Deep Sea Mining: a civil society perspective

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The international area of the seabed (the Area): “the common heritage of mankind, the exploration and exploitation of which shall be carried out for the benefit of [hu]mankind as a whole”

Part XI – The Area, Article 145: “ensure effective protection for the marine environment from harmful effects [of seabed mining activities]”

International Seabed Authority (ISA): Council: 36 countries (12 ‘sponsoring states’), ISA Assembly: 167 countries + EU
Clarion Clipperton Zone

16 Contracts/18 countries: Belgium, China, Cook Islands, France, Germany, Japan, Kiribati, Korea, Nauru, Russia, Singapore, Tonga, UK & IOM - Bulgaria, Cuba, Czech Republic, Poland, Russian Federation and Slovakia = 1.3 million km² (more likely – e.g. Jamaica)
Size of mines, sediment plumes & ‘nodule obligate’ species

Each CCZ mine directly impact/strip mine app 8,500 Km2 over 25-30 year mining operation

Sediment plumes could double, triple (or more) size of seabed impact area (tens of thousands Km2)

Noise, wastewater/sediment discharge from vessels could impact 10’s of thousands of cubic Km of water column habitat

Up to half larger animals on seabed in CCZ ‘nodule obligate species’ depend on the nodules for survival
Size of single mining claim area in CCZ approximately 75,000 Km²

- Nodules are not evenly distributed
- Mining likely to occur in multiple areas within claim (black shapes) over 30 year period of contract
- Plumes likely to flow well beyond actual mining sites – impacting seabed organisms
Biodiversity loss from deep-sea mining is unavoidable, the loss would be permanent on human-time scales given the very slow natural rates of recovery in affected ecosystems, offsets are ‘scientifically meaningless’.

No net loss of biodiversity (application of the mitigation hierarchy) is an unattainable goal.
The Hype

• “The green transition is going to require hundreds of millions of tonnes of nickel, copper and cobalt...”

Gerard Barron, CEO DeepGreen Metals

Hundreds of millions of tonnes? How much seabed would need to be mined to meet DeepGreen’s projections?

100 million tons of copper and nickel (8.5 billion tonnes of nodules)
Requires strip mining 850,000 – 1 million square kilometers of seabed (size of France and Germany combined) + plumes & water column impacts

100 million tons of cobalt (40-50 billion tonnes of nodules)
Strip mine 4-5 million square kilometers of seabed

Deep-sea mining likely to only be a niche industry in terms of global metals production; even so, damage could be severe
<table>
<thead>
<tr>
<th>Main metals found in polymetallic nodules in the CCZ</th>
<th>Estimated annual metal production in tonnes for each mining license in CCZ based on mining 3MT nodules (dry wt) per year</th>
<th>Land-based mined production in 2018 in tonnes (USGS)</th>
<th>Est Number of CCZ mines needed per year to equal annual terrestrial production</th>
<th>Est total CCZ seabed area that would be directly mined per year in km²</th>
<th>Cumulative impact over 30-year license period km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel (Ni)</td>
<td>37,050</td>
<td>2,300,000</td>
<td>62</td>
<td>18,600</td>
<td>558,000</td>
</tr>
<tr>
<td>Cobalt (Co)</td>
<td>6,375</td>
<td>140,000</td>
<td>22</td>
<td>6,600</td>
<td>198,000</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>32,400</td>
<td>21,000,000</td>
<td>648</td>
<td>194,000</td>
<td>5,832,000</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>760,000</td>
<td>18,000,000</td>
<td>24</td>
<td>7,200</td>
<td>216,000</td>
</tr>
</tbody>
</table>

Is it necessary to mine the deep-sea?

- Metal demands for renewable energy - Transition to 100% renewable energy economy by 2050 can be done without sourcing metals from the deep-sea

- Copper
- Cobalt
- Nickel
- Silver
- Lithium
- Specialty metals (Tellurium)
- Rare Earths (Neodymium, Dysprosium)
Changing technologies: Batteries without CCZ metals planned/already in production

Sulfur provides promising 'next-gen' battery alternative
Phys.org 16 June 2020

“Lithium-sulfur batteries...high energy density, low cost, abundance, nontoxicity and sustainability.”

How Elon Musk aims to revolutionise battery technology.
BBC 17 June 2020

“Tesla's Chinese partner CATL has found a way to make batteries free of cobalt, at least for shorter-range vehicles.”
Structural/political concerns re the ISA

- Lack of transparency (contracts, LTC meetings) – decision to grant mining contracts heavily influenced by LTC

- Decision-making weighted toward mining (2/3rds vote of Council needed to 'overturn' recommendation from LTC to award a mining contract)

- Conflict of interest (ISA both regulator as well as beneficiary of licences)

- Bureaucratic/institutional momentum to mine
Structural/political concerns re the ISA

- Use it or lose it incentives - mine or risk losing exploration claim/contract (15yr)

- Sponsoring State can trigger ‘2 year’ rule if regulations not yet adopted

- All countries have equal opportunity to mine/become a Sponsoring State - Can the ISA say no if many wish to apply? (22 countries currently Sponsoring exploration contracts)
UK House of Commons Environment Audit Committee (2019): Sustainable Seas Report

• Deep-sea mining would have “catastrophic impacts on the seafloor”

• International Seabed Authority both regulating and benefiting from revenues from mining licenses “a clear conflict of interest”

• “the case for deep sea mining has not yet been made”

Evidence presented by: ISA Sec General, UKSR, scientists, NGOs, others
Benefit to humankind as a whole?

- Estimates of economics of CCZ mining (MIT): payout to ISA countries for ‘benefit to humankind as a whole’ – a few hundred thousand dollars per country per year (167 countries)

- MIT: Profitable for individual companies and possibly some Sponsoring States – corporate tax (but not all can/will share equally in SS benefit – 167 mining operations)

- Economics likely to drive industry – if profitable, many countries & companies may want to join in the ‘gold rush’
Growing calls for a Moratorium on deep-sea mining

- European Parliament
- EU high seas fishing fleet associations
- PMs: Fiji, Vanuatu, Papua New Guinea (moratorium in nat waters)
- David Attenborough, Peter Thompson (UN Sec Gen Oceans Envoy)
- Many NGOs – e.g. Seas At Risk, Greenpeace, WWF, DSM, Fauna and Flora International, DSM Campaign, Conservation International, Earthworks, Amnesty International, Piango, Pang (South Pacific NGO coalitions) DSCC coalition (80+ members)
Industry: downstream users

- NGOs raising concerns with companies in the tech, renewables and other sectors - e.g. Apple, Microsoft, HP, Google, Boeing, Umicore, BMW, Samsung, Volkswagen (e.g. at World Economic Forum’s Global Battery Alliance; Responsible Business Alliance/ Responsible Minerals Initiative, etc.)

- “If deep-sea mining is going to be a problem, we don’t want these metals in our supply chains” – reputational risk, concern for the oceans, corporate CSR/ESG policies, sustainable development
SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development including Target 14.2: “By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans”

SDG 12: Ensure sustainable consumption and production patterns...Target 12.5 “By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse”
Conclusion

• Need much better understanding of deep-sea species, ecosystems and risks (incl science without expectation that mining license will be granted)

• Consistency with international commitments: Demonstrate possible to prevent loss of biodiversity & degradation of deep-sea ecosystems (& goods and services) – SDG 14.2

• Reform ISA (LTC transparency, decision-making, use it or lose it clause, two-year trigger rule)

• Transformation to a resource efficient, closed-loop materials circular economy, and responsible terrestrial mining practices

• Social license to mine (for the benefit humankind as a whole)
Q: Why open up a whole new frontier on the planet to large-scale industrial resource extraction when we have minimal understanding of what is there and we don’t have to?

Merci   Dank u
Case for a moratorium

1. Lack of sufficient understanding of the biology and ecology of the CCZ and other deep-sea areas (we don’t even fully know what is there much less how connected - environment baseline information insufficient).

2. Cannot begin to make informed, science-based decisions on what potential impacts on species, biodiversity, ecosystem goods and services etc may be and whether biodiversity loss can be prevented. Risk losing species before discovered...

3. Need reform of the ISA (transparency, decision-making, use it or lose it clause, two-year trigger rule)

4. Consistency with global policy and commitments: determine whether DSM necessary ‘for the benefit of humankind as a whole’; prevent ecosystem degradation and biodiversity loss; ensure circular economy approach/use of metals and responsible terrestrial mining (Comment from Apple participant: e-waste 15% recycled, lets at least get to 85% before we start talking about mining the deep-sea)

5. Public support/social license to mine (common heritage of humankind’).
References