Uranium Report 2020

Everything you need to know about uranium!

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Preface

Dear Readers,

With this new edition of the Uranium Report 2020 we are already entering the fourth year of this special report series. Uranium is a „hot potato“ and we see major imbalances in supply and demand coming to the markets. We expected this to happen in 2019 and have been proven wrong, as there is probably still enough to buy on the spot market. However, without uranium power generation, i.e. nuclear power plants, we will not only have a huge global problem in stable basic energy supply, but also a real power supply problem in itself due to the electromobility revolution. The development of the charging infrastructure is progressing much more rapidly in Europe and electricity consumption continues to rise. Even I now drive a hybrid and diligently charge electricity car for short trips in the city. The question is rather where does all the electricity come from, and that without pollutant emissions? Nuclear power is the only viable solution here for many years to come, as the sun and wind cannot be relied upon and they can only be suppliers. Especially in Germany this question is even more important, as nuclear power is being switched off and coal is being made to disappear. Here it is once again worthwhile to look at China because here they are also switching to solar, hydroelectric, wind and above all nuclear power. China has understood that one suffocates at the own smog but also needs a reliable and cheap power supply. Nuclear power is the perfect solution.

Closely related to Battery Metals (main components of lithium-ion batteries, the heart of every electric vehicle) is the base-load capable power supply (charging) of the batteries, and thus either the burning of coal, gas or oil or the use of uranium as a fuel element in nuclear power plants. There are no other base-load-capable energy production methods as long as no adequate storage possibilities for electricity from renewable energy sources have been created. This report is intended to give the reader an overview of the uranium industry and the real facts, as well as of the world‘s energy supply from nuclear power. The petition 232 in the USA last year and the Nuclear Working Group has come to a decision. The Trump Administration has now decided to buy domestic uranium for US$150 million per year! This could be the ignition point for rising uranium prices in the future. Supply is still falling, and demand is rising slightly.

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 buy recommendation since there are only very few listed companies left.

Raw materials are the basis of our entire economic coexistence. Without raw materials there are no products, no technical innovations and no real economic life. We need a reliable and constant basic energy supply for our highly industrialised world.

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Yours, Jochen Staiger

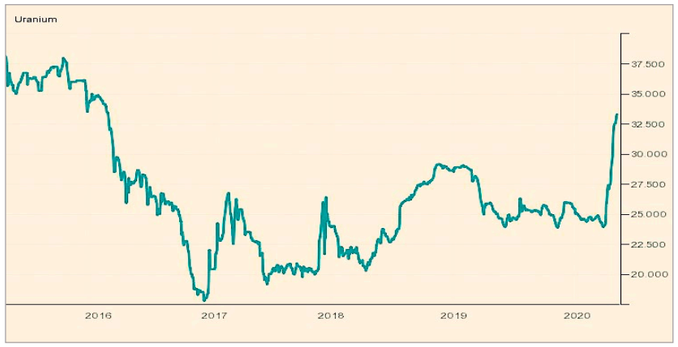
Jochen Staiger is founder and CEO of Swiss Resource Capital AG, located in Herisau, Switzerland. As chief-editor and founder of the first two resource IP-TV-channels Commodity-TV and its German counterpart Rohstoff-TV, he reports about companies, experts, fund managers and various themes around the international mining business and the correspondent metals.

Tim Rödel is Manager Newsletter, Threads & Special Reports at SRC AG. He has been active in the commodities sector for more than twelve years and accompanied several chief-editor positions, e.g. at Rohstoff-Spiegel, Rohstoff-Woche, Rohstoffraketen, the publications Wahrer Wohlstand and First Mover. He owns an enormous commodity expertise and a wide-spread network within the whole resource sector.

„Thanks to“ Corona:
The uranium sector is really picking up speed again! – Spot price at four-year high!

The Corona crisis continues to have a firm grip on the globe. The massive interventions in the development of the free economy have left deep scars. Mass unemployment and economic hardship have suddenly become part of everyday life again. But every crisis also has its winners. In the case of Corona, one big winner is already emerging: the uranium sector! While many large mines have had to temporarily shut down or even completely shut down due to possible infections of the personnel, at the same time the systemically important nuclear power plants must continue to operate in order not to allow the social system to fall apart completely. The USA in particular, but also other nations where nuclear energy plays an important role (such as France, Great Britain and China), urgently need a supply of fuel. Whatever the cost, one might almost think so, at least if one takes a look at the uranium spot price. It has gone up from US$ 24 to US$ 33.30 per pound in just 5 weeks. A plus of almost 40% and a four-year high at the same time!

Uranium price development over the last 5 years (Source: own representation)



Nuclear energy is currently the only base-load capable energy source that can manage the balancing act between an enormously increasing electricity demand and clean energy generation!
Uranium is irreplaceable for this!

Global energy demand has multiplied since the end of the 1980s. About 11% of the total energy demand worldwide is currently covered by nuclear power. However, it is still mainly fossil fuels such as coal and crude oil that are burned to generate energy. The increasing demand for a reduction of CO^2 emissions and the ever more noticeable phenomenon of „global warming“ are causing above all energy-guzzling industrial nations and emerging markets to increase their energy efficiency and improve their CO^2 budgets. The second important point is the ongoing electrical revolution, which in a few years‘ time will not only make us almost 100% electrically mobile but will also bring with it a huge additional surge in demand for clean energy.

Burning coal and oil cannot achieve both at the same time. The alternative is renewable energies, which however require an enormous amount of time and money and are not even close to being able to supply base load without the lack of larger electricity storage facilities, or nuclear power, which can provide a great deal of energy in a CO^2-neutral way. Some countries have long since recognized this possibility of fast and almost clean energy generation and are now pushing the construction of new nuclear power plants.

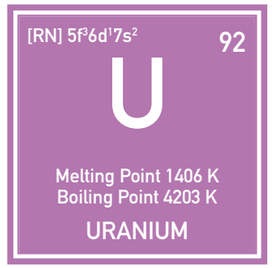
Base load capability, what is that?

Base load capability is the ability of a power plant to provide continuous, reliable electrical energy. 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 burned. The only base-load-capable electricity generation from renewable energy sources is by means of hydroelectric power plants, although this often requires a major intervention in nature.
Photovoltaic and wind power plants are not suitable for base load due to their often strongly fluctuating generation and thus feed-in.

What is uranium?

One of only two elements where nuclear fission chain reactions are possible

Let us come to the element uranium itself. Uranium is named after the planet Uranus and is a chemical element with the element symbol U and atomic number 92. Uranium is a metal whose all isotopes are radioactive. Uranium, which occurs naturally in minerals, consists of about 99.3% of the isotope 238U and 0.7% of 235U.



The uranium isotope 235U is fissionable by thermal neutrons and is therefore, apart from the extremely rare plutonium isotope 239Pu, 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 nature in solid form, but always in minerals containing oxygen. There is a total of about 230 uranium minerals which can be of local economic importance.
There is a wide range of uranium deposits from magmatic hydrothermal to sedimentary types.
The highest uranium contents are found in unconformity-related deposits with average uranium contents of 0.3 to 20 %. The highest grades are over 60% 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

Uranium mining is basically divided into two processes: Conventional extraction and extraction by means of in-situ leaching or in-situ recovery (ISR). The exact extraction method depends on the properties of the ore body, such as depth, shape, ore content, tectonics, type of host rock and other factors.

Conventional production

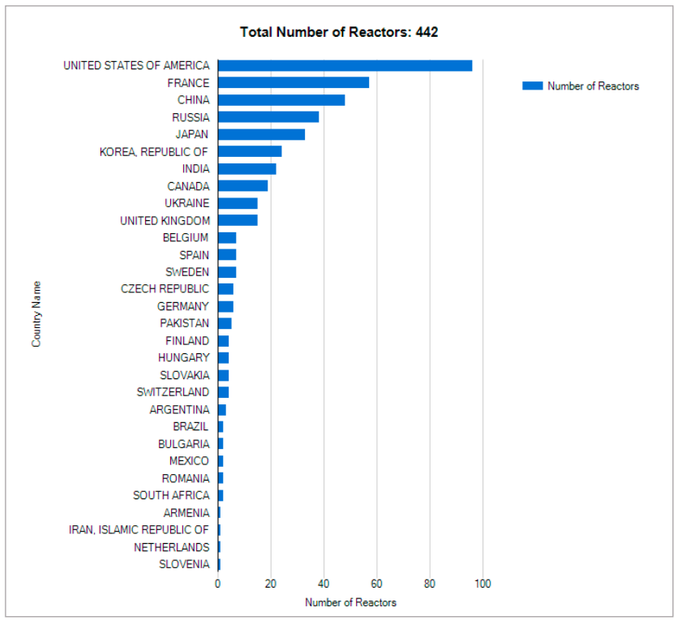
Most of the uranium is extracted by underground mining. The deposits are accessed via shafts, galleries, ramps or spirals. Problems are often caused by the ingress of mine water and so-called ventilation (technical measures to supply mines with fresh air). The exact mining method is chosen according to the characteristics of the deposit. Above all, the shape of the ore bodies and the distribution of the uranium in them are decisive. In underground 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 enables the use of cost-effective large-scale technology. Modern open-pit mines can be from a few metres to over 1,000 metres deep and can reach a diameter of several kilometres. Open-pit mining often produces large quantities of overburden. As in civil engineering, large quantities of water may have to be excavated for an open-pit mine, 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 dissolved out and pumped back to the surface for further processing with the help of so-called recovery wells. The whole process is therefore completely underground. The advantages of this process are therefore obvious: no major earth movements as in open-pit operation, no overburden dumps or run-off basins for heavy metals and cyanides have to be carried out. Only the wells are visible on the surface, the areas around the wells can continue to be farmed without restrictions. The ISR process makes even low-grade deposits economically mineable, the capital costs for mine development are greatly reduced. In addition, the whole process can be carried out with a minimum of manpower, which also drastically reduces operating costs. According to a study by the World Nuclear Association, 25% of the uranium mined outside Kazakhstan recently came from ISR mines.

Overview of reactors currently in operation per country (Source: www.iaea.org/PRIS)



The current status of the uranium market

But what about the uranium market today? It is clear that the lack of investment in the procurement structure - i.e. in the infrastructure of mines and processing plants - over the last 45 years will most likely prove to be a stroke of luck for uranium investors in the future!
For despite the fact that, at the latest since the Chernobyl disaster and even more so after the events surrounding the nuclear facilities in Fukushima, Japan, the number of nuclear power plants worldwide is already at a record level. Just 30 countries currently (as of 1 April 2020) operate 442 reactors with a total net electrical capacity of around 390.7 gigawatts.

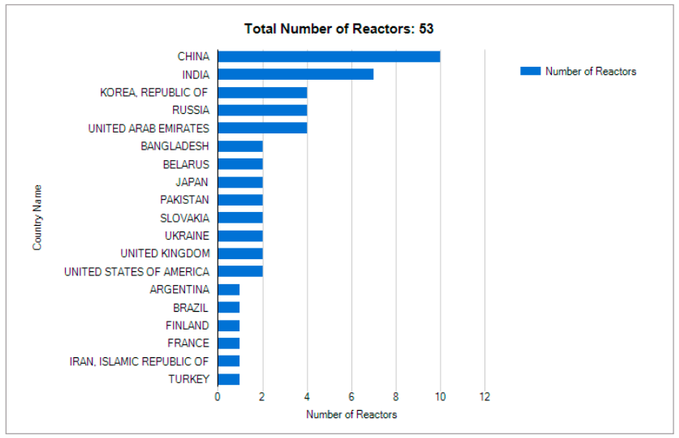
The current leading nuclear power nation with 96 reactors in operation is the USA. However, emerging markets such as China and India in particular are requiring more and more energy and have been focusing on a massive expansion of their nuclear power capacities for some time. It is therefore not surprising that 53 additional nuclear reactors with a total net electrical capacity of around 56.3 gigawatts are currently under construction. Plans for 110 additional ones have already been completed and 330 more are in the pipeline.

The demand situation

China is only at the beginning of the nuclear age

While many self-proclaimed experts had already prophesied the end of the nuclear age, this is still in its infancy in the world‘s most populous country. 48 reactors with a total net electrical capacity of 45.5 gigawatts are operated in the Middle Kingdom, which has so far mainly used coal to generate electricity. Of these, 9 new reactors alone have been put into operation since the beginning of 2018. The expansion of nuclear power in China is therefore enormous and is proceeding at breathtaking speed! Nevertheless, more than two thirds of China‘s energy consumption is still generated by coal-fired power plants. And although China itself is mining its own coal deposits on a large scale, it is one of the world‘s largest coal importers alongside India. 30% of the coal mined worldwide is imported into these two countries alone. A certain dependence on these same coal imports is obvious. And this is exactly something that the leadership of the People‘s Republic is trying to avoid. The obligation to establish climate-friendly and clean energy generation options is almost a secondary consideration. The state-owned power plant manufacturer Power Construction Corporation of China (Beijing) predicted in autumn 2015 that its country would rise among the world‘s largest users of nuclear power after the Chinese government planned to build more than 80 new nuclear reactors in the next 15 years and more than 230 new nuclear reactors by 2050. According to information from China Power, the new five-year plan for the energy industry, which is scheduled for adoption by the National People‘s Congress in March 2016, envisages a faster expansion of nuclear capacity than has been the case to date: previously, capacity was expected to rise to 58 gigawatts in the coming years, but now more than 90 gigawatts are under discussion. In 2005, the plan was still based on a mere 40 gigawatts by 2020. By 2030, 110 reactors should be on the grid. A total of 10 nuclear reactors are currently under construction. In a further step, China‘s nuclear power generation is to be expanded to 120 to 160 gigawatts by 2030!

While in Germany the abolition of nuclear power generation was sealed shortly after the events in Fukushima, China has decided exactly the opposite and is making every effort to produce cheap electricity by means of a chain reaction. In view of an ever-increasing energy demand - mainly due to rising prosperity - and a catastrophic CO_2 balance, China‘s path in this direction seems only logical.



Overview of reactors currently under construction per country (Source: www.iaea.org/PRIS)

India massively expands civil nuclear program

India is following a similar path. The world‘s second most populous country plans to expand its nuclear energy capacity by 70 gigawatts. In contrast, India‘s current total net electrical capacity of about 6.2 gigawatts seems downright ridiculous.

However, India has literally slept through its entry into nuclear energy and is now desperately searching for recoverable deposits, but also has to expand its overloaded power grid. A tenfold increase in nuclear energy capacities seems not only sensible, but also urgently necessary.

India itself has hardly any significant uranium deposits. An expansion of its own nuclear energy capacities by a factor of ten would at the same time mean a 10% increase in total global nuclear power generation.

But where is the additionally required uranium going to come from? Currently, only a few of India‘s 22 nuclear reactors are running at full load. While Japan, China, Russia and South Korea in particular have been able to secure uranium resources worldwide in recent years, India has completely missed this opportunity. Only recently, several purchase agreements have been concluded with companies from the USA, Canada, Na-

mibia, Kazakhstan, Russia, Great Britain and South Korea.

At present, 7 nuclear reactors are under construction in India, with another 42 to follow by 2050.

Russia with increasing nuclear capacity

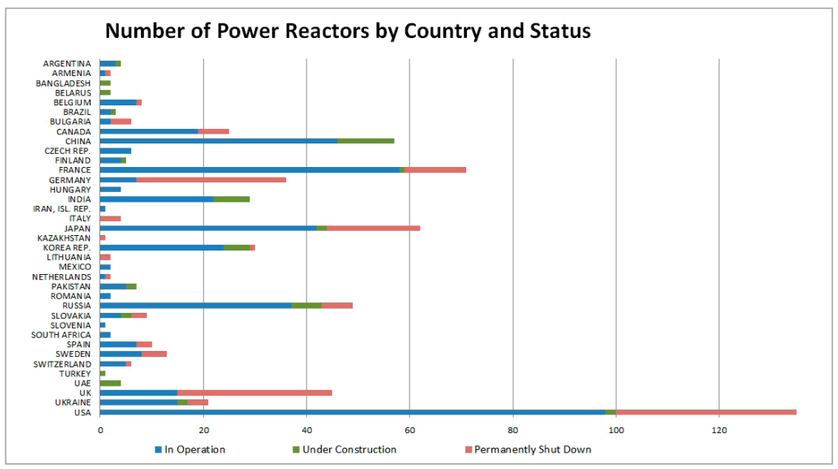
Russia and Brazil have also announced a massive expansion of their nuclear power plants. Russia currently operates 38 nuclear reactors with about 29.2 gigawatts. 4 plants are in the construction phase. In addition, Russia plans to build 46 more nuclear power plants, which should increase the share of nuclear energy in the Russian energy mix from currently 15% to over 20%. In a further step, Russia wants to increase this quota again to 25%.

Rising global expansion of nuclear energy

In addition to the 30 nations that already have nuclear reactors online, another 17 countries are planning to install nuclear power plants. Among them are Egypt, Jordan, Turkey and Indonesia. At the beginning of March 2020, the 31st nation, the United Arab Emirates, entered nuclear power production. Another 3 reactors are under construction there.

The USA in particular is threatened by the energy collapse

With 96 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 the Americans‘ hunger for energy is growing. Many of the coal-fired power plants that still date from the 1950s and 1960s operate inefficiently and uneconomically. Sooner rather than later they have to be taken off the grid. 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. Of course, climate-friendly energy is also provided by photovoltaic systems, wind farms, hydroelectric power plants or geothermal energy, but these energy producers can only solve acute energy problems to a limited extent, as they are very costly on the one hand and their output fluctuates according to the time of day and weather conditions on the other. What therefore remains as the only climate-friendly energy production option is nuclear power. Because, given the amount of additional electricity required over the next two to three decades, renewable energies can only serve as an admixture to the overall energy mix.



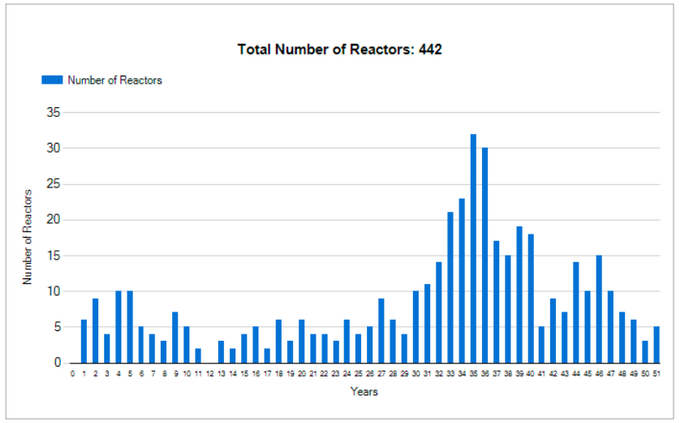
Overview of currently running reactors (blue), currently shut down reactors (grey), reactors under construction (green) and permanently shut down reactors (red). Above all China, India, South Korea, Russia, the United Arab Emirates and the USA are currently working on expanding their reactor fleets.
(Source: www.iaea.org/PRIS)

For this very reason, a law to increase and promote energy production using nuclear power has already been created as part of the „Clean Energy Act of 2009“, a programme for the provision of carbon-free energy. Both US government parties have drawn up an $18.5 billion plan to double nuclear power capacity by 2030. At the beginning of 2010, President Obama announced that the US government would include in the 2011 federal budget additional funds of $36 billion for state guarantees for the construction of a new generation of nuclear reactors. This meant a tripling of the originally planned budget funds.

In recent years, an application has been made for an extension of the operating lives of more than 60 US nuclear reactors to 60 years of total operating time. In addition, 42 applications have been submitted for the construction of new nuclear power plants. So far, however, only 4 plants are under construction, another 21 are in the concrete planning phase.

Long-term supply contracts to expire shortly

The previous cycle of contracts, dominated by the uranium price peaks of 2007 and 2010, has led plant operators to enter into higher-priced contracts with very long durations of about 8 to 10 years. On the one hand, these old contracts are expiring, but on the other hand the plant operators have not yet made any effort to replace these supply volumes. Forward transactions by plant operators are therefore declining sharply, which means that the quantities required for which there is no contractual obligation yet, but which must be contractually secured in future, are also increasing. Uncovered demand is expected to be just under one billion pounds of U_3O_8 over the next 10 years. At the same time, more than 75% of the expected reactor demand until 2025 is not contractually secured. For a commodity such as uranium, which is only marginally traded, this return to more „normal“ long-term contracts is likely to put enormous pressure on both long-term prices and spot prices. International plant operators are therefore now increasingly showing signs of increased buying activity.



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

Summary

The fact is that 442 reactors are currently in operation and at least 330 more are to be added by 2040. 53 plants are already under construction, another 110 are in the concrete planning phase. Even if half of the old reactors were to be taken off the grid by then, 500 to 600 reactors would be active in 2040.

Furthermore, about 90% of all long-term supply contracts between the uranium producers and the power generation companies expire by the end of 2020, which is likely to put established nuclear power nations such as the USA in particular in a predicament.

The supply situation

Established producers are running out of air

The established uranium producing nations Australia, Canada, Russia and Niger were already having problems expanding their production before the Corona crisis. All four countries together produced almost 19,333 tonnes of uranium in 2018. In 2009 the figure was 28,000 tonnes of uranium. Australia has experienced recurring problems at BHP Billiton‘s Olympic Dam Mine, by far the country‘s highest-yielding uranium mine. In Canada, the start of production at Cameco‘s McArthur River Mine had to be postponed tens of times due to repeated ingress of large amounts of groundwater. In Niger, mine openings that had also been planned had to be postponed. In some cases, however, mines were also shut down due to the weak uranium spot price.

US uranium production is down

The situation in the USA is even more threatening. Although the Obama administration has decided on a US$ 54 billion programme to promote the nuclear power industry in 2010, it is still far from clear where the uranium needed to operate the reactors will come from. The uranium industry in the USA is only a shadow of the past. In the last 45 years, practically nothing has been invested in the development of new deposits and almost 95% of the uranium required has been obtained from disarmament programmes. US nuclear reactors already consume about 21,300 tonnes of uranium annually. An increase in capacity would therefore also require an increase in the amount of uranium needed. The World Nuclear Association (WNA) estimates that by 2035, the USA alone will need about 40,000 tonnes of uranium annually. Even in the heyday of US uranium production in the 1960s and 1970s, it would not have been possible to extract such a quantity from their own plants. US uranium production reached its peak in 1980, when about 29,000 tonnes of uranium were extracted from the ground. After the end of the Cold War, disarmed nuclear weapons in particular became the most important source for US uranium demand. This led to a decline in American uranium production to less than 500 tons of uranium per year at the end of the war. As a direct consequence, much of the infrastructure and approved production facilities were simply closed or completely dismantled. Currently, only a few mines remain in Texas, Arizona and Wyoming.

Kazakhstan – the new uranium superpower

While almost all established uranium producers are experiencing difficulties in rebuilding or expanding their uranium production, one region has now moved past all other countries to the forefront of uranium production: Central Asia. In the last ten years, Kazakhstan in particular has multiplied its uranium production there. Uranium production in the former Soviet Republic rose from 1,870 to over 24,586 tonnes between 2000 and 2016. In 2009, Kazakhstan thus also overtook the previous leader Canada and is now responsible for almost 40% of total global uranium production.

Massive production cuts have already been initiated

But although Kazakhstan is one of the nations that can currently mine uranium at the lowest cost, the country has long since ceased to be prepared to sell its uranium deposits at rock-bottom prices. In early 2017, the state-owned Kazatomprom announced that its own uranium production would be cut by at least 20% in 2017. In May 2018 Kazatomprom announced further production cuts. In addition, production had to be further reduced due to corona.

However, Kazatomprom is not the only uranium producer that has been relying on production cuts in view of the weak uranium price. Uranium major Cameco 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 is the mine with the second highest uranium production worldwide. With the temporary closure, 10% of the total world production was taken off the market at a stroke. In addition, Cameco has for some time been acting as a uranium buyer itself in order to supply long-term, higher-priced supply contracts with corresponding uranium volumes at spot prices.

Since 2017 Kazatomprom has reduced its uranium production by about 15% and Canada by about 45%. Furthermore, Cameco closed its Cigar Lake mine in March 2020 for four weeks due to corona, which was subsequently extended. In addition, Orano‘s McClean Lake processing plant also had to close. Other closures include Moab Khotseng in South Africa and the Chinese-owned mines Husab and Rössing in Namibia, to name but the most important. The spot market, whose supply is mainly composed of uranium, which is mined as a by-product in other mines, has also recently seen a decline in supply due to various mine closures.

Huge supply gap already existing before Corona

Overall, uranium production has declined by about 60% since about the beginning of March 2020 due to corona alone, although it should be noted that the supply shortfall was already about 40 million pounds of uranium per year before that. The current demand is thus largely covered by stocks, which are thus rapidly dwindling. So, in fact, there is already a supply shortfall. At the current level of 442 nuclear reactors worldwide, consumption is about 183 million pounds of U_3O_8, of which only about 139 million pounds are covered by global uranium production (excluding the special effect of corona). The International Atomic Energy Agency (IAEA) estimates that the construction of new nuclear power plants will increase global uranium demand to up to 300 million pounds of U_3O_8 in 2030.

Uranium spot price (blue) and long term price (red) including major events for the sector
(Source: Company presentation Laramide Resources)

1. early 2000s: major mine disruptions after U_3O_8 price was at all-time low
2. mid to late 2000s: new supply contracts concluded
3. March, 2011: Fukushima
4. in the past 12 months: Major production cutbacks (Cameco, Kazatomprom); US government support and global demand for nuclear power generation; new financial players (Yellow Cake, Uranium Participation, Uranium Royalty, etc.); long-term contracts expiring; new construction of nuclear reactors.

Summary

The supply side is currently in a state of flux in the uranium sector. The secondary supply from Russia‘s disarmed nuclear stocks is becoming less and less important. While in 2006 37% of demand was covered by disarmed nuclear weapons, this figure has now fallen to just 4%. At the same time, however, the number of nuclear reactors will increase dramatically. The established uranium producers will not be able to completely cover this equally leap in demand - at least not at the current uranium spot price of US$ 33 per pound of U_3O_8. So where is the more needed uranium to come from in the future?
Increased production can only be achieved through a higher uranium price and, consequently, major investments in the expansion of existing and new mines.

However, the basic problem remains the relatively low uranium spot price, which does not allow producers to access deposits that are more difficult to access and therefore more costly to extract.

At a market price of US$40 per pound of uranium, experts estimate that there are just under 713,000 tonnes of commercially recoverable uranium.

With an annual consumption of about 68,000 tonnes of uranium, these deposits would therefore only last for 10 years, provided that the market price for them remained constant at at least US$ 40 during this period and demand also remained constant. However, this demand will inevitably increase.

If the market price for uranium were to rise and justify extraction costs of US$80 per pound of uranium, it would be possible to mine about 1.28 million tonnes of uranium economically. Range at current consumption: 19 years.

If the uranium price were at 130 US$ per pound, about 3.86 million tons of uranium could be economically extracted. At current consumption levels, the known reserves would then last for about 56 years.

Conclusion

Doubling the demand is matched by almost no increase in supply!

However, the uranium spot price is currently as far away from the US$130 per pound uranium mark as current demand will soon be from future demand. According to a very conservative estimate by the International Atomic Energy Agency (IAEA), this demand will double in the coming years. In 10 to 15 years, the above-mentioned ranges could therefore be halved without hesitation.

All this shows that the still - apparently cheapest - way of generating electricity can only be used if the market price for the starting product uranium rises again. The market price of uranium is also determined by supply and demand. However, if the market price no longer permits economic production, it must and will inevitably rise. In the case of uranium, demand will also rise sharply as a result of 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 recognised this trend early enough.

High proportion of demand has not yet been covered

Uncovered demand is expected to exceed one billion pounds of U_3O_8 in the next ten years. However, more than 80% of the expected reactor demand until 2025 will not be contractually secured. For a commodity such as uranium, which is only marginally traded, this return to more „normal“ long-term contracts is likely to put enormous pressure on both long-term prices and spot prices. International plant operators are therefore already seeing increasing signs of increased buying activity.

USA build up strategic reserve!

In January 2018, the only two remaining US uranium producers, Ur-Energy and Energy Fuels, submitted a petition to the U.S. Department of Commerce to point out the relevance of US uranium mining with regard to possible security policy concerns and increasing dependency of the energy industry on uranium imports.

The two companies argued that 40% of US demand for uranium is met by imports from countries of the former Soviet Union (namely Russia, Kazakhstan and Uzbekistan), while only 2% of demand is produced in the USA. The dependence of both the US energy industry (after all, 20% of the electricity consumed in the USA is generated by nuclear power plants) and the military on these nations has increased alarmingly as a result.

With their petition, the two producers wanted to have both the Department of Commerce and President Trump draw up a clear assessment of the USA‘s dependence on imports from Russia, Kazakhstan and Uzbekistan, as well as promote the USA‘s own uranium industry.

In July 2018, the U.S. Department of Commerce initiated an investigation into the impact of uranium imports on U.S. national security.

This led to the US government announcing in February 2020 that it would provide US$ 150 million annually over the next 10 years to create a strategic uranium reserve. This reserve is to come entirely from uranium from US mines.

The most important decisions in this regard were as follows:

- US purchases of 17-19 million pounds of U_3O_8, starting in 2020 from domestic producers on the basis of a tendering process. Subsequent support is considered necessary over a period of up to 10 years to restore market share.
- Streamline regulatory reform and access to land for uranium mining.
- Supporting the efforts of the Department of Commerce to renew the Russian suspension agreement to protect against future uranium dumping on the US market.
- Enabling the Nuclear Supervisory Commission to refuse to import nuclear fuel produced in Russia or China for reasons of national security.
- Establishment of a nuclear industrial base structure analogous to the defence industrial base.
- Financing of advanced water treatment technology for uranium mining and in-situ recovery
- Increase the efficiency of export processes and adopt 123 agreements to open up new markets for the export of US civil nuclear technology, materials and nuclear fuel

In this way, the US government is accommodating the domestic mine operators to some extent and thus trying to revive domestic production. It is expected that US producers will need an average uranium price of at least US$50 to US$60 per pound to be able to produce sustainably. Currently, only Energy Fuels, Uranium Energy, Ur-Energy and Cameco are able to restart their mining projects, although Cameco has already announced that this is not in the company‘s interest.

Uranium ETFs cause spot price to rise

Only recently, several other strong market players have been added, who are now securing U_3O_8 on the spot market at a low price, mostly from mines where uranium is a by-product. In addition to Cameco, which is now acting as a buyer, Uranium Participation Corp. and Yellow Cake Plc. have also been able to purchase larger quantities of uranium. Yellow Cake also has a contract with Kazatomprom under which it buys uranium for

US$170 million. This takes immense pressure off the uranium spot price and also puts pressure on utilities to extend their expiring contracts.

The best uranium stocks promise multiplication potential!

We have taken the current situation of a far too low uranium spot price, which does not reflect reality, plus the massive supply shortfall expected in the future, as an opportunity to summarize promising uranium shares to you in compact form. We are concentrating in particular on development companies with extremely promising projects, as these offer a high takeover opportunity in addition to the actual appreciation through a higher uranium spot price. At the end of 2015, the merger (de facto takeover) of Fission Uranium with (by) Denison Mines failed, among other things due to the vote of Fission shareholders. The example shows that investors currently assume that there will be far better takeover or merger opportunities in the future. This is precisely because the uranium sector is currently undervalued in this way, and this undervaluation must first be eliminated.

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.

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

Dr. Schärer, nuclear power is controversial, especially in German-speaking countries, and politicians have initiated the phasing out of nuclear power. Recently, however, several politicians have been advocating the continued operation of reactors. At the same time, many new nuclear reactors are being built, especially in China, but also in many other parts of the world. Is nuclear power experiencing a renaissance?

Nuclear energy is a highly emotional topic, especially in German-speaking Europe. The decisions regarding the phasing out of nuclear power should also be seen against this background. These decisions were made under the impression of the events in Fukushima, without a politically broad-based and rationally based debate on the sensible design of future energy supply. This debate is now being conducted after all against the background of the climate debate. It is a fact that on a global basis around ¾ of the energy demand is covered with fossil fuels. If we now want to seriously address the issue of CO_2 reduction, we cannot avoid a drastic and rapid restructuring of our energy supply. This will hardly succeed without a strong expansion of electricity production from renewable sources (sun, wind and water). In this context, we believe that nuclear energy remains relevant because of its small CO_2 footprint. It is important to differentiate between the starting position in the Western industrialised countries on the one hand and that in the emerging economies, especially in Asia.

For Europe, the small CO_2 footprint of nuclear energy is interesting. For example, electricity production in a gas-fired combined cycle power plant emits around 25 times more CO_2 than the production of nuclear power. Against this background it makes sense to keep existing reactors technically fit and to continue operating them for a few years. This gives you time to expand production from renewable sources, while at the same time significantly reducing CO_2 emissions by decommissioning coal-fired power plants. The construction of new nuclear reactors seems to me to be politically hardly feasible, especially in German-speaking Europe. This is despite the great age of the existing reactor fleet.

The starting position is somewhat different in China or India. These economies are growing dynamically. The same applies to their electricity requirements. In addition, high levels of air pollution and growing international pressure to reduce CO_2 emissions are just as much a challenge as the high dependence on imports of fossil fuels. It is therefore not surprising that these countries are resolutely pushing ahead with the expansion of nuclear energy.

These influences and trends are reflected in the figures of the International Atomic Energy Agency IAEA. According to their figures, a total of 450 reactors with an installed capacity of 398.9 GW are in operation on a global basis as of 31.12.2019. This means that nuclear energy supplies around 10% of global electricity production and is the second most important source of low-CO_2 electricity after hydropower. 53 reactors with a capacity of 54.7 GW are under construction. A good half of these are in China, Russia and India. Our conservative projections assume that these new reactors will largely compensate for the shutdowns expected in the established industrialized countries in the coming years.
These considerations lead us to the core of our investment thesis. We assume that nuclear energy will remain relevant. We do not advocate either significant absolute growth or an increasing share in the global energy mix. With our Uranium Resources Fund we focus on the emerging supply gap in the uranium market.

Since 2011, the uranium price has been under permanent pressure and has still not recovered. What are the main reasons for this price collapse and how do you assess the current state of the market?

The Fukushima reactor accident was a decisive event for the uranium sector. As a result of the accident, the entire Japanese reactor fleet was taken offline. That was a good 10% of global capacity. The demand for uranium has been reduced accordingly. The future prospects of nuclear energy were discussed worldwide. In German-speaking Europe it was even decided to phase out nuclear power. This uncertainty was also reflected in the inventory cycle and the purchasing behaviour of power plant operators. The demand side has been very defensive. At the same time, in the first few years after the accident, the supply side hardly reacted at all to the reduced demand. This was due to the long-term supply contracts between the mines and the power plant operators from the time of the last uranium bull market. Many producers were able to service these contracts with their prices fixed at a high level and thus escape the price pressure on the spot market. The result was a significant oversupply on the uranium market. Accordingly, the prices have been reduced significantly.

In the meantime, a large proportion of these long-term supply contracts have expired and the pressure of suffering among producers has increased massively. Today, a good half of uranium production is likely to make losses. No money can be earned with a spot price of US$ 25. Against this background, the supply side has started to react. The two leading producers Kazatomprom and Cameco have significantly reduced their production and some mines have even shut down. Today, many producers fulfil their supply obligations by no longer extracting the uranium they need from their mines, but by procuring it on the spot market. The resulting reduction in supply will bring the uranium market back into balance over the coming quarters and create the conditions for a sustained increase in prices. Most recently, corona-related production interruptions acted as a fire accelerator in this context and the spot price rose to over US$30 per pound. This raises hopes that the phase of bottoming out in the uranium market can soon be concluded.

You mentioned that the falling uranium prices put massive pressure on producers. How have the companies come to terms with these low uranium prices and why do they now expect a turn for the better?

The fall in prices on the uranium market is a huge challenge for producers. In this environment, profitable production is unthinkable. Accordingly, costs are being consistently reduced. Production plans are being adjusted to the low prices and loss-making mines are being closed. The remaining capital is allocated in a very disciplined manner. Accordingly, development and expansion projects are re-dimensioned or cancelled. As mentioned above, individual producers have started to buy uranium on the spot market in order to meet their delivery commitments. The current spot price is obviously well below their own production costs! The advantage of this approach for these producers is that the uranium not mined remains in the ground and can later be sold on the market at higher prices.

Nuclear Fuel Pellets
(Source: NRCgov, CC BY-SA 3.0)

With their behaviour the producers are reducing the supply. Meanwhile, demand from power plant operators exceeds the reduced supply from the mines. The uranium market is thus in deficit. Part of the demand is therefore being met from non-strategic stocks. It is a question of time until these available stocks are used up. Correspondingly, in the medium term there are increasingly clear signs of a supply shortfall that can only be closed by significantly increasing uranium prices. We assume that uranium prices will have to recover sustainably in the direction of US$ 50 in order to stimulate the necessary expansion of production capacities.

A few weeks ago, the USA launched a programme under which the country will invest a total of US$ 1.5 billion over the next 10 years in building up a national uranium reserve from domestic mines. Is that enough to revive the fallow US uranium industry and what impact could this have on the price of uranium?

The proposal is included in the current US government‘s draft budget and is in response to the findings of a Department of Commerce investigation into the security of uranium supply. The investigation was initiated by two domestic uranium producers. The background is the fact that US nuclear power plants cover about 20% of national electricity production. However, due to the collapse of uranium production from domestic mines, 98% of the uranium needed for production has to be imported. From a security of supply perspective, the proposed creation of a strategic uranium reserve makes sense. It is also understandable that primarily US producers should benefit from this. Moreover, US$ 1.5 billion is a sum that would leave its mark on the uranium market.

Much is still unclear with regard to implementation. Moreover, the deal is only a proposal within the framework of the ongoing budget process. This has yet to be approved by parliament and it is unclear whether the next administration will continue to support the project. It is also not clear at what price the uranium will be purchased. At a fixed price covering the production costs? Or at the current spot price? Depending on the definition of the purchase price, there are different volumes that could be acquired with the US$ 1.5 billion mentioned above. It also remains unclear from whom the uranium should be purchased. The lack of domestic production capacity is precisely the origin of the initiative. So, there is still a lot that has not yet been thought through. However, we are convinced that the turnaround in the uranium market will materialize independently of the build-up of a strategic US uranium reserve. The question is not whether, but when this will happen.

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

An investment in our fund is a focused bet on the emerging supply gap in the uranium market. An investor with a medium-term investment horizon is offered an attractive return potential, which is however also correspondingly risky. The Fund is therefore suitable as a supplementary component in a diversified portfolio and not as a basic investment. The Uranium Resources Fund holds around 30 positions in the portfolio. This diversification makes sense against the background of the current state of the uranium market.

What selection criteria do you apply when selecting fund values?

The correction on the uranium market, which has been going on since 2011, demands a lot of staying power from all players. From an analytical perspective, the ongoing downward movement has also made us more humble with regard to our own forecasting ability. Nevertheless, given the fundamental starting position, we are convinced that the uranium market will turn the corner in view of the emerging supply gap. The question is not if, but when it will happen. Accordingly, our ultimate goal is to still be in play when this turnaround materializes. The next bull market in uranium shares will open up great profit opportunities. We want to make consistent use of these opportunities!

Against this background, our portfolio rests on four pillars. The first pillar is a strategic liquidity ratio. This ensures our ability to act at all times. In this way, we use attractive entry points that regularly open up due to the volatile price development 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. For this reason, two investment companies, which have invested their funds primarily in physical uranium, form the core of the portfolio. If our view is correct, the supply gap in the uranium market will be closed by a rising uranium price. „Uranium Participation and Yellow Cake Plc should be the first and immediate beneficiaries of this price recovery. Recently, we have supplemented this group with an investment in „Uranium Royalty Corp. The company adapts the „Streaming and Royalties“ business model, which has been particularly successful 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, without taking the risks associated with the operation of a mine.

The third pillar focuses on the shares of uranium producers. If uranium prices start to rise, then 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 rely on companies that have low production costs on the one hand and a good order book of long-term supply contracts on the other. The two industry leaders „Cameco“ and „Kazatomprom“ are significantly represented in the portfolio. Both companies have a broad portfolio of first-class production facilities. Despite the challenging environment, both companies are cash flow positive and pay a decent dividend. This group is complemented by investments in companies to which we would grant the status of „standby producer“. These are companies that have a portfolio of approved production facilities and processing capacities. Production could be launched within a manageable timeframe as soon as the economic conditions (i.e. a higher uranium price) are met. This group includes, for example, „Uranium Energy“ or „Energy Fuels“.

As part of the fourth pillar, we are focusing on explorers and developers who are driving forward world-class development and mining

projects. These are particularly interesting if they are able to start production in the time window of the expected supply gap. They will then be able to benefit from correspondingly attractive sales prices. In addition, these assets should have the necessary size to qualify as takeover targets. After all, we assume that after the price turnaround in the uranium market has occurred, a wave of consolidation will take place and possibly mining companies from outside the sector will also want to position themselves in the uranium business. This would make sense, not least because of the low sensitivity to economic trends and the comparatively high visibility of uranium demand. For example, the companies „Denison Mines“ or „Boss Resources“ are to be assigned to this group.

What are your biggest single positions at the moment and why? Do you also have uranium development companies in mind?

In the current environment, we are implementing our strategy with a comparatively defensive stance. Accordingly, we are focusing on the first three pillars within the concept already described. We have underweighted the „Explorer & Developer“ group. Its valuation is strongly driven by market sentiment. From a fundamental perspective, we are concerned about the limited refinancing options. The current stress on the financial markets makes it difficult for these companies to access debt and equity capital for their project developments. But now back to your question: we hold the 5 largest positions in „Uranium Participation“, „Yellow Cake Plc“, „Kazatomprom“, „Cameco“ and „Uranium Royalty Corp“.

The first two companies hold physical uranium in their portfolios. They regularly publish the net asset value (NAV) of their shares. The market price of their shares fluctuates and can be above or below this reported NAV. Currently, the prices are significantly below the intrinsic value. This makes these shares attractive because it allows us to buy physical uranium at a discount to its market value. The described „premium“ or „discount“ ratio is also a good sentiment indicator. The currently high discounts of the share prices compared to their intrinsic value show the pessimism of investors with regard to the expected future uranium price development.

From the group of small-capitalized stocks we would like to highlight „Uranium Energy“. The team around the charismatic Amir Adnani has built up a promising portfolio of projects over the past years. We like the fact that the company focuses on the „in situ recovery“ production method (ISR). This method allows uranium to be extracted at low cost. UEC also has a strategically important asset in the form of the fully licensed „Hobson Processing Facility“. Against this background, we believe that the Company is in an excellent position to establish significant production on a relatively attractive cost basis in the near future following a price turnaround in the uranium market.

What is your advice to investors interested in investing in the uranium sector?

The supply shortfall outlined above and the associated potential for rising uranium prices is still only foreseeable. Despite the good prospects, the exact timing of the expected turnaround in the uranium market remains uncertain. If, contrary to expectations, the current phase of bottoming out continues for some time to come, the air will quickly become thin for some uranium producers. Their balance sheets are emaciated after the continuing price collapse and the cost-cutting potential has already been largely exhausted. The environment also remains challenging for the developers of new uranium projects, as their projects will only become economically viable and thus realisable with rising uranium prices. It is correspondingly difficult to find investors to finance the next stages of the project. Anyone who bets everything on one card in this constellation is therefore playing high stakes - possibly even too high. The use of a fund that invests in a diversified manner within the topic seems reasonable to me. We also recommend a staggered build-up of positions over time.

Interview with Scott Melbye

Executive Vice President of Uranium Energy, Commercial V.P. of Uranium Participation Corp. and Ex-Advisor to the CEO of Kazatomprom

Scott Melbye is a 33-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 and 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.

Mr. Melbye, you have held and continue to hold senior positions with a variety of uranium companies and are considered one of the world's most respected uranium experts. Can you give our readers a brief overview of your career to date?

Thank you, it is a pleasure to share my observations and insights into the global uranium market with your readers. I have been fortunate to spend my entire 35-year career in the uranium and nuclear energy industries. Starting out as a nuclear fuel broker with Nukem in New York on 1984, and later being responsible for uranium fuel procurement at the three-unit Palo Verde Nuclear Generating Station in Arizona, really prepared me for the bulk of my career in uranium mining. In addition to 23 years with leading producer, Cameco, most recently as President of their global uranium marketing subsidiary, I also held leadership roles at Russian-owned, Uranium One and Kazakhstan's State uranium company, Kazatomprom. I have also had the opportunity to manage the physical uranium activities of Uranium Participation Corp. Since 2014, I have served as Executive Vice President of U.S. uranium developer and producer, Uranium Energy Corp., and more recently assumed the CEO role at Uranium Royalty Corp. which launched as a public company in December 2019.

The uranium spot price has been in a bearish phase for about 5 years and has not yet been able to recover significantly from its low in 2016, until very recently. What are the main reasons for this development?

While we are very encouraged by the recent improvements in the uranium spot market (best performing major commodity so far in 2020), it has indeed been a frustratingly slow recovery. With the benefit of hindsight, we can now see that 2016 was a pivotal year for uranium fundamentals. As a result of Fukushima market impacts, the uranium price fell from a ten-year high of US$70 per pound in early 2011 to a cycle low of US$17.75 per pound in November 2016. It was not until this April that we finally saw uranium prices again exceed $30 per pound. In the face of falling prices over the past decade, global uranium production counter-intuitively grew, year-over-year, and finally peaked in 2016 at 162 million pounds. This speaks to the relative inefficient nature of the uranium market compared to other mineral commodities like copper, gold or silver. In those commodities, price signals usually manifest in adjustments to supply much more rapidly, in real time, as selling prices are more reliant on spot price indexing. In the case of uranium, the prevalence of hedged, long-term contracts at higher-priced, base-escalated terms insulated many producers from the lower spot prices. However, by the end of 2016 we began to see the rapid drop off of that long-term contractual coverage that was secured in the previous cycle, hence (finally) exposing producers to the depressed market conditions. The uranium market has, as a result, seen a steady drop in global uranium production from 2017 to the present. This has been a key supply development as it finally allows the critical drawdown of excess inventories over-hanging the market. These supply cuts have now created a gap between annual production (currently at 142 million pounds) and consumption (currently 183 million pounds) ranging from 40-50 million pounds U_3O_8 per year. This does not factor in more recent reductions in mine supply due to the Coronavirus pandemic which we will discuss in more detail.

With regards to the demand side during this period we also witnessed the closure of Japanese reactors (both temporary and permanent), and the gradual phase-out of German reactors in response to Fukushima. However, after a period of safety re-assessments and plant upgrades, we experienced a resumption of nuclear plant construction globally which remarkably returned global nuclear generation to pre-Fukushima levels in 2019. This growth has also been helped by chan-

ging attitudes towards nuclear power, particularly in the climate change community where it is increasingly being seen as an important contributor towards a lower-carbon energy future.

So, this begs the question why the post-2016 recovery to-date has been so slow and stubborn? The main reason rests in a key catalyst which has only recently begun to re-emerge. Namely, the procurement activities of the world's nuclear utilities. Just as long-term contractual coverage has been rolling off for uranium producers in recent years, this has logically also been the case for their counterparty customers, the utilities. However, rather than rush back into new long term contracts with producers, the utilities have been content to focus on spot and near term procurement with prices that reflect the near term over-supplied market (spot prices have fluctuated in the $20-$30 per pound range). This has been especially compelling considering the utilities had been paying $40-$60 per pound, or higher, under older legacy contracts signed in the previous bull-market (the most famous example being the Cameco/ Tokyo Electric Power contract at $100 per pound). The most appealing option for these short-term focused buyers had been the "carry-trade" facilitated by trading companies that buy spot material, carry it at historic low cost-of-money levels, and deliver two to three years out at fixed prices, which were at or below, $30 per pound. While this myopic view of future uranium supplies has had a very positive impact on the fuel costs of nuclear power plants, it has not provided the level of long-term incentive pricing for uranium producers to sustain or start up new production. In a uranium market that consumes between 180 and 190 million pounds of uranium annually, the forward contracting levels of utilities should be at or near those levels each year to avoid falling behind on future needs. To the contrary, UxC Consulting reported long term contracting levels in the years 2014 to 2019 averaged 75 million pounds per year (well below normal levels). Fortunately, a shift in buyer behavior began to be observed in the 4th quarter of 2019 and has continued into 2020, where utilities are now beginning to look to cover longer term needs in a more strategic fashion. The Coronavirus pandemic, and recent geopolitical developments with the U.S., China, Iran and Russia, will only reinforce the shift to a more strategic focus on securing future needs. This interaction between buyers and primary producers should support price formation in both the spot and long-term markets which tend to interplay off of each other (the spot having already begun to move upward). Of course, as the pool of cheap spot material has been depleted by spot purchasing and carry trade activities, the spot price will rise (hence putting upward pressure on long-term prices). A current debate among market observers exists as to whether this pool of spot supply is greater than expected, or conversely, is not that extensive after years of drawdown, but has simply not been tested yet by meaningful procurement levels. We should finally be able to see the answer to that debate with higher levels of market activity in 2020.

Over the past three years, several of the leading uranium producers - in particular Cameco and Kazatomprom - have announced production cutbacks, some of them substantial. When will these have a significant impact on the uranium spot price?

Although there were some earlier exceptions, global production cuts really began to kick in during 2017 and are still a somewhat recent development. However, the magnitude of these supply cuts has reached significant levels, taking some 40-50 million pounds from the market each year. With indications that these conditions are not abating, the cumulative impact is an accelerated drawdown of excess inventories. While this production discipline is quite widespread, affecting mines in the United States, Africa and Australia, the most profound impact has been seen in Canada. After shuttering their Rabbit Lake mine in 2016, Cameco took their world-class McArthur River Mine offline in 2018. To put this into perspective, the McArthur River operation is the world's richest uranium mine with ore grades 100 times the world's average. Production had been approaching 21 million pounds annually. Cameco made the difficult, but logical decision, to suspend this production and instead meet their very substantial long-term contract book from spot market purchases. Not only does this move reduce fresh supplies to the market, it also accelerates the drawdown of excess inventories through their purchasing activities. It also preserves valuable geological resources in the ground until they can be mined at financial returns commensurate to their discovery, and development value.

The longer the prevailing market prices remain below incentive levels, additional production will be removed from the supply equation. While all of these cuts add to the needed economic "supply destruction", the keys still remain in the hands of world leader, Kazakhstan. Their State-producer, Kazatomprom, has also announced cuts from "planned production" in recent years, but many market observers assert that more could be done to help rebalance the market more quickly. These moves have currently capped their output at about 59 million pounds annually, which represents 40% of global supply. Incidentally, this growing reliance on a single country, under Russian influence and in a volatile part of the world, has security of supply implications, and has begun to cause some utilities to rethink nuclear fuel diversification objectives.

The Coronavirus Pandemic has had profound impacts on the global economy, and we have now begun to see this affect major uranium operations around the world. Is this behind the recent dramatic increase in uranium prices?

Very substantial production cuts have occurred as a result of Coronavirus precautions to protect the health and safety of uranium miners, support staff and impacted communities. Since the first part of April, these announced mine shutdowns have affected approximately 60% of worldwide monthly uranium output. Production cutbacks from Canada's Cigar Lake, Kazakhstan's operations, Moab Khotseng in South Africa and the Chinese-owned Husab and Rossing mines in Namibia, are removing approximately 7 million pounds from the uranium market for each month these measures are in place. In answer to your question, while this has provided a tipping-point catalyst for uranium prices, the real driver has been the rebalancing of global supply and demand over the past 3 years. Put another way, this Coronavirus "black swan" event has served to accelerate fundamentals that were already significantly improved going into 2020.

The Trump Administration recently released its comprehensive policy document on nuclear energy, including an initiative to invest a total of US$ 1.5 billion over the next 10 years in a national domestic uranium reserve. What impact will this have on the US uranium industry and the entire uranium sector?

In 2018, the U.S. Commerce Department initiated a Section-232 investigation into whether the extreme levels of foreign uranium imports (now effectively 100%) were posing a national security threat to the United States. The Trump Administration had recently invoked tariffs on steel and aluminum imports under a similar 232 investigation. While the Trump Administration decided against tariffs or duties on foreign uranium imports in July of last year, the President did conclude that a threat to national security existed. As a result, Trump formed the U.S. Nuclear Fuel Working Group comprised of his Senior Cabinet Secretaries and Administrative Agency Heads. Their objective was to recommend policies to the President to revitalize and expand the domestic nuclear fuel cycle, including uranium. It should also be noted that in addition to the uranium requirements of the electric utility companies (nuclear is 20% of US electricity supply), the U.S. Defense Department requires U.S. origin uranium for the 108 reactors in the Navy fleet of aircraft carriers and submarines. The report titled "Restoring America's Competitive Nuclear Energy Advantage – A strategy to assure U.S. national security" was released by the U.S. Department of Energy on April 24th and provi-

ded the strongest policy support for nuclear energy since the Eisenhower Administration in the 1950's. A significant element of the plan was previously announced as part of the President's proposed FY 2021 Budget. In the budget, President Trump called for a 10-year program to establish a domestic uranium reserve funded at a rate of US$150 million per year. It is now formally supported by this policy document, and, while many of the specific details have yet to be announced, this is viewed as a very welcome stimulus measure providing supplemental demand for U.S. mined uranium, in addition to the broader market requirements of the nuclear utility companies. The Trump policy also highlighted the national security risks of America's over-reliance on imported uranium, particularly from State-owned suppliers such as Russia. It stated that the Administration will seek continued limits on Russian nuclear fuel supplies through the U.S. Department of Commerce.

Do you see large new mines starting production in the next few years? What (spot) price will most companies need to push the development of new mines and bring their projects into production?

This is the key question facing the uranium market in the coming years. While new production is not needed today, we do not have to go very far into the future to see that restarts of idled capacity, and new mine start-ups, are required to meet robust and growing demand for uranium. However, in a "Catch-22" very similar to the previous bull market, the market price incentives have simply not been present in the recent mid-$20's spot market (and while the depressed longer-term market has been impacted by lower-priced carry trades). With every year that these conditions persist, and significant long-term utility uncommitted needs are looming, the likelihood of a supply crunch increases. The lead-times to permit, license and construct new uranium mines can be 6-10 years in duration and no level of uranium price can shorten those development times.

This, of course, begs the question of what price levels are needed to incentivize the additional supply going forward. Speaking very generally, the incentive price to return idled capacity into production, or advance the start-up of the most competitive new mine developments, is likely somewhere in a sustained $40-$50 per pound level. A point in case being the McArthur River Mine where restart thresholds have been indicated to fall in this range. The most competitive new mine developments that can advance in this range are likely in-situ recovery operations, and those who are fully permitted and licensed (with smaller capital requirements) have an important first-mover advantage. For conventional mines requiring long permitting, licensing and development lead-times and large capital investment, they will likely require sustained prices in the $60+ per pound range.

Another more recent hurdle facing new mine developments has emerged in the form of falling global equity markets that have been hit hard by the coronavirus pandemic. This, unfortunately, coming at a time when uranium producers were already facing 10-year lows in their share prices. The substantial funding needed to advance the next generation of uranium mines has become more difficult to raise under these challenging, capital markets conditions.

What does the current demand situation look like? Who could be the driving force behind the revival of the uranium price in the future?

The current demand situation for uranium can be described as robust and growing. The previous bull market in uranium was, in part, fueled by future forecasted growth in nuclear power. Today, we are actually seeing these reactors being constructed and entering into commercial operation. The nuclear energy industry has seen 47 new reactors connected to the global grid in the last seven years, and 54 additional reactors are under construction. Global requirements for uranium are projected by the World Nuclear Association to top 200 million pounds annually in the coming years (2% annual growth in the reference case forecast).

Most importantly for current and future growth, we have begun to see public attitudes toward nuclear energy turn decidedly more positive in recent years. Former opponents of nuclear energy have softened their positions, or even spoken out in support of this large baseload source of carbon-free electricity. At recent climate change meetings such as the COP 25 in Madrid, there has been an almost panicked realization that despite billions of dollars and euros spent on renewables in the past 25 years, very little progress has been achieved in global carbon reductions. Nowhere is this more evident than in Germany where the Energiewende commitment to renewables (without nuclear) has only resulted in electricity rates 50% higher than that of nuclear neighbor, France (who produce 1/10 the carbon emissions per capita). In the process, Germany has grown increasingly dependent on Russian natural gas, and ironically, French nuclear-generated electricity imports. None of this particularly comforting for Europe's leading economy which is based on energy-intensive manufacturing exports. This point is not to single out Germany's energy policy, but to highlight the difficulty, if not impossibility to achieve meaningful carbon reductions without a significant component of nuclear power in the energy mix.

Many of the emerging markets struggle to energize their economic growth without adding to extreme levels of harmful air pollution in their major cities. The good news is that nuclear energy can solve those problems with production of highly reliable, 24-7, carbon free, clean air electricity.

Another growth market for uranium is emerging from Small Modular Reactors ("SMR's"). These are not the 1,600 Mwe large reactors with large capital costs and long construction times, but rather the small 25 or 50 Mwe units that can be constructed in a factory and shipped on site. These scalable units can provide carbon-free benefits while competing on cost with cheap natural gas and can co-exist with grid-heavy renewables due to their load-following characteristics. They are very similar to the compact reactors that have powered aircraft carriers and submarines safely since the 1950's, and can be ideally marketed to smaller grids, island nations, or remote locations (including mining operations and military bases).

In summary, what do you expect for the uranium sector in the next two to three years?

In summary, expect very good things from the uranium market in 2020 and beyond. This optimism is grounded in the most fundamental factors of supply and demand. Uranium has suffered a long, severe, bear market, but appears to have turned the corner. Any economist will tell you that no commodity will stay down, nor, go up forever. Our uranium market is no exception, and it's unique and inefficient nature has caused market forces to manifest more slowly into higher prices. In turn, this should be good news to investors with higher prices in an under supplied market likely to drive appreciation in uranium equities. The continued growth in global nuclear energy, production discipline by existing producers and underinvestment by new producers, will test the market fundamentals in the coming months. As global utilities return to more normal procurement levels, more upward pressure on uranium prices should develop. The Coronavirus crisis has shocked economic markets in ways few imagined and will likely grab the headlines for some time to come. In the meantime, however, a very compelling supply and demand narrative for uranium has emerged and should not be overlooked by resource investors seeking out-sized commodity gains in the coming months. Opportunities exist with the well-run uranium companies that are positioned with quality assets and management teams that can capitalize on this story. The Coronavirus pandemic and resulting mine cutbacks could serve to be the tipping point catalyst to accelerate the already improving uranium market fundamentals.

Skyharbour Resources

World-class uranium project plus two top development partners

Jordan Trimble, CEO

Skyharbour Resources is a Canadian uranium and thorium development company focused on exploration projects in the Athabasca Basin. The company holds majority interests in five projects in the wider Athabasca Basin, covering a total of 230,000 hectares. With Azincourt Uranium and Orano, the company has excellent development partners for two of its projects.

Moore Lake Uranium Project – Situation and Deal

Skyharbour Resources' current flagship project is called Moore Lake and is located in the far southeast of the Athabasca Basin, only about 10 kilometres southeast of Denison Mines' mega-project Wheeler River and fairly midway between the Key Lake Mill and the McArthur River Mine. From Denison Mines, Skyharbour Resources acquired the Moore Lake Project in July 2016, consisting of 12 contiguous claims totaling 35,705 hectares.
The acquisition of 100% of Moore Lake required Skyharbour Resources to transfer 18 million of its own shares to Denison Mines, making Denison the largest single shareholder in Skyharbour. In addition, CA$500,000 in cash payments and CA$3.5 million in exploration expenditures were required to earn a 100% interest in Moore Lake. This was realized in August 2018, well ahead of schedule. All in all, an absolute bargain price considering that more than CA$35 million has already been invested in exploration at Moore Lake to date. This has included more than 370 drill holes with a total length of over 135,000 metres.

Moore Lake Uranium Project – Exploration Successes

Upon completion of the Denison Mines acquisition deal, Skyharbour began an initial 3,500 metre drill program in February 2017. High radioactivity and uranium mineralization were encountered in three of the first five holes. The first hole in the Main Maverick Zone intersected 20.8% U_3O_8 over 1.5 metres within a 5.9 metre interval of 6.0% U_3O_8 at depths of 262 metres and over. The fourth drill hole also returned 5.6% eU_3O_8 over 1.8 metres within a 10.7 metre interval with 1.4% eU_3O_8 from a depth of 267 metres. Finally, Skyharbour Resources reported further significant drilling successes during 2017. These included 2.25% U_3O_8 over 3.0 metres at the Main Maverick Zone and 1.79% U_3O_8 over 11.5 metres at a new discovery called the Maverick East Zone, including 4.17% U_3O_8 over 4.5 metres and 9.12% U_3O_8 over 1.4 metres.

In 2018, the series of sensational drill results continued, including 3.11% U_3O_8 over 1.8 metres and 1.33% U_3O_8 over 7.8 metres.
Further drilling successes were reported in 2019. These included 2.5 metres of 2.31% U_3O_8 at the Maverick Zone.

In February 2020, the Company started a drilling campaign of approximately 2,500 meters.

Preston Uranium Project – Location and Exploration

The Preston Uranium Project is located southwest, just outside the Athabasca Basin in the Patterson Lake region. It is bordered to the north by Fission 3.0s and Nexgens project areas, among others. The Preston Project, which covers approximately 121,000 hectares and in which Skyharbour Resources holds a 50% interest (the remaining 50% is owned by its partner Clean Commodities Corp.), is located close to the high-profile Nexgen (Arrow) and Fission Uranium (Patterson Lake South) discovery.

To date, the two partners have invested approximately CA$ 4.7 million in the exploration of the huge license areas. They have identified 15 areas with similar indicators to Patterson Lake South and Arrow. A large number of additional drill targets also provide a high exploration potential.

Preston Uranium Project – Option Agreement with Orano

In March 2017, Skyharbour Resources and its partner Clean Commodities Corp. (now Dixie Gold), Skyharbour Resources entered into an option agreement with Orano (formerly AREVA). Under the terms of the agreement, Orano can earn a 70% interest in part of the Preston Uranium Project, approximately 49,600 hectares in the western portion of the total project, by investing CA$7.3 million in exploration over 6 years and making an additional CA$700,000 in cash payments. In March 2020, Orano started an exploration campaign that will total approximately CA$735,000.

Preston Uranium Project – Option Agreement with Azincourt Uranium

Also in March 2017, Skyharbour Resources entered into a second option agreement with Azincourt Uranium Inc. for the East Preston Uranium Project. This is located in the eastern portion of the overall Preston project and covers an area of approximately 25,300 hectares. Azincourt Uranium may earn a 70% interest in the East Preston Uranium Project by pre-transferring 4.5 million treasury shares to Skyharbour Resources and its partner Clean Commodities Corp. and making cash payments totaling CA$1 million over three years and investing a further CA$2.5 million in exploration and development of the project area. This agreement was extended for one year in April 2020 in exchange for the transfer of a total of 5 million Azincourt shares to Skyharbour and partner Dixie Gold.

At the beginning of 2018, Azincourt was able to identify several important targets for further exploration by means of geophysical gravity studies. In 2019, a VTEM survey was used to locate seven new target areas. The first drilling campaign also confirmed the prospectivity of the East Preston Project as the underground lithologies and graphitic structures intersected at East Preston are very similar to those of the Patterson Lake South, Arrow and Hook Lake/Spitfire uranium deposits in terms of rock and rock formation. A drilling campaign commenced in February 2020, which included over 2,000 metres of drilling.

Other top projects

In addition to Moore Lake and Preston, Skyharbour Resources has other top projects.
These include the Falcon Point Uranium & Thorium Project. This covers 79,000 hectares and is located approximately 55 kilometres east of the Key Lake Mine. In 2015, Skyharbour Resources was able to report a NI43-101 resource of 6.96 million pounds of U_3O_8 and 5.34 million pounds of ThO2 for Falcon Point. The project has geological and geochemical similarities to some of the best projects in the Athabasca Basin such as Eagle Point, Millennium, P-Patch and Roughrider. Recent sampling in the northern part of the license area has returned up to 68% U_3O_8.
Another top project is Mann Lake, which is directly adjacent to the joint venture project of the same name between Cameco, Denison and Orano. Mann Lake is strategically located approximately 25 kilometers southwest of Cameco's McArthur River Mine and 15 kilometers northeast of Cameco's Millennium Uranium Deposit. A 2014 Cameco drill campaign encountered 2.31% eU_3O_8 over 5.1 metres including a 0.4 metre interval of 10.92% eU_3O_8.

Upcoming catalysts

Skyharbour Resources and its partners are expected to see several significant developments over the coming months. Skyharbour Resources is conducting its own winter drilling program to confirm previous drilling successes. Orano has started an exploration program. Azincourt has already been able to identify various drill targets by means of geophysical studies which are currently being

drilled. Skyharbour Resources plans to partner its projects through its „Prospect Generator Model“ in order to both advance the projects and generate additional funds to advance its flagship Moore Lake project.

Summary:
Top projects, strong partners and a good business model

Skyharbour Resources excels above all with its top projects, its strong partners and its good business model. The flagship Moore Lake project stands for itself anyway. Top grades and a huge exploration potential in the immediate vicinity of some of the world‘s best uranium deposits on the globe: there should be some top news to come! Two top development partners have been acquired for the giant Preston project. These partners will not only bear the sole exploration costs over the coming years and thus rapidly develop Preston but will also pay a substantial amount of cash to develop Moore Lake. Skyharbour Resources‘ Prospect Generator business model is already paying off. Skyharbour Resources also has a technical development partner in Denison Mines, the largest single shareholder, whose CEO David Cates also sits on the board of Skyharbour Resources. This makes Skyharbour Resources one of the top picks in the uranium sector for years to come, with the potential for several bull‘s-eyes to come.

Exclusive interview with Jordan Trimble, CEO of Skyharbour

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

- The Company completed its 2019 diamond drill program totalling 2,783m in 7 holes at its flagship 35,705 ha Moore Uranium Project. Hole ML19-06 intersected a broad zone of uranium mineralization from 273 metres to 285 metres downhole within the growing Maverick East Zone which Skyharbour discovered in 2017. The interval returned 0.62% U_3O_8 over 12.0m with a high-grade basement-hosted intercept returning 2.5m of 2.31% U_3O_8.

- In the fall of 2019, Skyharbour completed a UAV-MAGTM survey that successfully identified high-priority, cross-cutting features and structures along the Maverick corridor. Identification of these features has helped refine and identify additional drill targets for the 2020 diamond drilling programs at Moore.

- As a part of the Company’s prospect generator strategy, the Company’s partners Orano (previously AREVA) and Azincourt both completed exploration and drill programs at the Preston and East Preston projects respectively with follow-up work planned through 2020.

- Finally, Skyharbour raised CAD$1.82 million late in 2019. Institutional investors and family office money accounted for a large portion of the financing. The company is fully funded to complete its upcoming work programs at its Moore project and will also receive cash payments from its option partners in 2020.

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

- The Company has been drilling at its Moore Project this year with a focus on exploring the underlying basement rocks which are relatively untested at the project and are the host rock for most of the recent high-grade discoveries in the Basin. A 2,500m program is underway to delineate basement feeder zones and source mineralization for some of the higher-grade zones present at the Moore Project including mineralization of up to 21% U_3O_8 at the Maverick Zone. The program is following up on high grade basement-hosted uranium at the East Maverick Zone where new geophysical techniques and new geological modeling have greatly refined the targets in addition to testing other target areas along strike.

- Skyharbour’s partners Orano Canada and Azincourt have both commenced exploration and drill programs which will contribute to the news flow and increase the odds of exploration success with multiple projects being advanced simultaneously. These partner companies can earn up to 70% of the Preston and East Preston projects through project consideration totalling $11.5 million in exploration and cash payments.

- The Company has been staking additional claims adding to its current landholdings and is actively looking to option and joint venture out these other projects to strategic partners.

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

- Uranium pricing has ticked up sharply after the March 23rd announcement that the Cigar Lake JV partners had temporarily shut down the mine (approx. 1.3mm lbs / month of production and 13% of global primary mine supply) due to the COVID-19 crisis. The market reaction in uranium equities, increasing amidst a volatile macro backdrop, suggests that this event might be the spark to rebalance the uranium market. Nuclear utilities are facing expiring contracts, and large producers such as Cameco are having to purchase material on the spot market, as the supply deficit between primary mine supply and reactor requirements continues to grow at an unsustainable level. A unique set of underlying fundamentals and drivers, including sticky demand and major supply curtailment, could lead to a complete revival of the sector in 2020.

ISIN: CA8308166096
WKN: A2AJ7J
FRA: SC1P
TSX-V: SYH

Shares outstanding: 63.9 million
Options/warrants: 32.5 million
Fully diluted: 96.4 million

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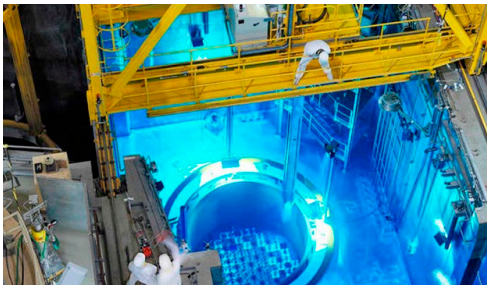

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