



## IT'S 2004 ALL OVER AGAIN

### DEVELOPING A URANIUM INVESTMENT THESIS

Q4 2018 TSXV: PTU

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#### **Forward Looking Statements**

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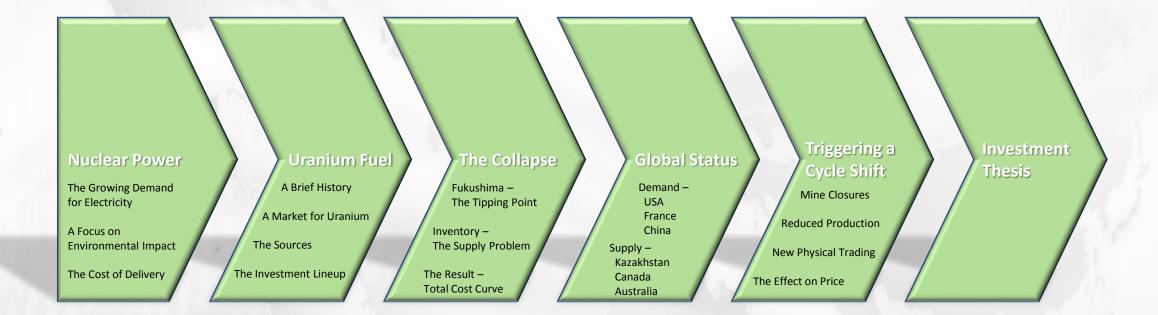
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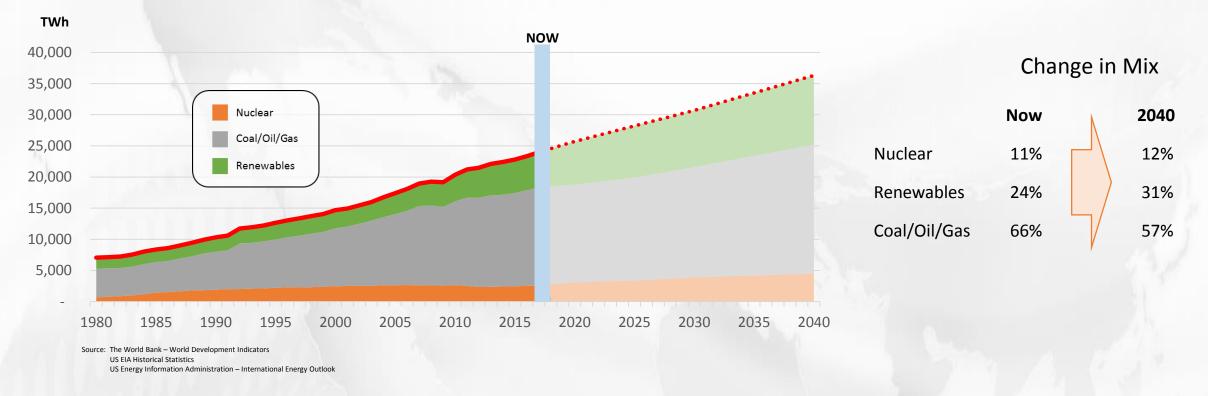
# **Nuclear Power**



## **Nuclear Power**

#### The Growing Demand for Electricity

Since 1980 Global demand for electricity has more than tripled 15 Years from now, the World will be consuming twice as much electricity as it did 15 Years ago!

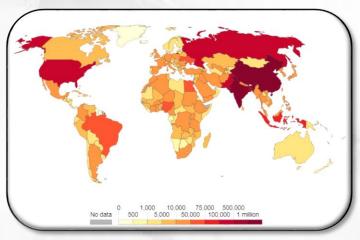


Although the bulk of power will continue to be produced by coal, natural gas and renewables, **Nuclear power generation** is expected to grow at a consistent rate of 2.3% per year

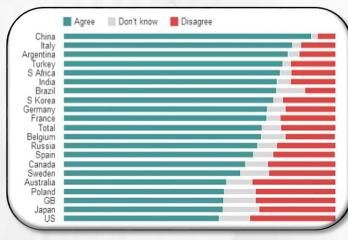


## **Nuclear Power**

#### A Focus on Environmental Impact

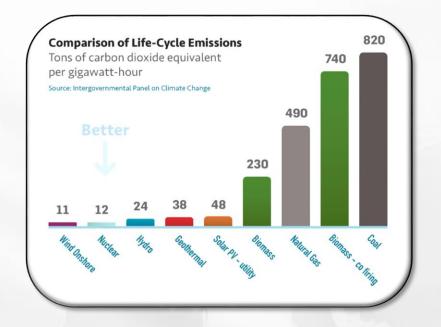


Absolute number of deaths from outdoor air pollution - 2016



Do you agree? - We headed for environmental disaster if we don't change our behavior or habits.

#### A significant driver of the world's energy mix is its impact on the environment

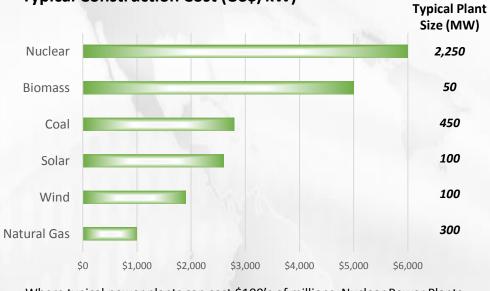


In evaluating the complete life-cycle of energy sources, from creation to ultimate use, Nuclear energy delivers the most environmentally friendly, base-line option



### Nuclear Power The Cost of Delivery

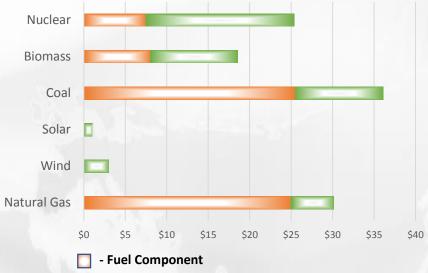
Relative to the total cost of delivery, nuclear fuel (uranium) represents a very minor component



#### Typical Construction Cost (US\$/kW)

Where typical power plants can cost \$100's of millions, Nuclear Power Plants typically cost in the range of \$10-15 billion

#### Typical Operating Costs (US\$/kW)



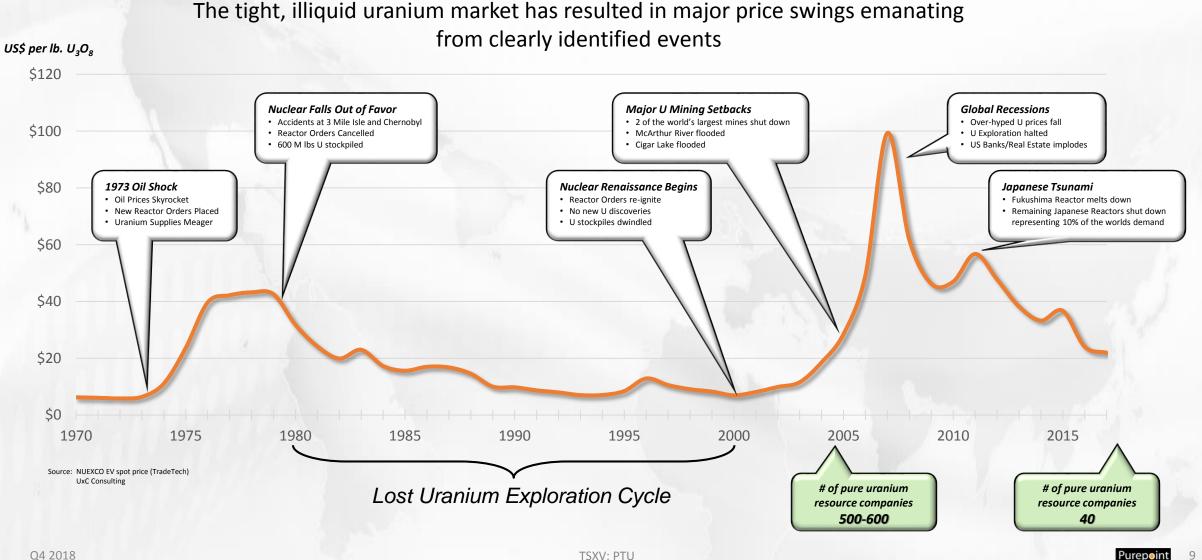
Despite its efficiency and environmental benefits...... project size, construction costs, lead time and social/political resistance, make nuclear power a challenging option



# **Uranium Fuel**



### **Uranium Fuel** A Brief History

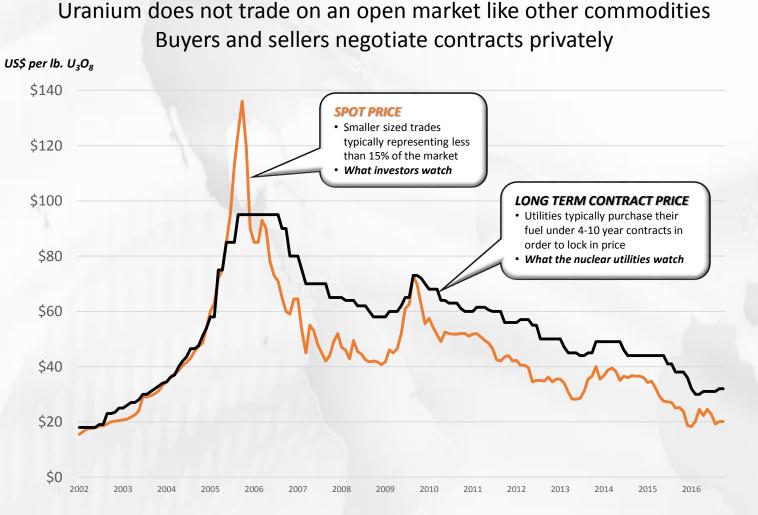


TSXV: PTU

Uranium Group Inc

## **Uranium Fuel**

The Market for Uranium



Source: UxC Consulting World Nuclear Association

	Reactors & Fuel Requirements							
		# of Reactors	lbs. U Required	lbs. U per Reactor				
	Operating (Oct, 2018)	420	143.3 мм	340,000				
	Japan – Idle	33	11.2 мм					
	Operable Under Construction	453 	154.5 MM _ <u>18.7 </u> MM					
1	Total	<u>508</u>	<u>173.2 </u> MM					
	Planned	152						
	Proposed	<u>335</u>						
	Total	<u>487</u>						
	2017 Production		<u>131.2 </u> MM					

#### **Observations:**

✓ Production is less than current consumption (by ~ 8%)

✓ Reactors under construction or idle further increase the gap (to ~ 24%)

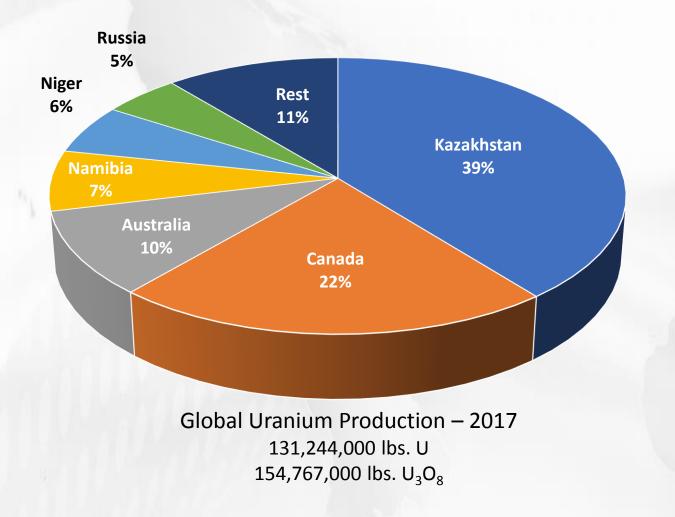
✓ Does not account for the 1.8 MM lbs. for initial new reactor fill

Planned and proposed reactors potentially double consumption



### Uranium Fuel The Sources

#### Nearly 80% of the world's uranium is mined in 4 countries



#### Kazakhstan

- Holds 12% of the world's uranium resources
- Utilizing low cost ISL mining methods
- Currently no investment opportunity
- Kazatomprom IPO scheduled before year end

#### Canada

- Holds 9% of the world's uranium resources
- Largest high-grade mines in the world

#### Australia

- Relative low production despite holding 29% of the world's uranium resources
- The vast majority of Australia's uranium resources are within five deposits including Olympic Dam (the world's largest known uranium deposit)

#### Namibia

- Two significant uranium mines capable of providing 10% of world mining output
  - Rössing owned primarily by Rio Tinto
  - Langer Heinrich owned by Paladin recently closed
- Production at Husab mine recently underway (owned by Chinese interests)

## **Uranium Fuel**

The Investment Lineup

#### Due to the prolonged languishing of uranium prices, there remain only 40 public pure-uranium investments available today (with three more pending)

#### **Producers/Traders/Funds EXCHANGE COUNTRY FOCUS** COMPANY TSX/NYSE Cameco Corp Canada TSX **Denison Mines Corp** Canada **Energy Fuels Inc.** TSX **United States Energy Resources of Australia** ASX Australia ASX Africa Paladin Energy NYSE **United States** Uranium Energy Corp TSX/NTSE **United States Ur-Energy** LSE Kazakhstan Kazatomprom **Uranium Participation Corp** TSX n/a LSE n/a Yellow Cake Plc **Global X Uranium Fund** NYSE n/a **Geiger Counter Ltd** LSE n/a Uranium Trading Corp Soon on NYSE n/a n/a Tribeca Global Natural Res. Soon on ASX

Developers						
COMPANY	EXCHANGE	COUNTRY FOCUS				
NexGen Energy Limited	TSX/NYSE	Canada				
Fission Uranium Corp	TSX	Canada				
Plateau Energy Metals Inc.	TSX.V	Peru				
Toro Energy Limited	ASX	Australia				
Berkeley Energia Ltd.	ASX	Spain				
Forsys Metals Corp	TSX	Namibia				
GoviEx Uranium Inc.	TSX.V	Niger				
Aura Energy Limited	ASX	Sweden				
Vimy Resources Ltd.	ASX	Australia				
A-Cap Resources Limited	ASX	Botswana				
Anifield Energy Inc.	TSX.V	United states				
Azarga Uranium Corp	TSX	United States				
Laramide Resources Ltd.	TSX	United States				
Bannerman Resources Limited	ASX	Namibia				

Explorers							
EXCHANGE	COUNTRY FOCUS						
TSX.V	Canada						
TSX	Canada						
TSX.V	Canada						
TSX.V	Canada						
TSX.V	Canada						
ASX	Australia						
TSX.V	Canada						
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ASX

**Deep Yellow Limited** 

Namibia

Q4 2018

# The Collapse





### **The Collapse** Fukushima – The Tipping Point

On March 11, 2011 the most powerful earthquake ever recorded in Japan triggered tsunami waves that reached heights of up to 40.5 metres (133 ft), critically damaging the Fukushima Daini nuclear power plant

As a precaution, all of the country's 42 reactors were shut down representing approximately 10% of the world's nuclear fleet

ANTICIPATED JAPANESE REACTOR RESTART								
Status/Date	2011 - 2017	2018	2019	2020	2021	2022	Permanent Closure	Total Operable
Currently Operating	5	4						9
Scheduled for Re-Start		1	2	3	1	1		8
Under Review/Repair				4	5	4	8	21
To be Decommissioned							4	4
Total	5	5	2	7	6	5	12	42

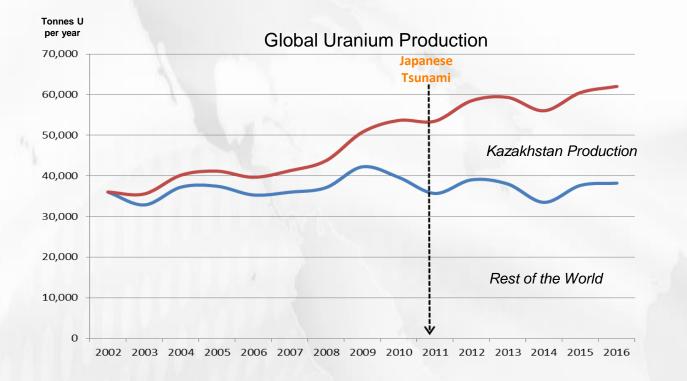
Over time, however, it has become evident that the industry's expected short term shut down has become a permanent reduction in demand

Source: World Nuclear Association SightlineU308.com



## The Collapse Inventory – The Supply Problem

## Unfortunately, the drop in Japanese demand was not the primary problem, but only the trigger exposing a larger underlying issue



#### Excess Inventory:

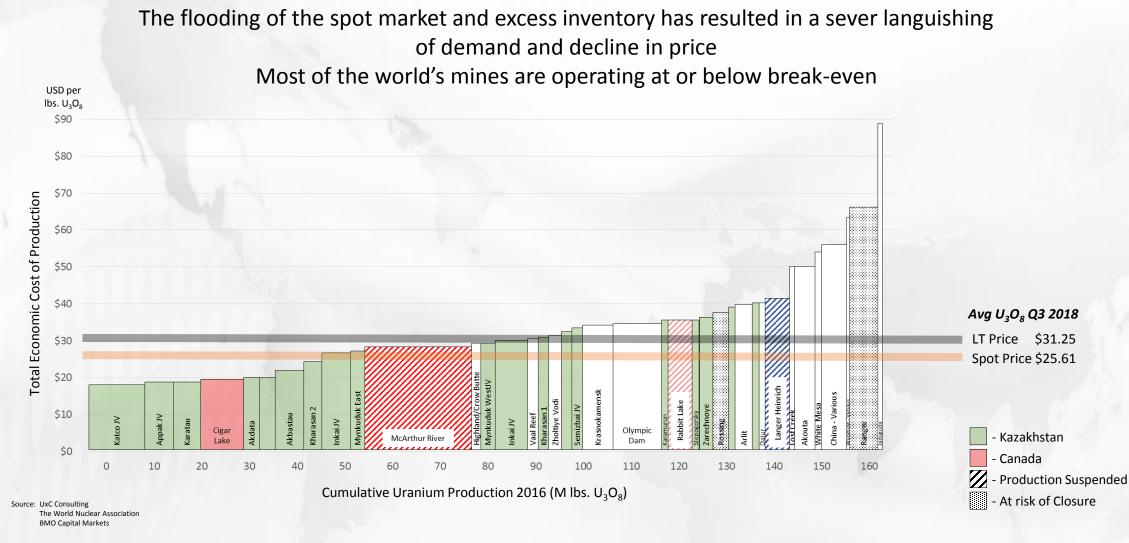
- 1. In the 5 years leading up to the Japanese shut down, the mining industry had increased production by 16%
- 2. Over a 10 year period, Kazakhstan had increased their production from practically nothing to 1/3 of the global supply
- 3. Post March 2011, Kazakhstan continued to ramp up production, increasing market share to nearly 40%
- 4. Kazakh transfer pricing laws and saturated demand, resulted in practically all Kazakh production being sold into the spot market
- Making the entire situation worse there was no reliable quantification of global uranium inventories. Current best inventory estimates are approximately 1B lbs U<sub>3</sub>O<sub>8</sub> +/- 150MM. (6.5x annual demand)

In addition to current inventory quantities, there is no clear level of "normal" inventory quantities or at what point price is affected

Source: World Nuclear Association UxC Consulting Yellow Cake LLP

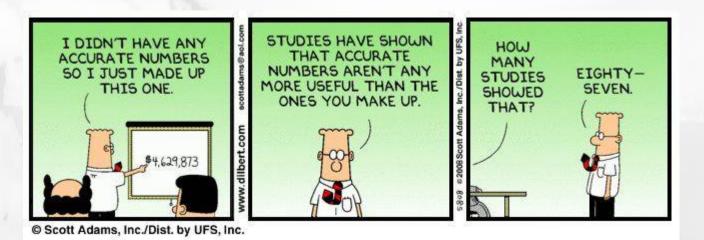


### The Collapse The Result – Total Cost Curve





# **Global Status**

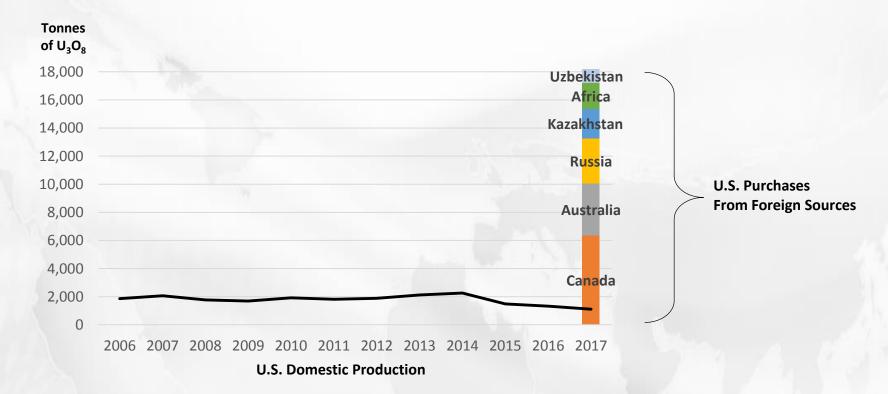


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## **Global Status**

Demand – United States

The USA is the world's largest producer of nuclear power, accounting for more than 30% of worldwide nuclear generation of electricity

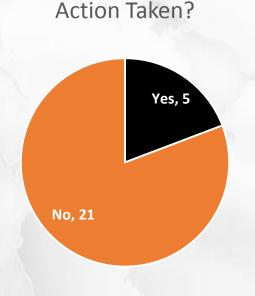


Currently, almost all the uranium used in US commercial reactors is imported. After reaching a peak in 1980, domestic mining now accounts for only 10% of the fuel used in US reactors



### **Global Status** Demand– United States

In January 2018, Ur-Energy and Energy Fuels Jointly Filed a Section 232 Petition with U.S. Commerce Department to Investigate Effects of Uranium Imports on U.S. National Security



- Under Section 232 of the Trade Expansion Act of 1962, investigations may be carried out to determine the effects of imports on the USA's national security and give the President the ability to address any threats to national security by restricting imports through tariffs.
- Prior to the current administration there have been only 26 investigations performed – including oil and uranium
- □ Very few have resulted in actions taken

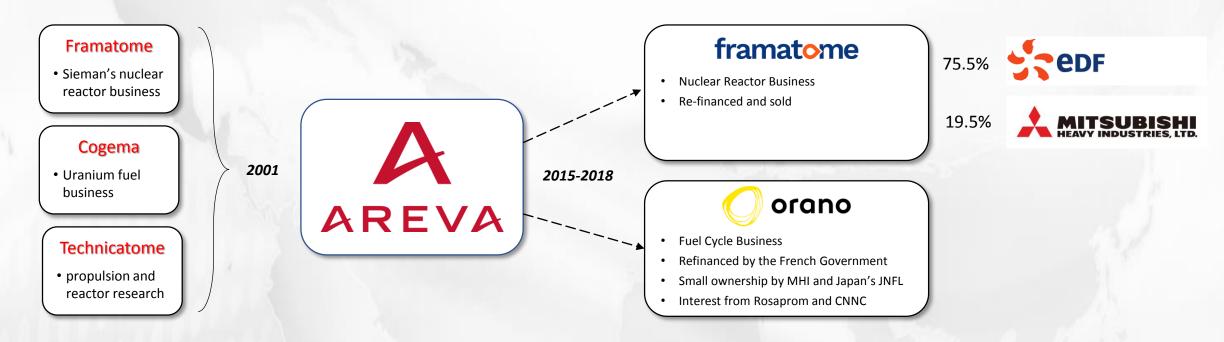
In July 2018, the US Department of Commerce launched a Section 232 investigation to review the entire uranium fuel cycle. Results are pending



# **Global Status**

Demand– France

France derives about 75% of its electricity from nuclear energy, due to a long-standing policy based on energy security



Areva (87% Government owned) was created in 2001 by merging Framatome, Cogema, and Technicatome

In 2015/2018 Areva was re-structured/re-financed to create Framatome and Orano



## **Global Status**

Demand – China

Generating 10% of the world nuclear power, mainland China has about 45 nuclear power reactors in operation, about 15 under construction, and more about to start construction



China aims to produce one-third of its uranium domestically (currently only 21%), obtain one-third through foreign equity in mines and joint ventures overseas, and to purchase one-third on the open market



### **Global Status** Supply – Kazakhstan

Kazatomprom is the national atomic company set up in 1997. Owned by the government, it controls all of the country's uranium exploration and mining

	Aggressive International Collaboration Efforts								
Russia	Japan	China	India	S. Korea	Toshiba	Cameco	United States	Areva	
<ul> <li>2006; US\$10B JV for 3 new soviet reactors</li> <li>2011; Coop on U exploration, Kazakh reactor and Russian enrichment plant</li> <li>2014; several new nuclear &amp; uranium agmts</li> </ul>	<ul> <li>2007; several high-level agmts re: U supply and fuel fabrication</li> <li>2006; J invests in numerous Kazakh mines</li> <li>2009; agmt for fuel processing</li> <li>2010; further plant construction in Kazakh</li> <li>2012/15; joint fast-reactor projects</li> </ul>	<ul> <li>2006; China Guangdong Nuclear (CGN) signs strategic agmt</li> <li>2007; investment in Kazakh mines &amp; Chinese technology</li> <li>2014; 55% of Kazakh U goes to China</li> <li>2015; after US\$B's in deals, China allows transit of U (via China) to NA</li> </ul>	• 2009; India's Nuclear Power Corp. (NPCIL) agrees to purchase 2100 tonnes U starting in 2010-2011 and undertake to build reactors in Kazakh	<ul> <li>2010; signs nuclear cooperation agreement paving the way for Korean SMART 100 MWe reactors for India</li> <li>Discussions ongoing with Korea Electric Power Corp (KEPCO) on mining and plant construction</li> </ul>	<ul> <li>2007; Kazatomprom acquires 10% interest in Westinghouse from Toshiba strengthening upstream links for fuel supply</li> <li>2017; interest is sold back to Toshiba</li> <li>Relationship resulted in numerous ongoing joint projects</li> </ul>	<ul> <li>1996; Inkai mine 60% Cameco/40% Kazakh</li> <li>2008; NewCo to build conversion plant</li> <li>2013; Joint PFS for U refinery</li> <li>2013; Canada &amp; Kazakhstan sign nuclear coop agmt</li> <li>2016; Kazakh increases interest in Inkai by 20%</li> </ul>	<ul> <li>2015; agmt signed with Centrus Energy to market Kazakh U in the USA</li> <li>2016; Kazakg – US energy partnership agreement signed related to nuclear security</li> </ul>	<ul> <li>2008; MOU signed to expand production at joint owned Katco mine</li> <li>2009; agmt to establish joint marketing on integrated fuel supply to Asian customers</li> <li>2010; JV to build fuel fabrication plant</li> </ul>	

As part of a program to reduce the Government's holdings in several state enterprises, Kazatomprom will launch an IPO on the London Stock Exchange before the end of 2018



### **Global Status** Supply – Canada

Canada's Saskatchewan resources hold grades far in excess of that anywhere else in the world, ranging from 1% - 20%

- **15.6 g/t Gold** (U\$1,200/oz)
- 1,215 g/t Silver (U\$14/oz)

- $1\% U_{3}O_{8} =$
- 10.78% Copper (U\$2.80/Ib)
- 24.54% Zinc (U\$1.22/lb)
- 9.87 barrels of Oil (U\$66.82/barrel)



Produces the Equivalent Power of:

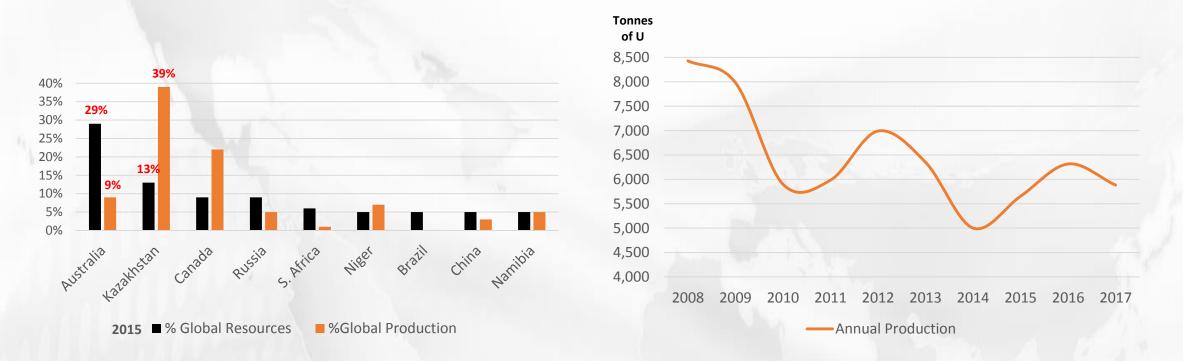


Until 2018, production came primarily from the McArthur River and Cigar Lake mines in northern Saskatchewan province, which are the largest and highest-grade in the world. McArthur River production was suspended in 2018



### **Global Status** Supply – Australia

# Australia's known uranium resources are the world's largest yet only three mines are currently in production



Most of Australia's uranium resources carry an all in production cost of less than US\$50/lb  $U_3O_8$  - half carry costs of less than US\$30/lb  $U_3O_8$ 

Source: Identified resources (recoverable), to \$130/kg U, 1/1/15, from OECD NEA & IAEA, Uranium 2016: Resources, Production and Demand ('Red Book'), Table 1.2a. The total to \$260/kg U is 7.642 million tonnes U.





Mine Closures

As prices reach breakeven or lower, some producers have been forced to suspend production at key projects

Mine Name	Owner	Country	Date	Annual Production MM lbs U <sub>3</sub> O <sub>8</sub>
Rabbit Lake/U.S Operations	Cameco	Canada/U.S.	April 21, 2016	4,971
McArthur River (10 month suspension)	Cameco	Canada	November 8, 2017	18,000
Langer Heinrich	Paladin	Namibia	May 25, 2018	5,036
McArthur River (indefinite suspension)	Cameco	Canada	July 25, 2018	

In the case of Cameco, the company currently purchases 1/3 of their uranium on the Spot Market to fulfil sales contracts



**Reduced Production** 

#### In an effort to more proactively manage uranium prices, Kazakhstan announced/launched a number of initiatives

		Affected Production		Share of Production, 2017		
Event	Date	MM lbs U <sub>3</sub> O <sub>8</sub>	Kazatomprom		19.40%	
<b>Launch of Swiss-based trading subsidiary</b> - TH Kazatom - to bring greater liquidity to the uranium market. It buys and sells on the spot market as part of its corporate transformation to align its pricing mechanism with European and US markets.	July 1, 2017	-	Orano Cameco Uranium One	8.60%	15.60%	
Kazatomprom announces 10% reduction in production	January 9, 2017	6,390	INC/CGN (China) Rio Tinto	6.30%		
Kazatomprom announces 20% reduction in production	December 4, 2017	12,160	ARMZ Navoi Mining	4.90%		
Kazatomprom, <b>announces IPO</b> plans to list as much as 25 percent of its equity in London and the Kazakh capital Astana	October 22, 2018	-	BHP Billiton Other	4%	14.70%	
Kazatomprom announces 20% reduction in production for 2019 & 2020	October 23, 2018	20,200		% 5% 10%	14.70%           15%         20%	

Source: Kazatomprom

Kazatomprom's pending IPO caps a 20 year growth strategy that has allowed them to significantly influence the ongoing price of uranium and emerge as the single largest uranium producer in the world



New Physical Trading Companies

Up until this year, Uranium Participation Group was the only company purchasing and holding physical uranium as an investment.

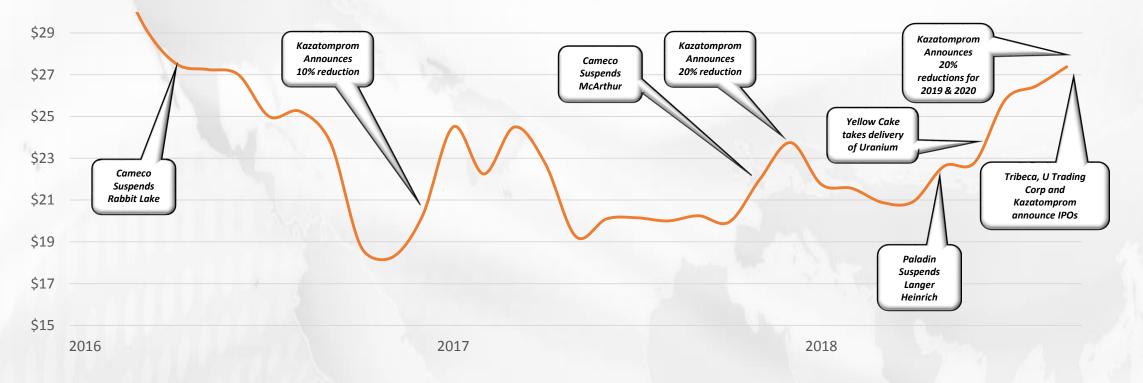
COMPANY EXCHANGE		Announced	Launched	Purchased Since Jan 1, 2016	
Uranium Participation Corp	TSX	n/a	May, 2005	2,645,000 lbs U <sub>3</sub> O <sub>8</sub>	
Yellow Cake Plc	LSE		July, 2018	8,450,000 lbs U <sub>3</sub> O <sub>8</sub>	
Tribeca Global Natural Res.	ASX	September 2, 2018	-		
Uranium Trading Corp	NYSE	October 5, 2018	-		

There will soon be a public U trading company in Canada, the USA, Australia and London



The Effect on Price

Since the beginning of 2016, the industry's various tactics have reduced global U inventories by 6.5% - 7.5% with ongoing annual reductions expected of 3% to 4%



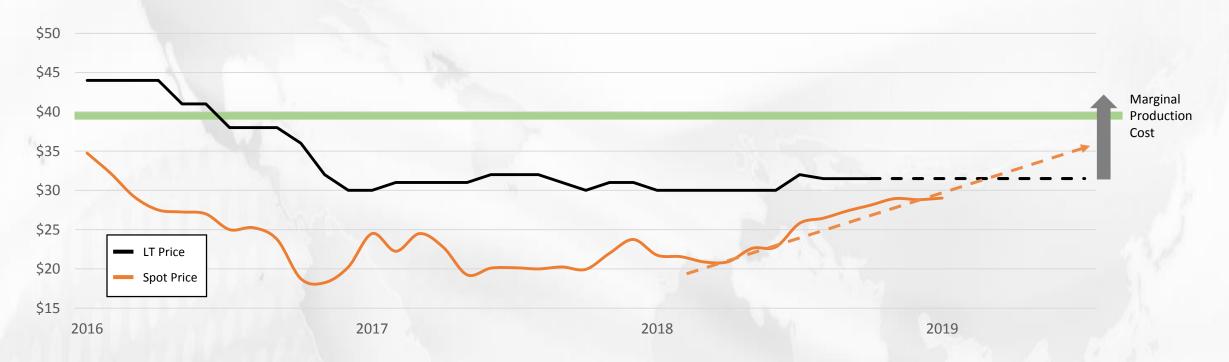
As these tactics take hold, the Spot Price has risen over 50% since it's 2016 low of \$18.25 / lb  $U_3O_8$ 



Purepoint 2 Uranium

The Effect on Price

Unlike the Spot Price, the LT Price has maintained a steady level of  $30-32.00 / Ib U_3O_8$ resulting from no significant contracts signed in over two years now



As the Spot Price approaches or crosses the LT Price, there will be increasing pressure to enter into new contracts – but only at prices producers are prepared to accept



### **Investment Thesis**

The Best Time to Invest in Uranium

#### DEMAND

Demand is steady and price inelastic

- ✓ Solid component of the global energy mix
- ✓ Steady 2.3% growth anticipated
- ✓ Price Inelastic:
  - Small fuel cost component to producing electricity
  - Significant capital commitment
  - No substitutes

**SUPPLY** 

Supply has been Forced into Free-Fall

- ✓ Excess inventory has driven U prices to historic lows
- ✓ Loss level pricing has spurred large production decreases:
  - Cost to produce =  $2 \times \text{sale price}$
- Mines shutting/scaling down ✓ LT contract buying moves to
- cheaper spot market ✓ No significant contracts signed in over 2 years

✓ During 2018, production has dropped by approx. 30% while the spot price has risen by 26%

**Inventory Levels are** 

**Reaching a Tipping Point** 

**INVENTORY** 

- ✓ Producer's (Cameco) are fulfilling contracts by buying product on the spot market
- ✓ Spot prices will continue to rise as inventories dry up
- ✓ Higher spot prices will force utilities to start negotiating LT pricing

**PRICE CORRECTION** 

A Rapid adjustment of 50% to 100% should be expected

- ✓ Spot price is now reaching LT contract prices
  - Expected to cross before Year End
- ✓ As Spot and LT prices meet, there is increased pressure to execute contracts
- Producers have performed their downsizing and have no need to accept contracts at a loss

Only profitable pricing will be accepted ( $$40-60/lb U_3O_8$ )

**EFFECT ON EQUITIES** 

**Equities will Lead Commodity Price** Increases

- ✓ Historically, equity moves have preceded uranium price moves
- ✓ Typically, equity price increases mirror uranium price rises
- ✓ There are currently only 38 pureplay public uranium companies.
- ✓ When uranium prices surge, sheer demand for equities, and lack of supply, will exaggerate the share price increase of equities.

Uranium equities are poised for a significant upward shift in the near term

> Purepoint | Uranium

Utilities will buy, no matter what the price

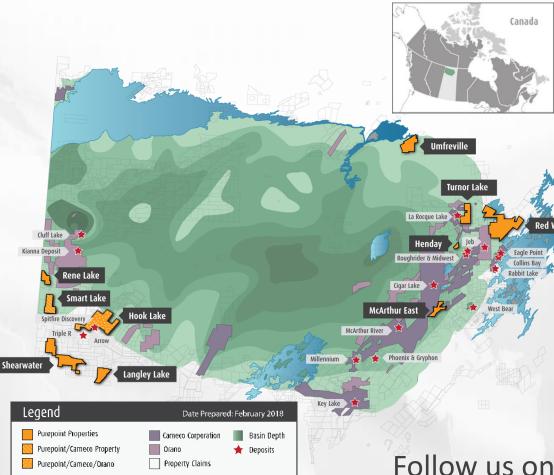
2018 production now 16% lower than demand

New significant LT contracts will signal the tipping point

## Purepoint's Athabasca Basin Portfolio

#### 10 Projects All Active

- Advanced stage exploration
- ✓ Dozen of drill targets well defined
- Low priority property all exited
- Assessment requirements current
- Support and continued spending by two of the largest Uranium producers in the world – Cameco & Orano
- Spitfire discovery (53.3% U<sub>3</sub>O<sub>8</sub> over 1.3 metres within a 10.0 metre interval of 10.3% U<sub>3</sub>O<sub>8</sub>) by the Hook Lake JV
- Patterson Uranium District hosts Fission's Triple R Deposit (indicated mineral resource 87,760,000 lbs U<sub>3</sub>O<sub>8</sub> at an average grade of 1.82% U<sub>3</sub>O<sub>8</sub>) and NexGen Energy's Arrow Deposit (inferred mineral resource 201,900,000 lbs U<sub>3</sub>O<sub>8</sub> at an average grade of 2.63% U<sub>3</sub>O<sub>8</sub>)



## **Contact Us**

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