

April 2017

## Uranium Market Outlook



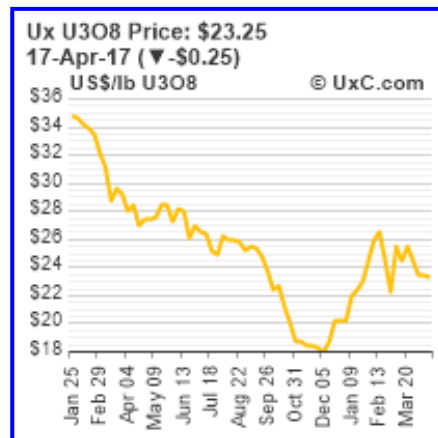
**Marino G. Pieterse, publisher and editor**

► **Longer than expected recovery of uranium price causes operational problems**

In my [March 2017 Uranium Market Outlook](#) I quoted [UxC](#), a leading consulting company in the uranium industry, that long-term prices are to recover significantly over the period 2016-2020. This as a result of expected 75 million pounds U3O8 to be uncovered by the end of that period, representing roughly 39% of projected total demand in 2020.

This prospective projection on demand is used by the uranium industry to feed its unchanged positive market outlook, despite a strongly disappointing market performance of the U3O8 spot price since the last two years from \$ 35.50 at year-end 2014 to a low of \$ 18.00 by the end of November 2016 and long-term price having decreased from \$ 49.00 to an interim low of \$ 30.00

A recovery to an interim high of the spot price of \$ 26.00 on 6 February 2017 resulted in returned market optimism for the short-term, but failed to persist.



### OVERVIEW of U3O8 PRICES

	Spot	Long-term		Spot	Long-term
<b>2017</b>					
April 17	23.25	33.99	<b>Year-end 2016</b>	<b>20.25</b>	<b>30.00</b>
March 27	24.50	33.99	Year-end 2015	34.25	44.00
February 28	22.25	32.50	<b>May 31, 2015 (year high)</b>	<b>39.50</b>	50.00
<b>February 6 (high)</b>	<b>26.00</b>	32.50	Year-end 2014	35.50	49.00
January 31	24.50	32.50	<b>May 14, 2014 (year low)</b>	<b>28.25</b>	49.00
January 9	22.00	30.00	Year-end 2013	34.50	50.00
<b>2016</b>			Year-end 2012	43.50	56.50
December 26	20.25	30.00	Year-end 2011	61.75	64.00
December 14	18.75	30.00			
<b>November 28</b>	<b>18.00</b> *	33.00	Pre-Fukushima accident		
October 31	18.75	35.50	March 11, 2011	67.75	73.00
September 26	23.75	38.00			
August 29	25.25	38.00			
July 25	25.00	40.50			
June 27	27.00	40.50			
June 20	26.15	41.00			
May 30	27.25	41.00			
April 25	27.50	43.50			
March 28	29.15	43.50			
February 29	33.50	44.00			
January 31	34.75	44.00			

\* spot price 12-year low

In this respect, I already mentioned that the short-term course of the U3O8 spot price is hardly predictable due to a lack of transparency in regards to stockpiled uranium, in particular in [Japan](#) where before the Fukushima nuclear accident in March 2011, approximately 39 million pounds of U3O8 equivalent were purchased in the spot market each year.

Due to the slow restart of reactors in [Japan](#) as a result of tightened safety and environmental regulations, the pace of restarts has been overestimated by the market forecasting strong growth of uranium demand from [China](#), [Russia](#) and [India](#).

As a result, forecasted significant growth of reactor construction in China, Russia and India is only partly compensating the fall-out of Japan's operable reactors, with currently only 3 reactors from a total of 48

reactors having restarted since the Fukushima accident and also the fully phase-out of 17 reactors in [Germany](#), as well as the shutdown of up to 15 reactors of the currently 58 operable reactors (providing 76% of electricity generation) in [France](#) to increase the share of renewable energy to achieve more balance in generation of electricity.

In China currently 36 reactors are operable, 21 reactors under construction and 40 reactors being planned. In Russia, currently 35 reactors are operable, 7 reactors under construction and 25 reactors being planned. In India, 22 reactors are operable, 5 reactors under construction and 20 reactors being planned.

Based on these figures, my conclusion is that the end of the current oversupply is mainly determined by the pace of the expected restarts of 19 nuclear reactors in Japan, which will take another few years, and in total of 27 Japanese reactors on line by 2035.

## Overview of world power reactors and envisaged future reactors

<i>March 1, 2017</i>	<b>Nuclear electricity generating in 2015 (billion kWh)</b>	<b>in % total consumption</b>	<b>Operable reactors</b>	<b>Under construction</b>	<b>Planned</b>	<b>Proposed</b>	<b>Uranium required 2016 (in tonnes U)</b>
<b>Country</b>							
<b>China</b>	161.2	3.0	36	21	40	136	5,338
<b>India</b>	34.6	3.5	22	5	20	44	997
<b>Russia</b>	182.8	18.6	35	7	25	23	6,264
<b>USA</b>	798.0	19.5	99	4	4	17	18,161
<i>Japan</i>	4.3	0.5	x	-	-	-	680
<i>x before Fukushima accident 48 operable reactors; 3 reactors restarted; 24 reactors in the process of restart</i>							
<b>European Union</b>	815.2	NA	128	4	12	16	20,100
<i>of which 70% applies to:</i>							
<i>France</i>	419.0	76.3	58	1	-	1	9,211
<i>UK</i>	63.9	18.9	15	-	4	9	1,734
<i>Germany</i>	86.8	14.1	8	-	-	-	1,689
<b>Subtotal</b>	<b>1,991.8</b>		<b>320</b>	<b>41</b>	<b>101</b>	<b>236</b>	<b>51,540</b>
<b>World total</b>	<b>2,441.0</b>	<b>11.5e</b>	<b>447</b>	<b>59</b>	<b>164</b>	<b>350</b>	<b>63,404</b>
<b>China, India, Russia, USA and EU</b>							
<b>in % of world total</b>	<b>81</b>		<b>71</b>	<b>70</b>	<b>62</b>	<b>68</b>	<b>80</b>
<i>source: WNA</i>							

The **USA** is the world's largest producer of nuclear energy, accounting for more than 30% of worldwide nuclear generation of electricity. The country's 100 nuclear reactors produced 805 billion kWh in 2016, 19.5% of total electricity output.

In 2016, US electricity generation was 4,079 TWh (billion kWh) net, 1,380 TWh (34%) of it from gas, 1,240 TWh (31%) from coal-fired plant, 805 TWh (19.75%) from nuclear, 266 TWh (6.56%) from hydro, 226 TWh (5.6%) from wind and 117 TWh (3.2%) from other renewables.

Annual electricity demand is projected to increase to 5,000 billion kWh in 2030.

Following a 30-year period in which few new reactors were built, it is expected that 4 more new units will come online by 2021, these resulting from 16 licence applications made since mid-2007 to build 24 new reactors. Government policy changes since the late 1990s have helped pave the way for significant growth in nuclear capacity.

In the **European Union** including the United Kingdom, there are 128 nuclear reactors operating of which 58 reactors in France, representing 48% of the total EU operating reactors are the more illustrative example that politically left mining approach against nuclear energy as the only large-scale source of emission free electricity generating, is dated by not recognizing the technical and innovative evolution in the nuclear industry.

This is demonstrated by the introduction of a second and third generation of nuclear reactors, which have satisfied ultimate safety and environmental requirements, and is not only fully recognized by the United States and major emerging countries, led by China, but also in Japan that despite the Fukushima disaster in March 2011 has planned to restart 28 of its nuclear reactors, which offer a mature viable clean and cost-effective alternative for fossil fuels, and have a positive impact on securing economic growth.

European Union: 128 nuclear reactors operating in 14 countries		
	Number of reactors	in percentage of total electricity generating
France	58	76.3
UK	15	18.9
Sweden	9	34.3
Germany	8	14.1
Spain	7	20.3
Belgium	7	37.5
Czech Republic	6	32.5
Finland	4	33.7
Hungary	4	52.7
Slovakia	4	55.9
Romania	2	17.3
Bulgaria	2	31.3
Slovenia	1	38.0
the Netherlands	1	3.7
	128	

No nuclear reactors operating in 14 EU countries
Italy
Portugal
Poland
Ireland
Croatia
Austria
Denmark
Luxembourg
Greece
Estonia
Latvia
Lithuania
Malta
Cyprus

In this respect, it has to be noted that the EU follows a controversial energy policy by allowing its member countries to follow independent strategies, as demonstrated by the conflicting energy policies of France and Germany, and the UK in favor of nuclear energy, against Italy abandoning nuclear energy.

The established nuclear trade body of the EU, Foratom, that works on a revised version of Illustrative Program for Nuclear Energy, known as PINC, recommends to the EU to facilitate nuclear development projects by

providing a stable regulatory and investment frame work given the importance of nuclear power for achieving its climate action goals as set by the **Paris Climate Agreement**.

Expecting at least 14 EU member states to follow the PINC program, which is in accordance with the current number of 14 countries operating nuclear reactors, but considering the Brexit, Germany phasing out its reactors, and France lowering its number of plants, the table below shows that the EU would be almost fully dependent on increasing nuclear energy capacity in Eastern European countries that besides geopolitical turmoil in some of these countries are economically not in a position to carry out a successful transmission from fossil fuels to nuclear energy and renewables.

### ► **Paris Climate Agreement targets to limit global warming out of reach**

While the Paris Climate Agreement confirms the essential contribution of nuclear energy to avoid dangerous climate changes by limited global warming to 1.5%, due to enter into force by 2022, the postponed target is in conflict with the variety of independent national directives in most countries.

In the United States, the fossil industry, representing 65% of total US electricity generation, will be protected by President Donald Trump, and considering the additional current share of 19.5% of nuclear electricity in total US electricity generation, there is no room left for a pro-active renewable policy in line with the Paris Climate Agreement.

Consequently, global warming targets set by the Agreement are out of reach, which conclusion is underpinned by China and the United States representing 29.5% and 14.3%, respectively of total CO2 emissions in 2015, followed by the European Union (9.6%) and India (6.8%).

## 2017 SHORTLIST OF URANIUM INVESTMENT RECOMMENDATIONS as at 31 March 2017

Company	Focus	Trading symbol		Share price		Change		Market capitalization		Change in % 2017/2016
				31 March 2017	Year-end 2016	in % local	US\$	31/3/2017 US\$ min.	31/12/2016 US\$ min.	
<b>Producers (4)</b>										
Cameco	Canada	ABX	TSX	C\$ 14.720	C\$ 14.040	5	5	4,428	4,112	8
Ur-Energy	United States	URG	NYSE	US\$ 0.660	US\$ 0.530	25	25	96	76	26
Peninsula Energy 1)	United States	PEN	NYSE	0.370	0.580 1)	-36	-36	84	115 1)	-27
Paladin Energy	Namibia	PDN	ASX	A\$ 0.110	A\$ 0.090	22	21	188	111	69
Energy Resources of Australia	Australia	ERA	ASX	0.720	0.440	64	59	287	164	75
<b>Advanced development companies (5)</b>										
Denison Mines	Canada	DML	TSX	C\$ 0.820	C\$ 0.700	17	17	348	276 1)	26
UEX	Canada	UEX	TSX	0.305	0.245	24	24	74	54	37
Berkeley Energia	Spain	BKY	ASX	A\$ 0.740	A\$ 0.900	-18	-17	145	165	-12
Vimy Resources	Australia	VMY	ASX	0.230	0.250	-8	-7	56	50	12
A-Cap Resources	Botswana	ACB	ASX	0.060	0.080	-25	-23	40	50	-20
<b>Exploration/development companies (10)</b>										
Laramide Resources	Australia/US	LAM	TSX	C\$ 0.600	C\$ 0.290	107	104	51	20	155
GoviEx Uranium	Niger	GXU	CNSX	0.260	0.150	73	71	64	36	78
Forsys Metals	Namibia	FSY	TSX	0.130	0.110	18	18	14	12	17
CanAlaska Uranium	Canada	CVV	TSX.V	0.475	0.485	-2	-2	10	10	0
Purepoint Uranium	Canada	PTU	TSX.V	0.120	0.130	-8	-7	17	18	-6
Boss Resources	Australia/US	BOE	ASX	A\$ 0.080	A\$ 0.060	33	31	62	39	59
Cauldron Energy	Australia/US	CXU	ASX	0.050	0.050	0	0	13	12	8
Deep Yellow	Namibia	DYL	ASX	0.290	0.400	-28	-26	29	37	-22
Bannerman Resources	Namibia	BMN	ASX	0.060	0.030	100	93	39	18	117
<b>Others - special situations(2)</b>										
Mega Uranium	Australia	MGA	TSX	C\$ 0.210	C\$ 0.140	50	49	45	29	55
Viginia Energy 1)	United States	VUI	TSX.V	0.120	0.215 1)	-44	-43	5	12 1)	-58
1) included as at February 1, 2017										
<b>Market performance 2017 (in US\$) as at 31/03/2017:</b>				<b>18.2%</b>						
<b>Market performance 2016 (in US\$):</b>				<b>30.5%</b>						
<b>Market capitalization increase 2017 (in US\$) as at 31/03/2017:</b>				<b>29.9%</b>						
<b>Market capitalization increase 2016 (in US\$):</b>				<b>101.3%</b>						
				<b>31/3/2017</b>	<b>31/12/2016</b>	<b>Change</b>				
<b>U3O8 spot price</b>				<b>24.50</b>	<b>20.25</b>	<b>21</b>				
<b>U3O8 long-term price</b>				<b>33.00</b>	<b>30.00</b>	<b>10</b>				

### Investment comments:

After an unrivaled market performance in 2016 despite of challenging market conditions, my **2017 Shortlist of uranium investment recommendations** showed an average gain of 18.2%, thanks to outstanding performances for Laramide Resources and GoviEx Uranium, both companies being featured as a **Special Situation**, as well as ERA and Bannerman Resources.

Referring to my updated **Special Report** on the Athabasca Basin) Skyharbour Resources (SYH – TSX.V) is added to my Shortlist as at 21 April 2017.