

# Elcora

Advanced Materials

TSXV **ERA**  
elcoracorp.com

## Charged & Ready

Mining Critical Battery Metals to Supply  
the Coming Global Energy Revolution



Corporate Presentation

08 – 06 – 2023



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- Projected project financial performance,
- Expected development of the project's business, joint venture or other agreements,
- Vision and growth strategy execution, including future activities and global growth,
- Sources and availability of third-party financing,
- Completion of current activities, in development, or otherwise under consideration
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# A Story of Storage

## How Elcora is Anticipating and Responding to the Global Energy Revolution



### Demand +9% per year

An EU-sized chunk of electricity demand (2500 TWh) is expected to be added to global total over next 3 years.<sup>1</sup>



### 98% Renewables

98% of new capacity to be met by renewable sources.<sup>1</sup>  
Intermittent Renewable Energy Sources (IRES) like wind & solar estimated to be 90% of new renewable installation.<sup>2</sup>



### Big Batteries Required

Renewables need massive expansion in Large-Scale Energy Storage (LSES) capacity. Global investment in 2022 estimated USD 20 billion and growing.<sup>1</sup>

LSES applications will significantly increase demand for critical battery metals this decade.



### Supplying Demand

With licenses for Vanadium, Manganese, and Copper, Elcora is well-positioned to harness imminent opportunities



### Li-ion Batteries (EV)

Lithium-ion manganese oxide battery (LMO) and nickel-manganese-cobalt (NMC) cathode

### Go With the Redox Flow

Vanadium Redox Flow Batteries (VRFBs) are emerging as a more attractive technology than Lithium for stationary grid-scale storage.

Australia building 200 MWh VRFB project, China commissioning 400 MWh, and a joint venture announced a \$600M investment in a 1 GWh VRFB plant in the US.<sup>3</sup>



# Company Highlights

## The Elcora Advantage

Owns Numerous Concessions for Key Battery Metals

- Vanadium for Large Scale Energy Storage applications
- Manganese for small-scale application like EVs and mobile devices

In Morocco

- Politically stable jurisdiction
- Supportive policies for resource extraction

In Production

- Delivering existing stockpiles of Manganese to market
- Positive cashflow
- Customers interested in securing supply with off-take agreements



# Elcora Action Plan

Leveraging Existing Value to Capture More Opportunities

- Expand Manganese ore extraction capacity
- Commence Manganese ore processing
- Explore & Develop Vanadinite deposits



# Elcora Locations

Canada & Morocco



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# Locations Overview

Elcora Seeks Out Stable Jurisdictions with Resource Positive Policies

## Canada

### Key Features

- Stable political climate
- Favorable Legal and Regulatory Framework
- Attractive Tax Regime
- Skilled Workforce

### Company Presence – Bedford, Nova Scotia

- Elcora corporate offices and
- Research laboratory

## Morocco

### Key Features

- Stable political climate
- Moroccan government has set out a strategy for tripling the mining sector by 2025
- Favorable mining laws enacted in 2016 and further modernized in 2021

### 2 Primary Operations Zones

- Atlas Lion Deposit
- Atlas Fox Deposit



# Morocco – Research & Exploitation Zones

17 Vanadinite Research Permits 272 km<sup>2</sup>

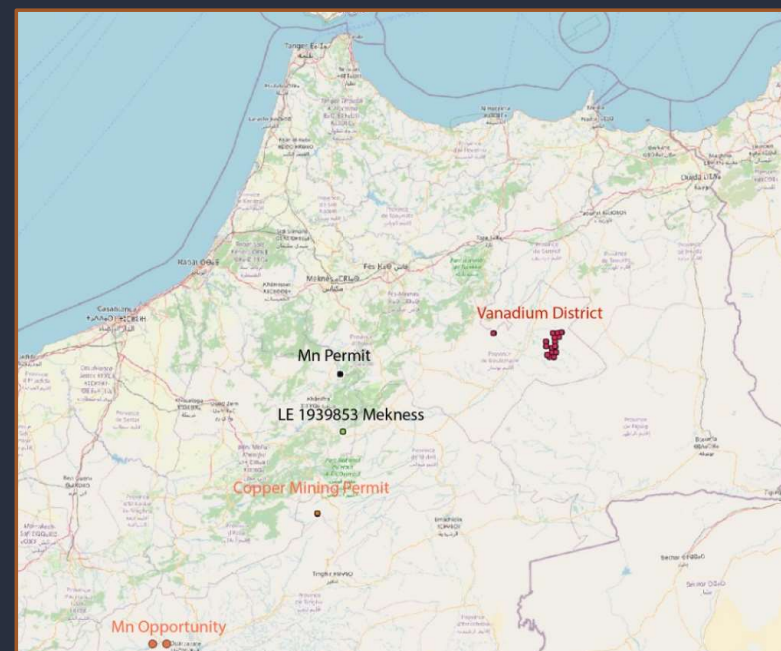
- 15 contiguous in one area (exploitation license pending)
- 1 close to Missouri (exploitation license pending)
- 1 close to Midelt (exploitation license Q4 2023)

2 Manganese Exploitation licenses

- Beni Melall 16 km<sup>2</sup>
- Ouarzazate - exclusive right on exploitation 16 km<sup>2</sup>

1 Copper Research Permits 16 km<sup>2</sup>

Total area of 32,000 hectares 320 km<sup>2</sup>





# Morocco Deposits

## Mineral Resource

- Atlas Lion Deposit - Vanadium District
  - Vanadinite deposit with desirable concentration of Vanadium and Lead
  - Surface deposits allow for simple, efficient and low-cost mining
  - Large, under-explored region in Morocco
  - High geological upside for other battery metals
- Atlas Fox deposit
  - Manganese deposits with desirable concentration
  - Copper deposit
  - Surface deposits allow for simple, efficient and low-cost mining



# Vanadinite Preliminary Findings

Geological report<sup>(1)</sup> on first 2 concessions out of 16 contiguous:

- **ESTIMATED VANADINITE RESOURCE ON 2 OUT OF 17 LICENSES**

- Estimated Resource 772,000 tons
- Estimated Exploitable Resource 462, 000 tons
- Forecasted production rate 30,000 tons per annum
- Vanadinite contains both Vanadium and Lead

- **ELCORA LAB VANADINITE TESTS PERFORMED ON SAME LICENSES**

- Estimated Vanadium content up to 8,9%
- Estimated Lead content up to 46%

- **POTENTIAL VALUE ON SAME 2 LICENSES**

- V<sub>2</sub>O<sub>5</sub> Vanadium Pentoxide Flake 98% Price 7,90/lb (\$17,38/kg) <sup>(2)</sup>
  - Vanadium revenue per ton for Elcora TBD
- LME Estimated Processed Lead (Pb) price \$2,143/ton<sup>(2)</sup>
  - LME Lead Price Converts in approximately \$700/ton revenue for Elcora

Combined Lab Test Results ATLAS LION DEPOSIT

Lab-Ref	R/4460-21-01
Customers-Ref	Echantillon 1
Al <sub>2</sub> O <sub>3</sub> (%)	0,26
CaO (%)	13,22
Fe <sub>2</sub> O <sub>3</sub> (%)	0,16
K <sub>2</sub> O (%)	0,44
MgO (%)	0,72
MnO (%)	0,01
P <sub>2</sub> O <sub>5</sub> (%)	0,32
SiO <sub>2</sub> (%)	1,02
TiO <sub>2</sub> (%)	0,01
As (%)	0,31
Ba (%)	2,40
<b>Pb (%)</b>	<b>45,14</b>
<b>V (%)</b>	<b>6,14</b>
S (%)	0,76

(1) Comprehensive NI43-101 Report available

(2) [www.lme.com](http://www.lme.com) – [www.vanadiumprice.com](http://www.vanadiumprice.com)



# Vanadium - Development Phases

Through trenching and mapping of ore outcrops the company has gathered substantial information allowing a conservative plan of development

## PHASE 1

- Build access dirt roads to first mine production site and remove overburden (waste to ore ratio ca. 1:1 at beginning)
- Mine ca. 3,000 t/month of Vanadinite ore
- Sell raw ore for lead content Q2 2023

## PHASE 2

- Build semi-mobile concentrator plant to produce a 46% Pb and 9% + V concentrate
- Increase mine production to 5,000t/month to allow for 2,500t/month concentrate production
- Sell concentrate to lead smelter
- Rebuy slag from smelter and sell to hydrometallurgical smelter for Vanadium extraction



# Vanadium - Development Phases (cont'd)

## PHASE 3

- Continue with Phase 2 production and start intensive, 2-shift exploration program to identify prime targets
- Plan mine for mid-term and long-term operations
- Start testing for metallurgical extraction of Pb, V and rare metals like Niob and Tantal
- Build hydrometallurgical plan scheduled to produce 1,500 t/year of 99.99% V and 15,000t/year 99.99% Pb
- Upgrade mine equipment to increase mine production



# Pictures



# Morocco – Atlas Fox Deposit

## License Locations

- Beni Mellal
- Ouarzazate





# Beni Mellal Manganese Deposit

- Manganese represents a critical link in the EV Lithium-ion battery supply chain
- Electrolytic Manganese Dioxide (EMD) is an upgraded form of Manganese that serves as a key ingredient of Lithium-ion, Alkaline and Zinc-Manganese batteries
- Elcora has received its 10 year Exploitation License for this site
- This Manganese concession contains a mine which operated during French colonial times
- Surface Deposit Mining
- Elcora will leverage on-site infrastructure, up to 600 tonnes of raw ore ready for processing



# Beni Mellal Manganese

The Manganese mine was already in production during the 40s and 50s of last century. The deposit was mined either as small open pits or through underground addits. These old pits now give all indications and information needed to start the operation as open pit.

## Development Phases

PHASE 1

- Clear the open pit area from bushes and trees
- Build access road with own equipment
- Move overburden down to ore body and start ore production ca. 2.000 t/month
- Keep developing the mine with removing 6.000 to 8.000 t/month of overburden
- Sell raw ore to contracted buyer



# Beni Mellal Manganese

## Development Phases continued

### PHASE 2

- Q4 2023 build gravimetric concentrator to upgrade raw ore content (ca. 30% Mn) to ca. 50% Mn
- Increase mine production to ca. 5,000t/month ore
- Produce ca. 2500 to 3,000 t/month of 50%Mn concentrate

### PHASE 3

- Phase 3 is a potential phase which's realization depends on metallurgical testing to build a flotation or hydrometallurgical plant to purify the Manganese to maximum quality.
- Start testing metallurgical options at laboratories like Afrilab - SGS



# Ouarzazate Manganese Mine

## Highlights

- The Omar Mine has been in operation for a number years until COVID
- Elcora has acquired exclusive mining rights of the Omar Mine with a set price purchase option
- The Omar Exploitation License is valid for another 7 years renewable for 10 years
- This Manganese concession contains both a surface deposit and underground mine
- Elcora is leveraging on-site infrastructure
- Existing Manganese ore piles of approximately 6000 tonnes are ready for processing



# Ouarzazate Manganese Mine

## Development Phases

### PHASE 1

- Ermazon acquired in February 2023 exclusive exploitation rights on this existing mine
- Exclusive right to purchase the mine
- Mine active until pre-COVID
- Sending Ermazon Loader and Dozer on-site to restart mining
- Sort existing Manganese ore piles
- Restart mining operations with local experienced miners
- Ramp up mining production to 2500 tons per month
- Sell hand sorted, crushed and screened ore to contracted buyer





# Company Profile





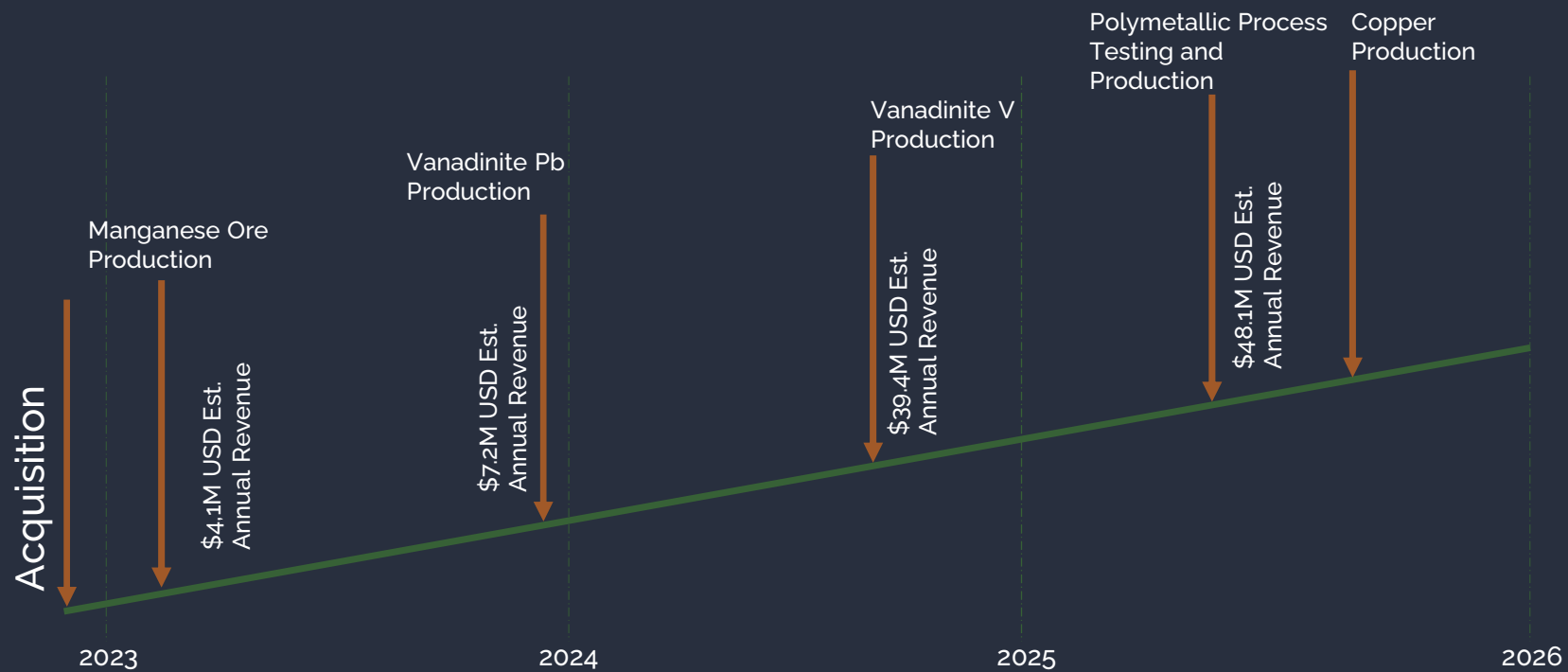
# Capitalization structure

- Limited number of large shareholders help translate an execution success to a market success
- Small debt and no streams or royalties encumber the company or the projects

Current Issued & Outstanding Shares - As of March, 2023	167 377 013
Reserved for Stock Options	16 737 701
Reserved for Warrants @ \$0.20 - Expiry March 23/24	58 393 700
Reserved for Warrants @ \$0.20 - Expiry March 02/24	13 660 000
<b>Total (Fully Diluted):</b>	<b>256 168 414</b>
Market Cap as of March, 2023	\$16,74M CAD
Insiders, Friends & Family	75%
RSU	0



# Timeline graphic



## Manganese & Lead

- Surface mines at 5000 tonnes per month Mn with objectives to reach 10000 tonnes per month
- Surface mine up to 2000 tonnes per month Pb
- Use local Traders and Toll Refiners in Morocco to produce a steady cash flow
- Mn production now
- Pb pre-Production Q3 2023

## Vanadium

- Surface Vanadinite mining up to 2000 tonnes per month
- Use toll refiners in Slovakia for Vanadium and Lead to increase cash flow
- Target date Q1 2024

## Polymetallic

- Copper concession research Q2 2023
- Copper exploitation target Q3 2024
- Complete and test Elcora / Ermazon polymetallic metallurgical process and polymetallic refinery
- Target date of Q2 2024



# Management Team



**Troy Grant**  
Founder & CEO

- Responsible for day-to-day management
- Led IPO of Elcora in Jun-11, managed Sakura mine JV project (timing and budget) and established Graphene Corp
- Extensive experience in corporate finance, mergers and acquisitions, business strategies and planning.



**Theo van der Linde**  
CFO

- Oversees group finance
- Chartered Accountant with extensive experience in exploration and mining companies at various stages of growth
- Prior involvement in projects in South Africa, West Africa, East Africa, Sri Lanka, UK and US.



**Denis Choquette**  
Chairman

- Responsible for board of directors and Morocco operations
- Involved in mining industry since 2011, played key role in raising equity for mining projects and in setting up joint ventures
- Founding partner of GTR Capital, providing M&A services to its clients throughout North America, Europe and Asia.



# Morocco On-Site Management Team

**Hassan (Lahcen)  
Jouak**  
Manager - Mining

- Manager - Morocco mining development
- CO-founder of Ermazon SARL
- 20 years of experience in Morocco mining industry
- Successfully built and managed mining operations.



**Moulay Larbi Es Sebaa**  
Manager - Research

- Oversees Research and Government relationship
- Electrical Engineer - Co-founder of Monument Minerals Morocco - Co-founder of Ermazon SARL
- Successful in the mining industry for 12 years. Specialized in vanadium for 7 years.

*Highly experienced management team with deep mining industry and Moroccan Government knowledge*



# Contact Us

For further information please contact:

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# Appendix A

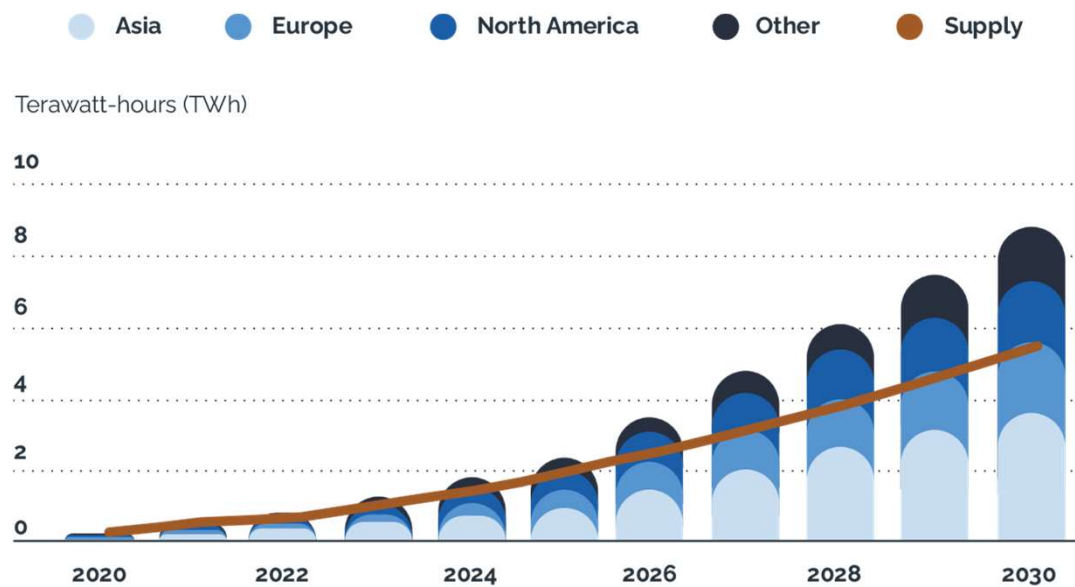
Market Information



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# Surge in Global Demand

## Global Battery Supply and Demand by Region



Source: Rystad Energy

\* Includes demand from transportation and energy sectors



# Worldwide Vanadium Production

Country	Production (tons)	Reserves (kilo tons)
United States	170	45
Australia	---	4000
Brazil	6,600	120
China	53,000	9,500
Russia	18,000	5,000
South Africa	8,200	3,500
<b>Worldwide</b>	<b>86,000</b>	<b>22,000</b>

82% of Production from China and Russia



# Vanadium, Multiple Usage

- High carbon steels 0.15% to 0.25% vanadium
- High speed tool steels 1-5%
- Powder metallurgic up to 18%
- Vanadium carbides
- Al-Ti-V alloys for jet engines, air-frames and dental implants
- Chemical industry as a catalyst.
- Glass coatings and ceramics
- LiVO as an anode in lithium-ion batteries



# Vanadium Reduction Flow Battery (VRFB)

## Perfect Complement to Intermittent Renewable Energy Sources

- Mature, proven technology
- 15 – 20 year lifespan
- No degradation over hundreds of thousands of charging cycles
- Deep discharge capable
- Superior safety
  - Non-flammable;
  - No thermal runaway like li-ion;
  - Low-toxicity chemistry
- Environmentally friendly
  - 100% of vanadium reusable;
  - 78% less CO2 emission than equivalent li-ion
- Unaffected by heat, operating conditions, or frequent discharges
- Unlimited capacity - easily scaled by adding modules or extra tanks
- Cost - lower cost per kwh over battery life
- Duration - 3 to 10 hours storage vs 2-4 hours for li-ion
- Rapid response



# Citations

1. IEA (2023), Electricity Market Report 2023, IEA, Paris <https://www.iea.org/reports/electricity-market-report-2023>, License: CC BY 4.0
2. IEA (2022), Renewables 2022, IEA, Paris <https://www.iea.org/reports/renewables-2022>, License: CC BY 4.0
3. IEA (2022), World Energy Investment 2022, IEA, Paris <https://www.iea.org/reports/world-energy-investment-2022>, License: CC BY 4.0
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