

Nick Piquard

Hi everyone, I'm Nick Piquard. I'm a Portfolio Manager and Options Strategist at Horizons ETFs and welcome to the latest episode of the Generations ETFs Podcast. As a Portfolio Manager at Horizons, in addition to options trading, I've spent many years trading energy commodities and stocks. These are the resources that fuel the world around us. Of those, the one that's captured my attention lately has been uranium. That's one of the reasons that I helped launch the Horizons Global Uranium Index ETF in 2019.

This is a sector that I believe has the potential to revolutionize the way we generate energy to sustain the planet. Today, I have the pleasure to welcome to our program, David Talbot. David is a Managing Director and Head of Research at Red Cloud Securities. He graduated as a Geologist from the University of Western Ontario, and worked for almost 10 years in the gold exploration industry with Placer, Franco-Nevada and Newmont. He transitioned over to capital markets in 2003, joining Dundee Capital Markets and for the next 18 years, he's covered uranium, precious metals and battery metal companies.

He has been to 68 countries and has seen well over 100 uranium projects worldwide. He has recently moved over to Red Cloud Securities to head up its research department and focus on uranium stocks. We're very lucky to have David join us today. David, welcome to the show.

David Talbot

Thank you, Nick. I appreciate you having me on your podcast today.

Nick Piquard

Perfect. So, let's talk a little bit about uranium. 10 years ago, the outlook for uranium was quite bright. The Chinese were to become the next big producer of nuclear energy, and India was fast on their tail. Then of course, as we all know, disaster struck and the tsunami that killed over 20,000 people along the Pacific also knocked out the Fukushima Daiichi nuclear plant. And the rest is history. Japan shut down all of their reactors, Germany shut down half of their reactors and committed to phase out nuclear all together, and the U.S., the largest nuclear power producer at the time, committed to review all of their 104 reactors to ensure safety, and also compete with the shale gas revolution that was rendering the nuclear power plants non-economic.

So that was a lot to come back from. Now, David, why don't you tell us, what is the state of nuclear energy today and uranium demand?

David Talbot

Thank you very much, Nick. I think in brief, the industry is in pretty good shape and the outlook is even better. Demand continues to rise, government support is increasing. Particularly in the U.S., China, and Russia, uranium is getting recognition as a green energy source, or I should say nuclear power that uses uranium, and China is on track to become the largest nuclear power producer in the world within this next decade. Uranium supply has been falling, there have been significant mine curtailments, the COVID-19 impact was severe, but after a decade of low uranium prices, what we've seen is a lack of investment necessary to sustain these production levels. So there's been utilities sitting on the sidelines and ultimately they've got to buy uranium to feed their power plants.

So I do want to say, a lot of people mentioned Germany. I never do. Until six months before Fukushima, Germany was exiting nuclear anyways and they were using less than 2% of global uranium requirements as it was. As a poster child for an industry in trouble from a western state, no it's not representative in my opinion. Now that said, there was about a 10 percent decline in uranium requirements right after Fukushima. Certainly the bottom fell out of the price and there were shut downs in Japan, there were shut downs in the U.S., and elsewhere, but I think we've come through most of that right now.

State of the industry right now, I think it's even stronger than it was pre-Fukushima, there's 443 reactors in operation. That's the same number as 10 years ago. Global demand is about 177 million pounds of U308 and we see this growing at about two and a half to three percent annually. There's several new countries that have entered the sector in the last few years. United Arab Emirates is one that just started up a reactor recently, and they've got three more under construction, 4 more planned after that. And many new countries are coming down the road. Russia, I think they do a great stop as a one-stop-shop for any countries that are looking to go nuclear. They help the countries with regulations, funding, construction. They even provide fuel and waste handling for the country as well. I think about one third of all new reactors in the world are built by Russia at various points across the globe.

That's a lot of new construction. There's 53 that are under construction right now. China plans to build and triple its capacity by 2030, and that will put China 50 percent ahead of where the U.S. is right now. You mentioned India, that's another 21 nuclear reactors by 2031. And Japan still wants to target 20 to 22 percent nuclear. And the U.S. it's not going away either, they're building a couple new reactors, they want to maintain 20 percent of their energy mix from nuclear. So what has changed in this world, is that the world is focused on lower greenhouse gas emissions and climate change.

The only two ways to do that is with base load power, hydro or nuclear. And you look at Biden's recent White House fact sheet, on the two trillion dollar infrastructure plan, made it clear that they're going to leverage nuclear and hydro going forward. This could mean small modular reactors as well.

Nick Piquard

You bring a lot of very good points, and I think when people think of nuclear, they really think of it as a dying industry. And I think part of the reason is because so few reactors have been built in the western world, but if you look at the actual statistics, as you said, there's over 50 reactors being built today in the world. Is that enough to ensure more uranium demand given there's also the ones that are getting old and are slated to close?

David Talbot

Absolutely, there are 54 reactors right now under construction and plans to build 100 more right after that. This year alone, we're looking for 12 to 15 new reactors scheduled to come online. And while we do expect some closures in the U.S. this year and elsewhere, I think we are seeing many reactors lives being extended. There's another thing I want to point out here. I want to warn investors that reactor count is not a great metric. It doesn't tell you how much nuclear power generation or uranium demand there is out there.

I'll use an example, going back to I believe it was 2016, there were 10 reactors that closed that year and 12 reactors started up. And the uranium requirements plus 2 net reactors actually doubled. The issue is the old reactors that are closing, they tend to be smaller. Often sub 700, 500 megawatts in size. The new reactors coming online, they're big. 750, 1000, 1200 megawatts. More electricity generation and higher efficiency, but still higher uranium demand for those reactors.

Nick Piquard

I think that's something people overlook a little bit. Everyone's talking about the number of reactors that are working right now but people don't really think about the amount of uranium each reactor necessitates. Those old reactors are definitely a lot smaller than the new ones that are coming online. I think that globally, we've now reached a new record for power generation that we hadn't seen since Fukushima. So it seems like uranium demand is on good footing, but we still have to worry about closures in Germany, potential closures in the U.S. Are you concerned about that at all?

David Talbot

There's closures for different reasons and it is a little bit difficult to determine how many reactors are going to close. Of the 443 reactors that are in operation right now, 70 percent of those are over 30 years old, 25 percent of them are over 40 years old. You look at the IEA, International Energy Agency, they suggest that about 200 reactors are going to shut down over the next two decades. However, what we've seen is as these reactors get closer to their end of life, or end of original planned life, it's been suggested they can run for, instead of 40 or 60 years, they can run for 60 or 80 years. A lot of these reactors are being extended beyond their original lifespan. To the tune of 50 to 100 percent increase over original expectations. So I think we are going to see a little bit more of that going forward.

Nick Piquard

I think that politicians who've made these commitments for zero gas emissions, when they see how much these nuclear power plants are contributing to their zero emission targets, they realize that spending the money to extend a plant is their only way to ensure these targets are met. If we look at the US, they're currently the largest nuclear energy generator in the world, so let's talk a little bit about the U.S.

Congress just passed a bipartisan bill called the American Nuclear Infrastructure Act. It's aimed at supporting nuclear energy and new nuclear technology. How significant is that for the industry?

David Talbot

I think this is key. This is all about green energy. This is a two trillion dollar infrastructure plan that's positive for nuclear, it's positive for electric vehicles, rare earth elements, other critical elements. I think besides trying to kick-start a COVID-19 impacted economy, the goal of this spending spree really is to "position the United States to out-compete China." There's a lot to go there, but I think we should at least be pleased with the attention that was giving nuclear power. And then I said this earlier, specifically that it's being recognized as a key source of base load clean energy along with hydro.

This infrastructure spend here, there's going to be spending on modernizing power generation, delivering clean energy, leveraging the pollution-free energy sources such as nuclear and hydro. They're going to invest in climate R&D priorities such as advanced nuclear, and there's also going to be a push towards supporting American made reactors, nuclear power plants, nuclear fuel. All of this is good for uranium, good for green energy. And then beyond just that recent infrastructure bill, there are a lot of programs in the U.S. government that were designed to help uranium and nuclear power. The U.S. Nuclear Fuels Working Group, that established a uranium reserve and they've got about 75 million dollars in funding this year, and 150 million dollars in funding per year over the next decade to buy uranium enrichment services. The Russian suspension agreement was also extended and that's even reducing uranium imports from 20 percent to 17 percent. There was an executive order supporting domestic mining of critical elements, of which uranium is part of that as well and the DOE has stopped selling uranium to fund its cleanup work at several nuclear sites.

Nick Piquard

It's important to note that all of these have really happened only in the past couple of years. Indian Point, which is one of the nuclear plants in New York State, they're slated to shut down this month and I believe there are two other plants in the U.S. that are slated for closure this year. Indian Point provides 25 percent of the electricity for New York, and a lot of that will have to be replaced by fossil fuels, at least in the short term. Is there a political will to stand behind nuclear energy and support these plants as they are right now, slated to close prematurely?

David Talbot

I do think there is political will at the federal level. There's climate change and other environmental issues to worry about, energy security, energy diversification. It's obviously a safe, reliable base load energy source. And some of this should filter down to the state level. The issue with the state level, that is where economics come in to play. So while you've got operating costs that can be relatively low compared to other sources of power, on a per kilowatt hour basis, there's capital outlay, massive capital outlay and red tape and this could all be a detriment to the economics of nuclear power plants.

The other issue here is that it's not a real level playing field. Gas is cheaper and smaller, no doubt about it. That's just capitalism at its work. But you've got heavy oil and natural gas power plants that are often subsidized by governments for not running and simply being on standby to help out with the peak load periods. So while nuclear power and hydro keep the lights on, particularly during cold snaps when gas operators just can't run, they aren't receiving the same revenue. Essentially the governments are giving a premium to fossil fuels plants and I think that has to change.

Nick Piquard

You make a very good point here. When nuclear power plants are on, they deliver consistent energy that's zero emission, compared to solar and wind, which obviously are much more intermittent by their very nature. Let's flip over here to the supply side. The demand side has been consistent, but I think the supply side is almost more exciting in terms of the changes that we see in the past couple of years. But even starting 10 years ago, Kazakhstan kind of became the new leader, almost the Saudi Arabia of uranium mining, as they developed ISR leaching, which is an innovation that allowed them to become a low-cost leader. I would compare it to shale revolution, but for uranium. Can you tell us a little bit about Kazakhstan and what has changed for them in the past few years?

David Talbot

Sure. Like you said, this is the more exciting side of things. I'm a Geologist, you're an investor. We deal mostly in the uranium stocks, right? This is the side of the equation that we pay most attention to and it's the one that has most of the variability as well. I think Kazakhstan in general was a disruptor. 15 years ago this country was nowhere, and suddenly it leads the world. Now it's producing 42 percent of the world's uranium. Almost 60 million pounds in 2019. It was down by about 15 percent to 50 million pounds last year but the global production also fell between 20 to 25 million pounds. We do expect Kazakhstan to be down about 20 percent through 2022 as well.

You touched on that, these mines are ISR, in situ recovery or ISL, in situ leach. So they are relatively low cost. The processing happens in the ground. But there is potential if these mines ramp up again in the next few years, especially if the Kazakh Tenge weakens further against the U.S. dollar and companies can make more money. We have seen Kazatomprom, the largest producer in the country become more fiscally responsible lately now that it's a publicly traded vehicle and in the face of weaker uranium prices. But given its low cost, that could be a first mover again as uranium prices rise. That said, I think things are changing longer term in Kazakhstan. I think the low hanging fruit is gone, costs are rising, wells are getting deeper, structures are getting more complex. That's more material in the hole, longer to drill and figure out. There's more calcium out there as well and finer grain sand which is coming up the circuits and impacting leachability. We do expect Kazakhstan to remain the global production leader here, but I think that this global cost gap is going to shrink a little bit.

Nick Piquard

And I think as you mentioned, what's important to think as well is Kazatomprom's perspective has changed quite a bit since they've gone from being a state owned company that wasn't traded on the stock exchange to now somewhat privatized company focused on maximizing profits. And then of course, the other leader in the uranium mining world is the Canadian company Cameco. They are the bellwether in Canada. Now what's interesting about Cameco is despite the very low prices that came to the uranium market after the Fukushima disaster, Kazakhstan kept its production going and growing and Cameco also kept producing. Why did they do that? In spite of these low prices, why did it take so long for them to change the production profile?

David Talbot

I think ultimately it's because Cameco was sheltered from the lowering costs to a certain extent. Cameco obviously is blessed with some large mines, some high grades, and therefore some relatively low cost operations, relatively speaking. I think probably more important in this case to look at was its massive uranium sales contract book. Its contracts are typically in the nature of 60 percent fixed cost, or 40 percent market pricing. Cameco, and they're not alone, there's other companies out there that have contract books that delivered for years and years, post-Fukushima as well. They all sold for years at higher uranium prices than what spot was providing. Maybe that was what they were supposed to do from a corporate standpoint. However, it didn't do the market much good because it was just excess supply that hit the market.

Nick Piquard

And of course a lot of that excess uranium that was being sold on contracts was to Japan and they couldn't use it so it really led to an increase in inventory as time went by. Now in 2018, that was, for me, one of the big signs that a turnaround was possible in the uranium market, was when Cameco closed the biggest plant in the world, McArthur River. There have been several other mines that have closed as well since then. As of today, how many uranium mines are in production and how much uranium is being produced?

David Talbot

Uranium production declined to about 123 million pounds last year. You did mention McArthur River and that was a shock to the system when that closed. I think people assume that because it was a high grade mine and the world's largest, they presumed it was low cost. When that announcement went out December 4th, 2017, uranium prices jumped two bucks a pound on that announcement. That's only the tenth time in

the last 15 years that uranium prices moved more than two dollars in a single day. Incidentally, we saw another one of those two dollar moves here about a month ago. We'll get to that later, I hope. We have seen some major operations come offline. McArthur and Rabbit in Canada, Cominak in Niger, Ranger in Australia, Akdala and Zarechnoye in Kazakhstan. Almost everything in the U.S. has come offline and that got us down to 123 million pounds. Uranium production, this is the issue with this industry, is it's dominated by just a few mines. The top 10 mines in the world produced 55 percent of all uranium in 2019.

That's even scarier when you start talking about jurisdiction. Uranium is only produced in 14 different countries. The top seven countries produced 94 percent of all the uranium. And when you consider Kazakhstan, Russia and Uzbekistan are in there along with Canada, Australia and maybe Niger. You've got some political risk built up.

Nick Piquard

Absolutely. What about the pandemic? When we look at the oil and gas markets, the pandemic had a massive impact on the oil demand. We saw last year prices even going negative, something I don't think anybody ever imagined. What was the impact on the uranium market in terms of the demand and supply?

David Talbot

I think last year we saw 35 percent of global production come offline. Certainly, a lot of it was COVID-19 related, I'm not going to say all of it was because some of those mines were up against their end of life. But Cigar Lake, for example, that was the world's second largest mine, largest at the time that was producing. Yes, that mine is certainly getting ready for production now to resume, but there's no timeline on that yet. It depends how quickly Cameco can get its people back and trained and safe. Cameco has not provided guidance yet for this year.

While the pandemic did affect production over the short term, I think the real issue is some of those turn downs were permanent, like Ranger and Cominak. Here the issue is, no new mines ready to come in and take their place. Uranium prices have been so low for so long, there's been little incentive to explore for uranium, or to move the development of projects forward. There's no real projects sitting here in the wings.

Nick Piquard

The other thing that's always notable about the uranium industry, is these project, these uranium mines, because of all the permitting required and whatnot, it takes a long time to get these projects off the ground.

David Talbot

Absolutely.

Nick Piquard

Now, getting back to the demand side, in tonnage terms, what is the annual demand for uranium today, and how does that compare with the supply side?

David Talbot

Forgive me, I don't think in tons but 177 million pounds, so like I said, the supply is at 123 million pounds. It could maybe rise to 130 million pounds this year depending on how sustained some of these COVID-related closures are. We have a gap right now of about 50 to 55 million pounds in there, between demand and supply that is really filled by secondary supply. This is unique to uranium in this sense. There was so much product built in the 1950's to support, we'll call it the atomic age, if you will. There's a lot of sources of uranium around. Secondary supply essentially stems from non-mine sources. Perhaps lower or high enriched uranium stockpiles, leftover uranium tails, excess inventory held by governments or utilities, or underfeeding.

We have seen the secondary supply step up here and fill in the gap over the past several years. There is a trend for that to decline. The U.S. Government, like I mentioned before, is no longer going to sell its excess uranium into the spot market to help fund its cleanup of nuclear sites. There's no more highly enriched uranium coming out of Russia from the down-blending of nuclear weapons. Underfeeding, as well, is in decline. Essentially underfeeding is enrichment plants continuing to turn out enriched uranium because it was cheaper to keep the centrifuges running than it was to shut those down. That's no longer the case, they have shut down a lot centrifuges so therefore, the underfeeding has dropped off and beyond that, once we get back to contracting, those enrichment facilities are going to be busy again so they're not going to have time to underfeed. They're going to be working for their clients.

Nick Piquard

That makes sense. I think one of the things that I've noticed in the markets recently, is even outside of Kazatomprom and Cameco cutting production which obviously helps reduce supply, we've recently seen several uranium companies that have raised money in the equity markets and decided to buy physical uranium with the proceeds. I don't think I've ever seen that in my career. Why would they do that?

David Talbot

I think this is new and big and exciting and I've covered this sector since 2007, and I've never seen uranium mining and development companies come out and buy in the spot market uranium like they had this year, at least without having delivery contracts at the time. Let's completely exclude the two to three physical uranium companies out there that do that as normal course of business. You've got Uranium Participation, Yellowcake and Uranium Royalty Corp. But beyond those three, uranium companies have removed almost seven million pounds from the spot market over the last month and a week, or so.

Denison started the trend when it purchased 2.5 million pounds in March. Uranium Energy followed the next day when it removed another 705,000 pounds. And then increased total purchases to about 2.1 million, and then Boss Energy after that, it purchased 1.25 million pounds. Encore, another couple hundred thousand pounds. Really the result was some spot market strength, there. We saw prices rise back up over 30 bucks uranium, which is back in line where the price was at the beginning of the year.

I think these companies are really buying the spot market for different reasons. Some are there to pad their treasuries, to help fund capital projects, they might use that treasury to help themselves raise debt, for example. Others are going to use it to de-risk initial startup. Others might be speculating on higher prices. That's typical of the physical companies as opposed to some of the others. But I think while the spot market did react well to the removal of these pounds, keep in mind that's not necessarily sustainable. These pounds will have to re-enter the market somewhere down the road. I think our hope is they're delivered into long-term contracts, rather than back into the spot market.

Nick Piquard

It seems that producers believe that uranium prices could go higher based on how they've been acting. You have Cameco shutting down, key assets, you have Kazatomprom curtailing growth. In the face of what looks like increasing demand, and you have those smaller companies like we just talked about that are buying physical uranium. In the land of economics, what we're all taught is higher prices will lead to lower demand. Will these higher prices have an impact on, again, already the U.S. nuclear plants are struggling with economics, everyone keeps on saying that nuclear is a very expensive form of energy. Although, that really depends on how you look at it. Do you see these high prices having an impact?

David Talbot

If prices go higher, I don't think there will be any real uranium demand change. Keep in mind, the only significant use for uranium is nuclear power. Nuclear power plants are fairly insensitive to uranium prices. It's only a fraction of its operating costs, enrichment and conversion, everything adds to that. So we're looking at sub 30 percent of its operating costs. Uranium prices going up is not the be all end all of things. I think there might be a couple things that do happen here. First of all, there might be a little more investment demand, which does take product out of the market. This will likely propel spot prices even further higher like we've seen over the past month or so.

Secondly, is I think we might see uranium trading and contracting starting to return to a normal level as spot price and term prices converge. Going back pre-Fukushima, and even pre-2007 the last peak, term and spot prices typically moved in tandem. I think what happened is when spot prices got way too high, a lot of contracting was done and that tided over a lot of utilities for a decade or more. And then over the past several years, we've seen spot very, very low, and term prices a little bit higher. Not high enough that the producers want to sell, but there's a big enough gap between those two prices that utilities didn't necessarily want to buy either.

I want to point out trading because this is an important part. Going back to 2007, only nine percent of the total uranium trade was in the spot market. Now, spot trading can be upwards of 70 percent. Last year, for example, spot trading was 92 million pounds. That was 63 percent of all trading. Despite the fact that none of those pounds go to a reactor. Term volumes last year, 53 million pounds, even though reactors last year needed 177 million pounds. I don't think that's sustainable. I think the utilities have to come back, start buying product again from the producers. There's a nearing volume of uncovered uranium requirements by the nuclear utilities out there that will have to be purchased from the producers. But as mines close down, there's going to be less uranium to buy out there.

Nick Piquard

I think you bring up a very good point about the utilities and the uncovered demand. I almost wonder whether, at least in the U.S., the uncertainty around their decision whether to close or not their plants, really affects their decision to contract long-term. If we see the U.S. government making some headway in supporting these plants, perhaps that could lead to more decisions on long-term contracting.

David Talbot

The issue here with the U.S., and you're probably referring specifically to the U.S. uranium reserve, which sort of came out of the nuclear fuel working group, which came out of that 232 petition by a couple firms. Yes, I think it certainly is positive to a certain extent, that the U.S. government has put in 73 million for this year, to get it up and running. And then probably starting next year they'll start to buy about 150 million pounds worth of uranium and enrichment services. There's still a little bit of uncertainty as to what they're going to pay, how much enrichment services are going to be included there, and how many pounds. I estimate that's between 1.7 and 1.9 million pounds. When you think 1.9, call it 2 million pounds in a world that needs 177 million pounds, even the U.S. that needs almost 45 to 50 million pounds, that's not an awful lot of product.

I think maybe at the most they can keep two mines going full capacity, but I don't know how they're going to spread it out amongst the various players in the industry in the U.S. We will see. If they can deliver 60 buck uranium to somebody, somebody's going to be happy, but it's not going to go far.

Nick Piquard

Agreed. It does sound like the current piece of primary uranium production, it's such a big deficit to existing demand, if we see inventories normalize fairly quickly, what kind of prices do new mines and new projects need to incentivize more production?

David Talbot

I think the easier production you got on the line is some of the product that went offline during the last drop. Gauging from where production shrank as prices were going down, I think we'll probably be needing at least well into the 40's before we get some of the low cost ISR production

back. Or even McArthur River back up and running. And then some of the U.S. and Canadian conventional operations might resume as prices rise back up above 50 to 60 bucks. But after that I think we're going to need easily 60 or 80 bucks uranium in order to really sustain this industry. There are very few large operations ready to go into production. None the size of Ranger that just went offline.

Nick Piquard

Looking to the future, Alberta just recently announced that it was going to join Ontario, New Brunswick and Manitoba to support the development of next generation SMRs, Small Modular Reactors. And if you look around, there's been a lot of these initiatives globally. Is this something that you're looking at, and what could that mean for uranium demand in the future?

David Talbot

Small Modular Reactors are something we're watching. Keep in mind, the military has been using Small Modular Reactors for decades now. The science isn't new. I do see the need for small reactors in commercial use. Helping provide clean energy sources in remote areas, for example. But I do think it's still early days in there and it's a little bit difficult to see how much of an impact this will make. And when comparing it to the new build out of China, India, and the need for base load demand in the world. Especially in response to growing populations and environmentally responsible electrical generation around the world, I don't think it's going to be material at least for another couple decades.

Nick Piquard

In your opinion, the real story right now is the ramp up in the existing nuclear fleet, especially out of the emerging markets. Sounds like China and India are really going to be the leaders of nuclear energy in the future.

David Talbot

Absolutely.

Nick Piquard

David, you work at Red Cloud Securities and I understand you guys have a conference on uranium coming up. Can you tell us a little bit about that?

David Talbot

Perfect, Nick. Thanks for the plug opportunity. Red Cloud is hosting its annual uranium conference. It's on Thursday, May 13th. I will have presentations from 18 different uranium companies we work with. Plus, there will be a keynote address from Grant Isaac, who is CFO of Cameco. I will also hold a fireside chat along with three of the largest uranium investment firms. Sachem Cove, Segra and L2. Anybody that's interested in attending the Red Cloud uranium conference, May 13th, you can register at redcloudfs.com. Thanks for the discussion.

Nick Piquard

Perfect. Thank you very much. Thanks David for being on the show. It was a pleasure having you. It sounds like we have a lot of exciting things happening in the uranium sector today and a lot to watch for over the next six months to one year. We hope to have you on the show again for an update.

David Talbot

Yeah, it's an exciting time. I think the wind is at our back.

Nick Piquard

Perfect. I hope everyone enjoyed the show, thank you very much.



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