MiningMaven

The Millennium Project: Establishing a strong cobalt and copper position in Queensland, Australia

GLOBAL ENERGY METALS CORP

TSX-V:GEMC

Q4 2019

Introduction

Alongside its prospective assets in Nevada and Ontario, Global Energy Metals' (TSX-V:GEMC) primary focus is the Millennium copper-cobalt project in the Mount Isa region of Queensland, Australia. The exploration-stage property, which remains open for expansion, contains vast reserves of cobalt as well as significant quantities of copper. These two metals are vital components in the production of electric batteries, and are both expected to enjoy an explosion in demand thanks to forecast rise in the use of electric vehicles (EVs) over coming years.

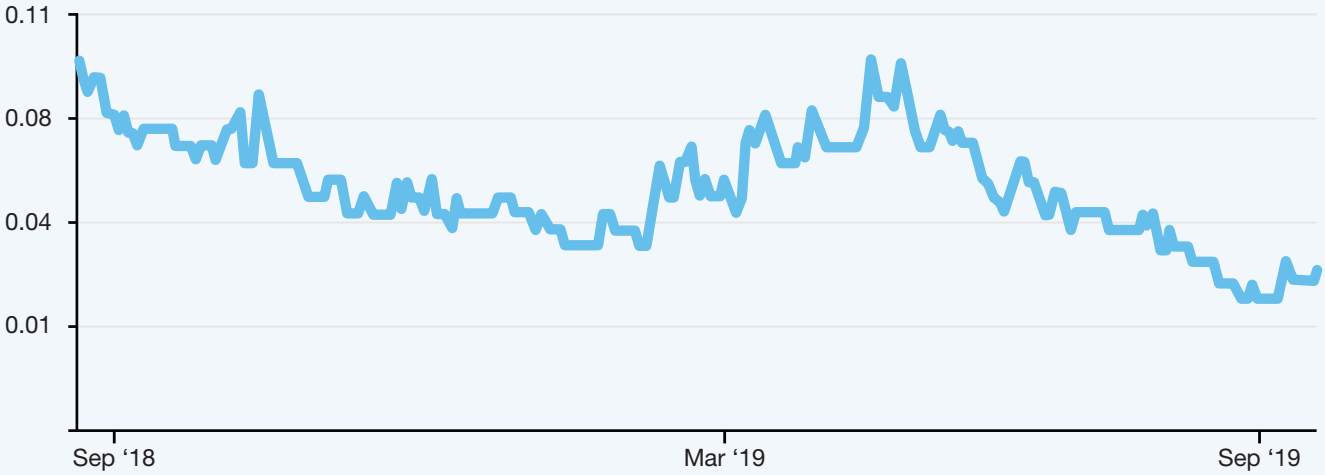
With cobalt nearing a supply deficit due to a widespread move away from the DRC, responsible for more than 60pc of the metal's global production, projects in stable areas like Millennium have never been more important. Alongside Global Energy's president and chief executive Mitchell Smith, we detail the firm's plans for Millennium and, critically, why funding at the project level is essential to the future electrification of vehicles.

Global Energy One Year Price Chart

GLOBAL ENERGY METALS CORP

Market Data

EPIC	GEMC.V
Current Mid Price	$0.035
52 Week High	$0.100
52 Week Low	$0.025
30MA Volume	124,486
Market Cap	$6.5m
Shares in issue	96.76m
Market	TSX-V



Source: LSE

The Millennium Project

Millennium holds a sizeable estimated resource of 3.1MMts containing cobalt at 0.14pc (the dominant economic metal), copper at 0.34pc, and gold at 0.12g/t*. What's more, preliminary hydrometallurgical studies have demonstrated the potential for the recovery of separate cobalt and copper concentrates at rates of more than 95pc.

Following a successful 2018 work programme that included infill drilling and rock chip sampling among other workstreams, Global Energy took over complete ownership of Millennium in June 2019. The deal, completed with Hammer Metals, also saw Global Energy take full ownership of two neighbouring discovery-stage cobalt assets called Cobalt Ridge and Mt. Dorothy – collectively known as the Mount Isa projects. Although earlier-stage than Millennium, the two projects boast significant upside exploration potential, with both containing sizeable, untested copper-cobalt anomalies.

Importantly, when taken as a whole, the acquisition took Global Energy's total land position in the Mount Isa region to 2,560 hectares – making it the largest cobalt-focused explorer by tenement size in Queensland. This point is significant for several reasons.

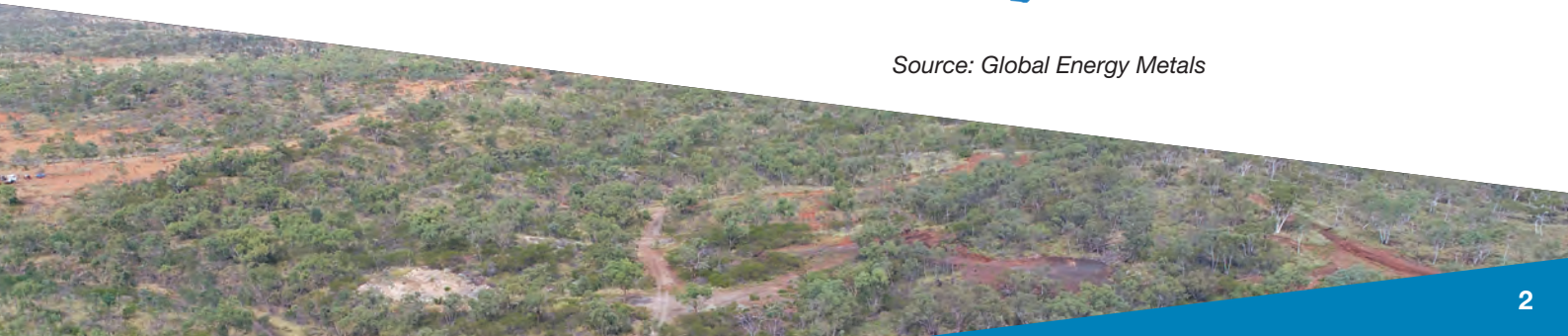
Critically, Mount Isa is a highly mineralised and established mining jurisdiction with robust infrastructure. The Millennium acquisition puts Global Energy at the forefront of this strategically important jurisdiction in Australia, a country renowned not only for its mining-friendly legislation and stability but also its proximity to China, a key metal consumer.

Underlining the importance of Global Energy's positioning is the fact that Mount Isa is also home to several world-class copper/gold/cobalt and lead/zinc/silver mines and deposits. Among these is CuDeco's Rocklands project, located just 19km to the northwest of Millennium and host to 28Mt of reserves grading 0.71pc copper, 0.14pc g/t gold, 6.7pc magnetite, and 357ppm cobalt.

**Equivalence calculations utilized prices as follows: Cu: US$4,600/t; Co: US$27,000/t; Au: US$1,330/oz; and Ag: US$20/oz*.

The Millennium Project's Location

Source: Global Energy Metals



Positive outlook for Cobalt demand

So, why has Global Energy chosen to focus on a project centred predominately around the production of cobalt?

The answer is straightforward. Compounds of the metal such as cobalt oxide, cobalt hydroxide, as well as the metal itself, are essential to the creation of electric batteries due to their volumetric energy and density. Indeed, these power sources typically contain a compound called lithium-cobalt oxide that can be made up of as much as 60pc cobalt by weight.

Electric batteries are widely used in such everyday devices as mobile phones, laptops, tablets, and cutting tools as well as in areas such as renewable energy and ancillary services to electrical grids around the world. Although roughly 50pc of the cobalt produced globally is already used in the production of electric batteries, the big opportunity moving forward for cobalt – and indeed all battery metals - is the rise of electric vehicles (EVs).

Thanks to a rising, global shift away from fossil fuelled cars, typically led by government-backed environmental initiatives, the global EV fleet is expected to grow from 3.2m in 2017 to more than 130m by 2030.

According to the European Commission, this electrification of cars is expected to lead to a threefold increase in the overall demand for cobalt within the next decade alone. Likewise, a report from the body's Joint Research Centre released in 2018 estimates that global cobalt demand will increase at a compound annual growth rate of between 7pc and 13pc from 2017 and 2030. Put another way, global consumption of the metal is expected to reach about 220,000ts in 2025, increasing to 390,000ts in 2030. In comparison, demand sat at just 93,950ts in 2016.

Emphasising the potential offered by this growth, Smith highlights that the amount of cobalt used in portable electronics still outweighs that used for car batteries:

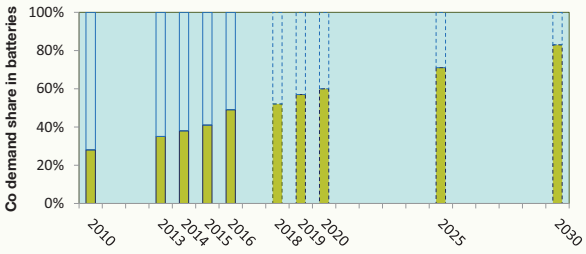
> "This will obviously change as more and more vehicles come online, but it just goes to show how early-stage the EV market still is. EVs represent a $3trn global industry still in its infancy, and its growth is reliant on the critical metals such as cobalt, copper and nickel that are associated with powering the vehicles themselves. One in six cars is expected to be electric by 2025 – that is just five years away and, if these rates are realised, there needs to be a secure supply of battery metals and fast."

It is worth noting that, while cobalt can theoretically be substituted with other metals such as nickel in the chemistry of lithium-ion batteries, work to achieve this is in its early stages. As such, the European Commission believes that the reduction of cobalt in electric batteries will not take place to a significant degree until well into the next decade.

The Future of Cobalt

Cobalt in the EV Market

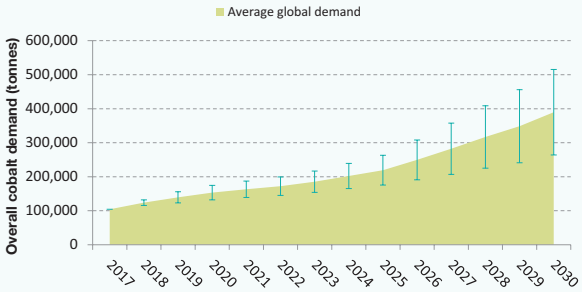
Cobalt Demand Share in Electric Batteries



Own compilation based on (BRGM, 2014), (Roskill Information Services, 2014), (Darton Commodities, 2016), (Bloomberg, 2018)

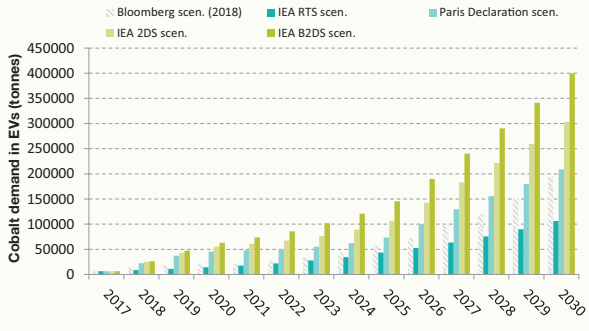
Cobalt Supply/Demand Fundamentals

Overall Global Cobalt Demand Projection



Source: European Commission

Annual Global Cobalt Demand from EVs between 2017 and 2030



Source: European Commission

Outlook for Cobalt Supply/Deficit

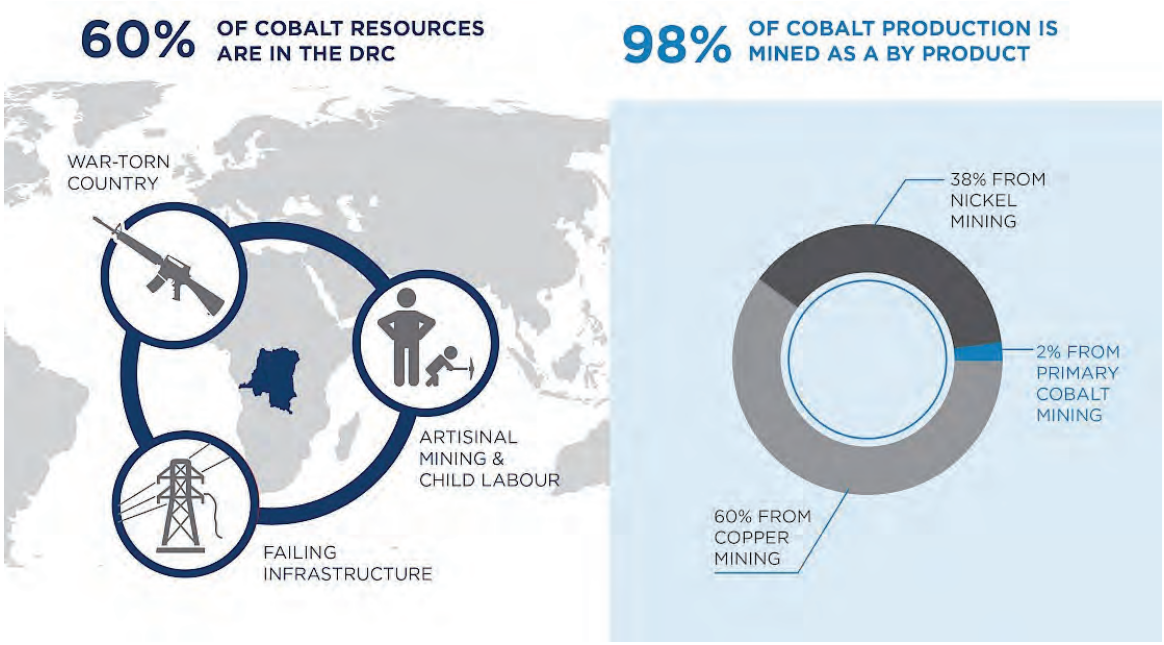
Source: European Commission

Potential Cobalt Supply Challenges

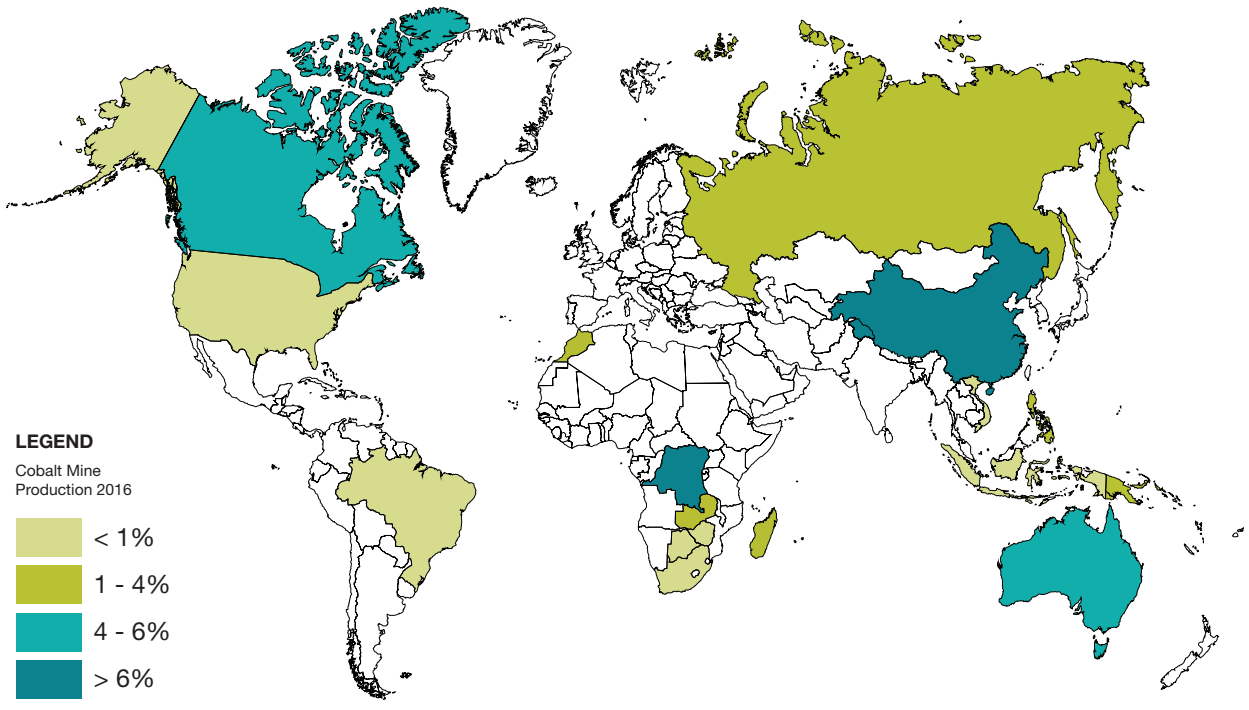
Although demand for cobalt continues to grow, the metal is already encountering severe supply-side limitations. As it stands, more than half of the world's stock of the metal is sourced from the Democratic Republic of Congo (DRC), a country known for its political instability and human rights abuses.

These issues include the use of child labour and the widespread prevalence of dangerous artisanal mining. The country's reputation in the global mining community was dealt yet another blow in 2018 when government royalties doubled on all domestically-produced minerals.

Infographics highlighting supply issues in the cobalt market



Source: Global Energy Metals

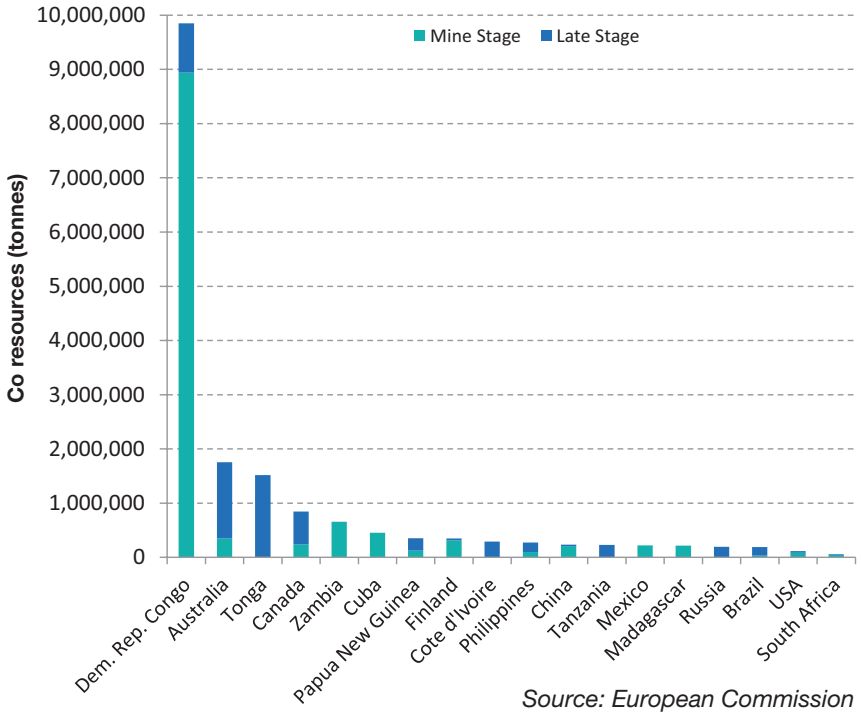


Source: European Commission

As these instabilities and financial challenges have become more prominent, their impact on the cobalt space has reached unprecedented severity. Indeed, many automotive businesses, perhaps most notably Volkswagen, are now seeking out cobalt sourced ethically in alternative jurisdictions. Likewise, mining major Glencore was forced to shut its giant Mutanda mine in the DRC – alone responsible for a fifth of global cobalt supplies – in August 2019 in the face of falling metal prices and rising local taxation.

These issues have only served to highlight the sector's over-reliance on the nation – for example, cobalt's value soared by nearly a third on the news that Mutanda was set to shut alone. The problems have also reinforced the urgent need for sources of the metal in alternative jurisdictions as demand continues to grow. As it stands, much of the world's cobalt is mined predominantly as a by-product, meaning its price has historically moved in line with other metals such as nickel and copper.

Cobalt resources (inclusive of reserves) available at operating mines and late-stage exploration projects by nation



Source: European Commission

If these conditions continue, the European Commission believes that cobalt demand will exceed supply by 2020. This deficit is then expected to reach 64,000ts by 2030, forcing prices of the metal to increase dramatically. One only has to look at cobalt's performance over the last few years to see the beginnings of this dynamic play out. After tripling over the previous three years, the metal hit an all-time high of $95,250/t in 2018. After collapsing to lows of $26,000/t alongside other metals in response to US/China trade concerns, the metal has since recovered to more than $35,000/t in the wake of Mutanda's closure. As of 20 September 2019, the metal was sitting at c.$36,500/t.

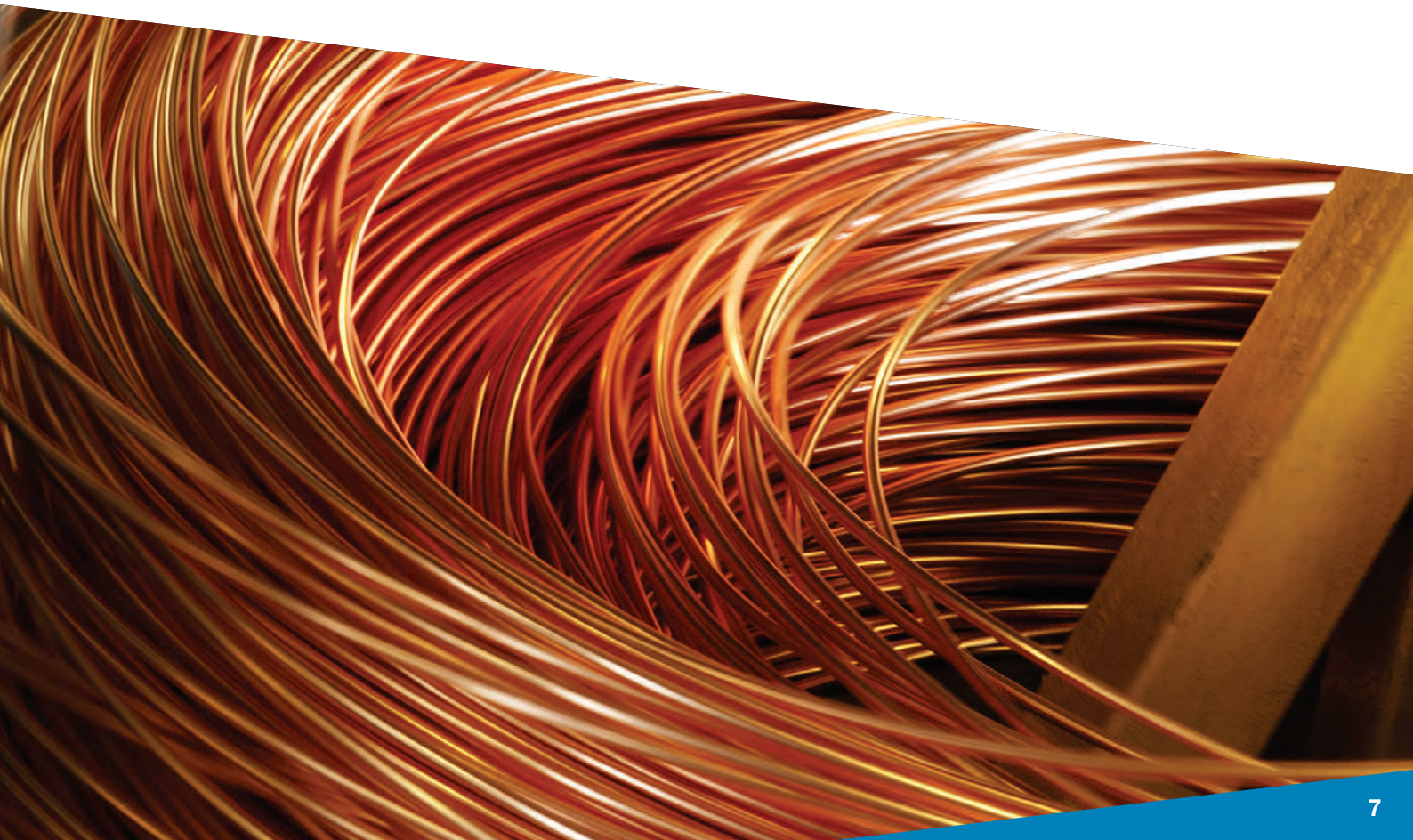
Cobalt Price Chart

A Copper Play Too

Beyond cobalt, Millennium is also prospective for copper, another metal that is expected to enjoy a rapid price increase over coming years due to its use in the manufacture of electric batteries. Indeed, analysis firm CRU expects prices of the red metal to end 2019 at $2.86/lb before hitting $3.30/lb in 2023 as the market approaches a deficit.

Given the growing need for nations like Australia to step up their cobalt output, Global Energy sees Millennium as a principal beneficiary of the world's movement away from DRC cobalt and its increasing adoption of EVs. Smith builds on this, telling us:

> "We have spent the last decade working very closely with intermediaries between the refineries and the end-user groups, and they have voiced concerns on many occasions that a greater diversification of supply is needed away from the DRC. Millennium is based in Australia: a fantastic, very well-known mining jurisdiction based near Asian shipping routes, and it also boasts solid by-product metals. It is the key to our vision of building a diversified supply chain for downstream users with potential to grow into a significant cobalt supplier to the battery revolution."



Moving Towards Commercialisation at Millennium

With the cobalt and copper deficits approaching, Global Energy has accelerated its work rate at Millennium towards production over the past two years. Before the company's involvement at the project, former owner Hammer Metal had established early signs of its potential through a 2016 RC drilling programme. Peak interceptions obtained through this work included 8m with 0.35pc cobalt and 4m at 0.41pc cobalt as well as 19m at 0.38pc cobalt and 1.27pc copper, 24m at 0.15pc cobalt, and 24m at 0.15pc cobalt and 0.23pc copper.

To build on these promising, early signs, Global Energy completed a thorough exploration programme at Millennium in 2018 as part of an initial earn-in agreement. The firm began with a successful infill drilling programme that demonstrated continuity between previously-reported high-grade cobalt zones and wide zones of cobalt mineralisation both nearsurface and at depth. The work – which tested two zones called the Millennium North Zone and the Millennium South Zone – exceeded grade and thickness expectations. Highlight intersections from Hole MIDD010 included 41 metres at 0.2pc CoEq, which featured a 13 metre interval grading 0.28% CoEq; 15 metres grading 0.25% CoEq and a 1 metre interval grading 1.89% CoEq. (Equivalence calculations utilised prices as follows: Cu: US$4,600/t; Co: US$27,000/t; Au: US$1,330/ oz; and Ag: US$20/oz.)

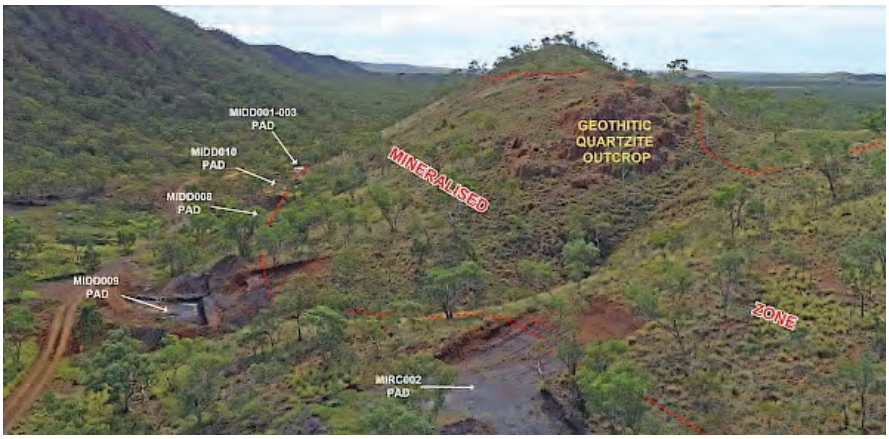
Alongside this, Global Energy also conducted rock chip sampling to test for additional zones of cobalt and copper mineralisation along the Millennium trend – focusing in particular on the northern strike extension. This area – known as the Northern Discovery Zone – is based c.1km north of the defined Millennium resource but contains similar host rock units and strong soil geochemical anomalies. Sampling identified anomalous cobalt and copper, indicating high priority targets for further work to expand the project's known resource area.

With this exploration work confirming Millennium's mineralisation continuity and the potential for resource expansion, Global Energy embarked on an initial metallurgical programme at the asset in November 2018. The work, completed over the project's northern quartzite zone, confirmed that the production of separate cobalt and copper concentrate streams is possible at a recovery rate of more than 95pc for both minerals.

The firm expects that these grades may increase further on re-grind and final flotation.

Smith says the results of last year's work were critical to Global Energy's decision to take a 100pc position in the asset:

> "All of the findings exceeded our expectations significantly. Because of that, we opted to move to full ownership. This arrangement allows for more flexible funding opportunities than the previous earnin agreement as we move Millennium towards a production decision."



A part of the Millennium project's mineralised zone

Source: Global Energy Metals

Proving up the Millennium Resource

In terms of moving forward, a NI 43-101 technical report completed by Kangari Consulting in June 2019 laid out some of the steps Global Energy will have to take at Millennium. The work re-stated that the asset's 3.1Mt inferred JORC mineral resource estimate (which does not include data from 2018's drilling), adding that this figure could increase through '*further resource definition drilling*'.

Specifically, Kangari said there is potential to increase resources within the current inferred zone by drilling closer-spaced infill drill holes to identify high-grade shoots. Likewise, it noted that there is also mineralisation potential at a depth of up to 280m below the currently defined mineral resource.

'*Further diamond drilling is required for resources to be classified as indicated or measured categories under 43-101 reporting standards,*' the consultant added.

Based on this report, Global Energy is now planning extensional drilling at Millennium to investigate more of the project's 3km-long strike. Once this completes, the firm will move to initiate a preliminary economic assessment for the asset before preliminary engineering, further resource definition, and, ultimately, a mine decision. This process can be seen below:

Millennium's Road to Mine Decision

Resource Definition Drilling

COMPLETED

- The objective of the 10-hole, 1,141 metre drilling campaign was to test the up-dip continuity at the Millennium North deposit and confirm historical estimates of cobalt mineralization reported in 2016 by operating partner Hammer Metals.
- Analysis and reporting of the previous drill results can be found in news releases dated June 19, 2018, May 31, 2018, April 30, 2018 and January 17, 2018.

Metallurgical Testing

COMPLETED

Expansion Drilling

Rapidly advance and grow the project on all fronts

- Expand and optimize resource with further drilling and study work;
- Mineralization is open along strike with multiple expansion targets;
- Immediate expansion potential surrounding historical resource;
- Lateral expansion targets under-explored;
- Depth expansion potential with initial intercepts already drilled.

Preliminary Economic Assessment

Preliminary Engineering & Additional Resource Definition

Additional metallurgical work to complement exceptionally positive results from the initial program that exceeded 95% recoveries for both cobalt and copper in separate concentrates.

Upgrade resource to 43-101 standards.

Source: Global Energy Metals

Alongside a new phase of drilling, Global Energy is working on additional metallurgical tests to develop its understanding of the suitability of metals produced at Millennium for end cobalt, copper, and gold users. In July, the business announced that it had entered a memorandum of understanding with a peer group called Cobalt Blue Holdings that has developed processing technology for the extraction and recovery of payable metals. Together, the firms plan to identify a processing option for concentrates at the asset through both a review of historical data and laboratory-scale '*proof-of-concept*' test work on samples using Cobalt Blue's technology.

Smith says that, when it comes to developing an exploration asset, end-product quality is equally important to, or even more important than, the size of resource estimates:

> "I think this point gets missed a lot when junior resource players are looking at projects. There is a lot of focus on making an asset as big as possible, and there are obviously a lot of costs associated with that, but it is only useful if the end product can be produced commercially and there is a willing buyer for it. We want to make sure Millennium offers a product that partners in the battery space would want to buy, and then we will make this project a lot bigger – almost a reversal of the normal procedure."

Mt Dorothy and Cobalt Ridge

As work at Millennium continues, Global Energy also plans to begin de-risking Mt Dorothy and Cobalt Ridge, the Mount Isa projects, focusing on the assets' previously identified mineralisation and untested anomalies. With mid-tier and major mining companies surrounding the two properties, Global Energy hopes that delineating drill targets and defining a resource can trigger a potential joint venture or partnership opportunity. Speaking to these projects, Smith told us:

> "All of the results at these two projects to date confirm the potential for a resource. There is elevated copper and cobalt geochemistry there and analogous geology to Millennium. We think there is an opportunity there and given its size and scalability it could allow for significant feed to neighbouring refineries in the Mount Isa region. So, it is not just about having projects that we want to advance for ourselves; it is also about the future opportunity for other companies to potentially extend their life of mine."

All of this work will be guided by a highly experienced management team led by Smith, a mining professional who has held senior roles at groups like Global Cobalt, International Barytex Resources, and Petaquilla Copper. Likewise, the firm's technical progress is overseen by director Paul Sarjeant, Global Energy's '*qualified person*' with extensive exploration, project evaluation and acquisition experience both in Canada and internationally.

A strategic advisory board made up of numerous mining, financing, and accounting experts also supports the company. Among these figures are well-known writer, speaker, and analyst Chris Berry and James Gilbert, an executive with 28 years of experience in mining and metals investment, financing and transactions. Likewise, strategic support also comes from chartered professional accountant Bassam Moubarak, former CFO of Goldrock Mines where he played a key role in its sale to Fortuna Silver Mines for $180m, and experienced senior executive Giulio Bonifacio, founder and former director, president and chief executive of Nevada Copper. Bonifacio is currently the chairman of CopperBank Resources.

The Need for Project-level Investment

The opportunity presented by the electrification of vehicles for the price of cobalt and copper, and in turn, companies like Global Energy is clear. However, particularly in the case of cobalt, this opportunity can only be realised if investment is made by companies at the project level. Smith says this is where the real investment opportunity lies. By providing the capital needed to develop Millennium through an investment in Global Energy, he says that investors facilitate both the global move towards EVs and get exposure to it in one move:

> "We are early in that stage of EV proliferation and there is a lot more demand to come from that space as the major automotive groups move from fossil fuel-powered vehicles into the electric space. However, we believe there is a shortage of high quality, scalable cobalt projects in safe mining jurisdictions to meet this growing demand for the metal as demand continues to grow as this dynamic plays out."

Smith continues:

> "Realistically, there needs to be capital injected at the project level to make these projects viable and allow for the production of the required material to a degree that will allow the EV revolution to occur. So, why do you buy into GEMC? Through our developing projects, we provide exposure to a multi trillion industry via a mineral that is critical to that growth pattern."

Plans for Expansion at the Millennium Resource

Source: Global Energy Metals

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