



# Ubika Base Metals 20 Index

July 23, 2018

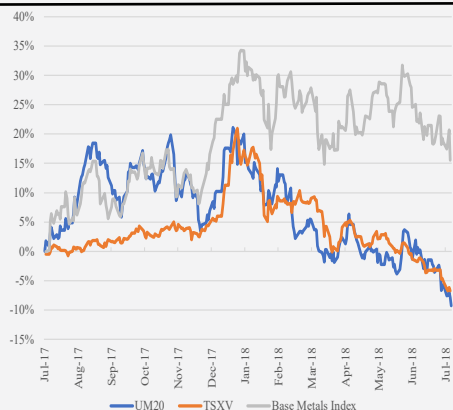
## Ubika Base Metals 20 Index

May 25, 2018 - July 20, 2018

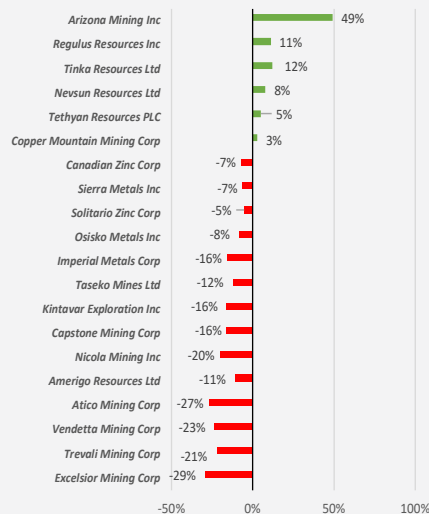
UBM20: -7.9% (-9.3% Y/Y)  
 TSX-V: -8.1% (-6.8% Y/Y)  
 Base Metals Index: -7.7% (14.4% Y/Y)

*Dollar amounts in CAD unless otherwise stated.*

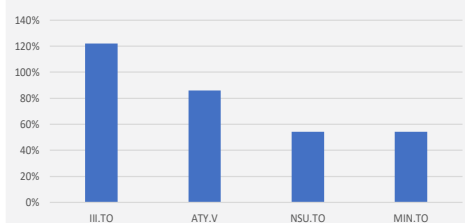
### UBM20 Vs. Benchmarks Y/Y Performance



### Ubika Base Metals 20: Performance Distribution



### Top Volume Gainers (m/m)



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## Base Metals Interest Cools: Ubika Base Metals 20 Update

The Ubika Base Metals 20 Index has decreased 7.9% since our last report dated May 25, 2018, outperforming the TSXV and underperforming the Base Metal Juniors Index, which have declined 8.1% and 7.7% respectively over the same period. Notable performers for this report include:

- Arizona Mining Inc. (TSX:AZ), which increased 49% with a takeover offer from South32 (ASX:S32)
- Tethyan Resources PLC (TSXV:TETH) which increased 5% after acquiring a Serbian Company called Taor
- Nevsun Resources Ltd. (TSX:NSU) which increased 8% after rejecting an unsolicited takeover proposal

### Industry Highlights

**Copper fell below US\$2.80/lb for first time since 2016. On July 19, 2018, a new round of trade tensions with China sent metals markets into a tailspin.** Copper has fallen 18% since early June, with zinc, lead, nickel, and aluminum all following suit. China accused American officials of making false accusations and fired back against a claim President Xi Jinping is blocking talks with the U.S. The result has been the value of the Yuan falling against the Dollar as uncertainty over future economic conditions dominate.

**Miners in the Democratic Republic of the Congo (DRC) have proposed changes to the country's new mining code,** which came into effect March 7. The proposal removes the 50% windfall tax, 10% strategic substance royalty rate, and returns exemptions. In exchange, royalty rates would increase, tied to international market prices. While some government members insist that no changes be made, Kabila, the president of the DRC, has previously promised to consider the companies' concerns. The code adds further concerns to a country already struggling with democratic legitimacy, human rights, and the lingering aftermath of the Second Congo War.

### Upcoming Events

PDAC 2019 – Toronto, Ontario, March 3-6, 2019. PDAC International Convention, Trade Show & Investors Exchange is the world's leading convention for people, companies and organizations in, or connected with, mineral exploration. More than 1,000 exhibitors, 3,495 investors, and 25,000 attendees are expected to participate.

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## Notable Performers:

### Arizona Mining Inc. (TSX:AZ)

Arizona Mining is a Canada-based zinc developer operating in Arizona. The Company's stock price increased 49% since our last base metals report on news of a takeover offer.

Arizona Mining's flagship asset is its Taylor project, a zinc-lead-silver sulfide project in Arizona, which won PDAC's Best Global Discovery award. The mine hosts two deposits, the Taylor and Central deposits, of which the Taylor deposit is the primary focus. According to its January 2018 PEA, the site hosts reserves of 101.0Mt grading 10.4% Zn and 2.1 oz. Ag/t. Figure 1 contains a summary of the PEA.

Figure 1: Taylor PEA Summary

(in US dollars)		
<b>Financial Summary</b>		
After-tax NPV (8%)	\$(000's)	\$1,979,101
After-tax IRR	%	48%
Payback	Years	1.6
Pre-production Capex	\$(000's)	\$518,959
Sustaining Capex	\$(000's)	\$725,261
LOM Capex	\$(000's)	\$1,244,220
<b>Operating Summary</b>		
Mineable Resource	m tons	96,671
Mine Life	years	29
Zinc Equivalent Head grade	% ZnEq	10.44
Zinc Head grade	% Zn	4.01
Lead Head grade	% Pb	4.34
Silver Head grade	opt Ag	2.22
LOM Avg. Annual Payable Zinc Production <sup>1</sup>	m lbs	211
LOM Avg. Annual Payable Lead Production <sup>1</sup>	m lbs	262
LOM Avg. Annual Payable Silver Production <sup>1</sup>	m oz	5.6
Zinc concentrate treatment charge (base)	\$/dmt <sup>2</sup>	210
Zinc treatment charge (Mn penalty)	\$/dmt	13
Lead concentrate treatment charge (base)	\$/dmt	190
All concentrates transportation charge	\$/dmt	97
<b>Operating Costs per Ton</b>		
Mining	\$/t	\$38.02
Processing	\$/t	\$10.54
Site-G&A	\$/t	\$2.00
Total operating costs (mine, processing, G&A)	\$/t	\$50.56
C1 Zinc Co-Product Cost <sup>3</sup>	\$/lb	\$0.49
C1 Lead Co-Product Cost <sup>3</sup>	\$/lb	\$0.37
All-in Sustaining Cost (ZnEq) <sup>4</sup>	\$/lb	\$0.61

		After-Tax NVP8% (US\$000's)					
		Zinc Price (US\$/lb)					
		\$1.00	\$1.10	\$1.25	\$1.50	\$1.75	\$2.00
Lead Price (US\$/lb)	\$0.90	\$1,631	\$1,797	\$2,045	\$2,457	\$2,870	\$3,282
	\$1.00	\$1,814	\$1,979	\$2,227	\$2,639	\$3,052	\$3,464
	\$1.15	\$2,087	\$2,252	\$2,500	\$2,912	\$3,324	\$3,736
	\$1.30	\$2,360	\$2,525	\$2,772	\$3,185	\$3,597	\$4,281
	\$1.45	\$2,633	\$2,798	\$3,046	\$3,458	\$3,870	\$4,535
	\$1.60	\$2,906	\$3,071	\$3,318	\$3,730	\$4,142	\$4,553

		After-Tax IRR (%)					
		Zinc Price (US\$/lb)					
		\$1.00	\$1.10	\$1.25	\$1.50	\$1.75	\$2.00
Lead Price (US\$/lb)	\$0.90	43%	46%	50%	56%	61%	67%
	\$1.00	46%	48%	52%	58%	63%	68%
	\$1.15	49%	52%	55%	61%	66%	71%
	\$1.30	53%	55%	59%	64%	69%	74%
	\$1.45	56%	58%	62%	67%	72%	76%
	\$1.60	59%	61%	65%	69%	74%	78%

Source: Company Presentation

The site's high-grade minerals enable low initial capital and production costs. The Company expects to produce an average of 946M lbs ZnEq and 9.5M oz. Ag in its first five years of production, which would make it the world's fourth largest zinc-equivalent producer. Arizona Mining aims to complete a Feasibility Study in Q3/2018 and begin production in late 2020. Figure 2 contains a timeline of project development.

Figure 2: Taylor Project Timeline



Source: Company Presentation

On January 10, the Company announced the receipt of several state permits regarding water treatment, enabling the construction of a tailings facility, water treatment plant, and an underdrain collection pond. The Company's stock climbed 23% between January 8 and January 15.

On January 16, the Company released an updated PEA. AZ conducted 71,000m of drilling, increasing the Project NPV8% by 57%, reserves by 39%, and expected silver production by 51%. The PEA assumes prices of US\$1.10/lb Zn, US\$1.00/lb Pb, and US\$20.00/oz. Ag. The Company's stock rose 11% over the following week.

On January 24, the Company announced results from its continuing drilling program. The Company completed four new holes, including one interval assaying 40.9% zinc-lead and 11.7 oz./t silver over 9.5m, within a 25m interval assaying 27.1% zinc-lead, and 6.8 oz./t silver. The Company's stock fell 18% over the following two weeks, likely due to a decline in zinc prices, which decreased 5%, to US\$1.56 over that period.

On May 22, 2018, Arizona Announced that it had discovered significant high-grade drill results in a new copper-rich zone at the Taylor project (Figure 3). No significant response in the share price was observed.

Figure 3: Taylor Drill Results

	Interval (m)	Ag (oz/t)	Pb%	Zn%	Cu%
HDS-501	26.2	3.7	10.2	18.4	2.1
HDS-507	68.0	8.4	10.5	9.8	0.7
HDS-508	132.1	7.3	12.3	2.8	0.2
HDS-505	7.0	7.0	21.5	24.7	0.9
HDS-513	22.6	4.1	13.0	18.0	0.3

Source: Company News Releases

On June 17, 2018, Arizona announced that it had entered into an agreement to be acquired by South32 (ASX:S32, LSE:S32) in an all cash deal. The offer for \$6.20/share represented a 50% premium to Arizona’s closing price on June 15, 2018. The transaction requires Arizona Shareholder approval by a simple majority.

Arizona is covered by 8 analysts with an average price target of \$4.67, representing a 32% downside. The Company currently has 7 Buy ratings and no Sell ratings.

### Tethyan Resources PLC (TSXV:TETH):

Tethyan Resources is a junior exploration company with early-stage metal projects in Eastern Europe. Its stock has increased 5% since our last base metals report dated May 25, 2018.

The Company’s portfolio is focused on exploration-stage precious and base metals projects in areas of historic mining with known mineralization. It seeks out compelling drill targets in what it believes to be an underexplored area for copper-gold and other base metals deposits in the Tethyan region of the Balkans. The Tethyan Mineral Belt extends over 10,000 km from southeast Asia to the Balkan states, with comparable mineralization to the Andes or western North America. However, this area remains comparatively underexplored, with regional conflicts preventing exploration with modern geophysics and geochemistry until relatively recently. The Company has secured a 643 sq. km land package in the area, surrounding historical mines and promising sites.

Figure 4: Map of Balkan Region



Source: Company Presentation

Tethyan’s more advanced projects are located in a southwestern area of Serbia, called the Raska District. It is a region of historical mining that included the largest mining complex in the former Yugoslavia and largest lead-zinc production zone in early 1900’s Europe. The zone benefits from existing water, electric, and railway infrastructure, which lowers overall capex



requirements for the project. Within Raska, Tethyan's flagship projects are its Kizevak Zinc-Lead-Silver Project and its Rudnica Copper-Gold Porphyry Project.

### Kizevak Zinc-Lead-Silver Project

This project contains historical reserves defined by the Serbian State as a result of former mining operations. The project surrounds a formerly producing open-pit mine that has since ceased operations. On July 1, 2018, the Company commenced a 1,000 m drill program to explore a soil anomaly along the south-east edge of the former mine. Results are expected in early August. An additional 1.3 km zinc-lead-gold anomaly in the southern area of the property that has never been drilled is currently being sampled.

### Rudnica Copper-Gold Porphyry

This project seeks to exploit a 1,500 m by 600 m copper-gold-molybdenum deposit, distributed throughout two concentrated zones. Soil sampling suggest greater than 0.1 g/t of gold. Sampling along the southern edge of the anomaly returned 567 m at 0.28% copper and 0.45 g/t gold (includes 30 m @ 1.45% copper & 0.4 gold from 120m). Figure 5 outlines the results from additional sampling.

Figure 5: Rudnica Copper-Gold Porphyry Drilling Results

Table below shows the Rudnica copper-gold porphyry drilling results to date:

Hole ID	From	Length (m)	Copper (%)	Gold (g/t)	Copper Equivalent (%)
RDD-001	0	<b>567</b>	0.28	0.45	<b>0.57</b>
RDD-002	96	<b>224</b>	0.24	0.27	<b>0.41</b>
RDD-003	42	<b>291</b>	0.31	0.32	<b>0.52</b>
RDD-004	0	<b>428</b>	0.34	0.27	<b>0.51</b>
RDD-005	6	<b>266</b>	0.22	0.20	<b>0.35</b>
RDD-006	0	<b>460</b>	0.21	0.20	<b>0.34</b>
RDD-007	0	<b>572</b>	0.11	0.16	<b>0.21</b>
RDD-008	138	<b>479.7</b>	0.17	0.24	<b>0.32</b>

Notes on drill intersection and gold equivalent calculations:

10m minimum composite length, 10m maximum internal waste

Commodity prices: Au \$1,300/ounce Cu \$2.97/lb

Copper equivalent calculation:  $CuEq = Cu \% + (Au \text{ g/t} \times 0.64)$

Source: Company Presentation

Over the next six months, Tethyan plans to continue the Rudnica drill program and to add drill rigs at Kizevak to begin expanding and confirming historical results.

On June 12, 2018, Tethyan announced that it had received a grant for a new exploration permit in the northern Trepca Mining district of Kosovo. The license is valid for three years and covers a 75 sq. km site that the Company hopes will contain significant lead-

zinc deposits. The share price fell 25% over the following week in conjunction with other announcements.

On June 14, 2018, the Company announced that it had signed an agreement to amend its option to purchase the Suva Ruda exploration license in Serbia. It had previously entered into an agreement in 2016 with Deep Research, which currently holds the license. Under the new terms, Tethyan will enter into a joint venture with Deep Research after acquiring another company called Taor upon exercising the option. The share price declined 25% between June 12 and June 19, 2018.

On July 3, 2018, Tethyan acquired a Serbian company, Taor, in a stock-and-cash transaction. Taor owned licenses adjacent to Tethyan's Suva Ruda project. The acquisition increased the Company's landholdings in the region to 443 sq. km. The share price increased 26% over the following 2 days.

On July 18, 2018, the Company announced the closing of a \$1.5M non-brokered private placement of up to 6M units at a price of \$0.25 per unit. The net proceeds of the placement will be used to finance Tethyan's Kizevak project. The share price continued an existing downtrend and declined by 4% following the announcement.

Tethyan is not covered by any analysts.

### **Nevsun Resources Ltd. (TSX:NSU):**

Nevsun is a diversified mid-tier miner with operations in Eastern Europe and Africa. Its stock has increased 8% since our last base metals report dated May 25, 2018.

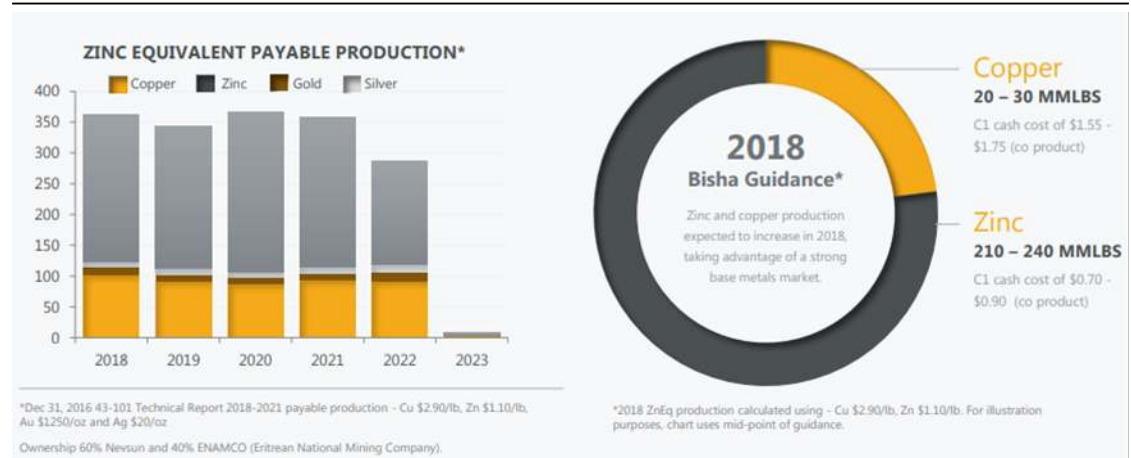
Nevsun's diversified mining projects are located in Serbia and Eritrea. Its flagship properties are its open-pit Bisha Mine and its Timok project in Serbia.

The Bisha Mine was established in 1998 and has a long, stable production history. The government has been very supportive of the mining project over the past 20 years, with stable taxation regimes and capital contributions. The mine produces reliable streams of copper and zinc with small amounts of gold and silver. The chart in Figure 6 shows projected metal production over the next five years.

The Timok Project is a promising investment in a historic copper-producing region. The Company's pre-feasibility study suggests an after-tax NPV8% of US\$1.8B with an 80% IRR at \$3.15/lb Cu and \$1300/oz Au. Probable mineral reserves include 27Mt at 3.3% Cu and 2.1g/t of Au. The tables in Figure 7 outline Resource and Reserve estimates.

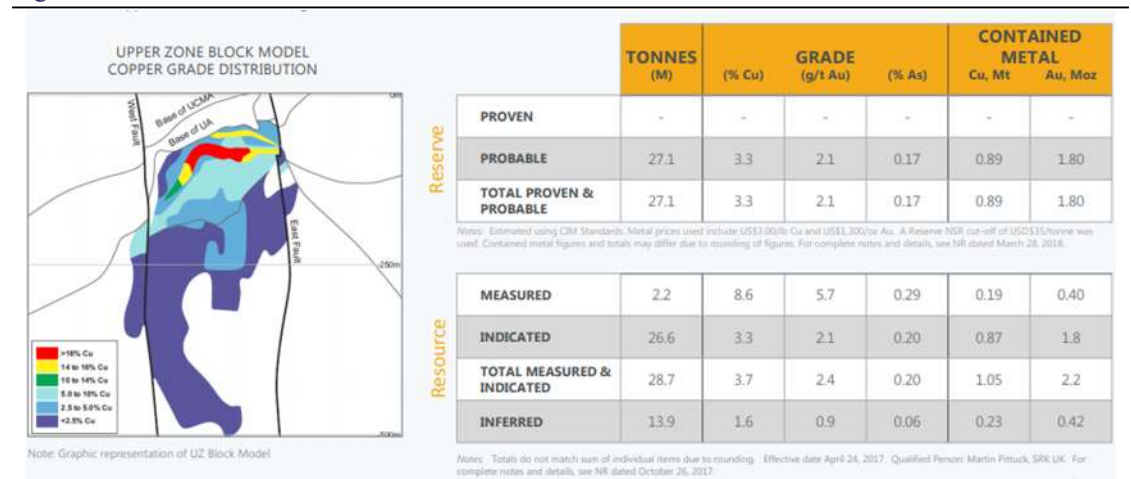
The Timok lower zone requires further exploration. However, initial testing suggests a large copper-gold-porphyry deposit, including 1.7B tonnes at 0.86% copper and 0.18g/t of gold for 31.5B pounds of copper and 9.6M oz of gold. Figure 8 shows the project timeline for the Timok upper zone.

Figure 6: Nevsun Projected Output



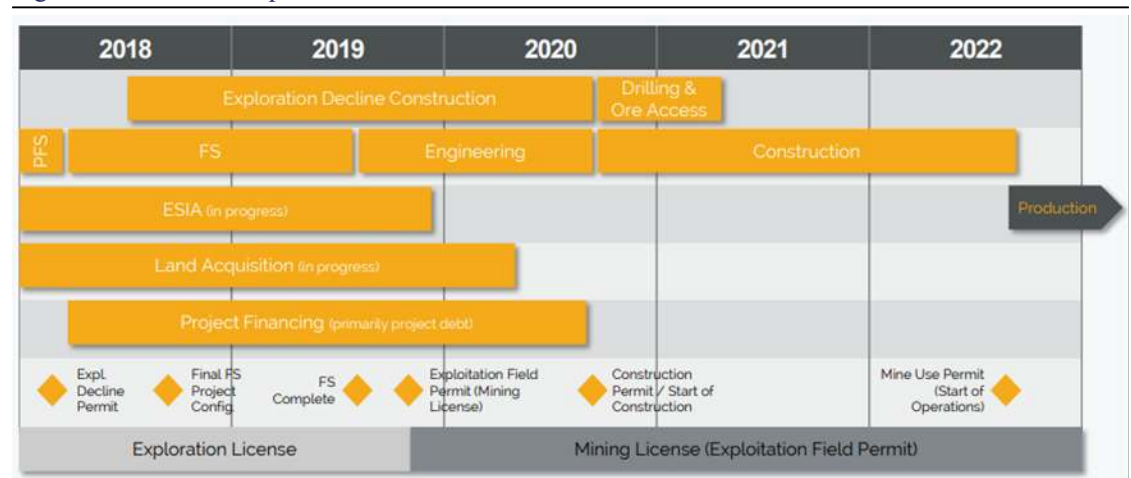
Source: Company Presentation

Figure 7: Nevsun Resource and Reserve Estimates



Source: Company Presentation

Figure 8: Timok Development Timeline



Source: Company Presentation

The Company plans to continue exploration projects in Eritrea in 2018. It currently has licenses for 800+ sq. km. its 2018 budget, including \$7M allocated to exploring 15 sq. km of promising shallow near-mine copper, gold and silver discoveries.

On May 8, 2018, the Nevsun board rejected a Euro Sun-led unsolicited proposal, citing inadequate value and a problematic deal structure. The share price increased 7% over the following 2 days.

On June 5, 2018, Nevsun broke ground on the exploration decline for the Timok project. The share price increased 2% over the following day.

On June 14, 2018, the Company announced its intention to extend the life of the Bisha Zinc-Copper mine. The extension will be self-funded by existing cash flows and is expected to add 3.3M tonnes of high-grade ore through 2022. The share price decreased 2% in response.

On June 26, 2018, the Company announced the initial resource estimates for the Timok lower zone. The property is thought to contain 1.7B Inferred tonnes grading 0.86% copper and 0.18 g/t gold for a total estimate of 31.5B lbs of copper and 9.6M oz of gold. No significant response in the share price was observed.

On July 17, 2018, Lundin Mining Corporation (TSX:LUN) announced that it was considering issuing a formal offer to acquire Nevsun. Management for the Company advised shareholders that no formal offer had been received and recommended no action in response to the announcement.

Nevsun is covered by 10 analysts and has an average price target of 4.19, representing an 11% downside. It currently has 3 Buy ratings and 7 Hold ratings.

### Upcoming Catalysts:

**U.S. President Trump vowed recently to open large areas of Minnesota forests to mining.** The area is thought to host large deposits of copper and nickel. Several mining companies have already expressed interest in the land. Environmental groups oppose the move, which could destroy more than 200,000 acres of old-growth forest.

**Changes in geopolitical issues in Africa could pose a threat to companies interested in expansion. South Africa's Chamber of Mines now demands a 26% black ownership target, which could deter further foreign investment.** We previously mentioned issues in the DRC, which is expected to become the world's fourth-largest copper producer. Zimbabwe and the DRC are scheduled to hold elections in the coming year, in July and December, respectively. A military coup ejected Mugabe, the last Zimbabwean president, and the elections in the DRC were delayed by a year due to violent protests. Changes in longstanding governments could significantly alter the mining environment in Africa.



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