# WHIreland & CORPORATE & INSTITUTIONAL BROKING

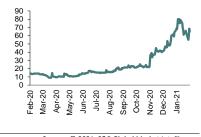
69p

#### 09 February 2021

# CORPORATE

Share Price

Reuters/BBG	EMH	.L / EMH LN
Index		FTSE AIM
Sector		Mining
Market Cap		£111m
Shares in Issue		172m
NAV		5.8p
Performance	All-Share	Sector
1 month:	3.3%	(0.6)%
3 months:	178.7%	18.4%
12 months:	303.3%	96.3%
High/Low	80.0p /	8.9p



Source: © 2021, S&P Global Market Intelligence

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#### Marketing Communication

This document has not been prepared in accordance with legal requirements designed to promote the independence of investment research. Please refer to important disclosures towards the end of this document.

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# **European Metals Holdings**

### Lithium development on track in the heart of Europe

European Metals Holdings (EMH) is developing the large Cinovec lithium (tin/ tungsten) deposit in the Czech Republic with its new strategic partner CEZ in at the project level. Following completion of the fully-funded Feasibility Study, EMH will hold 49% of this strategic asset and operational control. The large Cinovec deposit benefits from simple bulk mining and magnetic upgrade and will use conventional processing techniques to produce a final lithium hydroxide (or carbonate) at site. Security of supply and a scalable project constitutes the prize offered to Europe as the EU supports the development of the next generation of EVs and begins the transition to a carbon neutral future. The location of Cinovec gives EMH a strategic advantage as Europe looks to insist legally on a fully functioning lithium raw material supply chain from ground to car (and recycling). Our simple DCF valuation model gives a fair value of 129.8p/sh.

An investment in European Metals provides investors with:

- **Exposure to the lithium market** We see strong fundamentals for the lithium market. In our opinion, the supply response will be insufficient to fulfil the obvious growing demand (the acceleration of EV sales globally in 2020, up 43%, providing all the evidence needed). Long lead times to develop projects and the associated downstream conversion capacity together with difficult capital markets will drive prices; we use prices close to current spot in our model.
- A development project about to go through a funded final feasibility The agreement with CEZ (SEP:CEZ, Mkt Cap €10.9bn, No Rec) to purchase it's 51%, has fully funded the feasibility study and front-end engineering design work (€29m) and the plan for Cinovec is simple and achievable in our view. Conventional mining and processing will produce a battery-grade lithium hydroxide using well understood technology. Tin and tungsten credits will provide a small element of revenue diversification (c.10%). There may also be synergies with the deposit extension over the German border (Zinnwald).
- Attractive economics Expected post-credit costs place Cinovec in a low-risk portion of the global cost curve; we believe that attractive profit margins will generate significant cash flow and returns. In our opinion the current production plan is ripe for an expansion. We anticipate first production could be achieved in 2023/24.
- Ideal location The European automotive industry will require security of supply and Cinovec is perfectly placed in the heart of industrial Europe. There is a strong interest within the EU in the whole battery chain with a particular emphasis on the full raw material supply chain to ensure a locally produced, "green" lithium. This is being backed up by legislation to ensure "European" lithium is included in the supply mix.
- **Strong, strategic partner** CEZ, a major European utility (70% owned by the Czech Govt.) owing 51% of the project. In our opinion this reduces the risk going forward for the equity component of the project build (along with potential EU grants).

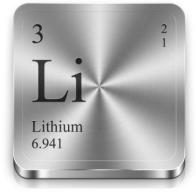
We see the European Metals Holdings story as a straightforward investment case with the development of an operation to produce lithium hydroxide directly for battery manufacturers. Growing lithium demand in Europe will drive an incentive (and legal and strategic requirement) for domestic production as Europe electrifies and looks to a carbon neutral future; driven by a world-leading climate change approach.

In our model we assume \$12,500/t LiOH (marginally above SPOT) through the mine life and include the option of a (heavily risked) expansion. Using these conservative inputs we calculate a fair value at 129.8p/sh using a DCF methodology.

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Important disclosures and certifications regarding companies that are the subject of this report can be found within the disclosures page at the end of this document.

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#### LITHIUM CONVERSIONS

ppm - parts per million ppm to % divide by 10,000 Li to LCE multiply by 5.32 Li to LiOH multiply by 6.06 LiOH to LCE multiply by 0.88  $Li_2O$  to LCE multiply by 2.473  $Li_2O$  to LiOH multiply by 2.809 Figure 1: Zinnwaldite – lithium mica, from its type locality at Cinovec / Zinnwald



Source: Leon Hupperichs - http://www.mindat.org/photo-150086.html

Robust business – fair value of 129.8p/sh

Strategic Investment by Czech utility CEZ highlights attractiveness of the project

The updated Prefeasibility study (PFS) in June 2019 confirmed a planned switch from lithium carbonate to lithium hydroxide production

Strategic partner with the large Czech utility CEZ

Exposure to lithium a positive

#### **Investment Case**

European Metals Holdings (ASX/AIM:EMH, NASDAQ - ERPNF) is developing the Cinovec lithium (tin-tungsten) deposit in the Czech Republic. The Cinovec resource (the largest defined lithium resource in Europe and 4<sup>th</sup> largest hard rock lithium deposit in the world) is strategically located close to key automotive consumers in Europe and attracting a great deal of interest from the battery and automotive industry within the wider European Union. We see fair value at 129.8p/sh.

This updated note reflects the new European focus on lithium within the European Union and its importance to the European car industry. There is still no indigenous lithium raw material supply and we anticipate legislative, social and financial support to the nascent lithium supply industry in Europe from a wider variety of stakeholders. Cinovec is a large, scalable deposit close to the heart of the European car industry and will, in our opinion, be a strategic source of lithium for many years to come.

The proposed production process is standard and will follow a simple route to produce lithium-mica, tin and tungsten concentrates; with lithium hydroxide production via roasting mica concentrate with limestone, gypsum and sodium sulphate before leaching and then recovery from solution after purification. The first stage lithium carbonate production is converted to lithium hydroxide in a final step with hydrated lime slurry with a final purification step using ion exchange and lithium hydroxide crystallisation.

**Small acorns grow** ..... Cinovec has a 21 year mine life in its current (PFS) economic model; a mine life which only uses less than 10% of the resource and which could easily be scaled or extended if lithium demand rises at the pace indicated and expected.

**Involvement of CEZ reduces risk** the strategic relationship with CEZ was first announced in July 2019. CEZ is a large Czech utility company. After conducting due diligence over Cinovec this has turned into a partnership with CEZ earning 51% at the project level (held by EMH's holding company Geomet) for €29.1m – to fund the project to a construction decision. In the case of EMH the partnership with CEZ reduces the risk going forward as, in our opinion, it removes much of the risk associated with the construction fund raise.

**Positive choice to produce lithium hydroxide** European Metals Holdings adapted its plan for final product to lithium hydroxide in June 2019 in response to battery manufacturers turning to this compound as feedstock for batteries: it offers better power density (a bigger battery capacity), faster charging, longer life cycle and enhanced safety features. Lithium hydroxide achieves a premium to lithium carbonate (+15-20%), a differential that will be maintained in the future in our opinion.

**Don't underestimate the green credentials** Lithium from Cinovec will not only be a material for the green revolution, but will also be produced in an environmentally sensitive way. The low-carbon involved in short transport distances combined with production using a growing proportion of renewable energy generated within the EU will make for a final lithium product with strong environmental credentials.

**Exposure to lithium** The demand for lithium-ion batteries is only set to increase and eventually likely to put a strain on the raw material supply chain over the medium term in our view – which will necessarily impact on price. A recent oversupply (mostly from Australian spodumene producers) has led to price pressure but as demand grows quickly there will be a requirement for additional supply – this is where Cinovec can come into its own, especially as it is located in the heart of industrial Europe. Geographically, the project is in a sweet spot as a key component for security of supply for consumers. The majority of car manufacturers are working on new and improved electric vehicles. This is shown in Figure 3 with the Cinovec project right in the heart of lithium demand from the

Europe has no significant lithium production and none for the battery industry.

Estimates of demand show that by 2025 there is the equivalent requirement for over six "Cinovec"sized mines. Cinovec will simply have to be part of the production mix required to meet EU domestic demand.

Robust project on many levels

Large resource

Consistent, mineralogy

Europe – leading new technology industries in the battery sector

Timing

Conventional production process

new battery manufacturers setting up production facilities in Europe. Increased demand for electric vehicles will in turn lead to improvements in infrastructure (e.g. charging points) together with improved battery technology (capacity, charging speed) and specific legislation in countries (especially continent-wide in Europe) which will challenge the use of the internal combustion engine – this is already happening as many countries have already put dates on when new Internal Combustion Engines cannot be sold.

**High-level European interest in the whole battery chain** The European Union recognises the importance of the battery industry to the European economy going forward – the whole chain, from raw materials through battery manufacture and inclusion in EVs and back to raw materials again via recycling. The growth in lithium demand in Europe will be big; the investment in an EV future by all the car manufacturers is also big. The requirement by the EU to "go green", will mean that the supply chains which provide for the raw material and the energy to charge the final products will also have to be environmentally friendly – short supply chains, power efficient processing and charged by renewable energy where possible. There will simply have to be lithium mined, with lithium chemicals produced, in Europe to ensure the "green" credentials of the lithium used. We therefore see significant support by the EU and the car manufacturers to encourage the bottom, raw material, part of the supply chain. The EU goals cannot remotely be met without Cinovec going into production. We estimate that demand in 2025 will be equivalent to the production of at least six Cinovec-sized mines (as currently planned).

Just to reiterate the investment case for Cinovec:

- Cinovec ticks the boxes of a low-risk, high-return project The fundamental basis for investment in mining projects in our opinion should be low risk and a high return – with an assessment reached based on geology, mining, metallurgy, location, economic returns, commodity market and management. Timing of first production could be late 2023/24 - into the middle of a period of exponential growth in demand in the EU.
- **Cinovec has a large resource**, which is amenable to bulk mining and processing and is multi-commodity, hence capable of producing several saleable products: lithium hydroxide (or still potentially lithium carbonate if required), tin, tungsten and potash (potassium sulphate). The PFS mine plan uses only 10% of the total outlined Indicated Resource (Table 4) and we anticipate an expansion is likely at some point.
- Mineralisation is consistent the large bulk of the resource shows little variability in grade and mineralogy. Lithium grade can be simply upgraded by magnetic separation of lithium-bearing mica – meaning back-end processing size is smaller (~80%) with a saving on capital cost.
- Local support People in the local area appreciate mining and the employment benefits it can bring (the area has a long history of mining).
- We view the location in the centre of Europe as a big positive with stable democracies and expansion of automotive and battery industry infrastructure. There is currently no production of lithium chemicals in the EU; and Cinovec would provide domestic security of supply.
- **Production will be via conventional processes**, well-understood technology which reduces the risk going forward.
- **Full value capture** with European Metals Holdings proposing to produce a final product direct to the battery manufacturers, it is not losing value in the zinnwaldite conversion from an intermediate concentrate (compare with spodumene producers).
- Management has been developing the project for several years and is well connected internally in the Czech Republic with links at all levels of government – all improved by the inclusion of CEZ as a local, high-value strategic partner.

The Definitive Feasibility Study (DFS) programme with experienced partner by end of 2021.

Expect an offtake to be announced in year

Trading on the NASDAQ OTC to gainexposuretolithium-awareshareholders.Still looking to list inCzech Republic

Adding strategic institutional investors to the share register

Lithium sector appreciation by the market has improved

CEZ is a financially strong partner, headquartered in the Czech Republic and with ongoing and future interests in the use of lithium.

A natural fit for the next stage in European Metals Holdings' development

# Since the last update

European Metals Holdings is managing the DFS programme and has appointed SMS Group Process Technologies GmbH as lead engineer at the Cinovec project in Czech Republic. SMS will be working on the minerals processing and lithium battery-grade chemicals production, to provide a complete Front-End Engineering Design (FEED) study for Cinovec. We expect the DFS to be completed by the end of this year. We also expect EMH to be working on its offtake agreements.

Since our last update, EMH has started trading also on the NASDAQ International OTC program to boost its exposure to major US investors and talks are ongoing about a quote on the Prague Stock Exchange to increase local interest in the Cinovec project. The listing on the NASDAQ International Program will accelerate the company's exposure to US shareholders, who understand the lithium sector.

At the beginning of February 2021, European Metals Holdings took advantage of the interest in European lithium developers to raise a small amount of capital (AUD7.1m) and introduce a new institution to the register - Luxembourg green energy fund, Thematica Future Mobility. Whilst not necessary EMH may, at its choosing, take advantage of further interest from other strategic institutional investors.

Share price performance of EMH (and a host of other lithium company peers) has been extraordinary over the past 6 months or so where we have seen confidence return to the sector. In our opinion, this move into the sector is structural as investors understand that given the time taken from discovery to production, the next raft of lithium projects simply has to come from those already moving to development stage. For European projects there are also special, unique drivers such as the expected growth in domestic EV demand, the legal requirements for locally sourced raw materials and the expectation that these new, critical metals will be produced in an environmentally-friendly way: by high labour and ESG standards using green power and with green transport solutions.

# Who is CEZ?

CEZ is an established, integrated energy group operating in Europe and Turkey - headquartered in the Czech Republic. The core business is electricity (generation, supply and trade), natural gas, and coal production. CEZ Group has 33,000 employees, annual revenues of approximately EUR8.3bn and earnings of €0.6bn (source: CapIIQ, 20.01. 21).

The largest shareholder of its parent company, CEZ a.s., is the Czech Republic with a stake of approximately 70%. The shares of CEZ a.s. are traded on the Prague and Warsaw stock exchanges and CEZ has a market capitalization of approximately €10.9bn.

CEZ intends to develop energy storage and battery manufacturing projects in the Czech Republic and in Central Europe. It is a market leader for E-mobility in the region and operates a network of EV charging stations throughout the Czech Republic.

While CEZ can withdraw from the project at certain milestones, we see this as unlikely given the expansion into automotive infrastructure that CEZ is already committed to. CEZ can withdraw firstly (milestone 1) after spending €12.3m on completing the engineering design programme (including semi-industrial pilot testing) or secondly (milestone 2) after spending €20.8m which would include the completion of the Definitive Feasibility Study. Milestone 1 would leave CEZ with 21.5% of Cinovec with 36.4% after milestone 2 – both stages would have hugely advanced the Cinovec project.

In our opinion, CEZ is a strong partner and a natural fit for the next stage in European Metals Holdings' development.

Lithium a key component of a green future

Europe produces 0% of its own lithium battery supply and 0% of its lithium hydroxide chemicals – the starter chemical for most EV batteries

The proportion of EVs sold in the EU is expected to rise from 1m to 4.5m from 2020 to 2025 and to represent ~25% of all cars sold. This translates into a requirement for 150GWh of batteries in 2025 which, using a factor of 90% (1kwh requires 0.9kg LCE), which is a demand equivalent of nearly 140kt of LCE in 2025.

As current global production is only in the region of 350kt LCE; demand cannot be satisfied from current production; new production supply will have to be funded and built.

# The European Perspective on Lithium

Europe has finally realised that it is dependent on a range of metals and chemicals (e.g. lithium, nickel, cobalt and graphite – to name a few in the battery sector) for which it has no, or only a little, domestic production. Lithium is a key component of a green future and the removal of internal combustion engines (ICEs) from the transport network for reasons of  $CO_2$  emissions or air quality will go a long way to help. The supply of lithium into the battery sector for Electric Vehicles (EVs) is therefore of paramount importance going forward and, perhaps especially after the COVID pandemic, Europe is taking a good look at its supply chains.

A battery chain in Europe is being developed and there are several lithium cathode and large battery factories under construction (Figure 3). The European Commission is taking a leading role in legislating for the end of the ICE; so the demand end of the lithium chain is well catered for. However, there is no domestic supply of battery-grade lithium, no conversion capacity to turn lithium-bearing concentrates into battery-grade lithium and no domestic production of lithium concentrates; **the start of the supply chain is missing**.



A new EU proposal to change battery legislation from its first 2006 directive will continue to support the development of European raw material supply. The new proposal seeks to embed the full life cycle of a lithium battery from mining into end users cars and the all-important recycling step this supports green transport from green energy to address all social and environmental concerns. The change is being implemented because of the rapid expansion in the demand for batteries (estimated at a 14x increase by 2030 by the EU), its impact on the environment and the focus on environmental sustainability and accountability by major economies as we all attempt for carbon neutrality.

Source: WH Ireland Research

# A European "kite mark" of lithium provenance

The EU proposal will seek to mandate competitive sustainability with the use of responsibly sourced materials using a minimum content of recycled materials, with a focus on carbon footprint, performance (and durability) and labelling. From the 1st July 2024, only rechargeable industrial and electric vehicles batteries, for which a carbon footprint declaration has been established, can be placed on the market in Europe. Providing this legal framework is the key to unlocking investment in Europe to service the growing EV sector on a more sustainable level.



#### Figure 3. Lithium Battery plants in Central Europe (construction and planned)

Battery factories are being set up all around Europe

The EBA platform includes the European Commission, EU member states, the European Investment Bank and more than 400 industrial, innovation and academic stakeholders. The EBA's industrial development programme (EBA 250) has the objective of ensuring a strong pan-European battery industry that is able to help Europe capture a growing market worth €250Bn/year from 2025. The European Battery Alliance (EBA) was launched in October 2017 to support the whole supply chain across Europe; from mine through to batteries and eventually to recycling. Many mining companies with an interest in lithium now have an association with the EBA and EIT InnoEnergy (European Institute of Innovation and Technology), which is an EU body responsible for sustainable energy across Europe (and which manages the EBA250 programme); and which also has the financial power to support start-ups in the sector.

To date EIT InnoEnergy has invested €276m in the sustainable energy sector, supported the development of more than 480 products, partnered with more than 500 groups across Europe and supported over 330 start-ups. In total, the projects EIT InnoEnergy have been involved with have raised €2.5Bn of finance.



Source: WH Ireland Research, IS Markit (Transport & Environment, 2019 European Federation for Transport & Environment AISBL) # kt LCE demand calculated using a ratio of 1kwh of battery capacity needs 0.9kg of LCE

Source: WH Ireland Research, European Metals Holdings

Usual risks for development-stage projects

Funding via capital markets remains a risk but recent funding in the sector shows that there is equity available for the right projects

Country risk is low

Location key: central, infrastructure and reactivation of a brownfield site

Product pricing a benefit

Commodity risk is low

# **Key Risks and Other Considerations**

European Metals faces the usual risks for development projects, raising money (equity and debt) in the capital markets and permitting being specific risks.

The capital markets have recently been a difficult place for junior explorers and developers in the Natural Resources Sector. However, we see renewed interest in the sector – not least in London in February 2021 with a \$62m Bacanora (AIM:BCN, No Rec) raise to fund the Sonora lithium project and in EMH itself by adding a new strategic institutional investor to its register with a AUD7.1m raise. This renewed interest in resources in general has moved from producers into developers (and even exploration) as the market see value enhancement. That EMH works in lithium (for which we see a rapid expansion in demand and a supply chain that may struggle to keep pace) and lithium in Europe (where provenance is all important) means investors may be even more focused on the Cinovec project.

We assess the country risk for the project as low. The Czech Republic is an established democracy in the European Union. The June 2019 strategic partnership with CEZ, a major Czech utility owned 70% by the Czech government also shows that the Czech Republic is a good place to do business – with support at all levels of government for EMH.

Location in an area full of infrastructure is also a further big positive. The new spodumene producers in Western Australia are remote, spodumene projects in Europe and Africa are far from the companies which refine in China (until new conversion units open in other major demand areas of the world), the Chilean and Argentinian brine deposits often lack sufficient process water and the new clay deposits in Mexico are also remote and in areas which will be new to mining, with all the lack of support services that this implies. Cinovec by comparison benefits from significant infrastructure, access to experienced contractors and a trained workforce in a region with a very well-established mining industry; and the intention to produce a final product, for sale, in Europe.

Product pricing will also be low risk in our opinion. Lithium pricing is not always transparent. Lithium spodumene concentrate producers must take the price for concentrate (from Asia) – with the contained lithium at a discount to the contained lithium in the spot carbonate or hydroxide price. The spodumene price may not always run in the same direction as the lithium chemical pricing depending on the supply and demand for concentrate. In Cinovec's favour is that it will produce a final product and is expected to settle longer-term offtake agreements with consumers – this will both provide security of revenues and enable proper partnerships to be built up and also may be a source of funding for the development of the project. There may also be the potential for a producer premium to price – given the purity of the lithium hydroxide produced.

Our estimates of the supply / demand-price equation for lithium show that a front runner in lithium production in Europe would be relatively low risk. There is a growing demand for lithium, amongst a host of speciality and critical metals to enable green, efficient technologies and hi-tech applications; for which there is no realistic economic metal substitution possible and for which there are issues around security of supply. In the case of lithium there is a large anticipated expansion in electric vehicles which requires new producers to satisfy ever increasing demand and the legal requirements being imposed by the EU (amongst others). We see fair value in EMH at 129.8p/sh

We use a DCF approach for our fair value

WH Ireland Model Assumptions

Long-term LiOH price set at \$12,500/t

Long-term tin price set at \$21,000/t

Long-term tungsten price set at \$350/mtu APT

Potassium sulphate \$600/t

WHIe Capex - \$550m

WHIe Opex - \$5,600/t LCE (pre-Sn/WO<sub>3</sub> credits). Post credits \$4,000/t.

Capex for expansion an additional \$300m from cash flow

# Valuation

Our fair value for European Metals Holdings is 129.8p against the current share price of 65p.

#### Approach

Our model is based on Pre-Feasibility numbers from European Metals Holdings modified by our own assumptions – these are laid out in Tables 3 and 4 below, with a summary cash flow in Table 5. We risk the project using 50% of the project NPV for this stage in our final fair value calculation using a share divisor of current outstanding shares (172m post Feb 21 raise). This is an increase on our previous 40% of NPV – reflecting that the full feasibility study, processes are now funded and EU support for lithium projects is becoming clearly evident.

New for our fair value estimate in this note is an allowance for a doubling of capacity in year 5. The resource at Cinovec is huge and we anticipate that extra capacity will be added to make full use of the resource to satisfy the demand we expect. This possibility has not been discussed by management as it focuses on its priority of bringing the stated mine plan into production – but in our opinion makes perfect sense from a resource utilisation point of view, a demand point of view and perhaps more importantly an economic point of view (the expansion roughly doubles our NPV<sub>8</sub>). We estimate (WHIe) an additional \$300m capex to double capacity at the mine and make full use of capital and operating economies of scale. This potential expansion is risked and we include only 10% of the value in our model which is calculated as the difference in NPV<sub>8</sub> for the expanded case and NPV<sub>8</sub> for the standard project as outlined by EMH.

Table 1: European Meta	ls Holdings Val	uation				
Valuation Approach		Valuation	Valuation	Owned	Risk*	Valuation
		US\$m	£m**	%	%	GBP p/s
Cinovec	DCF - 8%	949.1	730.0	49.0	50.0	103.9
Cinovec Expansion	diff. DCF - 8%	798.8	614.5	49.0	10.0	17.5
Cash & Cash Equivalents***		22.3	17.1			10.0
Corporate Costs	3yr DCF-8%	(3.6)	(2.7)			(1.6)
WH Ireland Valuation						129.8

Source: WH Ireland Research. Valuation based on 172.1m \* Subjective risk

\*\* WHI est FX US\$:£ = 1.3:1. (Jan 2021), \*\*\* WHI est Feb 2021. Post 2<sup>nd</sup> Feb AUD7.1m raise and including 49% of the cash in the Cinovec JV vehicle – Geomet (the cash used by CEZ to buy its stake and fund the feasibility study)

#### Sensitivity

The Cinovec project is a robust project as shown in Figure 5. Even if the lithium hydroxide price were to fall 20% (just above the current (low) indicative lithium hydroxide pricing at \$10,000/t), the project would still return an NPV<sub>8</sub> ~\$478m in our model. The initial 21 year mine life outlined by European Metals Holdings is also only a minimum in our view as the whole outlined resource would justify a much longer life or the expansion we show in our fair value – subject to drilling and reserve definition.

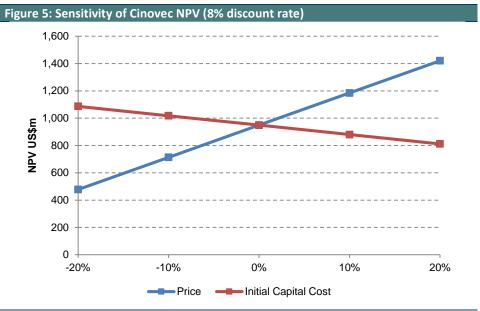
There is also the potential expansion capacity and potential synergies with the remaining part of the deposit on the German side of the border – Zinnwald (currently owned by Zinnwald Lithium AIM:ZNWD). We are firmly of the opinion that there are synergies with Zinnwald and that in all likelihood there will only be one large processing facility required

A large project in the EU with significant strategic backing should benefit from a lower discount rate than the standard 10% we usually use across our modelling in the mining sector. We use an 8% discount rate in our analysis here.

Cinovec is a robust project and we expect once in production for it to lie in a low risk part of the global cost curve, with costs below the spodumene producers and benefiting from by-product credit tin and tungsten and economies of scale could generate bigger returns for shareholders of both deposits. A significant majority of the current declared lithium resource is on the Czech side of the border.

We use an 8% discount rate in our fair value analysis. We usually use a standard 10% discount rate, but we view Cinovec differently; the project lies in the European Union which is fully supportive of a domestic lithium mining industry to complete the raw material supply cycle it wants going forward. We expect, in addition to European bodies like the EBA250, there will also be legislative help and even grants to encourage the mining of lithium in Europe; with a legislative requirement for the use of domestic lithium in car batteries the advanced European lithium developers MUST be part of the supply solution going forward.

There may also be a premium for Cinovec lithium hydroxide as EMH (RNS 17.06.19 - PF update) confirmed the purity of lithium hydroxide produced from Cinovec ore as part of the metallurgical testwork, with the amount of sodium, potassium, chorine, sulphate and iron at, or below detection limit). Purity of lithium is essential if there are to be safe batteries produced.



Source: European Metals Holdings

Given the size of the resource, an expansion seems like a logical project for European Metals Holdings to take and is perhaps one of the biggest sensitivities to total NPV. If we double the size of the project from year 5 (to match potential demand increases in the EU), for an additional capital cost of \$300m, then the total NPV<sub>8</sub> for the project rises to \$1,748m from \$949m in our Base Case. We see a clear case for an expansion at Cinovec.

#### **Future Valuation**

Of course, once in production we would look at the valuation of the project at Cinovec in a different way. The valuation of a mine generating \$150-\$200m of free cash flow every year (\$370m if the project doubled in size) would be significantly in excess of our fair value presented here.

The size of the resource suggests that an expansion of some sorts would have to be considered once in production. The impacts of a doubling of production on project returns suggests this will be something to be considered.

WHIreland

**European Metals Holdings** 

European Metals Holdings is listed on the ASX and AIM – EMH. It is also listed on the US based NASDAQ International OTC program (ERPNF) and is also seeking a listing in Prague

has

long

been

Current

area

prospective for mining

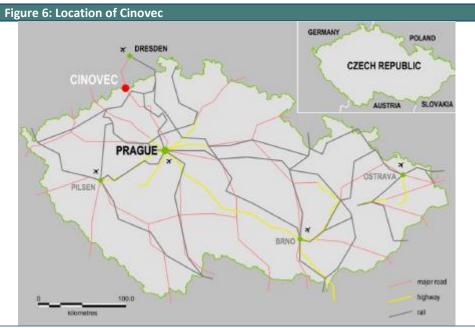
## **Overview of European Metals Holdings**

European Metals Holdings controls the mineral exploration licenses awarded by the Czech State over of the Cinovec lithium-tin deposit in the Czech Republic – these are held 100% by Geomet, the local 100% Czech subsidiary – and it is this subsidiary that CEZ is earning its 51% stake in. The project is located 100 km NW of Prague on the border with Germany. It is part of the historic Cinovec-Zinnwald mining district which over the past 600 years has been a significant producer of tin. The deposit is in the heart of industrial Europe, close to the major centres for the automotive production and where technology industries are abundant.

#### History

Tin mining began in the area in the 14th century with modern mining only ceasing in 1972 when near surface flat lying quartz-cassiterite-wolframite veins were mined underground using shaft access.

As the high grade tin ore was running out, the Czech State began an underground exploration programme south of the workings. UG drilling and tunnelling defined significant blind tin-tungsten-lithium mineralization associated with greisenization and silicification with about 0.5Mt of ore test-mined in the 1980s and a feasibility study completed. All operations ceased with the demise of the centralized economy in 1990.



Source: European Metals Holdings

After gaining control of the licence, European Metals Holdings has quickly moved through the stages of study completing a scoping study in 2015 and a PFS in 2017 (which was updated in June 2019).

#### Geology

Cinovec lies in the Erzgebirge region situated in a NW part of the Bohemian Massif in the Saxothuringian zone of the European Variscides. The mineralisation is related to post-

orogenic granite intrusions and hydrothermal alteration – a "greisen" system with quartz and zinnwaldite (a lithium mica) with or without topaz, minor sericite, fluorite and potassium feldspar and forms as:

- irregular metasomatic greisen and greisenised granite zones from several tens to hundreds of metres thick that follow and are located near or at the upper contact of the cupola;
- thin, flat greisen zones enclosing quartz veins up to 2m thick and parallel to the intrusive contact of the cupola. Ore minerals are cassiterite, wolframite, scheelite and zinnwaldite. In the greisen, disseminated cassiterite predominates over wolframite, while in veins wolframite is roughly equal to, or more abundant than, cassiterite;
- steep quartz veins with wolframite

#### **Resources**

A resource was calculated for the lithium and the tin zones in November 2017 after a period of infill drilling. This incorporates all of the historical data (which is considerable: drill holes, production reports and underground sampling, 85km of historic diamond drilling plus 21.5km historic development tunnels) which had been checked with holes drilled by European Metals Holdings (>12km to date).

European Metals Holdings concentrated its recent drilling on known high-grade areas in the tin and lithium zones; high grades which would substantially improve the economics of the deposit if targeted during the early years of production.

The deposit is not constrained by the national border and the mineralisation does run into southern Germany where the licences are held by another company (which is now 44% owned by Bacanora – AIM:BCN) and the deposit called Zinnwald. There may be some synergies with the continuation of the deposit.

Table 2: Ci	novec reso	ource (No	v 2017) –	see Figur	e 8 for lo	cation of I	resource	
Category	Cutoff Li	Mt	Li%	LCE kt	Sn%	Sn kt	W %	W kt
Indicated	0.1	372.4	0.21	3,890	0.04	149	0.02	60
Inferred	0.1	323.5	0.18	2,960	0.04	129	0.01	42
Total	0.1	695.9	0.20	6,990	0.04	278	0.01	102
Courses Furer	aan Matala I	Ioldings M	U Iroland ro	coorch				

Source: European Metals Holdings, WH Ireland research

The Prefeasibility Study (PFS) is based on mining 34.5 Mt of material over 21 years, 100% of which lies within the Indicated Mineral Resource category. The tonnage used in the PFS represents only 5% of the total Mineral Resource and 10% of the Indicated Mineral resource.

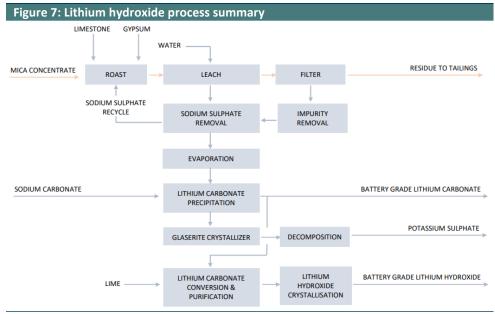
#### **Proposed production plan**

The Prefeasibility Study assumes mining 1.7Mt/yr which is mined and crushed in the underground mine before stockpiling at the mine entrance (30kt capacity) over a 21 year period. The geometry of the orebody is largely flat or shallow dipping and massive enough to allow the use of long-hole open stoping (stopes - 90m long, 25m high and 13m wide, rib pillars up to 7m). The mine will be accessed by a twin decline system. A conveyor will be installed from the underground primary crusher on the 590m level (130m below surface) with a conveyor up the decline to take ore to surface. The second decline will be used as a service decline for men, material and as an intake airway.

The key to lithium production is the simple upgrade from 0.6%Li<sub>2</sub>O in the ore to 2.9%Li<sub>2</sub>O in the lithium mica concentrate. This simple upgrade is achieved after crushing and grinding by Wet Magnetic separation.

Recoveries of over 90% at this stage are expected.

Comminution will be via a single stage 4MW SAG mill at the mining portal and will deliver ground ore ( $P_{80} < 212 \mu m$ ) to the Beneficiation Plant, which is to be located adjacent to the Lithium Plant. Wet High Intensity Magnetic Separation (WHIMS) will first separate out the lithium-bearing micas (zinnwaldite) and produce a magnetic mica concentrate (0.36Mt/yr for further processing). The ability to use wet magnetic separation is unique to zinnwaldite ore because zinnwaldite contains iron in its lattice and is paramagnetic. Magnetic separation offers cost and recovery advantages over beneficiation through froth flotation (recovery of 91% v 78%). The non-magnetic stream will be treated by gravity, flotation, magnetic and electrostatic separation to produce tin and tungsten products.



Source: European Metals Holdings

The lithium plant will take the mica concentrate from the beneficiation plant and extract the lithium through roasting, leaching and then purification to produce battery grade lithium carbonate or hydroxide. The plant will also produce a by-product potassium sulphate. The tailings produced by both processing plants will be filtered to produce a filter cake which is dry stacked in a nearby Tailings Storage Facility (TSF). Although higher cost than alternative methods, dry stacking significantly reduces environmental impact. Recent test work conducted at separate laboratories determined the optimal mass ratio of mica to gypsum and limestone additions to the roast. This roast recipe results in an ambient temperature leach lithium recovery of 95% after the blended powder has been roasted at a temperature of 850 °C for 1 hour.

Based on the best lithium extraction achieved in early roast optimisation test work, a bulk composite of mica concentrate, produced from representative Cinovec core samples, was roasted at Nagrom, and an initial lithium carbonate produced which had a purity of >99.5%.

As confirmed by test work conducted in both Anzaplan (Germany) and Nagrom (Perth), the quality of the lithium carbonate and lithium hydroxide produced more than meets requirements for use in lithium batteries (indeed it is exceptionally pure). Tin and tungsten concentrates would be sent to smelters on arm's length contracts with the lithium mica processed on site to produce battery-grade lithium carbonate or hydroxide.

Anzaplan began testwork on proving up a flowsheet for the production of lithium hydroxide in 2018 and following the recent PFS update.

- Lithium recovery to concentrate 90%;
- Lithium recovery in carbonate plant 91%;
- Overall lithium recovery 82%; and
- Tin recovery 65%.

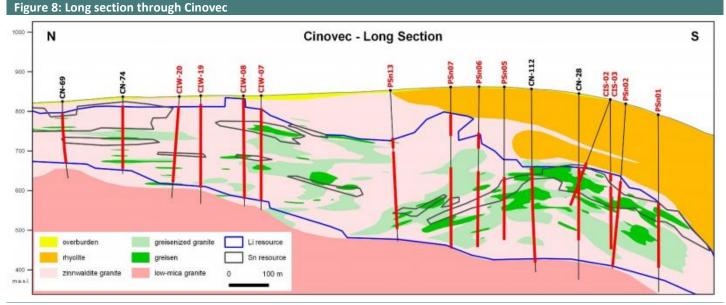
#### Prefeasibility (PFS) study economics

The PFS was completed in April 2017 (updated June 2019) and used the parameters laid out in Table 3 and 4. The accuracy of the estimates was put at +/- 25%. As the Project lies on the border of Germany and the Czech Republic, it is exceptionally well-serviced by supporting infrastructure including access to rail, national highways, power, water, gas, skilled workforce, engineering companies and chemical companies

#### Funding

A project with a capital cost projected to be \$550m (WHI est.) is obviously not going to be simple to fund.

However, with the current COVID-19 crisis highlighting the precarious just-in-time supply chains and with sovereign decisions taken in disrupting free trade – there really is no substitute for security of supply and domestic production in our opinion. Cinovec will be a large, expandable, long-life project capable of producing significant amounts of lithium compounds that are essential to the health and well-being of the auto industry defining the EU's low-carbon future. We expect also that the EU may be supportive in helping to find funding for the project in some way (either directly or with loan guarantees for example) once the final feasibility study has been completed. However, a serious partner like CEZ will also be a big help – with its large stable balance sheet and its demonstrated capability to run projects.



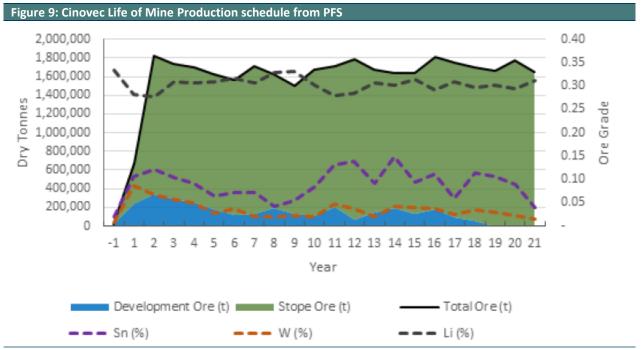
Source: European Metals Holdings

Parameters	PFS	WHI assumptions
Feed Rate	1.7Mt/yr	1.7Mt/yr
Costs		
	Capital Cost (US\$m)	
Mining	70.3	
Comminution / Beneficiation / Infrastructure	104.9	
Lithium plant (LCP) to produce LiOH*	264.3*	
Contingency @ 10%	43.9*	
TOTAL	482.6	550

Source: European Metals Holdings, WH Ireland research

# Table 4: Cinovec PFS parameters – Operating Cost (updated in June 2019)

	E	EMH PFS upda	te		WHI estimate	S
Costs	\$M/yr	\$/t ROM	\$/t LiOH*	\$M/yr	\$/t ROM	\$/t LiOH*
Mining	40.7	24.3	1625.0	42.5	25.0	1700.0
Comminution / Beneficiation / Infrastructure	19.4	11.6	770.0	20.4	12.0	816.0
Lithium plant (LCP) to produce LiOH*	62.1	37.0	2458.0	68.0	38.0	2720.0
Admin	0.9	0.5	34.0	4.0	2.4	160.0
Total Operating Cost	123.1	73.4	4887.0	134.9	77.4	5396.0
By-product Sn/W	(29.2)	(17.4)	(1156.0)	(28.7)	(16.9)	(1080.0)
By-product potash and sodium sulphate	(6.7)	(4.0)	(285.0)	(7.8)	(4.6)	(175.0)
Total Opex (net of by-product credits)	87.2	52.0	3446.0	98.4	59.5	4141.0
Source: European Metals Holdings, WH Ireland resear	rch					



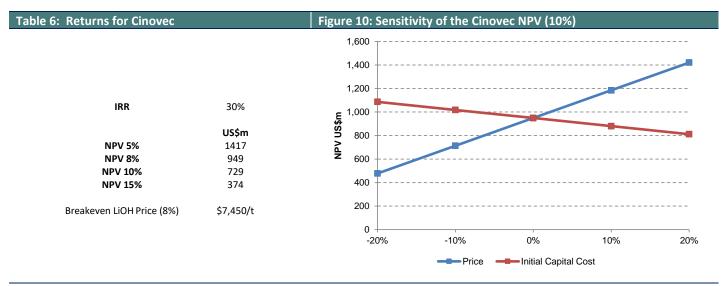
Source: European Metals Holdings, WH Ireland research

#### **Discounted Cash flow analysis**

Base Case Project to 1.7Mt/yr ore processed.

	Table 5: Cash Flow Cin	ovec lithium -	- tin/tungs	ten proj	ect (100	%) -Rea	l 2021\$	
WH Ireland Assumptions			Yr-2	Yr-1	Yr 1	Yr 5	Yr 15	Yr 20
·	Tonnes to Mill	kt	-	-	1000	1700	1700	1700
Lithium – pay 100% of LiOH.H <sub>2</sub> O.	Li	%*	-	-	0.30	0.30	0.30	0.30
Long-term LiOH price set at	Sn	%	-	-	0.09	0.09	0.09	0.09
\$12,500/t	WO <sub>3</sub>	%	-	-	0.03	0.03	0.03	0.03
	LCE	kt	-	-	13.7	23.3	23.3	23.3
Tin (Sn) – TC of \$500/t conc. (Inc.	Paid LiOH	kt	-	-	15.6	26.6	26.6	26.6
low grade penalty), deduct 2% tin for	Paid Sn	kt	-	-	0.6	1.0	1.0	1.0
low grade, Long-term tin price set at	Paid WO <sub>3</sub>	kt	-	-	0.2	0.3	0.3	0.3
\$21,000/t	Paid potassium sulphate	kt	-	-	7.6	13.0	13.0	13.0
	Price LiOH	US\$/t LiOH	-	-	12500	12500	12500	12500
Tungsten (WO₃) – pay 80% of APT	Price Sn	US\$/t Sn	-	-	21000	21000	21000	21000
price. Long-term price set at	Price WO <sub>3</sub>	\$/mtu APT	-	-	350	350	350	350
\$350/mtu APT	Price potassium sulphate	\$/t	-	-	600	600	600	600
	NET REVENUE	US\$M	-	-	217.4	369.6	369.6	369.6
Potassium sulphate \$600/t	Mine Site Cost	US\$M	-	-	(82.0)	(135.9)	(135.9)	(135.9)
Capex - \$550m (WHI est.)	Royalties	US\$M	-	-	(4.3)	(7.4)	(7.4)	(7.4)
	EBITDA	US\$M	-	-	131.0	226.3	226.3	226.3
Opex (WHI est.) - \$5,600/t LiOH	DDA	US\$M	-	-	(26.5)	(48.1)	(48.1)	(48.1)
(pre-Sn/WO₃ credits). Net	Interest	US\$M	-	-	-	(10.6)	-	-
production cost of \$4,000/t (post	Тах	US\$M	-	-	-	-	(33.9)	(33.9)
credits). This is a low risk part of the	Net Profit After Tax	US\$M	-	-	104.5	167.6	144.3	144.3
cost curve in our opinion.	Add back in DDA	US\$M	-	-	26.5	48.1	48.1	48.1
	Add back in interest	US\$M	-	-	-	(10.6)	-	-
	Expansion Capex	US\$M	(100.0)	(270.0)	(180.0)	-	-	-
	Sustaining Capex	US\$M	-	-	(10.0)	(20.0)	(20.0)	(20.0)
	CINOVEC CASH FLOW	US\$M	(100.0)	(270.0)	(59.0)	185.2	172.4	172.4

Source: WH Ireland. Note the break in years. Forecasts are Real 2021\$ NOTE BREAK IN YEARS



Source: WH Ireland Research

# Lithium Market Outlook

Lithium chemicals are currently produced from two main sources: hard rock mines and salt lake brines, with hard rock sources now the more significant component of production. Some companies are even looking into deep aquifer brines to extract lithium from (e.g. in Cornwall or the Upper Rhine Valley). Over time we expect hard rock sources to become even more important. Lithium is converted into several forms, but mostly into lithium carbonate (of various grades) and lithium hydroxide. Conversion of hard rock lithium concentrates is usually by a third party– and that is usually in China. Some new hard rock projects (e.g. Keliber, Savannah Resources and European Metals Holdings) intend to produce lithium chemical onsite. Brines are integrated operations producing lithium chemicals onsite. There are also several lithium clay projects (e.g. Sonora in Mexico and Jadar in Serbia) with large lithium mica projects in the Czech Republic (Cinovec) and in Spain (San Jose) which we expect will also form a significant component of production in the future.

#### Supply

The majority of lithium raw material production comes from Chile, Australia (mostly as a concentrate), Argentina and China - with the top three, Australia, Chile and Argentina, accounting for 85%. The largest hard rock producer is Talison Lithium in Australia, which has the capacity to produce 1.4Mt/yr of spodumene concentrate (~ 160kt LCE) after a recent expansion at its Greenbushes mine in Australia. Hard rock producers send their spodumene concentrates to China, in the main, for conversion to one of the saleable lithium compounds with some small conversion capacity in Australia and Brazil.

The largest brine producer is SQM in Chile, which produced 70kt lithium carbonate and 14kt lithium hydroxide in 2019.

Albemarle is the world's largest lithium producing company.

Although the supply of lithium raw materials is geographically spread – the supply of lithium chemicals (the next stage from processing the lithium raw materials) is more concentrated with China dominating and e.g. producing 80% of the world's lithium hydroxide in 2019.

The lowest cost production is from lithium brines with production costs of US\$3,000-\$4,500/t LCE forming the lowest 50% of the cost curve. Above this, the hard rock producers have production costs ranging from US\$6,000 – US\$8,000/t LCE. There is growth expected in recycled supply as companies gear up to reprocess electronic batteries and to the anticipated volume of batteries from electronic vehicles in the future.

The increased requirement for lithium over the short to medium term may be satisfied from increased capacity utilisation and a raft of hard rock and brine projects due for construction. However, many of those already slated for production had been delayed e.g. Bacanora Lithium and SQM, an existing brine producer with delayed expansions due to legal challenges over taxes and a lack of water in the Atacama desert.

We see significant challenges to future supply growth – these include, but are not limited to: 1) funding; 2) time to build (hard rock mine 4-5 years from first discovery – at least; brine salar plant 6-8 years); 3) commissioning, then achieving and maintaining nameplate output; 4) requirement for new conversion capacity to match concentrate production (preferably outside of China); and 5) delivering a battery grade product.

Currently the market seems adequately covered (Figure 11), with a small surplus which is depressing current prices. However, over the medium term, we believe, the world will

#### GLOSSARY

LCE – Lithium Carbonate Equivalent LiOH – Lithium hydroxide monohydrate

#### CONVERSIONS

ppm – parts per million ppm to % divide by 10,000

Li to LCE multiply by 5.32 Li to LiOH multiply by 6.06 LiOH to LCE multiply by 0.88 Li<sub>2</sub>O to LCE multiply by 2.473 Li<sub>2</sub>O to LiOH multiply by 2.809

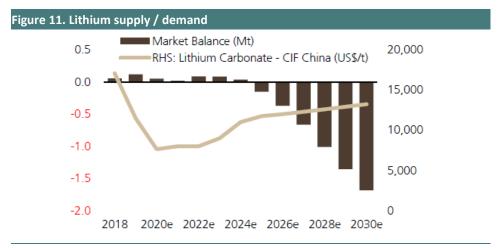
#### Lithium Chemical Production

# 0% lithium chemical production in the EU 27 / UK

In 2019 China produced 55% of the world's lithium chemicals (80% of the lithium hydroxide which is the principal lithium chemical in EV batteries)

After this Chile produced 27% of the world's lithium chemicals, followed by 10% in Argentina and 2% in the USA.

need ever increasing amounts of lithium and it is clear to us that new projects will be required as part of the production mix since we are not convinced that existing producers (especially the brine producers) can hit their optimistic expansion targets. We see strong lithium prices justifying new hard rock project development, with differential prices for the separate lithium chemicals required for different types of batteries.



Source: WH Ireland Research, UBS (Metal Bulletin, Wood Mackenzie)

#### Demand

Lithium is used for batteries, glass, ceramics, greases, metallurgical powders, polymers, and in the aluminium industry.

- Rechargeable batteries are the growing use of lithium in electronic hardware to the source of power in electric cars at ~60% of lithium demand in 2019 from 2% in 2011.
- After batteries the largest market for lithium is in glass, glass-ceramics and ceramics which together accounted for ~25% of total consumption in 2019; lithium helps reduce the viscosity of the glass melt. Portugal is Europe's only producer of lithium for the glass-ceramic industry, or indeed any lithium, at the present time.
- Metallurgical powders, polymers and grease.
- Air treatment dehumidifiers and air purification.
- Lithium is also used in the production of aluminium

The key theme in the lithium industry is increased demand going forward from all end uses, with the biggest area of growth arising from the expansion of the battery sector for electric vehicles (Figure 12). In 2011 it was estimated that 2% of lithium ended up in electric vehicles; this is expected to rise by 2025 to 75% - and on a much higher demand number. Battery-grade lithium carbonate and lithium hydroxide consumption is expected to rise from 200kt/yr in 2019 to perhaps ~1,000kt in 2025 (source UBS research – Figure 12). The demand is being led by increased EV production by all of the major automobile makers driven by legislation, especially in the EU and wider Europe.

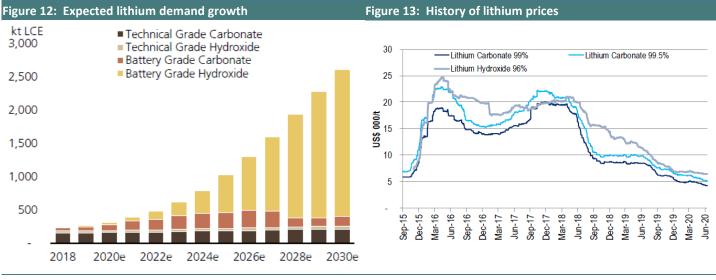
Lithium-ion batteries are the batteries of choice as they are able to store more energy (i.e. have a greater energy density) with greater longevity than other battery compounds, and are more lightweight than their lead nickel, nickel cadmium, and nickel metal hydride counterparts.

The new lithium-ion battery factories, with their economies of scale, should reduce the cost per pack and make it able to compete with the internal combustion engine. Indeed, lithium-ion battery costs have dropped from \$1,000/kwh to below ~\$175/kwh over the past five years driven by technological advances; the aim is to reduce the cost further to below \$100/kwh by 2030. Batteries are perhaps half the price of an EV, so the reduction in battery price will help sell more cars into the economy and make an EV a cost-effective choice for consumers.

Battery life has also improved with many producers offering guarantees for eight years / 100,000 mile warranties on their batteries. The speed of charging has also improved with fast chargers being introduced to many countries – this will go a long way to reducing "battery anxiety".

All the major German car manufacturers have plans to increase sales of EVs with Volkswagen, Porsche, BMW and Daimler / Mercedes all looking to build up their EV models by 2025. Indeed most car manufacturers have, or are developing, partnerships with battery manufacturers e.g. Ganfeng and Northvolt on a new Gigafactory in Germany; but the others e.g. LG, Samsung, A123, Northvolt and Britvolt looking to build battery plants in Poland, Hungary, Austria, Czech Republic, the UK and Sweden (and Tesla in Germany as well) to cope with expected demand.

Growth in EVs will come from the continued decrease in the cost of the batteries and as many countries look to ban the sale of new internal combustion engine cars over the next few decades and to force auto companies to produce cars with lower CO2 emissions by way of fines (EU CO<sub>2</sub> target of 95g/km). Current EVs make up ~3% of total car sales. Expectations are that this will rise to be 20-25% of new car sales by 2025. This is a rapid increase in demand and perhaps underestimates the potential growth in EV sales in our opinion. Figure 4 lays out the expectations for lithium demand growth in Europe through the increase in the production of EVs. We stress – Europe has no domestic raw material production, as yet.



Source: WH Ireland Research, UBS (Wood Mackenzie)

Source: WH Ireland Research, Bloomberg

#### **Price forecast**

Current Lithium prices (Fastmarkets' lithium reference prices – LME) are \$7,500/t for lithium carbonate and \$9,500/t for lithium hydroxide with spodumene prices around

#### \$455/t.

We use a long-term price of \$10,000/t lithium carbonate (99.5%) and \$12,500/t lithium hydroxide. These stand at a moderate premium to current prices but we believe this represents a conservative forecast given our expectation of further supply delays and ever-increasing demand. There is a real danger that supply will not be able to match demand expectations as the increase in EVs snowballs.

# Shareholders

Table 7: European Metals Sha	reholders (October 26th 202	20)
	Shares	% Total
Cadence Minerals PLC	23.3	14.4
Armco Barriers Ltd	16.3	10.1
Mr Keith Coughlan	9.4	5.8
Total *	161.2	100
* of which Directors **	32.9	20.6
** Kiran Mozaria (NED – Cadence non	ninee) holds shares directly and indi	rectly on behalf of Cadence

Source: European Metals Holdings, WH Ireland research

## **European Metals Holdings Directors**

**Keith Coughlan – Executive Chairman.** Keith has almost 30 years' experience in stockbroking and funds management. He has been largely involved in the funding and promoting of resource companies listed on the ASX, AIM and TSX. He has advised various companies on the identification and acquisition of resource projects and was previously employed by one of Australia's then largest funds.

Until recently, Keith was the Non–Executive Chairman of ASX listed Talga Resources Limited. He is currently the Non-Executive Chair of Doriemus PLC and a Non-Executive Director of Calidus Resources Limited and Southern Hemisphere Mining Limited.

**Richard Pavlik - Executive Director**. Richard is the Chief Advisor to the CEO of Geomet s.r.o., the Company's Czech subsidiary, and is a highly experienced Czech mining executive. He holds a Master's Degree in Mining Engineer from the Technical University of Ostrava in Czech Republic. He is the former Chief Project Manager and Advisor to the Chief Executive Officer at OKD. OKD has been a major coal producer in the Czech Republic. He has almost 30 years of relevant industry experience in the Czech Republic.

Richard also has experience as a Project Analyst at Normandy Capital in Sydney as part of a postgraduate programme from Swinburne University. He has held previous senior positions within OKD and New World Resources as Chief Engineer, and as Head of Surveying and Geology. He has also served as the Head of the Supervisory Board of NWR Karbonia, a Polish subsidiary of New World Resources (UK) Limited. He has an intimate knowledge of mining in the Czech Republic.

**Kiran Mozaria - Non-Executive Director**. Kiran is currently Chief Executive Officer and Director of the Company's largest shareholder, Cadence Minerals.

Kiran holds a Bachelor of Engineering (Industrial Geology) from the Camborne School of Mines and an MBA (Finance) from CASS Business School. He has extensive experience in the mineral resource industry working in both operational and management roles. Kiran spent the first four years of his career in exploration, mining and civil engineering before obtaining his MBA. He has served as a director of a number of public companies in both an executive and non-executive capacity.

**Ambassador Lincoln P. Bloomfield Jr. - Non-Executive Director**. Lincoln is a former US official specialising in foreign policy and international security, having held policy positions in five previous administrations, most recently in 2008 as a Presidential Envoy with the rank of Ambassador. He has dealt with a wide range of issues and has experience working effectively with governments in Europe and around the world. He also has many years of experience working with companies in the private sector, primarily involving renewable energy technology, private equity, and security issues.

For eight years until 2016, Lincoln was Chairman of the Stimson Center in Washington DC, one of the top-rated think tanks in America. During his service as US Assistant Secretary of State for Political Military Affairs, Lincoln was the US Government regulator responsible for industry compliance with defence export law and regulation. He serves and has previously served on for-profit and non-profit Boards.

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As at the quarter ending 31 January 2021 the distribution of all our published recommendations is as follows:

Recommendation	Total Stocks	Percentage %	Corporate	Percentage %
Corporate	57	98.3	57	100.0
Buy	0	0.0	0	0.0
Speculative Buy	0	0.0	0	0.0
Outperform	1	1.7	0	0.0
Market Perform	0	0.0	0	0.0
Underperform	0	0.0	0	0.0
Sell	0	0.0	0	0.0
Total	58	100.0	57	100.0

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A draft of this research report has been shown to the company following which factual amendments have been made.

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#### **Company/Issuer Disclosures**

Company Name	Table of interest number	12-month recommendation history	Date		
European Metals Holdings (EMH)	1,2,3,4,5	Corporate	11/03/19		
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http://research.whirelandplc.com/research/regulatory.asp

#### **Companies Mentioned**

Company Name	Recommendation	Price	Price Date/Time
Sociedad Química y Minera de Chile S.A. (NYSE:SQM)	No Rec	USD 50.86	05/02/2021 16:30
Albemarle Corporation (NYSE:ALB)	No Rec	USD 154.9	05/02/2021 16:30
European Metals Holdings Limited (AIM:EMH)	Corporate	GBP 0.65	05/02/2021 16:30
Savannah Resources Plc (AIM:SAV)	Corporate	GBP 0.04	05/02/2021 16:30
Bacanora Lithium Plc (AIM:BCN)	No Rec	GBP 0.46	05/02/2021 16:30
Ganfeng Lithium Co., Ltd. (SZSE:002460)	No Rec	CNY 111.96	05/02/2021 16:30
Galaxy Resources Limited (ASX:GXY)	No Rec	AUD 2.66	05/02/2021 16:30
northvolt (private)	No Rec	NA	05/02/2021 16:30
CEZ, a. s. (SEP:CEZ)	No Rec	CZK 525	05/02/2021 16:30
Zinnwald Lithium Plc (AIM:ZNWD)	No Rec	GBP 0.13	05/02/2021 16:30

Headline	Date
Significant lithium resource at the heart of industrial Europe	11/03/2019
Update: Lithium hydroxide production confirmed	01/08/2019
€29m CEZ Strategic Investment in Cinovec Project completed	14/05/2020
Lithium development on track in the heart of Europe	09/02/2021

Recommendation	From	То	Analyst
Corporate	11/03/19	present	CA

Current Analyst (CA), Previous Analyst (PA)

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