

Deep-sea mining and the precautionary principle

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Deep-sea mining: Exploring the unknowns - Multistakeholders conference

Brussels, 26 April 2016

Precautionary principle in the EU

"Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay."

(Treaty of European Union, Art 191 §2)

Precaution and the ISA

- The exploration regulations of the International Seabed Authority (ISA) specifically oblige all actors (the ISA, sponsoring states, and mining operators) to apply the precautionary approach.
- The challenge lies in translating the abstract obligation of the precautionary approach into meaningful actions

Source: Jaeckel, A. *The International Seabed Authority and Marine Environmental Protection: A Case Study in Implementing the Precautionary Principle* (PhD thesis, 2015)



Sustainability: the EU vision



Living well, within
the limits of our planet
7th Environment Action Programme

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society."

The 7th EAP shall be based on the precautionary principle, the principles of preventive action and of rectification of pollution at source and the polluter-pays principle.

The precautionary principle

'The precautionary principle provides justification for public policy and other actions in situations of scientific complexity, uncertainty and ignorance, where there may be a need to act in order to avoid, or reduce, potentially serious or irreversible threats to health and/or the environment, using an appropriate strength of scientific evidence, and taking into account the pros and cons of action and inaction and their distribution.'

EBA Report | No 1/2013

Late lessons from early warnings:
science, precaution, innovation

ISSN 1725-9177



European Environment Agency



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DSM: A case in point for precaution?

- Highly complex ecosystems; incl. some unpredictable behaviours inherent to the system
- **Uncertainties and unknowns :**
 - Ecosystems, their functions, the services they provide, fragility and vulnerability, recovery rates ...
 - Potential impacts
 - Technologies, demands, economic and social values
- Potentially serious or irreversible threats to the environment
- Potential negative socio-economic impacts? (on local communities, resource curse...)
- Indirect threats to the environment and human health?
More of these minerals extracted and used...

Precautionary Strategies for DSM



Timing and scale of decisions

- Benefits of waiting and learning:
 - better understanding, reduced risks, better technology, lower costs
 - but requires investment in R&D
- How to reconcile approach driven by sense of urgency (needs/demand for the resources and geopolitical/strategic 'imperatives') with a precautionary approach?
- Can we think of a staged approach?
 - exploiting resources with lower risks in a limited number of sites
 - learning as we go, exploiting others after, if appropriate

Keys for the governance of innovation

In decision processes around technology development and deployment:

- reflect on consequences over time of innovations, and on their effects on quality of life, well-being and sustainability ⇒ Gauge an innovation against societal goals
- Clarify ethical dilemmas and trade-offs
- Be transparent and dynamic (there are unknowns, knowledge evolves)
- Acknowledge the possibility of surprises
- Consider irreversibility of potential negative consequences

Keys for the governance of innovation (2)

- Consider spread of exposure
- Build on plural and conditional assessments
- Apply the precautionary principle when uncertainty and ignorance prevail and stakes are high
- Cherish diversity of solutions to build resilience and avoid lock-ins
- Be adaptive, allow to revisit decisions and choices
- Keep options open, yet accept to close down inappropriate paths...
- Be humble

Precautionary process for DSM

- Assess the economic and social necessity of DSM
- Assess the risks and benefits of DSM in light of potential alternatives (avoid, substitute, reuse, reduce, recycle, terrestrial mining)
- Recognise uncertainties / ignorance regarding potential economic and environmental impacts
- Design decision processes which allow for staged, adaptive and iterative implementation of mining
- Monitor, experiment and learn as we go
- Maintain options of expanding, status quo or stopping depending on learning / evidence
- Requires starting exploitation where lower estimated risks, but also in variety of small areas

Knowledge needs: Unpacking the PP definition

Precautionary principle	Deep-sea mining questions
<i>...situations of scientific complexity, uncertainty and ignorance</i>	What are the uncertainties, the stakes, the unknowns? Which are the reducible and irreducible uncertainties (unpredictable behaviours inherent to the system)?
<i>... may be need to act to avoid, or reduce</i>	What available actions? How do they compare?
<i>... potentially serious or irreversible threats to health &/or environment</i>	What environmental and societal risks? Is the harm potentially serious (nature and extent)? Is it reversible?
<i>... using appropriate strength of scientific evidence</i>	What do we know? vs. What do we need to know?
<i>... taking into account pros and cons of action and inaction</i>	What are the arguments for and against mining / waiting?
<i>...and their distribution</i>	Who benefits and who loses if we mine and if we do not mine?

In conclusion...

Because of our European ambitions to operate a transition towards Sustainability, and to be a world example in this transition, we can and must urgently ask the following questions regarding deep-sea mining...

- Why should we mine?
 - "Because we can do it", "because it will happen anyway", ... are not intellectually solid answers...
- What for and for whom?
 - What societal purpose does it serve? What vision? Is it the only way?
 - Does DSM put us on a sustainability trajectory?
- Should we mine today? If yes then:
- How and where should we mine?

A last thought...

We have done it wrong so many times, for so many resources, why not try something different for deep sea mineral resources, rather than 'more of the same'?



"Perfection of means and confusion of goals seem, in my opinion, to characterise our age"
A. Einstein (1941)



Thank you!

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MIDAS is funded by the European Union's Framework 7 Programme under the theme "*Sustainable management of Europe's deep sea and sub-seafloor resources*", Grant Agreement 603418.