CENTRE OF EXPERTISE ON RESOURCES

The Hague Centre for Strategic Studies

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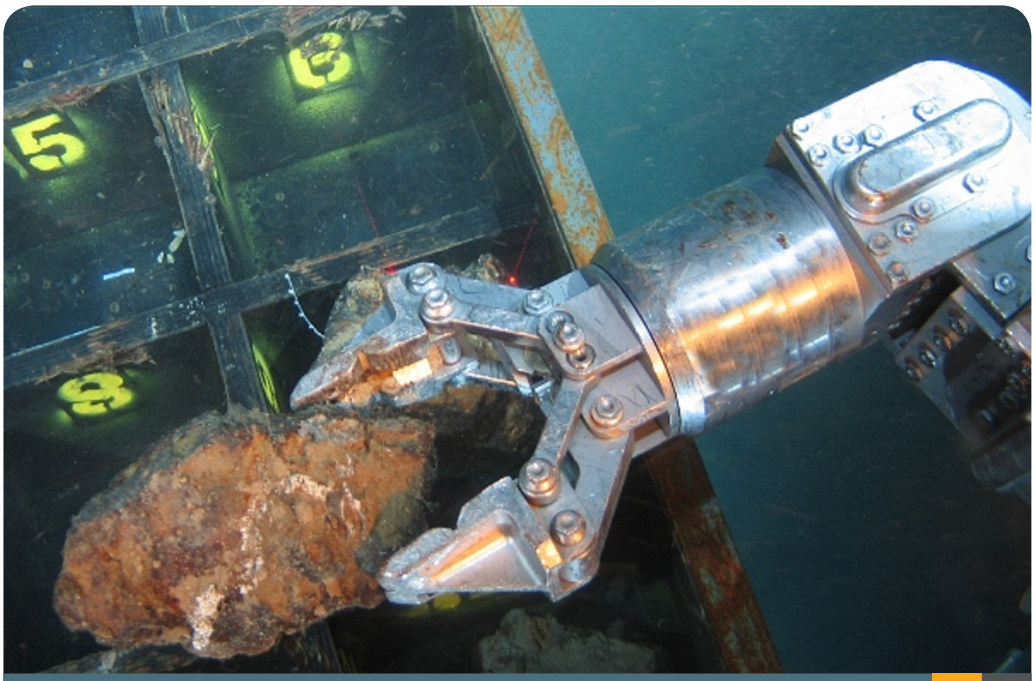
DEEP SEA MINING: HITTING THE BOTTOM OR TAKING OFF?



GEOPOLITICS

COE-RESOURCES ISSUE BRIEF 2

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The Centre Of Expertise on Resources (COE-Resources) supports industry and government to timely and effectively anticipate strategic opportunities and risks related to the sustainable supply of resources.

This report is from the COE-Recources theme **GEOPOLITICS**. Our other themes are FORESIGHT and ENVIRONMENTAL POLICY.

GEOPOLITICS

We specialize in bringing the geopolitical context in to the debate on natural resources. How secure is the country of your main supplier? How vulnerable is the shipping lane you depend on? How vulnerable is your national economy to supply disruptions of certain imports? We have the knowledge and the instruments to analyze this kind of questions for your raw material supply chain.

Partners

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DEEP SEA MINING: HITTING THE BOTTOM OR TAKING OFF?

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This paper has been published following the seminar 'Deep-Sea Mining: Hitting the Bottom or Taking Off?' on July 8th, 2015, organized by the COE-Resources in cooperation with IHC Mining.

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1 INTRODUCTION

Exploration and exploitation of the deep seas in search of marine minerals have over the past 15 years received increased attention. Developments in sub-marine technologies, rising raw material prices until recently, increased price volatility and supply security are changing the business-case for furthering activities in the marine environment. After years of talking, exploitation legislation is now being put in place in the Area and the first projects are on the verge of becoming operational. Industry players active in the field are generally confident that it is a matter of time before mining will begin. Despite no commercial activities in the Area exist to date, the high potential of the challenging market that is under development is attractive. Due to the largely unexplored deep sea environment, some uncertainties still remain regarding the environmental and social impacts of large scale deep sea mining. These uncertainties can be decreased once pilot mining takes off.

This Issue Brief discusses the strategic relevance and economic potential of deep-sea mining (DSM), the geopolitical context, legal constraints as well as the environmental concerns in particular for the Netherlands. The main questions that are being answered are:

- What is the **strategic significance** of deep sea mining for Europe in general and especially for the Netherlands? Is deep-sea mining needed to ensure **security of supply of minerals** for our industries? What is the Dutch industry's interest for deep sea mining?
- What are the current **geopolitical risks and challenges** industry and government are facing?
- What should be the **next steps** for the (Dutch/ EU) government and their businesses, taking into account that other countries provide a stronger political support to their business involved in DSM?

With the insights from this Issue Brief, the Centre of Expertise on Resources (COE Resources) supports industry and government to effectively anticipate strategic opportunities and risks related to the sustainable supply of resources.

2 THE STRATEGIC IMPORTANCE OF DEEP SEA MINING

There are a variety of reasons why companies and governments get involved in DSM. These reasons can be (but are non-exclusive):

1. **Exploitation of mineral resources** – this reflects the demand for securing critical materials for national industries;
2. **Exploration of mineral resources** – this reflects the demand for research and development and mapping of the ocean floor; and
3. **Technology and knowledge development to supply services/ equipment** – this reflects the strategic interest in deep sea mining.

Once one company 'takes the plunge' it is likely to fuel a race that is based on **strategic advantage and competition**.

Data collected in 2010 showed that **Europe ranks second in terms of inventions related to DSM** (after the USA and before China, Japan and Korea) and first in terms of scientific developments.[1]

The table below provides an overview of the main reasons for DSM activities at global, industry and regional level.

GLOBAL	INDUSTRY	REGIONAL
Global economic growth – increased demand for minerals and metals	Economic benefits (i.e. profits) – revenues made from the value of the ores (land mining more and more costly and difficult – increasing input and fuel costs)	Pacific: alternative economic development option to increase employment and growth and scope of local economic industries
Increased industrialisation and urbanisation (emerging economies)	Cost savings vis-à-vis land mining (mobile infrastructure that can reallocate from deposit to deposit, clustering of the resource, less waste separation for some deposits, etc.)	EU: securing supply of raw materials is critical for EU manufacturing industries and their competitiveness
States try to safeguard security of supply of essential raw materials	Apparent higher grade deposits than on land – attractive for companies as the grade of deposits on land is decreasing	EU: potential for a new export market for technology
Minerals are needed for clean energy technologies and the transition towards a green economy	Develop innovative frontiers – mining industry is used to high-risk innovative investments and going offshore would be one of them (main driver)	EU: research and innovation to explore a new area
	No concerns about resource availability from a geological point of view – a lot of research and sampling done to give confidence in explored areas of deep-sea. Less confidence in knowing the resource assessment for seafloor massive sulfides (SMS) (more difficult to find) but for nodules and crusts the industry knows where to find them	EU: potential to develop new materials (for e.g. clean technologies)

TABLE 1 OVERVIEW OF THE MAIN DRIVERS FOR EXPLORATION AND EXPLOITATION ACTIVITIES

SOURCE: TRINOMICS (2015)[2]; SECONDARY SOURCES (E.G. ROCHE AND FEENAN 2013[3], ECORYS 2014[4])

It is the service/ equipment and knowledge supply that drives Dutch industry demand

The Netherlands has accumulated great knowledge and experience in the related fields of maritime law and environment, which form a strong basis for deep sea mining. There are a number of leading companies that have gained a strong position and a good reputation in related areas, such as:

- Minerals transfer (port of Rotterdam);
- Offshore operations (Van Oord, Boskalis, Heerema);
- Subsea technology (TU Delft, Royal IHC, Seatools); and
- Research (TNO, Fugro, NIOZ).

The Dutch industry has demonstrated continuous investment in the international sectors of dredging, oil & gas, construction and mining, by ongoing research and development, and design and construction programs. These are particularly aiming for the security of the technical, environmental and economic feasibility of the mining operations.[5]

In a nutshell, DSM offers **business opportunity for Dutch industry to become a service provider and a technology and knowledge supplier to other nations**.

Dutch dredging and seafloor mining companies are at the forefront of exploration technologies and dredging exploitation technologies, which they supply to other states and market players. They could also potentially play a role in the exploitation of deep sea resources.

Why is it strategically important for the Dutch government to get involved ?

There are a number of strategic reasons why DSM is important for the Netherlands:

- It is important to support the Dutch dredging and seafloor mining industry by providing an enabling regulatory framework. This regulatory framework, i.e. deep sea mining legislation, would show to the outside world that the Netherlands takes an active role in the DSM market together with the Dutch industry.
- Having a back-up and a proactive role from the Dutch government would improve the level playing field (i.e. access to equal opportunities) at the international trade negotiations table. The Dutch industry currently operates independently from the government, unlike other involved countries, where governmental representatives are present. This is becoming more and more important in order to take the next step in the DSM activities.
- Government's involvement also provides the possibility to offer valuable insights and influence the developing international legislative framework for exploitation of such resources at the UN level.
- The Netherlands has little or no access to own raw materials and own access to deep sea minerals by an international license would create such access and provide an economic stimulus. Even if the Netherlands is not a contractor by itself, others could become contractors under the Dutch flag.
- It is important not to "miss the boat" while other neighboring countries are already on board.

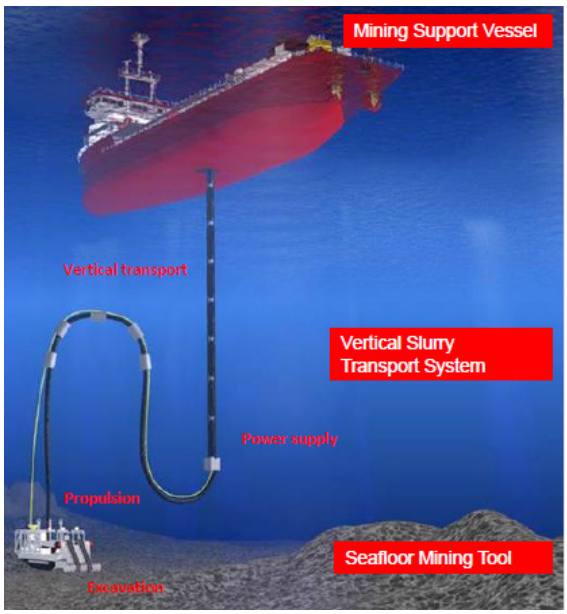

FIGURE 1 ILLUSTRATION OF DEEP SEA MINING (SOURCE: IHC MINING)

Getting involved in DSM also means the ability to influence the developing **legislative framework** based on Dutch experience in the offshore sector (including oil and gas) and to **ensure environmental and social interests** are protected.

Currently, there is a lack of progress in the Netherlands to fulfil the Dutch industry's need for relevant legislation, which is not the case in other neighboring countries which do have such national legislation in place.

One of the **key bottlenecks** for the Dutch DSM industry is the fact that the "DSM Dutch table" is **lacking mining legislation and the presence of the authorities, concession holders and investors.** Belgium, Germany, the UK and France all have mining regulation (and licenses) in place, and the government shows a pro-active role and interest at international trade negotiations.

3 A GEOPOLITICAL PERSPECTIVE ON DSM – RISKS AND CHALLENGES

Relevance of geopolitics to deep sea mining

Geopolitics can be defined as the influence of geography on international peace and security issues and international relations. The geographical location of a country not only influences its endowment with natural resources, such as minerals and oil, but equally it's potential to harness these resources. It also shapes its trade relations with other states and is greatly affected by security issues that arise from instability within its own boundaries or those of its neighbours. A geopolitical analysis of deep-sea mining also takes into account aspects of socio-economic and political geography, such as demography and governance, as well as financial and ecological costs.

The geopolitics of DSM is in part **similar to those of natural resources** in general. Global trends, such as **population growth** and the rise of the global middle class, which **increase** the demand for natural resources, can drive the interest of states and industry in DSM. However, **the geopolitics of DSM differ from land resources** as the Area (i.e. international waters) do not belong under a specific national jurisdiction. Nevertheless, the **main players can withhold or stimulate the activity in the Area**, which is important from a geopolitical perspective.

At present, the EU imports 77% of its critical raw materials. 49% of its critical raw materials it sourced from China. In recent years the EU has sought to establish a more diverse import market for the sake of securing domestic industries against market shocks and increased prices.[6]

The international system is in transition to a multipolar world, in which multiple centres of power increasingly compete with each other. This multipolar world is emerging due to, 1) relative decline of Western power and dominance in international relations and, 2) rising economic and political power of emerging economies.

In the resource sector this is manifesting through a resurgence of resource nationalism, which means that the control of the natural resource sector is **shifting in favour of state-owned companies**, and it is becoming more and more difficult for foreign companies to have access to these sectors. This may also lead to a surge in protectionist policies.

The emergence of such a multipolar world is also happening offshore. For example, in the South China Sea several countries dispute borders in order to create future access to resources in the 200 nautical miles (Nm) zones. DSM could lead to similar and increased competition in international waters.

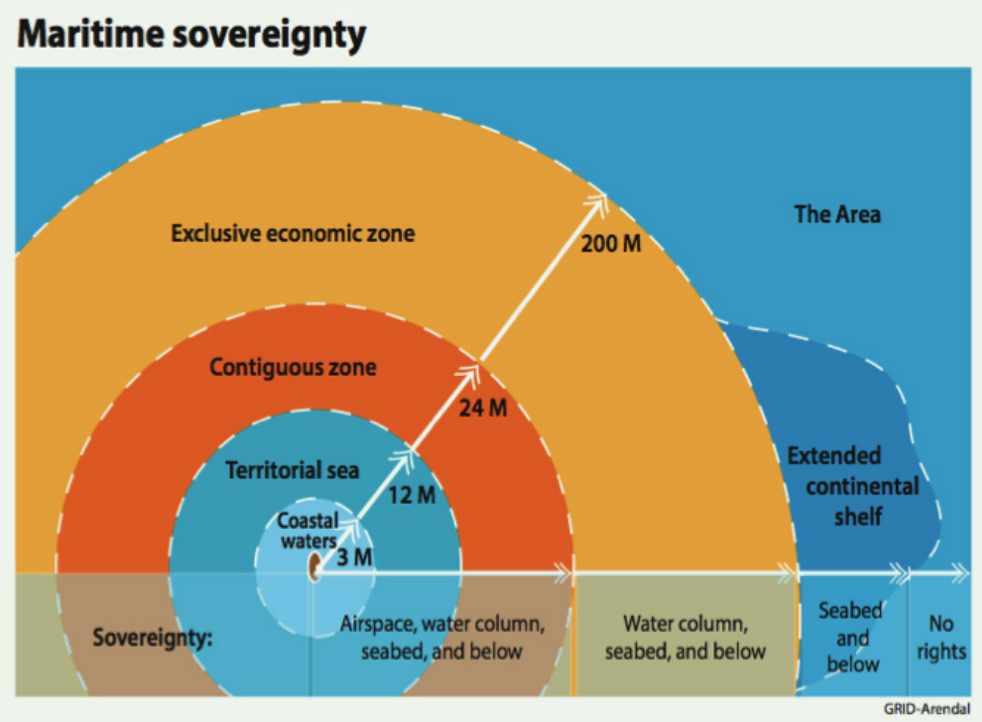

FIGURE 3 MARITIME ZONES UNDER UNCLOS
SOURCE: SPC (2013). DEEP-SEA MINERALS: DEEP-SEA MINERALS AND THE GREEN ECONOMY. BAKER, E., AND BEAUDOIN, Y. (EDS.) VOL. 2, SECRETARIAT OF THE PACIFIC COMMUNITY).
M = NAUTICAL MILE

The need of enabling a level playing field from a geopolitical perspective

As briefly mentioned above, the lack of level playing field in the DSM market is a significant concern for the Dutch DSM industry. On the one hand, there is a risk that states involved in DSM through either implemented national mining legislation or through being a sponsor state will give priority to their national companies to supply DSM services/ equipment, which can be seen as a sort of 'resource nationalism' in international waters. On the other hand, it is becoming more and more important to build strong relationships between the different parties involved in DSM at the international trade mission, as DSM is to some extent politicized due to the involvement of state parties and governments in these activities. This can be seen as a response to the obligation of state 'sponsorship' of contractors engaged in DSM in the Area.

In the Netherlands, **DSM does not seem to be a priority on the government's agenda** but **the issue of mining legislation needs to be given attention** in order to support the Dutch DSM industry to remain globally competitive. The main risk Dutch companies are facing is the lack of level playing field on the market, where other countries could favor their national companies as service providers, for example, through different taxation schemes. As a result, Dutch DSM companies have difficulty competing in such a market without any back-up by the Dutch government.

4 WHAT SHOULD BE THE NEXT STEPS?

A recent workshop organized by COE Resources with the DSM community and focusing on the Netherlands, found that the community is divided on the question of how soon DSM will take place and whether it is strategically important for the Netherlands to be involved. As mentioned above, currently DSM is not on the forefront of the Dutch government's agenda. The Dutch industry players asked the government to consider becoming a sponsor and put relevant legislation in place to exploit its expertise and position itself at the forefront of technological innovation. Having national legislation in place is sometimes even required to act as a service provider to third parties. The key issue to be tackled is mining legislation. This would provide two crucial benefits: (1) it would improve the level playing field on the international DSM market for Dutch companies, which currently have competitive disadvantage against other state-sponsored companies; and (2) being pro-active on the DSM table would also give the Dutch government influence to improve the future sustainability of DSM legislation through its expertise in raw material strategies. The Dutch government agreed to study the Belgian and German DSM legislation.

At this meeting, policy makers and industry identified the following action points:

→ Enquire as to the possibility of a pan-European initiative. If there is interest, discuss this with the European Commission to create a common approach.

→ Fund further research into the environmental impacts/ costs of DSM. This is important to minimize the serious knowledge gap in this area.

→ Keep abreast of legal discussions currently taking place at the international level to ensure that developing states benefit from the mining of minerals and monopolization is avoided.

→ Continue discussions on how to establish ways of leveraging Dutch expertise in water management and off-shore activity in relation to DSM.

→ COE will continue to offer its knowledge and services on geopolitics, foresight and environmental policies to help industry and policy makers formulate robust strategies that anticipate the challenges of the future.

FIGURE 5 ACTION POINTS/ NEXT STEPS

5 CONCLUSIONS

The main conclusions from this Issue Brief for the industry and policy makers are:

- Deep-sea mining is of great strategic importance for the Dutch dredging and offshore mining industry due to its strong position in the sector as service/ equipment supplier and knowledge provider.
- The Dutch government can play a more active and important role in this development, as Dutch companies are already at the forefront of DSM activities as market leaders in exploration technologies.
- Dutch companies face the risk of decreased competitive advantage as service providers on the global market due to the lack of a level playing field if a national DSM legislation is not put in place.
- Implementing national legislation would also provide much more influence in the development of international exploitation legislation. This offers an exceptional opportunity to develop DSM into a more environmentally friendly and socially responsible alternative to terrestrial mining. It is important to ensure an ecological sound practice so that future generations do not look back and view this practice in the same way current generations view deforestation.

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