DISRUPTIVE NEW SOURCE OF BATTERY METALS FOR THE GREEN TRANSITION

Seafloor polymetallic nodule harvesting

Gerard Barron, Chairman & CEO
We’re on a quest for a sustainable planet
Today: 5 million EVs
out of 1.3 billion vehicles
2030: 125 million EVs

2047: 1 billion EVs
Trend towards more nickel intensive battery chemistries

Li-ion battery cathode composition
Kg / KWh

NMC 111
NMC 622
NMC 811

Li  Ni  Co  Mn
We will need a lot of nickel and cobalt

75KWh EV battery with NMC 811 cathode chemistry contains:
• 56 kg of Ni
• 7.1 kg of Co
• 6.6 kg of Mn

To electrify 1 billion ICE cars, the world would need:
• 56 million tonnes of Ni
• 7.1 million tonnes of Co
• 6.6 million tonnes of Mn
EV manufacturers are worried about

• Security of supply
• Climate change impact
• Human rights
• Cost
A better way to supply EV batteries:
Naturally occurring, polymetallic nodules sitting unattached on the deep ocean’s abyssal plain. It is the world’s largest undeveloped high-grade base-metal resource.

“NMC battery in a rock”

Polymetallic nodule

Ni

Mn

Cu

Co
MexicoHawaii
(USA)

THE CLARION CLIPPERTON
FRACTURE ZONE (CCZ)

Total CCZ resource estimate

- 34 billion tonnes of nodules
  - 6 billion tonnes of manganese
  - 270 million tonnes of nickel
  - 234 million tonnes of copper
  - 46 million tonnes of cobalt

Enough to electrify 1 billion cars 4 times over

Source: Resource Estimates of the Clarion Clipperton Manganese Nodule Deposit, Morgan 1999

Marine preservation zones

DeepGreen's Exploration areas
Nodule collection got started in the 1970s but halted due to lack of regulations.
Resource harvesting in the CCZ is now regulated by the International Seabed Authority (ISA)

- **1994**: UNCLOS enters into force and ISA is established
- **2001**: First Exploration Contracts granted to Government Institutions
- **2011**: NORI Area rights acquired by DeepGreen, sponsored by Nauru
- **2015**: Marawa Area rights acquired by DeepGreen, sponsored by Kiribati
- **2017**: Draft Exploitation Regulations issued by ISA
- **2020**: Final Exploitation Regulations in place, ISA open for Exploitation applications

**Map showing the Location of the Nine Areas of Particular Environmental Interest (APEI)**

- **NORI Area (74,830km²)**
- **Marawa Area (74,990km²)**

Key:
- Yellow: NORI Area (74,830km²)
- Blue: Area of particular environmental interest (APEI)
- Red: Marawa Area (74,990km²)

- **Clarion Fracture Zone**
- **Clipperton Fracture Zone**

**Time Line**

- **Hawaii (USA)**
- **Mexico**

**Areas of particular environmental interest (APEI):**

- **160˚W**
- **150˚W**
- **140˚W**
- **130˚W**
- **120˚W**
- **110˚W**
- **100˚W**
- **90˚W**
- **80˚W**
- **70˚W**
- **60˚W**
- **50˚W**
- **40˚W**
- **30˚W**
- **20˚W**

**Kilometers**

0 250 500 1000
DeepGreen is the only pure-play commercial player to hold two concessions in the CCZ.
We have completed three offshore survey campaigns.
893M/T HIGH GRADE POLYMETALIC MANGANESE NODULES

CONTAINING
29.2% Manganese
1.3% Nickel
1.1% Copper
0.2% Cobalt
Comparable to three mines in one

<table>
<thead>
<tr>
<th></th>
<th>Total NORI Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abundance</td>
<td>13.1 kg /m²</td>
</tr>
<tr>
<td>Resource (wet)</td>
<td>893Mt</td>
</tr>
<tr>
<td>Nickel</td>
<td>1.30%</td>
</tr>
<tr>
<td>Manganese</td>
<td>29.2%</td>
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<tr>
<td>Copper</td>
<td>1.08%</td>
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<tr>
<td>Cobalt</td>
<td>0.18%</td>
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<tr>
<td>Cu Equiv</td>
<td>6.5%</td>
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</tbody>
</table>

Vale / Goro Nickel Project
Eramet / Moanda Mine
Taseko / Gibraltar Mine
Comparing to undeveloped land-based nickel deposits

Assuming the following commodity prices: Cu $7,084/tn, Ni $19,926/tn, Au $1,250/oz, Ag $18/oz, Co $50,993/tn, Mn $4/tn, Mo $11/lb, Pt $1,200/oz, Pd $800/oz.

Source: DeepGreen PEA April 2019, WoodMac, mining project/company websites.
Scaling through partnerships

**Resource**
- Convert Exploration Contracts for NORI and Marawa Areas into Exploitation Contracts
- Acquire new high quality ground in CCZ and EEZs
- Drive strong focus on ocean health to secure the social operating license

**Strategic partnerships**
- Engage well-capitalized strategic partners for test, design, build & operate offshore and onshore production systems. Maintain strong in-house system design capability to challenge partners to innovate
- Strategic partnership in place, a major shareholder

**Collection**

**Shipping**

**Processing**
- Discussions in progress with several potential partners
- Strategic partnership in place, a major shareholder

**Sales**
- Pre-sell battery precursors directly to EV manufacturers and battery gigafactories
- Build a consumer-facing brand to drive consumer preference for Green Metals
Nodule collection

**Production vessel**
- Length: 225m
- Station Keeping: DP2
- DWT – 79,000 Te
- POB: 120
- Power: 75 MW
- Nodule Storage: 70,000 Te

**Harvester vehicle**
- L x B x D: 19 x 12 x 6 M
- Weight: 325 Te (Air)
- Weight: 46 Te (water)
Zero waste processing
Expecting to produce at the bottom quartile of the nickel cost curve...

World's cumulative nickel production by miner, million tonnes
...and at a fraction of CO₂

Electrifying 1 billion vehicles
Gigatonnes of CO₂e attributable to production of battery cathode metals¹ and copper 2018-2047²

<table>
<thead>
<tr>
<th></th>
<th>Land ores</th>
<th>Ocean nodules</th>
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</thead>
<tbody>
<tr>
<td>Copper</td>
<td>1.02</td>
<td>0.4</td>
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<tr>
<td>Cobalt</td>
<td>0.46</td>
<td>0.22</td>
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<tr>
<td>Manganese</td>
<td></td>
<td>0.11</td>
</tr>
<tr>
<td>Nickel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Nickel, cobalt contained in metal sulphates; copper contained in copper cathode; manganese contained in FeMn. Allocation of CO2 based on economic value of contained metal. Mass-based allocations would include an allocation to 171Kt of fertilizer grade ammonium sulphate with very low economic value and lead to much lower values for key metals derived from ocean nodules.

² Taking into account ore grade degradation for land-based nickel and copper between now and 2047.

Source: Published academic papers on metal production from land ores; Company PEA April 2019; Comparative LCA analysis of producing metals from land ores vs. ocean nodules (using Ecoinvent database)
Driving consumer preference for Clean Metals together with EV manufacturers
THANK YOU
FOR YOUR TIME

Gerard Barron
Chairman & CEO