranium off the spot market and to force demand-side utilities into negotiations on new long-term contracts.

Because without emission-free and at the same time base-load capable nuclear power, which is based on the „fuel“ uranium, many countries will not only have a huge problem in the stable basic energy supply and, due to the electromobility revolution, a real power supply problem in itself, but will completely lose sight of the goal of a world that is as CO₂-free as possible.

In the future, so-called Small Modular Reactors (SMRs) will play an increasingly important role. These are nuclear fission reactors that are smaller than conventional reactors and can be manufactured in a factory and then transported to an assembly site.

Investors such as Buffett and Gates have long recognized that solar and wind power will not be able to meet baseload requirements until adequately large storage facilities for electricity from renewable energy sources are created, and they have provided the corresponding funds for research and construction of SMRs.

This report is intended to provide interested investors with an overview of the uranium industry and the real facts.

Of course, we also present some interesting companies in the industry with facts and figures.

This is to be understood as a suggestion and not as a recommendation to buy, as there are only very few listed companies left at all.

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Uranium price picks up:

The classification of nuclear energy as sustainable energy, the budding electrerevolution, uranium funds and the Ukraine war are the main drivers

After years of bobbing around below the US\$30 per pound mark, the price of uranium has shot up in recent months, hitting a temporary high of US\$63.88 at the beginning of April. This will not be the end of the line, however, as the renaissance of nuclear energy, which requires uranium as fuel, has only just begun. At the latest with the decision of the European Commission in early 2022 to give nuclear energy and natural gas a „climate seal“, nuclear power will also become respectable again in Europe. Both have been included in the so-called Taxonomy Regulation, which is intended to boost billions in investments in green energies. Add to that the Ukraine war, which will take a lot of natural uranium (Kazakhstan is the world’s largest uranium producer) and enriched uranium (Russia enriches a good 45% of the world’s production) off the market or cause some countries to stop sourcing their uranium from Russia. In addition, the beginning electrerevolution will require a large amount of additional, CO₂-free energy in the future.

But it is not only on the demand side that a lot has happened in recent months. The supply of natural uranium has recently become increasingly scarce. New players emerged who either bought physical uranium as physically deposited funds or - as in the case of the largest Western producer Cameco - serviced

their long-term supply contracts from the spot market. In sum, this has created an annual supply deficit of between 40 and 60 million pounds over the past 5 years. This means that in 2021, for example, around 60 million pounds less U₃O₈ was produced than was simultaneously demanded. Accordingly, the inventories of many energy suppliers (utilities) have been exhausted, so that they now have to come back to the negotiating table and conclude new long-term supply contracts. It can be assumed that corresponding uranium producers will set a price of around US\$70 per pound of U₃O₈ as a lower limit. The mix of a strong supply shortage and steadily growing demand described above should be argumentation enough for this.

This of course continues to open up excellent opportunities for interested shareholders to participate in the uranium market. Some interesting investment opportunities can be found in this report.

Energy demand is rising, while at the same time energy generation is to become more climate-friendly

Global energy demand has multiplied since the late 1980s and will multiply again in the coming decades. About 10% of the world’s total energy demand is currently met by nuclear power. However, fossil fuels such as coal and crude oil are still primarily burned to generate energy. The increasing demand for a reduction in CO₂ emissions and the ever more noticeable phenomenon of „global warming“ are prompting energy-guzzling industrialized nations and emerging economies in particular to increase their energy efficiency and improve their CO₂ balance. The second important point is the ongoing electrerevolution, which will not only allow us to travel almost 100% electrically in a few years, but at the same time will also bring a huge, additional surge in demand for clean energy. It is estimated that the demand for electricity will increase by 200% compared to 2020.

Both cannot be achieved at the same time by burning coal and oil. The alternative is renewable energies, which, however, require an enormous amount of time and money and, in addition, cannot continuously provide the same amount of required energy without larger electricity storage facilities. The alternative is nuclear power, which can provide a lot of energy in a CO₂-neutral way. This possibility of fast and almost clean energy generation has long been recognized not only by climate protectionists such as Bill Gates or Greta Thunberg, but also by many countries worldwide, who are now pushing the construction of new nuclear power plants.

Nuclear power’s greatest asset is its base load capability

Skeptical investors are surely asking themselves at this point why the world will need far more nuclear energy in the future, when electricity can also be generated from the sun and wind. This is where baseload capability comes into play.

Base load capability is the ability of a power plant to provide continuous, reliable electrical power. This includes nuclear power plants, coal-fired power plants, gas-fired power plants, oil-fired power plants and steam power plants fired with substitute fuels. Combined heat and power plants, biomass and biogas power plants can also be base-load capable under certain conditions, although fossil or renewable raw materials must also be fired for this purpose. The only base-load-capable electricity generation from renewable energy is by means of hydro-electric power plants, but this often requires a major intervention in nature.

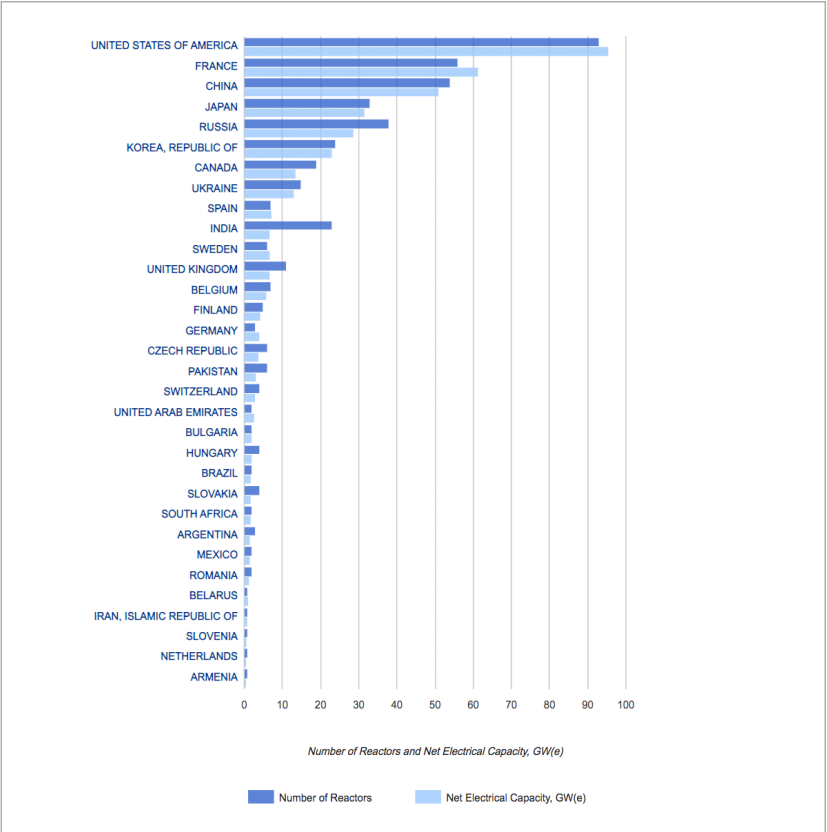
Photovoltaic and wind power plants are not base-load capable due to their often highly fluctuating generation and thus feed-in.

The number of nuclear power reactors worldwide is growing faster and faster

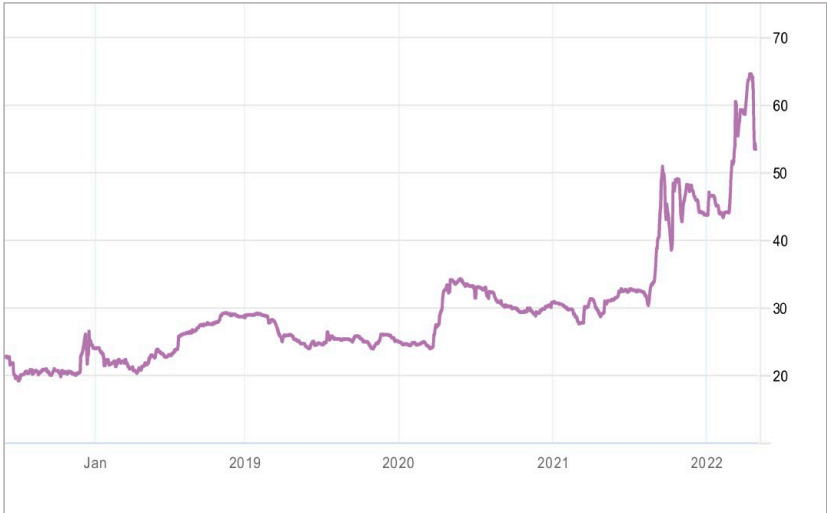
Despite the fact that there has been a great deal of opposition to nuclear power in recent decades, the number of plants worldwide is currently at a record level. 33 countries operated 441 reactors at the end of March 2022, with a total net electrical capacity of around 393.6 gigawatts. In the past 10 years alone, 65 new reactors have been connected to the grid worldwide.

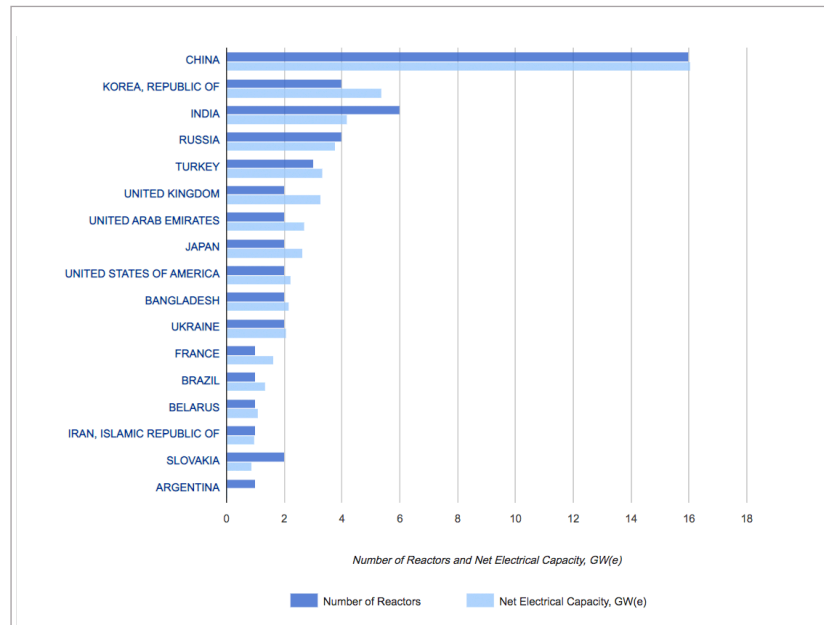
The USA is currently the leading nuclear power nation with 93 reactors in operation. However, emerging countries such as China and India are in particular need of more and more energy and have been focusing on a massive expansion of their nuclear power capacities for some time now. It is therefore not surprising that 52 additional nuclear

Overview of currently operating reactors (blue) and net electrical power (light blue).
(Source: www.iaea.org/PRIS)



Uranium price development over the last 5 years
(source: own presentation)





reactors with a total net electrical output of around 53.7 gigawatts are currently under construction - 16 of them in China alone. Planning has already been completed for around 120 additional ones, and more than 300 others are in the pipeline.

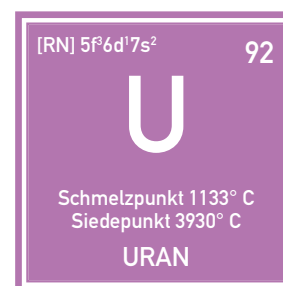
Overview of reactors currently under construction (blue) and the corresponding net electrical output (light blue) per country.
(Source: www.iaea.org/PRIS)

Basic knowledge uranium

Only with uranium are nuclear fission chain reactions commercially possible

Uranium is named after the planet Uranus and is a chemical element with the element symbol U and the atomic number 92. Uranium is a metal whose all isotopes are radioactive. Naturally occurring uranium in minerals consists of about 99.3% isotope ^{238}U and 0.7% ^{235}U .

The uranium isotope ^{235}U is fissionable by thermal neutrons and thus, apart from the extremely rare plutonium isotope ^{239}Pu , is the only known naturally occurring nuclide with which nuclear fission chain reactions are possible. For this reason, it is used as a primary energy source in nuclear power plants and nuclear weapons.



Occurrence

Uranium does not occur in pure form in nature, but always in oxygenated minerals. There are a total of about 230 uranium minerals that can be of local economic importance. There is a wide range of uranium deposits from magmatic hydrothermal to sedimentary types.

The highest uranium grades are achieved in unconformity-bound deposits with average uranium grades of 0.3 to 20%. The highest grades are over 70% U_3O_8 !

According to the International Atomic Energy Agency (IAEA), the largest uranium ore reserves are in the USA, Niger, Australia, Kazakhstan, Namibia, South Africa, Canada, Brazil, Russia, Ukraine and Uzbekistan.

Uranium mining

In uranium mining, a distinction is basically made between two processes: Conventional extraction and extraction by in-situ leaching or in-situ recovery (ISR). The exact extraction method depends on the characteristics of the ore body, such as depth, shape, ore content, tectonics, type of surrounding rock and other factors.

Conventional production

The majority of uranium is extracted by deep mining. The deposits are accessed via shafts, adits, ramps or spirals. Problems are often posed by the penetration of mine water and the so-called ventilation (technical measures to supply mines with fresh air). The exact mining method is chosen according to the characteristics of the deposit. Above all, the shape of the ore body and the distribution of the uranium in it are decisive. In deep mining, an ore body can be mined in a targeted manner, resulting in much less overburden than in open pit mining.

Near-surface or very large ore bodies are preferably extracted by open-pit mining. This allows the use of cost-effective large-scale technology. Modern open pits can be from a few meters to over 1,000 meters deep and several kilometers in diameter. Open pit mining often produces large quantities of overburden. As in deep mining, large quantities of



water may have to be lifted for an open pit, but ventilation is less of a problem.

ISR mining

In the ISR method, water and small amounts of CO_2 and oxygen are injected into the sandstone layers with the help of so-called injection wells, the uranium is extracted and pumped back to the surface for further processing with the help of so-called recovery wells. The entire process therefore takes place completely underground. The advantages of this process are therefore obvious: there is no need for major earthmoving as in open-pit operations, and there are no tailings piles or discharge ponds for heavy metals and cyanides. Only the wells are visible on the surface, and the land around the wells can continue to be farmed without restrictions. The ISR process also makes low-grade deposits economically mineable, and capital costs for mine development are greatly reduced. Moreover, the entire process can be carried out with a minimum of labor, which also drastically reduces operational costs. According to a study by the World Nuclear Association, 25% of uranium mined outside Kazakhstan recently came from ISR mines.

The current demand situation:

Total demand in 2021 was about 180 million pounds of U₃O₈

The USA extends power plant lifetimes

With 93 reactors, the USA has by far the largest active nuclear power plant fleet in the world. Nevertheless, the USA is threatened with a collapse in energy supply. The United States is still the country with the highest per capita consumption of electricity in the world. And Americans' hunger for energy is growing. Many of the coal-fired power plants that date back to the 1950s and 1960s are operating inefficiently and uneconomically. They will have to be taken off the grid sooner rather than later. Electricity consumption, on the other hand, is rising steadily. So, the USA has no choice but to increase the number of its nuclear reactors in the coming years. Accordingly, the expansion of the nuclear power plant fleet is also part of the „Green New Deal“ initiated by President Biden, which is intended to lead the country toward CO₂ neutrality. Alongside the expansion of wind and solar energy, nuclear power is the top priority. In recent years, more than 60 U.S. nuclear reactors have applied for lifetime extensions to 60 years of total operation. In addition, there are about 40 applications to build new nuclear power plants. To date, however, only 2 plants are under construction, and another 20 are in the concrete planning phase.

China is expanding strongly and will soon overtake France

For several years now, it has been China that has been setting the pace in the construction of nuclear power plants. 54 reactors with a total net electrical capacity of 51.1 gigawatts are operated by the Middle Kingdom, which until now has primarily used coal to generate electricity. Of these, 16 new reactors alone have been commissioned since the beginning of 2018. Nuclear power expansion in China is therefore enormous and taking place at breathtaking speed! It is expected that China will soon replace France (56 reactors)

as the current number two in nuclear power. The Chinese government plans to build more than 80 new nuclear reactors in the next 15 years and over 230 new nuclear reactors by 2050. By 2030, a total of 110 reactors are to be connected to the grid, which will mean that the USA will have been replaced as the current leader. A total of 16 nuclear reactors are currently under construction.

India massively expands nuclear program

India is following a similar path. The second most populous country in the world is planning to expand its nuclear energy capacity by 70 gigawatts. Currently, a total of 23 Indian nuclear reactors are running at full load (6.9 gigawatts). One of them was recently connected to the grid. Currently, 6 nuclear reactors are under construction in India, with 40 more to follow by 2050.

Russia with increasing nuclear capacity

Russia has also announced a massive expansion of its nuclear power plants. The country currently operates 38 nuclear reactors with about 28.6 gigawatts. 4 plants are in the construction phase. In addition, Russia plans to build more than 40 additional nuclear power plants, which will increase the share of nuclear energy in Russia's energy mix from the current 15% to more than 20%.

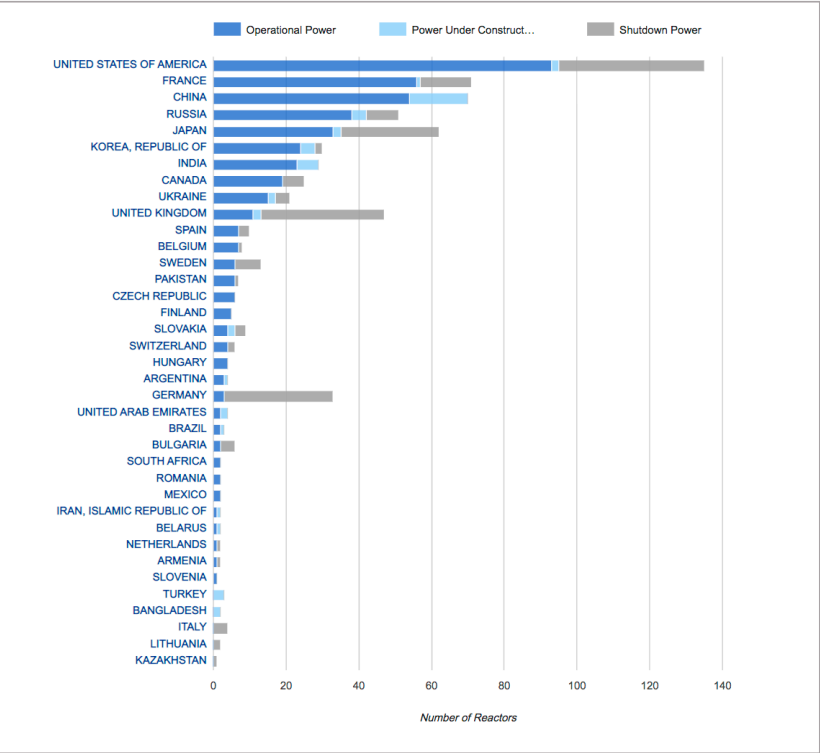
Increasing global expansion of nuclear energy

In addition to the 33 nations (including Taiwan) that already have nuclear reactors on the grid, 17 countries have nuclear power plants under construction. These include Argentina, Bangladesh, Slovakia and Turkey.

Other countries, such as Egypt, Jordan and Indonesia, are planning to build several reactors in the coming years.

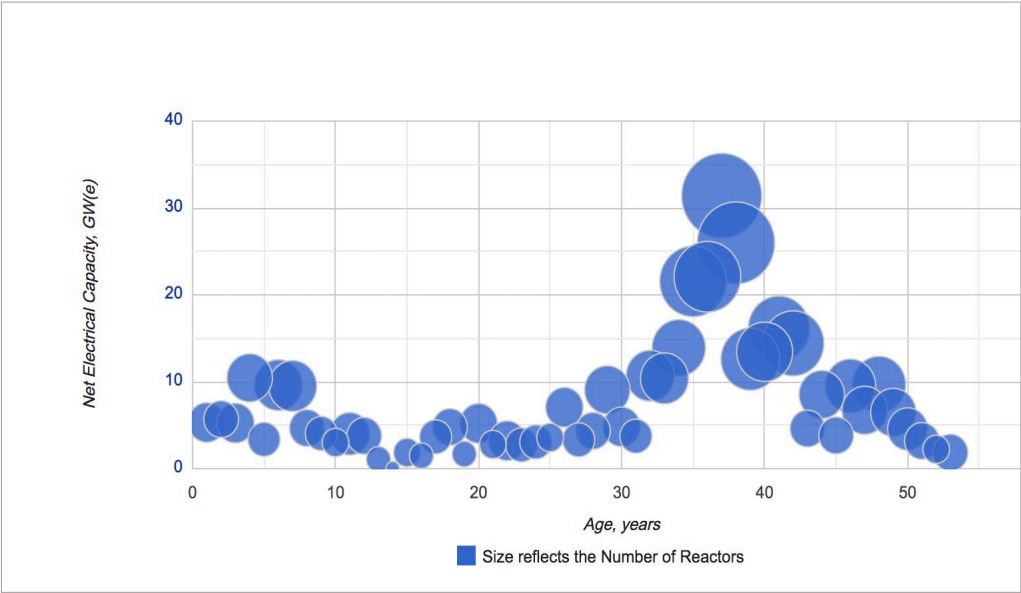
Utilities are forced to sign new supply contracts

The previous cycle of contracting, dominated by the uranium price spikes of 2007 and 2010, has led plant operators to enter into contracts with higher price levels and very long terms of around 8 to 10 years. On the one hand, these old contracts are expiring, but on the other hand, plant operators have not yet looked for replacements for these supply volumes. As a result, the forward contracts of the plant operators are declining sharply, and thus the demand volumes for which there is not yet a contractual obligation, but which will have to be contractually secured in the future, are also increasing. Unmet demand is expected to exceed one billion pounds of U₃O₈ over the next 10 years. At the same time, more than 75% of expected reactor demand through 2025 is not contractually secured. For a thinly traded commodity such as uranium, this return to more „normal“ long-term contracts is likely to put



Overview of reactors currently in operation (blue), reactors currently shut down (gray) and reactors under construction (light blue). (Source: www.iaea.org/PRIS)

tremendous pressure on both long-term and spot prices. There are therefore now increasing signals among international plant operators towards increased buying activity.



Overview of the age of currently operating reactors. Many will (have to) be replaced by more powerful ones in the coming years. (Source: www.iaea.org/PRIS)

The current supply situation:

Total supply in 2021 was about 124 million pounds of U₃O₈

Uranium production declines sharply

In 2021, around 124 million pounds of U₃O₈ were produced from mines worldwide. This was significantly less than at the peak in 2016, when 162 million pounds of U₃O₈ were produced.

Deposits are stable – There is an acceptable range at higher uranium prices

At a market price of US\$40 per pound of uranium, experts estimate that there are just under 715,000 tons of economically recoverable uranium. With annual consumption currently at around 70,000 metric tons of uranium, these deposits would therefore be sufficient for just 10 years, provided the market price remained constant at at least US\$40 during this period and demand also remained constant. However, demand will inevitably increase.

If the market price for uranium were to rise and justify extraction costs of US\$80 per pound of uranium, about 1.28 million tons of uranium could be mined economically. Range at current consumption: 18 years.

If the uranium price were US\$130 per pound, about 3.79 million tons of uranium could be economically extracted. The known reserves would then last for about 54 years at current consumption levels.

Former producing nations struggle with weak uranium prices

The established uranium-producing nations of Australia, Canada, Russia and Niger were already having problems expanding their production before the Corona crisis. All four countries together produced just under 15,925 tons of uranium in 2020. In 2009, the figure was 28,000 tons of uranium. In some cases, mines were shut down due to the weak uranium spot price or the lack of further reserve availability (as was recently the case at the Cominak and Ranger mines).

U.S. uranium production tends toward „0“

The U.S. uranium industry is but a shadow of days gone by. Over the past 45 years, virtually nothing has been invested in developing new deposits, and nearly 95% of the uranium needed has been extracted from the disarmament programs. U.S. nuclear reactors already consume about 21,000 tons of uranium annually. Accordingly, an increase in capacity would also require an increase in the amount of uranium needed. The World Nuclear Association (WNA) calculates that by 2035, about 40,000 metric tons of uranium will be needed annually in the U.S. alone. Even at the peak of U.S. uranium production in the 1960s and 1970s, it would not have been possible to produce such a quantity from its own facilities. U.S. uranium production reached its previous peak in 1980, when about 29,000 tons of uranium were extracted from the ground. After the end of the Cold War, disarmed nuclear weapons in particular became the most important source of U.S. uranium requirements. This led to a decline in

U.S. uranium production to, most recently, about 4.5 tons of U₃O₈ in the fourth quarter of 2021. As a direct result, much of the infrastructure and licensed production facilities were simply closed or completely dismantled. Currently, only a few mines remain in Texas, Arizona, and Wyoming, but most of these have been shut down. Recently, however, several companies have been working on new licenses for their processing plants. In total, the USA has a production capacity of around 33 million pounds of U₃O₈ per year, about half of which has a production license.

Uranium superpower Kazakhstan

While almost all established uranium producers are having difficulty rebuilding or expanding their uranium production, one region has now moved past all other countries to the top of uranium production: Central Asia. There, Kazakhstan in particular has been able to multiply its uranium production in the last ten years. From 2000 to 2019, uranium production in the former Soviet republic rose from 1,870 to over 22,808 metric tons. As a result, Kazakhstan also passed the previous leader Canada in 2009 and is now responsible for around 40.8% of total global uranium production. In 2020, due to production cuts caused by low prices and the effects of the Corona pandemic, production fell below 20,000 tons, to 19,477 tons to be exact. In 2021, Kazakhstan produced about 22,500 tons of uranium.

Massive production cuts to stabilize prices

Although Kazakhstan is one of the nations that can currently mine uranium at the lowest cost, the country is no longer prepared to sell off its uranium deposits at rock-bottom prices. In early 2017, the state-owned Kazatomprom announced that it would cut its own uranium production by at least 20% in 2017. In May 2018, Kazatomprom announ-

ced further production cuts. In addition, production had to be further reduced due to Corona.

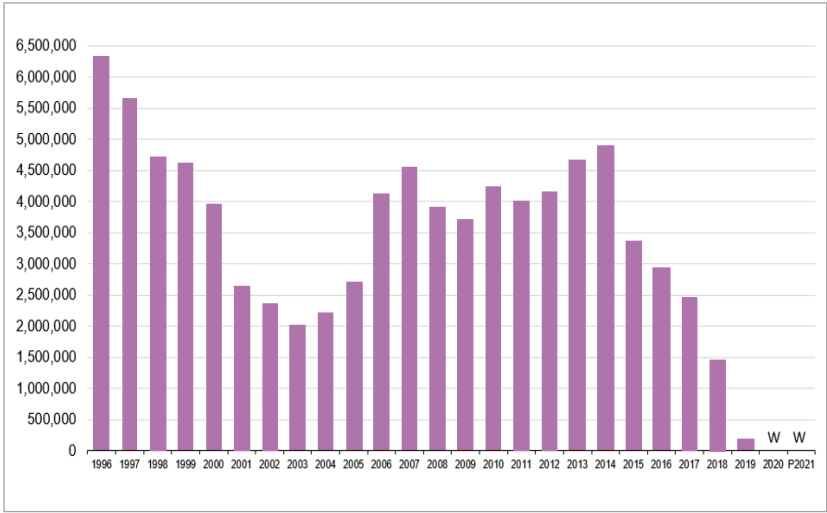
But Kazatomprom is not the only uranium producer to cut production in light of the weak uranium price. Uranium major Cameco also announced production cuts and closed its McArthur River mine and Key Lake facilities indefinitely in January 2018. The Rabbit Lake mine was also closed, both of which are among the ten largest uranium mines in the world. McArthur River was the mine with the second highest uranium production and grades in the world. The temporary closure removed 10% of the world's total production from the market in one fell swoop. In addition, Cameco has itself been acting as a uranium buyer for some time to service long-term, higher-grade supply contracts with corresponding uranium volumes at spot prices.

Since 2017, Kazatomprom reduced its uranium production by about 15% and Canada by about 45%. Further, Cameco closed its Cigar Lake mine for one year in March 2020 due to corona, reopened it and had to close it again after too many corona cases. Currently, the mine is back in the ramp-up phase. Additionally, Orange's McClean Lake processing plant had to close as well. In addition, there are closures at Moab Khotseng in South Africa and at the Chinese-owned Husab and Rössing mines in Namibia, to name just the most important ones. The spot market, whose supply is mainly made up of uranium mined as a by-product in other mines, has also recently seen a decline in supply due to various mine closures.

Huge supply gap existed even before Corona

Even before the Corona pandemic, the supply deficit was about 40 million pounds of uranium per year. In 2020, the supply deficit was about 57 million pounds of U₃O₈, or just under one-third of global annual demand.

Uranium concentrate production in the U.S.
1996-2021 in pounds U₃O₈
(Chart: own presentation)



Thus, most of the current demand is being met from stockpiles, which are thus rapidly running out. A de facto supply shortfall has already existed since 2017, with consumption at the current level of 441 nuclear reactors worldwide at about 180 million pounds of U_3O_8 , of which only about 124 million pounds could be met by global uranium production in 2021.

Over the past five years, global production has lagged behind global uranium consumption by about 40-60 million pounds per year. At its peak, the COVID-19 pandemic alone affected about 50% of global uranium production.

Conclusion:

The existing supply deficit must necessarily lead to a further upward price adjustment

A future supply deficit at the current spot price is almost inevitable

The International Atomic Energy Agency (IAEA) estimates that new nuclear power plant construction will increase global uranium demand to as much as 300 million pounds of U_3O_8 per year in 2030. Over the past 5 years, there has already been a de facto supply shortfall of between 40 to 60 million pounds per year. In its Nuclear Fuel Report 2021, the World Nuclear Association projects a 27% increase in demand by 2030.

It is thus clear that the apparently cheapest and only base-load-capable CO_2 -free way of generating electricity can only continue to be used if the market price for the initial product uranium continues to rise. In the case of uranium, too, demand and supply regulate the market price. However, if the market price no longer permits economic extraction, it must and will inevitably rise. In the case of uranium, there is also the fact that demand will rise sharply due to the construction of several hundred new nuclear reactors, so that the market price will benefit twice over. And thus, of course, also those investors who have recognized this trend in time.

A high proportion of demand is currently unmet

Unmet demand is expected to exceed one billion pounds of U_3O_8 over the next decade. In this context, more than 75% of the expected reactor demand will not be contracted by 2025. For a commodity as thinly traded as uranium, this return to more „normal“ long-term contracts is likely to put tremendous pressure on both long-term and spot prices. Therefore, there are already increasing signals among international plant operators in the direction of increased buying activity.

Governments increasingly rely on nuclear power as a green, base-load energy source

As early as 2021, U.S. President Joe Biden announced with his „Green New Deal“ a strong promotion of nuclear power in the U.S. and thus also of uranium mining in his own country. At the beginning of 2022, the European Commission also declared that nuclear power would be given a „climate seal of approval“. This clears the way for billions to be invested in nuclear power.

As early as 2021, President Joe Biden announced with his „Green New Deal“ a strong promotion of nuclear power in the USA. At the beginning of 2022, the European Commission also declared that nuclear power would receive a „climate seal of approval“.

The future is modular

A huge future growth market for uranium is currently emerging in the form of modular small reactors, or SMRs. These are small 5–300-megawatt units that can be built in a modular fashion in a factory and transported to the eventual deployment site. These scalable units can provide carbon-free benefits while competing on cost with cheap natural gas or diesel and can coexist with grid-intensive renewables because of their load-sensing characteristics and zero-emission operation. The individual SMR units have a capacity of less than 300 megawatts and can operate for 3 to 5 years without fuel reloads - without interruption. They are very similar to the compact reactors that have safely powered aircraft carriers and submarines since the 1950s, and can be ideally marketed for smaller grids, island states, or remote locations (including mining and military bases). Very significant progress has already been made in government support for these innovative, carbon-free energy sources in the United Kingdom, Canada, and the United States.

Among others, Microsoft founder Bill Gates is also working with one of his companies on the development of such small reactors and is

pushing the construction of a corresponding plant in Wyoming, which is to replace a coal-fired power plant there. Gates' company, TerraPower, is to have a sodium-cooled fast reactor with a capacity of 345 megawatts. Using molten salt storage technology, the plant's output can be increased to 500 MW for more than five and a half hours if needed, supplying power to about 400,000 homes.



*Drawing of a small modular nuclear reactor plant from NuScale Power.
(Source: NuScale, BY-SA 2.0)*

An existing example of such a power plant is the Akademik Lomonosov, which Russia commissioned in 2019 as a floating power plant in northern Siberia. A huge market that could cause uranium demand to skyrocket in the future.

Interview with Dr. Christian Schärer – Manager of the Uranium Resources Fund and Partner of Incrementum

US builds strategic reserve ...

The USA is also working on the implementation of SMR technology. To date, the U.S. Department of Energy has funded more than \$160 million in projects under its new Advanced Reactor Demonstration Program.

Furthermore, the country is trying to become less dependent on the immensely high uranium imports, mainly from successor states of the former Soviet Union. To this end, the U.S. Congress approved a budget that will provide \$150 million annually over the next 10 years to create a strategic uranium reserve. This reserve is to come entirely from uranium from U.S. mines.

In this way, the U.S. government is making some concessions to domestic mine operators in an attempt to revive domestic production. It is expected that U.S. producers will need an average stable uranium price of at least US\$60 per pound in order to be able to produce sustainably. Currently, only Energy Fuels, Uranium Energy, Ur-Energy, Consolidated Uranium (via toll milling together with Energy Fuels) and Cameco can (re)start their mining projects, although Cameco has already announced that this is not currently in the company's interest.

... and reduce uranium imports from Russia

In addition to these measures, in September 2020, former U.S. President Trump signed an amendment to the agreement suspending the U.S. Department of Commerce's anti-dumping investigation of uranium from the Russian Federation, reducing America's dependence on Russian natural uranium concentrations by up to 75% from previous levels. The agreement was set to expire at the end of 2020 and allowed the import of about 20% of U.S. low-enriched uranium requirements from Russia. The U.S. Department of Commerce determined that the natural uranium

and conversion components would be about 7% of U.S. enrichment requirements and no more than 5% beginning in 2026. This represents a reduction in Russian natural uranium imports of up to 75% from previous limits.

Uranium funds and uranium companies buy spot market empty

Only recently have several other strong market players joined the fray, now securing U₃O₈ on the spot market at a small price, mostly from mines where uranium is a by-product. In addition to Cameco, which is now a buyer, Uranium Participation Corp. (now acquired by Sprott Physical Uranium Trust) and Yellow Cake Plc. have also been able to buy larger quantities of uranium. All of these players took approximately 80 million pounds of U₃O₈ from the spot market since the beginning of 2021. Furthermore, uranium companies such as Uranium Energy, Denison Mines and Boss Energy also purchased physical uranium in order to be able to act flexibly and fulfill supply contracts in the event of an early production start-up.

The best uranium stocks promise multiplication potential!

The current situation of a uranium spot price that continues to be too low and does not reflect reality plus the still existing, massive supply deficit, we have taken the opportunity to summarize promising uranium shares for you in a compact way. In doing so, we focus primarily on development companies with extremely promising projects, as these also offer a high takeover opportunity in addition to the actual appreciation due to a higher uranium spot price in this context.

The two expert interviews, which provide additional information and investment ideas, should also be noted.

Mr. Schärer, nuclear power has recently come back into the focus of investors because many governments around the world have classified it as a „green technology“. What does that mean for the uranium sector?

Against the backdrop of the global climate debate, governments are looking for answers to the question of what their country's optimal energy mix should look like in the future. Geopolitical concerns, economic interests, national egoisms and the laws of nature (physics) must all be taken into account. This is an extremely complex issue, because ultimately policymakers must ensure that the energy and power supply for their national economies is clean, secure and affordable.

According to the goals of the Paris Climate Agreement, energy supply in the future should be based less on fossil fuels. It is undisputed that the intended electrification of industry and mobility will lead to a disproportionately growing demand for electricity. Accordingly, alternative energies (wind, solar, hydropower) are to be strongly expanded.

In recent years, a great deal of time and commitment has been devoted to defining globally binding climate targets that are as ambitious as possible. Ideological and moral arguments have often played a major role in these discussions. Now, however, the time has come for concrete energy policy implementation. In this context, the limiting factors of time and money are beginning to take effect. Accordingly, realpolitik is increasingly taking the reins in the search for feasible energy policy compromises. This is reflected in the formulation of the „New Green Deal“ by the Biden administration, the shaping of the EU taxonomy by the Commission or the objectives of the Japanese government, which is working on a forced comeback of nuclear energy a good 10 years after Fukushima. Underlying all these political approaches is the recognition that the unavoidable

fluctuations in the production of alternative energy sources must be balanced out within the framework of a stable power grid. This requires reliable power generation from non-fossil sources that is available around the clock, seven days a week. Because nuclear power is produced with low CO₂ emissions, nuclear power plants are a possible solution for many governments to provide this base load in the power grid. Against this background, alternative energy sources and nuclear power can form a „green“ symbiosis.

Thanks to this green stamp, nuclear power plants will probably also benefit from economic stimulus programs and government subsidies in the future. It will also be easier to tap investor funds. For Europe, the USA and Japan, we expect that this will make it easier to modernize existing nuclear power plants with the aim of extending their operating lives. By contrast, we do not expect numerous new projects for the construction of current-generation reactors. We see more potential for new reactor concepts that are safer, more flexible and less expensive than the current generation of nuclear power plants. The necessary research funds can now be mobilized more easily in the context described.

Whereas in the established industrialized countries the short and medium term aim is to extend the operating life of existing nuclear power plants, in the emerging economies in the Middle East and Asia the focus is on the accelerated expansion of reactor fleets. China is particularly ambitious in this respect. The country plans to build around 150 new reactors in the next 15 years! More than the rest of the world has built in the past 35 years. Are these plans realistic? That remains to be seen. The example of the United Arab Emirates gives cause for optimism in this respect. There, under Korean project management, it has been possible to realize ambitious construction projects for new reactors while adhering to schedules and cost budgets.



Dr. Christian Schärer is a partner at Incrementum AG, responsible for special mandates. During his studies he started to search for the strategic success factors of successful business models. A topic that still fascinates him today and inspires him in the selection of promising investment opportunities. He studied business administration at the University of Zurich and earned his doctorate while working at the Banking Institute Zurich with an analytical study on the investment strategy of Swiss pension funds in the real estate sector. He has acquired comprehensive financial market knowledge in various functions as investment advisor, broker and portfolio manager. Since the summer of 2004, Schärer has been focusing on various investment themes with a tangible asset character as an entrepreneur, consultant and portfolio manager. He also brings his practice-oriented financial market knowledge to companies as a member of the board of directors. He is married and father of a son. In his free time, he enjoys cooking for friends and family, hiking in the Ticino mountains or reading the biography of a fascinating personality.

To what extent does the conflict between Russia and Ukraine affect the global supply of uranium?

Security of supply is a key issue for nuclear power plant operators. This is explained by the cost structure of these power plants. In contrast to fossil-fueled (gas or coal) power plants, in the case of a nuclear power plant the capital costs are the dominant factor in the total cost calculation for electricity production. With a share in the high single-digit percentage range, fuel costs (uranium) are of secondary importance. Accordingly, the industry usually shows little price sensitivity to rising uranium prices. However, when an operator invests billions in the construction of a nuclear power plant, he also wants to operate it around the clock, seven days a week. A possible bottleneck in the fuel supply must be prevented accordingly.

In terms of the supply situation, the period since the Fukushima reactor accident has been mostly comfortable for power plant operators. For the most part, supply was greater than demand and the availability of uranium on the spot market was good. During this time, uranium producers from Kazakhstan, Uzbekistan or Russia have steadily gained market share due to their attractive positioning on the aggregate cost curve. As a group, these producer countries now hold a good 50% share of the uranium market. With a weight of 40%, Kazakhstan plays a dominant role.

Accordingly, the social unrest in Kazakhstan at the beginning of the current year and the associated military intervention by Russia were already an initial wake-up call for the global nuclear industry. Even then, it became clear that the long-term supply contracts concluded with producers from Kazakhstan were probably riskier than had been thought a short time before. The issue of strategic supply security was launched.

Since Russia's attack on Ukraine, it has dominated the agenda. Russia is not only a uranium producer, but with „Rosatom“ also a weighty player in uranium enrichment and

fuel production. For example, U.S. power plant operators cover about 40% of their fuel needs from the Russian supplier. In the current sanctions discussion, there are voices on both sides. Aware of Western dependencies, Russian voices are calling for an export ban on uranium and nuclear fuel. On the other hand, bills are pending in both chambers of the U.S. Parliament that aim to ban imports of Russian uranium.

As of today, the outcome of these discussions is open. Due to the existing stocks at the power plant operators, the smooth continued operation of the nuclear power plants is ensured for the next 12 to 18 months, irrespective of the outcome of these discussions. However, against the background outlined above, we expect massive structural shifts on the uranium market in the medium term:

1. Western power plant operators will want to diversify their supply sources and enter into long-term supply contracts with suppliers from politically reliable jurisdictions. A willingness to self-sanction can already be observed today. Western power plant operators are refraining from purchasing uranium and nuclear fuel from Russian sources wherever possible.
2. Power plant operators are also addressing the issue of strategic security of supply with more extensive stockpiling. As the latest quarterly report of the Canadian uranium producer „Cameco“ has already shown, power plant operators are indicating an increased willingness to stockpile uranium. This is likely to mark the start of a new inventory cycle on the demand side. In our opinion, this is the last missing piece of the mosaic in the picture of a multi-year and sustainable uranium bull market.
3. The outlook for existing and prospective uranium producers has thus improved significantly. On the one hand, they benefit from the willingness of demanders to conclude new long-term supply contracts (see „Cameco“). On the other hand, the recent significant increase in the price of uranium provides incentives to bring existing production capacities,

which have been shut down for economic reasons, back into production and to push ahead more consistently with the realization of projects which have already been approved. These are the first tentative steps towards reducing the still growing supply gap on the uranium market.

In summary, despite the current political and military uncertainties, from a fundamental perspective the medium-term outlook for producers on the uranium market has further improved.

Since 2018, uranium producers worldwide have been trying to find a balance between production and demand. What has actually happened since then, and is it really sustainable?

In this context, it is important to distinguish between strategic and cyclical market developments. The Corona-related production cuts have relieved the market in the short term as part of a cyclical fluctuation and supported the spot price. This was because, due to interruptions in production, renowned producers were no longer able to cover their delivery obligations from their own uranium production, but only with purchases on the spot market. This was a welcome contribution to the desired stabilization of the market. However, these capacities will sooner or later find their way back into the market. Accordingly, the resulting support for the uranium price is also only of a temporary nature. This process will continue in the case of the recent production outages due to supply chain delays.

More important for the further development of the uranium price, however, are the changes at the strategic level. Under the leadership of the two heavyweights „Kazatomprom“ and „Cameco“, the supply side has attempted to lead the uranium market back to a new equilibrium over the past four years with significant production cuts. We are seeing previously unknown supply side discipline in the market today. As a result, global mine production is likely to have reduced by around a quarter compared to 2016.

These production cuts reflect nothing more than the recognition of economic realities by uranium producers. From the point of view of the mine operators, the ratio of the production costs of their existing capacities (AISC - All In Sustaining Costs) to the spot price is relevant. If these costs are higher than the selling price realized on the spot and forward markets, then uranium production makes no sense from an economic point of view. If the uranium price rises sustainably above the level of production costs, capacities that have been temporarily shut down for economic reasons (mines in „care and maintenance“ status) will find their way back to the market. The latest announcements by Cameco to bring its McArthur River and Cigar Lake mines (partially) back into production from 2024 should be seen against this background.

In retrospect, it can be stated that this strategy to discipline the supply side has worked. The uranium price has now completed its bottoming out and recently reached its highest level since 2012. Given the improvements on the demand side discussed earlier (extension of operating lives, construction of new reactors, desire to diversify supply sources), we see price risks on the demand side of the market in the current environment. Over the past 12 to 18 months, the uranium market has changed from a buyer's market to a seller's market.

As the „Cameco“ example shows, a significant expansion of production volumes is not to be expected in the short term, even in an environment with stronger increases in uranium prices. For technical reasons, this is not feasible even for established producers in the short term (within 12 to 18 months). At most, a question mark could be placed behind the production discipline of „Kazatomprom“. In view of Russia's increased influence on the government of Kazakhstan, one can indeed question the adherence of the 75% state controlled „Kazatomprom“ to its self-imposed production restrictions. So far, however, we have not heard any signals from management regarding such a change in strategy. Here too, for technical reasons

(supply chain problems, time-to-market of new in-situ production capacities), a short-term expansion of production seems unlikely to us. On the contrary, in the current (sanctions) environment, the risk of limited availability of Kazatomprom production due to delivery difficulties (shipping via St. Petersburg) seems more likely than an unexpected production expansion.

You manage the Uranium Resources Fund (ISIN LI0224072749) of LLB Fundservices AG in Liechtenstein. What strategy are you pursuing and what does the fund actually represent?

The investment strategy of the Uranium Resources Fund is based on our investment hypothesis that the existing supply gap in the uranium market will be closed over the next three to five years. This will only succeed if a significantly higher uranium price provides the incentives for new production capacities or those temporarily shut down for economic reasons to find their way to the market.

The Fund holds 25 to 30 positions in the portfolio and is suitable for the long-term oriented investor who wishes to participate in the interesting prospects of the uranium sector. The assets are invested worldwide in

companies that have a direct link to the uranium sector, in accordance with the principle of risk diversification. The investment strategy aims at absolute value growth.

Due to its risk profile, the Uranium Resources Fund is suitable as a supplementary component in a diversified portfolio and not as a basic investment. The Fund is licensed for public distribution in Liechtenstein, Germany and Austria and is tax transparent. In Switzerland, it is open for subscription to professional investors.

What selection criteria do you use when choosing fund stocks, and what are your current top performers?

After a long bear market, the uranium market has bottomed out and made a sustained upward turn. In view of the growing supply gap and the further improving fundamental data, there are good prospects for a continuation of the bull market despite the price gains to date. However, interim setbacks and high volatility remain a feature of this tight market. We intend to consistently exploit the profit opportunities that present themselves, while accepting controlled risks! Against this background, our portfolio stands on four pillars. The first pillar is our strategic liquidity ratio. This ensures our ability to act

at any time. In this way, we take advantage of attractive entry points that regularly open up due to the volatile price performance of many uranium shares.

With the second pillar, we want to participate directly in an improvement in the uranium spot price. Without higher uranium prices, a sustainable recovery of uranium producers is difficult to imagine. That is why two investment companies, which have invested their funds mainly in physical uranium, form the core of the portfolio. If our view is correct, the supply gap in the uranium market will be filled via a rising uranium price. „Sprott Physical Uranium Trust“ and „Yellow Cake Plc.“ should consequently be the first and most immediate beneficiaries of this price recovery. We have added to this group with a position in Uranium Royalty Corp. The company adapts the „streaming and royalties“ business model, which has been successful mainly in the precious metals environment, to the uranium market. The company finances uranium mines and in return secures a share in current or future production. However, this is done without taking on the risks associated with operating a mine.

The third pillar focuses on the shares of uranium producers or „standby“ producers with approved and/or realized projects that are not currently in production. When uranium prices start to rise, the producers who can place significant uranium production on the market will benefit. Only those who produce can also deliver. To be on the safe side, we focus on companies that have low production costs on the one hand and a good order book of long-term supply contracts on the other. Significantly represented in the portfolio are the two industry leaders „Cameco“ and, due to the current environment, with some restrictions „Kazatomprom“. Both companies have a broad portfolio of first-class production sites. This group is supplemented by investments in companies to which we would give the status of „standby producer“. These are companies that have a portfolio of approved production sites and processing capacities. Production could be launched within a foreseeable period of time

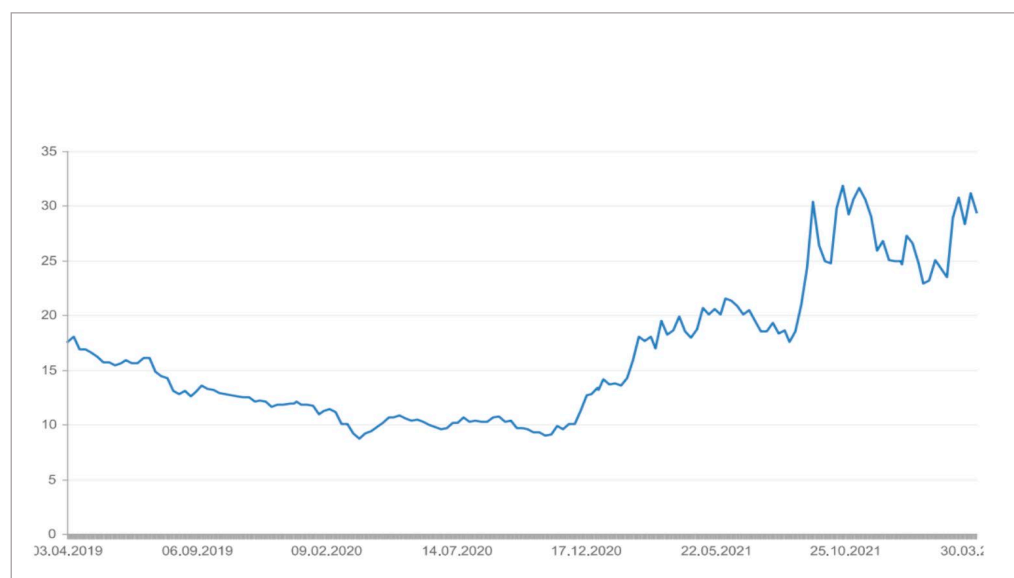
as soon as the economic conditions (i.e., a higher uranium price) are met. We include „Uranium Energy“, „enCore Energy“ or „Energy Fuels“ in this group, for example.

Under the fourth pillar, we focus on explorers and developers who are advancing world-class development and mining projects. These are particularly interesting if they can significantly advance their projects in the time window of the expected supply gap. They will then be able to benefit from a correspondingly attractive performance of their projects. In addition, these assets should have the necessary size to also qualify as takeover targets. This is because we assume that once the price turnaround has occurred on the uranium market, a wave of consolidation will take place and mining companies from outside the sector may also want to position themselves in the uranium business. This would make sense not least because of the low cyclical sensitivity and the comparatively high visibility of uranium demand. For example, the companies „NexGen Energy“, „Fission Uranium“ or „Boss Energy“ can be assigned to this group.

What advice do you have for investors interested in investing in the uranium sector?

As discussed, the prospects of promising uranium stocks are promising. On the other hand, the volatility of these shares is extraordinarily high due to their low market liquidity and implicit project risks. Those who put all their eggs in one basket in this speculative constellation are therefore playing high poker – possibly even too high. The use of a fund or ETF that invests diversified within the investment theme seems reasonable to us. In addition, we recommend a staggered build-up of positions.

Performance of the
Uranium Resources Fund
in Swiss Francs
(Source: incrementum.li)



Interview with Scott Melbye

CEO of Uranium Royalty, Executive Vice President of Uranium Energy and Ex-Advisor to the CEO of Kazatomprom



Scott Melbye is a 37-year veteran of the nuclear energy industry having held leadership positions in major uranium mining companies as well as industry-wide organizations. Through to June 2014, Melbye was Executive Vice President, Marketing, for Uranium One, responsible for global uranium sales activities. Prior to this, Melbye spent 22 years with the Cameco Group of companies, both in the Saskatoon head office and with their U.S. subsidiaries. He had last served as President of Cameco Inc., the subsidiary responsible for marketing and trading activities with annual sales exceeding 30 million pounds U_3O_8 . Melbye was formerly the Chair of the Board of Governors of the World Nuclear Fuel Market and President of the Uranium Producers of America. He also currently serves as Executive Vice President of Uranium Energy, was VP-Commercial for Uranium Participation Corporation and was Advisor to the CEO of Kazatomprom, the world's largest uranium producer in Kazakhstan. Melbye received a Bachelor of Science in Business Administration with specialization in International Business from Arizona State University in 1984.

You have been in the uranium and nuclear energy business for 37 years now. Can you share with our readers your path to get here and observations on how this time compares with other periods in the uranium market history?

It has truly been a pleasure to be engaged in this incredible industry throughout all these years. The mid-1980's had me trading uranium commodities with the German company, Nukem Inc. in New York, followed by my time as a nuclear fuel buyer for the Palo Verde Nuclear Power Station in Arizona. The next two decades were devoted to Cameco, from the time of their merger out of Canadian Federal and Provincial Crown corporations, to becoming the largest publicly listed uranium miner, operating the world's leading operations in Saskatchewan and selling over 34 million pounds of uranium annually to all of the world's nuclear utilities. Among many amazing experiences at Cameco, important new markets in China and India were opened up during this time. The early part of the last decade had me leading the marketing efforts of Uranium One, the global uranium production subsidiary of Russia's Rosatom with extensive experience in Kazakhstan, the United Arab Emirates, and China. Finally, I embarked on my current leadership positions at Uranium Energy Corp. and Uranium Royalty Corp. Mixed in there were consulting roles with the management of uranium activities at Sprott Physical Uranium Trust-forerunner, Uranium Participation Corp. and as Advisor to the CEO of Kazatomprom, assisting in their transition from state-owned-entity to publicly traded company.

With all these experiences behind me, including all the highs, and some very challenging times for our industry, I can say that I have never been more optimistic about the prospects for nuclear energy and uranium in the coming months and years.

Uranium Prices have now been trading as high as \$63 per pound, up significantly from the bear cycle lows of \$17.70 per pound in November 2017. What is behind this bull market move in uranium prices?

Uranium prices have indeed been on a dramatic recovery which can be attributed to a number of basic supply and demand fundamentals, in combination with a mix of global mega-trends and geopolitical developments.

Firstly, we have been talking about the rebalancing of supply and demand factors for some time, and recent events have only accelerated that development. Following a period of uranium over-supply brought on by the impacts of Fukushima, global uranium producers began to take steps to rationalize their production plans around the time long term contract hedges were beginning to roll out of supplier portfolios. Despite falling prices throughout the decade, global production had increased and peaked in 2016. From 2017 onward, however, we finally began to see supplier discipline translate into reduced production levels and the shut-in of mines around the world. In fact, over the past 5 years, global production has lagged global uranium consumption by roughly 40-60 million pounds per year. This has had the impact of drawing down global secondary supplies to help bring the market more into balance. Some producers, like Cameco, not only shut-in production, but entered the market as buyers to backfill their substantial long term contract commitments.

A couple of major developments came along to throw gasoline on the fire. The COVID-19 pandemic, for one, impacted roughly 50% of global uranium production at its peak, yet fortunately spared the nuclear power plant, uranium-consumers who operated reliably as essential services throughout this time. As such, uranium demand was unimpacted while major mining operations, like those in

Kazakhstan and Cigar Lake in Saskatchewan, Canada, saw their output decreased, even beyond the discretionary mine cut-backs. Additionally on the production side, the uranium market is experiencing the end-of-mine-life of a number of key operations including the Ranger mine in Australia (which ceased operations in 2021), the Akdala mine in Kazakhstan, and the Cominak mine in Niger. Additionally, the decade of low uranium prices did very little to incentivize the pipeline of new projects or encourage the restart of idled mines. This will dramatically impact the production response in this emerging supply squeeze as mines are not permitted, licensed or developed overnight, and in fact, can take 6-10 years to accomplish (with no guarantee of success). Market observers should also not ignore the impacts of global inflation on the price thresholds of mine restarts and development. There may be a general misperception of the level at which uranium prices will incentivize new mines.

With this sort of production/consumption gap prevailing for so long, have we finally made a dent towards drawing down the over-hang of global inventories?

Yes, most definitely. These voluntary and involuntary reductions in global mine production provided the opportunity for the market to fully draw on, and deplete, the over-hang of inventories which built up from the effects of Fukushima and, frankly, overproduction throughout the first half of the decade. This has been dramatically accelerated through the purchasing activities of non-traditional uranium buyers. Such category of buyers would include producers, like Cameco, backfilling contract commitments from the open market, junior producers, like UEC and others, opportunistically establishing low-cost inventories at near the bottom of the cycle, and pure speculative purchasers. These speculative, or financial, buyers have

included Uranium Royalty Corp., Yellow Cake Plc., and Sprott Physical Uranium Trust (SPUT) who are accumulating holdings of physical uranium on behalf of their shareholders who are seeking price exposure to the underlying commodity. Similarly, we have seen hedge funds make direct purchases of spot uranium in which they hold to realize capital appreciation of the assets. Collectively, these categories of buyers have had a profound impact on the rebalancing of the uranium market having purchased over 81 million pounds in the past 15 months. SPUT has been the major player in all this having raised \$1.7 billion from its at-the-market financing vehicle since August 2021. While I am reluctant to describe these developments as "catalysts", preferring to reserve that term to the major underlying supply and demand fundamentals, I would clearly describe these events as a major tipping point in the market re-balancing. Our rather thinly traded and inefficient uranium market was already heading from over to under-supply from both traditional supply and demand trends, however, the magnitude of spot buying has perhaps accelerated forward the market recovery by a couple years. The significance being that the uranium market is transitioning from being inventory-driven, to one more reliant on the cost and timing of production from new and restarted mines.

What impact has society's desire to decarbonize our economy had in terms of nuclear growth on the demand side for uranium?

Just as the global uranium industry was focusing on the rationalization of production in light of low market prices that were below global extraction costs, we have seen an unprecedented embrace of nuclear power for the role it can play in a lower-carbon future. For the first time in the modern history of nuclear energy, we are seeing broad support for nuclear power from the political Right

and Left, the investment community, and both environmentalists and industrialists. Whether one values the clean energy benefits of this leading green-energy technology, or it is a prioritization of the reliability and affordability of 24/7, baseload power, nuclear energy delivers both. It is as carbon-free and safe as wind and solar yet runs 95% of the time versus 30% for intermittent renewables. Moreover, its energy-dense uranium fuel serves as a price hedge against volatile fuel costs compared to fossil-fired generation. It is not surprising then that in the past 8 years the world has seen 62 large, modern nuclear power plants connected to the global electric grid and 54 more commence construction. Furthermore, we are now seeing very exciting developments in the deployment of small modular, or advanced, reactors (SMR's). These are not the 1500-megawatt massive power stations that we have become accustomed to, but rather smaller 50-300 megawatt units that can be constructed in a factory with lower up-front capital, shipped on site and built in a scalable, modular manner. Once these innovative plants can get past the first-build hurdles, they promise to be affordable and flexible clean energy sources that can adapt well to large grids already burdened with substantial intermittent renewables, present viable alternatives to retiring coal fired power plants, or serve as a main source of power to remote communities, or for uses in industrial or mining applications. Whether it is GE Hitachi in Canada, Rolls Royce in the United Kingdom, or X-Energy, TerraPower or NuScale in the United States, these SMR's and advanced designs are receiving substantial commercial interest and boosted by strong government support in terms of their initial deployment. In a significant announcement last year, the U.S. state of Wyoming will see a Bill Gates, TerraPower, Sodium reactor constructed on the site of a retiring coal-fired power station (Warren Buffett's Pacific Corp. utility being the buyer). Not only can this advanced reactor make a clean energy transition, but it can also connect into existing grid infrastructure, and jobs can be preserved in the impacted fossil fuel sector. Central Europe is proving to be a promising market for this technology

as these countries are facing a number of energy challenges. While historically dependent on coal-fired power generation, they are being pushed towards lower carbon alternatives by the European Commission. At the same time, they want to avoid the dangerous reliance on Russian natural gas. Large western reactors and SMR's are proving to be the desired fit between these competing objectives.

In that regard, how is the Russian invasion of the Ukraine impacting the global uranium market?

If the supply and demand rebalancing, COVID-19 impacts, and non-traditional uranium buying was not enough, the appalling and unprovoked invasion of sovereign Ukraine by Russia may prove to permanently reshape the uranium market in a number of ways going forward. The Rosatom uranium enrichment complex represents 45% of global installed capacity, and closely aligned Kazakhstan has become the world's largest uranium producer. In the United States for example, 20-25% of the enriched uranium comes from Russia and close to 50% of natural uranium supplies are sourced from Russia, Kazakhstan, and Uzbekistan. These Russian fuel purchases amount to close to US\$1.3 billion in hard currency per year towards Putin's war efforts. Western Europe would have similar levels of reliance. We would be correct in pointing out the risk management folly of putting that many eggs in Putin's basket, but the reality faced today is not whether to move away from Russian fuel reliance, but how quickly can this be achieved without harm to the nuclear power plant consumers. Not only are these supplies potentially subject to sanctions (the U.S. Congress have proposed a complete ban on varying timelines), they could also be subject to a Kremlin export embargo knowing how strategic these energy supplies are to the West. Yet other companies have remained true to their moral and ethical values and have voluntarily ceased Russian purchases (Swedish Vattenfall having made this decision on the first day of the invasion). Other utilities

„Whether one values the clean energy benefits of this leading green-energy technology, or it is a prioritization of the reliability and affordability of 24/7, baseload power, nuclear energy delivers both. It is as carbon-free and safe as wind and solar yet runs 95% of the time versus 30% for intermittent renewables.“

ties will face mounting pressure to act from shareholders and customers, like the protests we have seen at EDF's headquarters in Paris. Central European utilities face a more daunting task in refueling their Russian designed VVER reactors with western fuel, including the fabricated fuel designs now being manufactured by Westinghouse for the Ukrainians and Czechs. Having said that they, and other neighboring countries, are fully committed to the transition given the first-hand perspective of Russia's carnage and the exodus of refugees. From a supply and demand perspective, we have to assume perhaps a permanent shift away from Russian uranium fuel reliance. While this may have dramatic on uranium prices in the near term, it should signal a strategic shift towards more geopolitically stable suppliers that are not under the influence of Russia or China.

How has this Russia/Ukraine conflict impacted nuclear power in global national energy policies?

The humanitarian catastrophe that is the Russian invasion of Ukraine will impact society in many ways for years to come. Perhaps the most lasting impact on global energy will be the renewed and keen awareness towards energy independence and security. Energy Ministers from around the world are reassessing how their energy is produced and from where it is coming from. No longer will it be acceptable to outsource strategic energy supplies (and other critical minerals, goods and services) to countries that do not have shared values and interests. Multinational cooperation will still exist, but a much greater emphasis will be placed on domestic control of strategic resources. Nuclear energy has a very important role to play in this societal shift. Nowhere has this become more evident than with the failed energy policies of Germany over the past 15 years. The Merkel approach of "Energiewende" promised abundant clean and affordable electricity though billions of Euros invested in green energy renewables, and a very deliberate and unequivocal phase out of nuclear

„Germany has instead “succeeded” in achieving electricity prices 50% higher than neighboring nuclear France, while making very little progress in its carbon reduction goals, losing their largest source of carbon-free energy (nuclear) and instead increasing reliance on dirty lignite coal.“

energy. The result has been quite the opposite. Germany has instead “succeeded” in achieving electricity prices 50% higher than neighboring nuclear France, while making very little progress in its carbon reduction goals, losing their largest source of carbon-free energy (nuclear) and instead increasing reliance on dirty lignite coal. However, the most disturbing result of this policy has been the overwhelming reliance on Russian natural gas from Nord-Stream 2. The latter causing not only supply shocks to the German economy but conflicting the German Government in taking stronger ethical geopolitical positions during this profound humanitarian crisis.

In Europe alone, we are seeing the reversal of phaseouts of nuclear power in countries like Belgium and a renewed commitment to nuclear energy like we are seeing in the United Kingdom and France. The European Commission’s taxonomy debate conclusions yielded to the pronuclear member arguments and deemed nuclear energy a green and sustainable energy source for the Community’s energy needs (albeit transitional

and with conditions). Nowhere is this more abundantly clear than in Central Europe where the threat of Russian aggression and energy weaponization is not a new concept. Countries such as Poland, Romania, Czech Republic, Slovenia, Hungary and Slovakia are not only placing increased value on their existing fleet (switching fabricated fuel suppliers from Russia’s Rosatom to Westinghouse) but are engaging in new build of large western reactor designs and fully embracing the benefits of small modular and advanced reactors. Put simply, the EU (and society at-large) is encouraging their shift away from the current heavy reliance on coal, and Russian gas is not an option. Renewables can contribute up to point but cannot be a baseload 24/7 source of uninterruptable electricity.

What does this all mean for uranium investors?

As we have been saying for some time, the market fundamentals have been ripe for a significant and sustained recovery in urani-



View of the Welzow-Süd opencast

lignite mine

(Source: Jörg Blabell, CC BY-SA 4.0)

um prices. We are now seeing this come together in a very big way assisted by the mega-trend towards energy decarbonization and supply shocks that have been brought on by a global pandemic and an apocalyptic invasion in Central Europe. We should remember that the last bull market in uranium began from a place of moribund demand for uranium, little to no investment in uranium exploration and development, and flat uranium prices below global costs of production. The resumption of new reactor builds in the nuclear renaissance combined with supply shocks at major production centers (floods and fires in Canada and Australia), resulted in a period of uranium prices trading in the \$70 to \$137 per pound range. I can’t help but draw the comparisons to today where even stronger, broad-based support of nuclear energy has emerged, fuel buyer complacency is again being met with supply shocks and uranium speculators have entered into the game in historic proportions.

Early investors in this cycle are now being rewarded for their patience and foresight, and new investors are finding the nuclear

energy and uranium story to be an extremely compelling sector in which to focus their capital for growth in the coming years. Given that we have only recently emerged from a period where the name of the game for uranium producers was to simply “leave it in the ground”, to one of needed uranium expansion and growth, we are still in the very early stages of this cycle. Investors will be wise to focus on the companies that have positioned themselves through an extremely challenging time of survival to be ready to seize on these significant opportunities going forward. Indeed, very exciting times for uranium as the promise of clean, reliable, and resilient nuclear energy becomes more widely appreciated in a lower-carbon world.

Blue Sky Uranium

Uranium from Argentina to be mined at low cost for Argentina



Nikolaos Cacos, CEO

The Canadian development company Blue Sky Uranium owns several large uranium licenses in the Argentine provinces of Rio Negro and Chubut Argentina, which can be exploited relatively easily in open-pit, or surface, operations. This creates an enormous cost advantage, promising not only faster mining but also high margins. The aim is to supply Argentina's nuclear power plants with uranium from the country itself. Blue Sky Uranium has already been able to present a large resource and a positive PEA for one of three subprojects. Concrete plans to build another Argentine nuclear reactor starting next year should give Blue Sky Uranium a further boost.

Amarillo Grande Uranium-Vanadium Project: Location and Resources

Blue Sky Uranium's flagship project is called Amarillo Grande and consists of the three sub-projects Anit, Ivana and Santa Barbara. The three license areas cover a total of approximately 261,000 hectares and are located in Argentina's Rio Negro province. Anit, Ivana and Santa Barbara lie within a 145-kilometer trend that hosts several known uranium occurrences. In addition to near-surface uranium mineralization, Amarillo Grande also hosts significant vanadium resources. The uranium and vanadium-bearing rocks range in depth from 0 to 25 meters, and the deposits can extend for several kilometers. The overburden consists of only slightly compacted sand, which results in not only favorable mining costs, but also extremely favorable drilling costs. Mining is usually carried out by means of a so-called scraper, which removes the rock layers and loads them directly onto a truck driving alongside by means of a conveyor belt. There is no need for drilling or blasting, which drastically reduces mining costs.

In addition, most of the excavators normally required are not needed. The rock material can be processed in a plant centrally located between the three sub-projects using leaching, which is also cost-effective. All these advantages make it possible to exploit even low-grade deposits. The additional presence of vanadium as a by-product strongly contributes to an improvement of the economic efficiency.

Amarillo Grande Uranium-Vanadium Project: Ivana

The largest subproject by area and the southernmost is Ivana. It covers about 118,000 hectares and hosts an anomaly more than 25 kilometers long. Sampling and drilling there encountered high-grade mineralization that was consistent with previous radiometric surveys. Up to 1.81% U_3O_8 was detected over 0.75 meters. This sample was only 2 meters below surface. The majority of the known resource is located very near surface to a maximum depth of 25 meters.

Drilling has intersected several high-grade intervals including 3,136ppm U_3O_8 over 1 metre, 2,182ppm U_3O_8 and 1,285ppm V_2O_5 over 2 metres and 2,087ppm U_3O_8 and 1,892ppm V_2O_5 over 1 metre, all within significant uranium and vanadium mineralization up to 20 metres thick. All of these drill results were from depths up to 23 meters. Additional drilling also returned additional high-grade results including 10,517ppm U_3O_8 over 1 meter and 8,618ppm U_3O_8 also over 1 meter, each within 8 meter intervals of over 2,200 and 2,800ppm U_3O_8 respectively. In 2018, the Company encountered over 20,000ppm U_3O_8 (equivalent to over 2% U_3O_8) over 1 meter, among others. This successfully confirmed the initial grades of over 1% U_3O_8 !

Ivana: resource estimation and positive economic analysis.

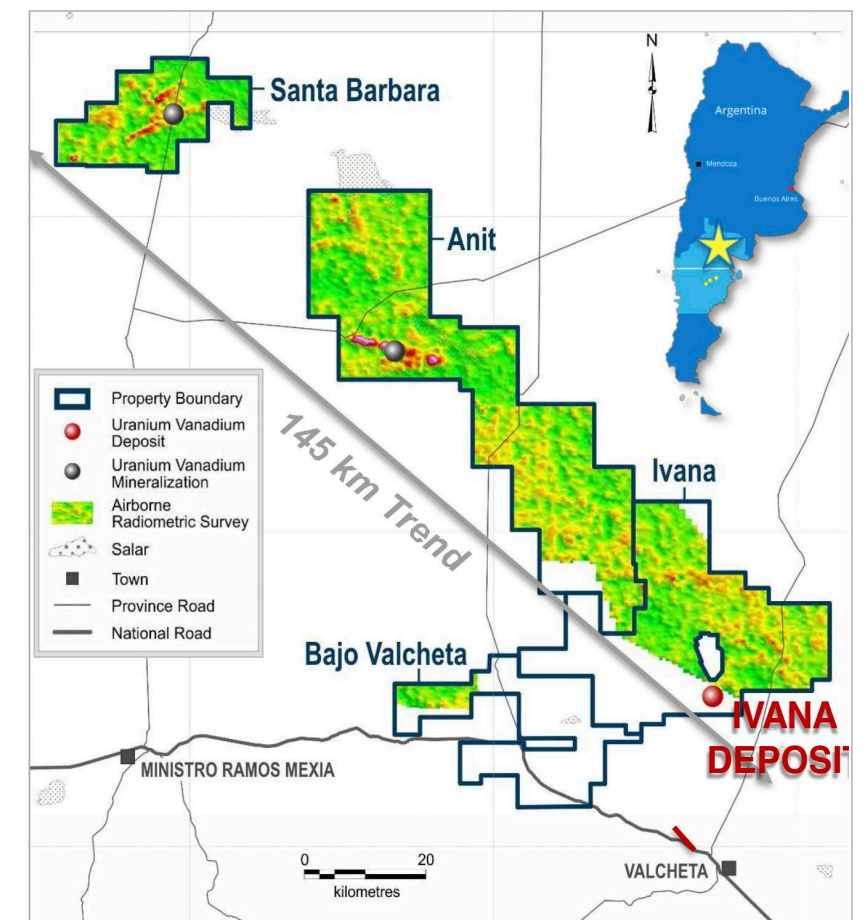
A 2019 resource estimate returned an inferred resource of 22.7 million pounds of U_3O_8 and 11.5 million pounds of V_2O_5 for Ivana.

Based on the exploration work and resource estimate presented, a preliminary economic assessment (PEA) for Ivana was prepared in 2019. Based on a uranium price of US\$50 per pound U_3O_8 and a vanadium price of US\$15 per pound V_2O_5 , the PEA calculated a net present value (NPV, discounted at 8%) of US\$135.2 million and an internal rate of return (IRR) of a very good 29.3% after tax. Based on a daily mining volume of 13,000 tonnes (including overburden) and a daily processing volume of 6,400 tonnes, this results in an annual production of 1.35 million pounds of U_3O_8 and a total production of 17.5 million pounds of U_3O_8 over a life of 13 years. The initial capital cost was estimated at US\$128 million and the all-in sustaining cost at US\$18.27 per pound of U_3O_8 . This results in a payback period of 2.4 years. This would place Ivana in the lower quartile globally for operating costs.

Ivana: Large-scale drilling campaigns lead to new discoveries

In February 2021, Blue Sky Uranium initiated an initial 40 hole or 1,591-meter drilling campaign that was quickly expanded to 4,500 meters to primarily test targets in the Ivana Central and Ivana North areas (both outside the known Ivana deposit).

Furthermore, a 3,255-metre drill campaign commenced in September, aimed at expanding the known resources of the Ivana deposit. This included encounte-



The Amarillo Grande Project comprises a series of new uranium-vanadium discoveries spotting along a 145 km trend over the past 15 years. (Source: Blue Sky Uranium)

ring 3 meters averaging 431ppm U_3O_8 and 371ppm V_2O_5 , including 878ppm U_3O_8 and 518ppm V_2O_5 over 1 meter, 4 meters averaging 296ppm U_3O_8 and 268 ppm V_2O_5 , including 581ppm U_3O_8 and 271ppm V_2O_5 over 1 meter, 4 meters averaging 214ppm U_3O_8 and 281ppm V_2O_5 , including 419ppm U_3O_8 and 369ppm V_2O_5 over 1 meter, and 2 meters averaging 301ppm U_3O_8 and 333ppm V_2O_5 . This has also allowed the Company to demonstrate that the Ivana deposit extends for a further 1.5 kilometers to the west. The Company was able to substantiate this by intersecting 5 meters of 0.15% U_3O_8 including 1 meter of 0.7% U_3O_8 in a step-out hole drilled 1.5 kilometers southwest of the current resource.

Amarillo Grande Uranium-Vanadium project: Anit

The second subproject, Anit, covers approximately 24,000 hectares and is centered between Ivana and Santa Barbara. Anit lies on a 15-kilometer trend of near surface uranium mineralization. Historical exploration work has averaged grades of 0.03% U_3O_8 and 0.075% V_2O_5 over 2.6 meters for 81 drill holes. In the western and central zones, 103 pits with uranium grades greater than 50ppm were encountered, a 1.97 meters of 0.04% U_3O_8 and 0.11% V_2O_5 . One drilling campaign detected uranium grades up to 1,114ppm U_3O_8 and up to 3,411ppm V_2O_5 . In particular, the very high-grade vanadium resource encountered attracted management interest. Test work also showed that a large part of the existing uranium and vanadium resources can be significantly improved by so-called wet screening, since coarse gravels in particular have hardly any uranium content. This would reduce transportation and processing costs and allow simultaneous extraction from several satellite projects.

Amarillo Grande Uranium-Vanadium Project: Santa Barbara

The third subproject, Santa Barbara, is located northwest of Anit and is still in its infancy. Blue Sky Uranium has already identified several anomalies there and intends to make a new discovery soon.

Amarillo Grande Uranium-Vanadium Project: Exploration Potential and Current Work

Currently, the Company continues to focus primarily on Ivana. As such, evaluation of the two aforementioned drill campaigns continues, based on IP assays and systematic sampling that returned 1.40% U_3O_8 over 1.10 meters, including 2.74% U_3O_8 over 0.5 meters, among other results.

Continued work on permitting and project planning for exploration at the Ivana East & Cuatro targets and engineering & process test work to support advanced technical studies of the Ivana deposit.



Drilling at Ivana Project
(Source: Blue Sky Uranium)

Grosso Group as an important back-up

Blue Sky Uranium is part of the Grosso Group of companies. The Grosso Group is a management company that has been in existence since 1993, specializing in South America, particularly Argentina, and during this time has made 3 multi-million-ounce precious metal discoveries in Argentina alone. In addition, partnerships with commodity giants such as Barrick, Areva, Rio Tinto, Teck and Yamana have been established. Company CEO Joe Grosso was named Argentina's Mining Man of the Year in 2005. Grosso Group has an extensive network of industry and political contacts in Argentina. Grosso has been a director and chairman of Blue Sky Uranium since October 2017.

Summary: Potential low-cost production and local customers who will need additional uranium.

Blue Sky Uranium is a real early-stage opportunity in a nascent uranium boom market. Especially in Argentina, as Chinese state-owned China National Nuclear Corporation (CNNC) and Argentine

state-owned Nucleoeléctrica Argentina have just signed an EPC (Engineering Purchase and Construction) contract in February 2022 for the supply of a Chinese HPR-1000 turnkey nuclear power plant, with construction scheduled to start this year. Although the company has already made significant exploration and development progress on its three advanced projects within Amarillo Grande, two things seem objectively clear: first, the rocks at Ivana and also at Anit contain significant vanadium resources in addition to uranium, and second, the existing deposits can in all likelihood be exploited via surface mining. Taken together, these two factors also promise a very good chance of production in the near future due to several existing high-grade intersections and, above all, low-cost production that also requires only a fraction of the capital costs of similar conventional mines. The Company's objective is to supply its own uranium to Argentina's currently 3 operating nuclear reactors, the reactor under construction and the planned reactor. With an oversubscribed financing of CA\$5.5 million at the beginning of 2021 and a further financing of approximately CA\$ 2.1 million at mid-year 2021, the upcoming activities are adequately funded.

Exclusive interview with Nikolaos Cacos, CEO of Blue Sky Uranium

What have you and your company achieved in the past 12 months?

BSK had an intensive exploration program running along the last year, where efforts were focused on the generation of worth valuable information for the development of the economic potentiality of our district scale project named Amarillo Grande. The works included a

4,500m drilling program testing highly ranked exploration targets in an area of 30-50km around the Ivana deposit, a +22 million pounds U_3O_8 deposit; and follow up program at the Ivana deposit after its positive PEA, including 3,500m drilling program, bulk-sample comprehensive metallurgical process design test works and environmental baseline studies.

The aim of the exploration program testing targets surrounding the Ivana deposit is to validate the exploration modeling which includes the potentiality to discover multiple deposits along this new district, which share geological similarities to world class districts like those in Kazakhstan. The 4,500m drilling program, testing two blind targets, comprises a first prospecting drilling phase of 1,500 at each target; followed by a second follow up phase of 1,500m at the areas with higher potentiality after initial results.

At this point, only one target completed the first prospecting drilling phase and the results have identified the presence of uranium mineralization with geochemical footprint similarities to the Ivana deposit, as well as clear indications for vectoring the follow up exploration efforts. The second target was tested with six holes, where the first hole has already intersected uranium mineralization. This program was set into stand by along the last year while preparing updated environmental permits, and the drilling is expected to be resumed by April 2022.

The follow up programs at Ivana deposit are advancing towards a potential prefeasibility study expected to be launched in the second half of this year. The actual program includes a 3,500m RC drilling program delineated for the expansion of the deposit to the west and covering areas with open drilling spacing at the PEA stage. The initial results from holes located to the west of the known mineral resources have confirmed the presence of uranium mineralization near surface, first 5m from surface; as well as the presence as higher vanadium presence compared to the overall grade at the Ivana deposit. The program is expected to be concluded by March 2022.

The comprehensive metallurgical process design test works include studies

for a new composite bulk sample consisting of mineralized material from the Ivana deposit. Their results will allow refined processing capital and operating cost estimates and will assess the characteristics of final uranium and vanadium products

The environmental baselines studies comprise the gathering of several environmental data from soil, air and superficial or underground water at time zero, as required by law and following the best practices for the development of a sustainable project.

What are the most important catalysts for the next 6 to 12 months?

BSK is exploring a district scale project with geological potentiality to comprise multiple deposits if compared with similar uranium districts in the world as those in Colorado Plateau or Kazakhstan. The size of the project, covering an area of more than 140km along a potential exploration corridor, implies a significant opportunity for BSK.

The strategy of the company since 2017 was to discover a potential economic deposit first, and the presence of more deposits along the district secondly. The deposit to be discovered had to be also potentially economic competitive at that time when uranium spot price was close to US\$20 per pound U_3O_8 .

This first goal was achieved with the discovery of the Ivana deposit, comprising 22.7Mlb U_3O_8 and 11.5Mlb V_2O_5 ; added to the publication of its preliminary economic assessment, or PEA, in 2019. The economic results from that study indicate a robust project with a relative low Capex of about US\$128M, including contingencies; and operating cost of US\$18.27 per pound U_3O_8 , AISC including credits of vanadium. The estimated results indicate that Ivana deposit may be as competitive as most of the opera-

ting mines at low uranium price cycles, at the lower quartile compared to 2018 worldwide operating costs; as well as, that any new deposit discovery located within a 30-50km radius may be summed to that project extending mine life without significant additional capex.

The next 6 to 12 months would be critical for the expansion of the Amarillo Grande project, where BSK expect to update resources and obtain a detailed metallurgical processing design for the Ivana deposit before launching a prefeasibility study; meanwhile the exploration program would be hopefully confirming positive exploration results towards a new Ivana-like discovery.

How do you see the current situation on the market for uranium?

Cuts to primary production and inventory optimization by utilities and producers, the uranium market is expected to slowly become more production-driven, where prices more closely correlate to the marginal cost of uranium produc-

tion. Additionally, Kazakh production targets for 2021 and 2022 will remain 20% below planned levels.

Today's uranium prices do not incentivize producers to increase production levels, utilities and suppliers will continue to purchase available secondary supplies, thus further reducing excess material and placing upward pressure on spot prices. This price increase could be further enhanced by traders and financial players attempting to get ahead of the next cycle of contracting activity.

Although reactor needs are flat at the moment, in the near future there will be significant demand growth that will encourage new production as resources are exhausted at several uranium projects.

ISIN: CA0960495079

WKN: A12GAR

FRA: MAL2

TSX-V: BSK

Shares outstanding: 185.7 million

Options: 16.4 million

Warrants: 95.1 million

Fully diluted: 297.1 million

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