

Mining the deep sea: environmental, political, and social challenges

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Members include



Seas At Risk/DSCC workshop, April 2016

(EC, EP, MS, industry, NGOs, scientists, Midas Partners)

- Differing views on whether deep sea mining is inevitable or necessary
- General agreement that despite recent strides, we do not yet know enough about deep sea environments to manage effectively
- All agreed that the EU has a significant role in facilitating further research and in drafting regulations
- Most agreed that the stringent application of the precautionary approach and 'polluter pays' principles was needed
- The ISA is the appropriate body to develop regulatory framework but concerns about the ability to monitor compliance with and enforce international regulations

Possible Structure of regulatory regime

- Overarching conservation objectives (incl ecological and social values) – possible models include UNFSA and UNGA deep-sea fisheries agreements
- Regional/Strategic Environment Management Assessments and Plans (SEMPs) in place prior to mining and periodically reviewed/updated
- Sufficient baseline information at appropriate bioregional scales to perform EIAs against which to measure potential changes induced by mining over appropriate timescales
- Active feedback between EIAs, EMPs and SEMPs and regular review/update of regs
- An ISA scientific/environment committee (and compliance committee)
- Effective mechanisms for monitoring and compliance with regulations
- Closure plans and post-mining monitoring
- Transparency, effective stakeholder input, independent scientific review
- Consideration of scale of initial/start up mines
- Liability regime, sustainability fund
- Planning: 100 year timeframe? Collecting baseline information, SEMP, EIA and review of EIA, test mining, evaluation, EMPs, commercial mining, closure & post mining monitoring (Jen's steps)

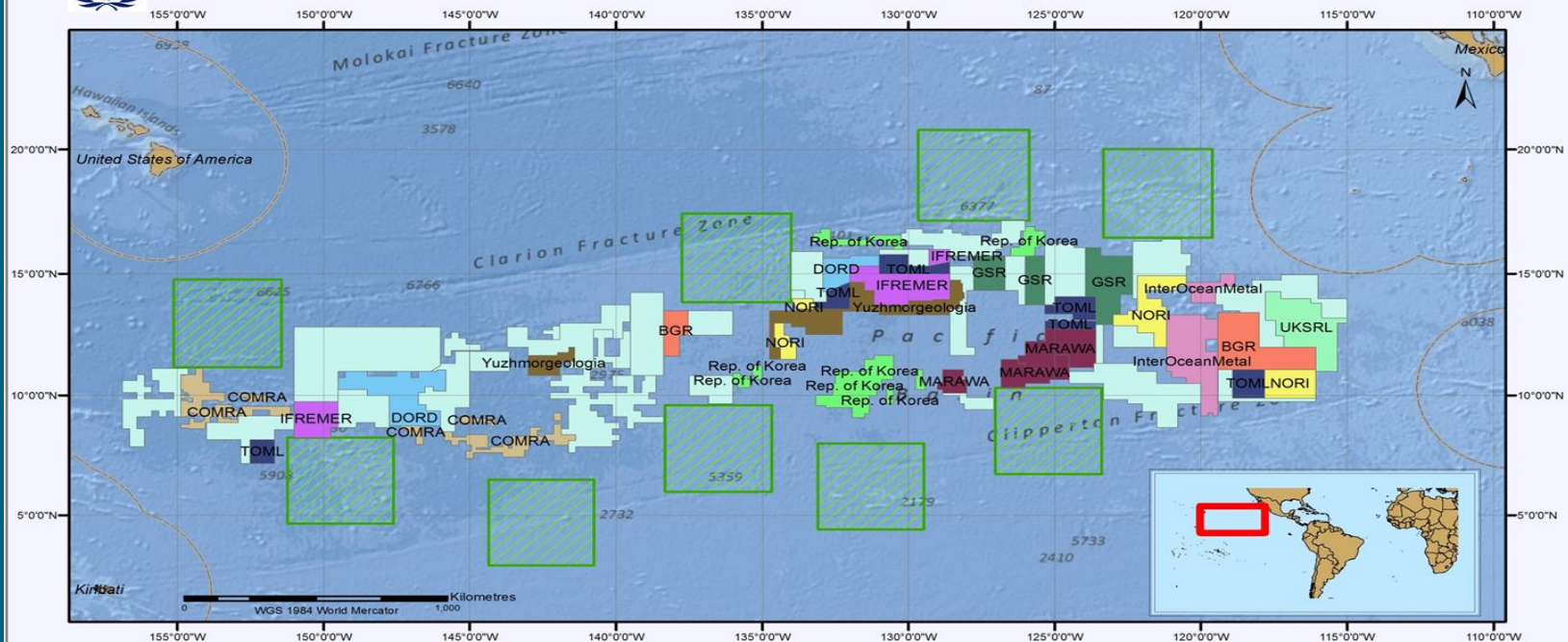
SIAs/EIAs

- How do you determine the risk of significant adverse impact or change?
- What and how much baseline information is necessary prior to mining to be able to assess the risk?
- What is an acceptable level of risk for which types of changes/impacts?
- Over what time scales? Bioregional scales?
- What can and should an EIA and/or test mining demonstrate and to what degree of certainty?
- What impacts does 'test' mining need to assess, how, and what procedures/timeframe needed to evaluate results before commercial mining permitted?
- What are the metrics, proxies, or quantifiable indicators of risk/change that can be used to regulate activity, prevent unacceptable impacts?

Clarion Clipperton Zone



Polymetallic Nodules Exploration Areas in the Clarion-Clipperton Fracture Zone Areas under contract and areas reserved for the International Seabed Authority



Contract area or contract approved as of 28 February 2013

- | | |
|---|---|
| Marawa Research and Exploration Ltd (Kiribati) | Institut français de recherche pour l'exploitation de la mer (IFREMER; France) |
| Bundesanstalt für Geowissenschaften und Rohstoffe (BGR; Germany) | InterOceanmetal (IOM; Bulgaria, Cuba, Czech Republic, Poland, Russian Fed., Slovakia) |
| China Ocean Mineral Resources Research and Development Association (COMRA; China) | Nauru Ocean Resources Inc. (NORI; Nauru) |
| Deep Ocean Resources Development Company (DORD; Japan) | Tonga Offshore Mining Ltd (TOML, Tonga) |
| G-TEC Minerals Resources NV (GSR; Belgium) | UK Seabed Resources Ltd (UKSRL, UK) |
| Government of the Republic of Korea | Yuzhmorgeologia (Russian Federation) |

- Reserved area*
 Area of particular environmental interest (APEI)**
 Exclusive Economic Zones (VLIZ, 2011)

* In the case of polymetallic nodules, the so-called parallel system provides that each application for exploration by a developed State must cover two parts of "equal estimated commercial value". One part is allocated to the applicant and the other is to become the reserved area, which is set aside for the conduct of activities by the Authority or developing States.

** In July 2012, the Authority adopted an environmental management plan for the Clarion-Clipperton Zone to be implemented on a provisional basis over an initial three-year period. The plan includes the designation of a network of areas of particular environmental interest (ISBA/18/C/22).

©International Seabed Authority, 2013. Background map: ESRI

Restoration/Remediation

- Is it possible?
- If not, what then?
- How much irremediable/irreversible damage is acceptable?
- Over what time scales?
- Can this be measured/quantified?
- Do DSM impacts in CCZ risk being ecologically irreversible or little possibility for recovery within reasonable timeframe?

Conservation objectives

21st Century

- Do we risk opening up a whole new frontier of extinction over the next several hundred years?
- Could the rate and scale of change overwhelm the capacity of some/many deep-sea species and ecosystems to adapt?
- Can extinction be justified if the activity is not critical to society or other less harmful options for providing the materials or service to humankind are available?
- Or - Can mining in CCZ be managed with reasonable confidence that in e.g 1000 years the CCZ is likely to be largely similar to what it is today (only slightly deviate from baseline assuming we have sufficient baseline to be able to make comparison)?

Ecosystem services?

Global Marine Assessment/World Ocean Assessment (UNGA 2015) Chapter 36F - Open Ocean Deep Sea

“This truly vast deep-sea realm constitutes the largest source of species and ecosystem diversity on Earth”

- “There is strong evidence that the richness and diversity of organisms in the deep sea exceeds all other known biomes... and supports the diverse ecosystem processes and functions necessary for the Earth’s natural systems to function”

What are they and can they be impacted by mining?

- “Deep-sea ecosystems are crucial for global functioning; e.g., remineralization of organic matter in the deep sea regenerates nutrients that help fuel the oceanic primary production that accounts for about half of atmospheric oxygen production.”

Global Marine Assessment/World Ocean Assessment

Chapter 51: Biological communities on seamounts and other submarine features potentially threatened by disturbance (pp 16-17)

- “Deep-sea ecosystems... are now and will increasingly be subjected to multiple stressors from habitat disturbance, pollutants, climate change, acidification and deoxygenation...”
- “The scientific understanding of how these stressors may interact to affect marine ecosystems remains particularly poorly developed. For example, the widespread destruction of deep-water benthic communities due to trawling has presumably reduced their ecological and evolutionary resilience as a result of reduced reproductive potential and loss of genetic diversity and ecological connectivity.”
- Can we prevent this from happening as a result of seabed mining?

European Commission Stakeholder Consultation on seabed mining 2014

The screenshot shows the European Commission website for Maritime Affairs and Fisheries. The main navigation bar includes links for Maritime Affairs, Fisheries, Atlas, Forum, and About us. The breadcrumb trail indicates the page is under Consultations > Seabed mining. The central content area features a large heading for the consultation, a brief description of the public consultation period (March to June 2014), and a section titled 'Why this consultation?' with sub-sections for Observations and Possible consequences. The Observations section lists concerns about underwater technology and raw materials supply. The Possible consequences section mentions increasing extraction activities in shallow water and potential deeper water mining. A sidebar on the left contains a menu with links to Home, About us, Contracts and funding, News and events, Consultations, and Online magazine. A search bar and related content section are also visible on the right.

European Commission

MARITIME AFFAIRS AND FISHERIES

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- News and events
- Consultations**
- Online magazine

Stakeholder consultation on seabed mining

Public consultation

In March 2014 the European Commission launched a consultation on seabed mining. The consultation closed on 20 June 2014.

Why this consultation?

Observations

- Rapid expansion in the capabilities of underwater technology
- Concerns about a sustainable supply of raw materials for industry

Possible consequences

- Existing extraction activities from seas and oceans, largely in shallow water, could increase
- Mining activities in deeper water could begin

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News

21/10/2014 - Commission reports on plans to save the European Eel
The European Commission has today issued a report on the measures taken by EU countries to ensure the recovery of European eel.

20/10/2014 - Regional plans adopted as landing obligation nears
The European Commission has today adopted a series of discard plans as it

INSEPARABLE

Responses to EC consultation

20 June 2014

18 civil society organizations from 10 EU countries (+ Aus, Switz, US) – most environmental NGOs

- Birdlife Europe
- Oceana
- Seas At Risk
- WWF (EPO)
- Surfrider Foundation
- Black Sea NGO Network
- Others incl Deep Sea mining Campaign (Australia); NFFO (UK)

- 28 'Private' entities – companies, consultancies etc. (e.g. Nautilus, G-Tec) from 9 EU countries plus Australia
- 18 'Public Authorities' including Ministries (CZ/ES), Departments of Antiquities/Archeology (FR/FI), regional agencies (PT Azores), Natural Heritage (SE/UK)
- 25 'Research' institutes (including a number of MIDAS partners)

Key themes

- Emphasis on reuse, recycling of materials rather than deep-sea mining
- Commercial mining should not take place until regulations are in place
- Regulations must be robust: management objectives and procedures/requirements (precautionary approach, EIAs etc)
- Drafting and adoption of regulations must be transparent and participatory; any benefits widely shared

Individual responses to EC consultation

515 individual responses (many 'standard' text) but...

- I ask you not to engage in such practices that will destroy many crucial habitats and irreversibly affect everything that's living in the ocean
- Don't allow the DEEP-SEA MINING in our precious OCEANS!!
- Please protect our oceans from deep sea mining
- The destruction and devastation man inflicts on this planet must end !
- I do NOT support any bulldozing of the ocean floor!
- Allowing the destruction of the oceans, for purely financial gain, is an unforgivable mistake
- Please stop deep-sea mining. It is far too destructive to the ocean environment
- No Seabed mining ever in Europe, PLEASE!!!!
- Arrêtez de permettre la destruction de la faune et de la flore des mers et des océans !!!

The Anthropocene

“Clearly we are in the midst of one of the great extinction spasms of geological history”

E.O. Wilson, *The Diversity of Life*

Growing social awareness of human impacts on a planetary scale



The Megafaunal Mass Extinction (the global spread of Homo sapien hunter-gatherers)

“a geologically instantaneous ecological catastrophe that was too gradual to be perceived by the people who unleashed it”

John Alroy - A Multispecies Overkill Simulation of the End-Pleistocene Megafaunal Mass Extinction
SCIENCE VOL 292 8 JUNE 2001



Concluding remarks

- How much biodiversity loss, if any, is acceptable over what timescales?
- What ecosystem functions important to humankind are potentially affected?
- Regulations need to be precautionary, transparent, robust – are the political, financial and regulatory and market structures sufficient to ensure effective compliance with rules?
- Can the regulatory structure incorporate social and environmental values – and accommodate change over time?
- Go/no go DSM a social choice – across many levels of society: companies, investors, consumers, regulators, conservationists, the public – common heritage of mankind
- The regulatory processes adopted over the next few years may well represent our generation's collective choices regarding the fate of deep-sea species and ecosystems potentially for many years to come

We have a responsibility to future generations...

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