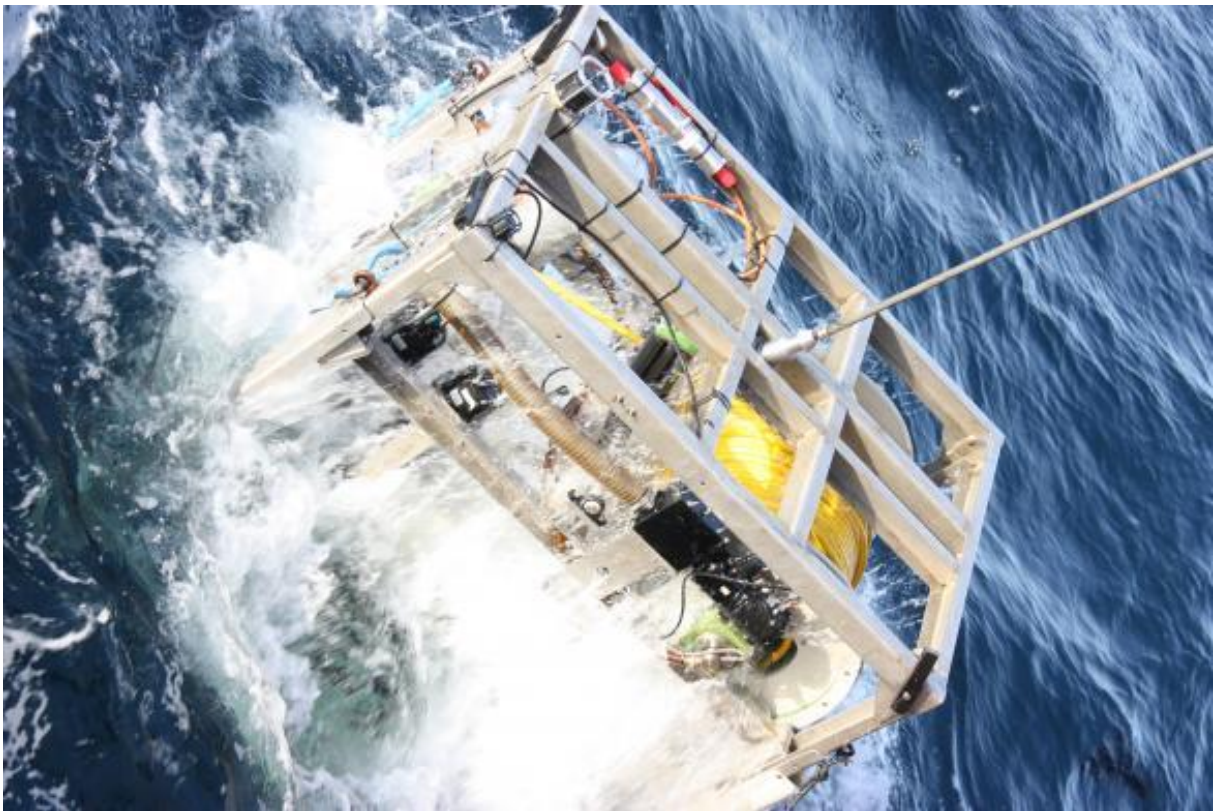


# Seabed mining

*European Commission public consultation (March 2014)*



## Flanders Marine Institute VLIZ

### Policy - Informing Brief

#### **Introduction note**

The Flanders Marine Institute (VLIZ) participates in public consultations of the European Commission on specific marine policy issues. Such consultations help the European Commission to collect and use the views of a broad range of stakeholders in shaping its discussions, in generating new policies, and in improving existing ones. VLIZ provides summaries of its responses to these consultations in the form of policy-informing briefs (PIBs).

The content of VLIZ policy-informing briefs combines expert scientific opinion with objective data and information. For this purpose, VLIZ draws on the expertise of coastal and marine scientists within its national and international network of marine research.

Policy-informing briefs reflect the impartial and objective position of VLIZ and are motivated by the basic principles of sustainable development and an ecosystem based approach, as endorsed by the European Integrated Maritime Policy and the principles of integrated coastal zone management.

More information about the core business, principles and terms of reference of the VLIZ: <http://www.vliz.be/en/mission>.

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## PUBLIC CONSULTATION EC

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## GENERAL CONTEXT ON SEABED MINING

*(This is the context as it was described in the consultation on the website of the European Commission's Directorate General for Maritime Affairs and Fisheries: [http://ec.europa.eu/dgs/maritimeaffairs\\_fisheries/consultations/seabed-mining/index\\_en.htm/](http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/seabed-mining/index_en.htm/)).*

Until recently, nearly all mankind's needs for non-living materials for agriculture, construction and manufacture were obtained from land. Now extraction of sand and gravel from the seabed is a thriving industry, mines for minerals such as potash extend offshore and licences have been granted for the exploration and extraction of minerals from the deep ocean floor.

Today commercial scale seabed mining operations are limited to shallow water. Most of this concerns the extraction of aggregates – sand and gravel – for the construction industry and for nourishing beaches. Other material extracted from shallow water down to about 500 metres depth includes tin, phosphates, iron ore and diamonds. The technologies involved include dredging, vacuum pumps and Remotely Operated Vehicles.

Deep seabed mining has been arousing interest since the 1960s but no commercial mining activity has yet begun. However, in the last decade interest has increased. Operations would be controlled from a floating platform at the sea surface and target one of four broad classes of deposits: polymetallic nodules, polymetallic sulphides, cobalt-rich crusts or rare earth element-rich deep sea sediments.

The regulations governing such activities depend on whether they take place inside or outside the jurisdictional waters of a sovereign state. According to the UN Law of the Sea a country enjoys exclusive sovereign rights to explore its continental shelf and exploit the natural resources, including mineral resources from it. Mining activities in this area are subject to the country's internal legislation. For EU countries, this legislation may include obligations agreed at EU level, such as the Environmental Impact Assessment Directive.

Deep sea mining operations can also be carried out in the international seabed (the "Area" which is the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction (article 1 UNCLOS)), for which a licence needs to be obtained from the International Seabed Authority, an intergovernmental body established under the 1982 United Nations Convention on the Law of the Sea with the mandate to organise and control activities of the Area, particularly with a view to administering the resources of the Area, to regulate seabed mining and to ensure the protection of the marine environment in the Area in relation to such activities.

Numerous organisations within the EU are presently engaged in seabed mining activities, both as technology providers and as mine operators. The sector, though small, has been identified as having the potential to generate sustainable growth and jobs for future generations. However, our lack of

knowledge of the deep-sea environment necessitates a careful approach. The European Commission is thus engaged in a variety of studies and projects aimed at shedding light on the benefits, drawbacks and knowledge gaps associated with this type of mining.

The aim of the EC consultation was to gauge opinion on these activities and to assess what stakeholders thought the EU's attitude and role should be.

Seabed mining covers three broad activities: extraction of aggregates, shallow-water mining and deep water mining.

VLIZ responded to the questions on mining of aggregates and deep sea mining as it is indirectly involved or possibly will be involved in the described activities. The response of VLIZ was established in cooperation with the Scientific Board of VLIZ and is summarized below and.

(A summary of the responses of all stakeholders on the consultation is available on the website of the European Commission's Directorate General for Maritime Affairs and Fisheries:

[http://ec.europa.eu/dgs/maritimeaffairs\\_fisheries/consultations/seabed\\_mining/index\\_en.htm/](http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/seabed_mining/index_en.htm/)).

## **BACKGROUND OF VLIZ WITH REGARD TO SEABED MINING ACTIVITIES**

VLIZ supports all types of marine scientific research. Its research vessel and monitoring equipment is used for monitoring the marine ecosystem, the seabed, cultural heritage underwater, pollution. The main interests of VLIZ with regard to seabed mining are surveying and prospecting and issues related to environmental impact. Other activities such as extraction, processing, equipment manufacture, shipbuilding (vessels and offshore structures), legal issues and the impact on other industries are of a lesser interest to VLIZ.

## **MINING FOR AGGREGATES**

### **BACKGROUND OF VLIZ WITH REGARD TO AGGREGATE EXTRACTION ACTIVITIES**

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VLIZ is indirectly involved in aggregate extraction projects by providing the scientific knowledge base through its network of marine scientists. During quarterly meetings these experts meet in the Scientific Board giving high quality and scientifically sound advice to the Board of Directors and ensure an effective information flow to the Flemish marine research community. All available scientific knowledge of the Belgian marine research landscape can be consulted through the Compendium for Coast and Sea (Lescrauwaet et al. 2013) on following website: <http://www.compendiumcoastandsea.be>.

### **IS AGGREGATE EXTRACTION A USEFUL WAY OF MAINTAINING AN ADEQUATE SUPPLY OF MATERIAL FOR CONSTRUCTION AND BEACH NOURISHMENT?**

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VLIZ believes that aggregate extraction from the sea is necessary for the maintenance of an adequate supply of material for the construction industry and for beach nourishment.

VLIZ also pointed out that beach nourishments are ideally executed with a sediment composition comparable to that of the natural sediment (where the nourishment takes place) (Vanden Eede, S. 2013). This sand is only found at sea, on the Belgian continental shelf.

### **WHAT IS LIMITING THE ECONOMIC POTENTIAL OF THIS ACTIVITY?**

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VLIZ is of the opinion that the most significant limits to growth of aggregate mining is the shortage of suitable sites and the competition with other users for resources (e.g. fishermen). Other relevant limitations could be posed by the volatility of prices and the lack of knowledge of the whereabouts of deposits. Technology shortcomings could also represent a minor limitation. VLIZ did not express an opinion on other suggested limitations to growth being the limited

access to finance, inadequate port facilities, over-stringent licensing conditions, lengthy, unclear or bureaucratic licensing conditions, shortage of skilled labour, local opposition and taxation issues.

VLIZ further clarifies that the Belgian part of the North Sea is a small and intensively used area (Maes et al. 2005). To balance all the needs of different stakeholders the Federal Government designed a marine spatial plan (Van de Velde et al. 2014), which was approved on 20 March 2014. This plan indicates the zones available for sand and gravel extraction. Zones where the extraction depth exceeds 5 meter are closed for recovery. The thickness of the historic depositions varies however from site to site. Therefore efforts should be made to adapt policy in this way. More information on the licenses, spatial use and societal interest of sand and gravel extraction on the Belgian part of the North Sea can be found on following website:

<http://www.compendiumkustenzee.be/en/spatial-use-1>.

#### WHAT IS THE ENVIRONMENTAL IMPACT OF AGGREGATE EXTRACTION?

VLIZ did not express an opinion on the comparison of the environmental impact of aggregate extraction to other activities such as fishing, extraction on land and oil and gas extraction.

With regard to the environmental impact of aggregate extraction as such, VLIZ refers to De Backer et al. (2011), who monitored the biological recovery of different sand extraction zones after closure. The results of both sites differ and suggest that the outcome of the biological impact of intensive dredging is primarily dependent on the local natural conditions of each site. Van Lancker et al. (2010) reported significant morphological changes in the extraction sites with no recovery on a short-term once the activities had ceased. For more information on the environmental impact and the impact on other users (for example on underwater cultural heritage) of sand and gravel extraction on the Belgian part of the North Sea, VLIZ refers to the Compendium for Coast and Sea (Lescrauwaet et al. 2013) (<http://www.compendiumkustenzee.be/en/impact-1>).

Concerning oil and gas extraction, VLIZ argues that a distinction should be made between the impact of extraction and the risks for the environment linked to the extraction itself (e.g. oil pollution).

#### WHAT EU ACTION WOULD BE HELPFUL?

VLIZ is of the opinion that priorities for EU action lie within the field of environmental impact research and the promotion of freely accessible seabed maps together with information on geology, ecosystems and habitats. Other useful EU actions, according to VLIZ, would include research on technology, the promotion of exchange of good practice, and the development of a code of corporate responsibility. VLIZ did not express an opinion on other suggested EU actions such as the facilitation of mobility of labour, further support to

initiatives such as the Extractive Industry Transparency Initiative (includes requirement for disclosure of payments to governments) and strengthening EU environmental legislation such as that on environmental impact and mining waste.

In addition, VLIZ suggests that initiatives such as the EMODnet central portal (<http://www.emodnet.eu/>) should be further supported by the EU in order to make marine data from all over Europe available to individuals and organisations (public and private).

VLIZ also stresses that the cumulative impact of all users of the territorial waters has to be taken into account. Concerning sand and gravel extraction, the spatial impact should be monitored better also outside the extraction zone. Scientific research nowadays is more focused on ad hoc monitoring whereas continuous monitoring and follow-up is needed. Legislation should stimulate concessionaires to contribute a part of their profit to scientific research (cfr. Belgian case). For relevant information on this topic, VLIZ refers to the Compendium for Coast and Sea (Lescrauwaet et al. 2013) (<http://www.compendiumkustenzee.be/en/sustainable-use-1>).

## SHALLOW-WATER MINING

VLIZ did not answer questions on the shallow-water mining of higher value commodities.

## MINING IN DEEP WATER

### BACKGROUND OF VLIZ WITH REGARD TO DEEP SEA MINING ACTIVITIES

VLIZ is currently not involved in any deep sea mining projects but could see itself being involved within the next ten years.

### COULD DEEP SEA MINING CONTRIBUTE TOWARDS A SUSTAINABLE AND ECONOMICAL SUPPLY OF RAW MATERIAL FOR EU INDUSTRY AND AGRICULTURE?

VLIZ believes that deep sea mining is a useful addition to land-based sources for the supply of raw material for EU industry and agriculture. However, VLIZ highlights that more research is needed, including the impact on underwater cultural heritage, to confirm whether or not deep sea mining is sustainable. The growing process of many deep sea materials is very slow, slower than the extraction rate. Therefore, VLIZ argues that there is an urgent need for conservation guidelines. For relevant information on this topic, VLIZ refers to a publication of Van Dover (2011) in *Nature* on tightening regulations on deep sea mining. Finally, VLIZ points out that ensuring research is carried out in tandem with economic activities is particularly pertinent in the deep sea where only



0.0001% of the deep sea has been sampled biologically. There is currently very little information available on the functioning of deep sea ecosystems, how these systems evolved, or their resilience to human threats and natural pressures (European Marine Board 2013: Navigating the Future IV).

#### **WHICH DEPOSITS ARE OF PRIMARY INTEREST FOR YOU AND WHERE DO YOU BELIEVE THAT MOST DEEP SEA MINING ACTIVITY WILL TAKE PLACE?**

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VLIZ has no particular interest in the type of deposits being nodules, sulphides, crusts and rare earth element-rich deep sea sediments and is of the opinion that most mining activity will rather take place in international waters than in jurisdictional waters.

#### **WHAT IS DRIVING ECONOMIC INTEREST IN DEEP SEA MINING?**

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According to VLIZ, both the advances in technology as the limited access to raw materials from terrestrial sources are driving the economic interest in deep sea mining. Technological advances are revolutionizing access to the deep sea, driving commercial opportunities to exploit the deep sea (European Marine Board 2013: Navigating the Future IV, chapter 8).

#### **WHAT IS LIMITING THE ECONOMIC POTENTIAL OF DEEP SEA MINING?**

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VLIZ believes the most relevant limitations of the economic potential of deep sea mining are the volatility of prices, shortage of suitable sites, technology shortcomings and a lack of knowledge of whereabouts of deposits. A minor limitation could be posed by the competition with other users for resources (e.g. fisheries). VLIZ did not express an opinion on other suggested limitations such as: limited access to finance, inadequate port facilities, over-stringent licensing conditions, lengthy, unclear or bureaucratic licensing conditions, shortage of skilled labour, local opposition and taxation issues.

VLIZ further explains that the initial interest in deep sea mining was lowered due to the ratification of the United Nations Convention on the Law of the Sea (UNCLOS) and metal prices that had dropped (Halfar et al. 2007). Whether a site is suitable or not depends on different factors: the amount of aggregate available at the site, the composition of the aggregate, the distance between the site and a harbour. For these reasons there is a shortage of suitable sites. There are many potential limiting factors for economic development in deep sea mining. However, a major limiting factor in both economic and governance terms is the lack of knowledge about the deep sea. In the deep sea, this gap in knowledge is particularly pertinent where only 0.0001% of the deep sea has been sampled biologically. The international Census of Marine Life project found that every second specimen collected from waters deeper than 3,000m belongs to a species new to science (Heip and McDonough, 2012). Currently, there are still major and important gaps in our knowledge of the natural histories, life

cycles, ecosystem interactions, and ecological functions of marine species and ecosystems. Still less is known about their resilience to human threats and natural pressures (European Marine Board 2013: Navigating the Future IV). The example of the efforts to stem the flow of oil from the Deepwater Horizon oil platform shows that knowledge and expertise in underwater technology is limited.

#### **WHAT IS THE ENVIRONMENTAL IMPACT OF DEEP SEA MINING?**

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VLIZ did not express an opinion on the comparison of the environmental impact of deep sea mining to that of other activities such as fishing, mining on land and offshore oil and gas extraction. Furthermore, VLIZ is of the opinion that there is a lack of knowledge concerning the environmental impact of deep sea mining, including the impact on underwater cultural heritage. The uncertainties about spatial impact, temporal impact and cumulative effects are high. For relevant publications on the topic, VLIZ refers to: Halfar and Fujita (2007) and Van Dover (2011).

#### **WHAT EU ACTION WOULD BE HELPFUL?**

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VLIZ believes that priorities of EU actions for deep sea mining lie in the field of environmental impact research, promoting freely accessible seabed maps together with information on geology, ecosystems and habitats, promoting exchange of good practice, and actively supporting networking of marine protected areas in areas beyond national jurisdiction. Other useful EU actions, according to VLIZ, are research on technology, development of a code of corporate responsibility, supporting a pilot project to test technology under realistic conditions. EU actions that would not be useful in the opinion of VLIZ are strengthening the EU environmental legislation such as that on environmental impact and mining waste.

VLIZ did not express an opinion on other suggested EU actions such as facilitating mobility of labour and further supporting initiatives such as the Extractive Industry Transparency Initiative (includes requirement for disclosure of payments to governments).

VLIZ further explains that the International Seabed Authority (ISA) should encourage exchange of good practice and further extend its mining code with conservation guidelines. The areas with particular environmental interest (APEI) which ISA assigned, should be linked to a management policy. In the framework of pilot projects the environmental impact, including the impact on underwater cultural heritage, should also be monitored. More information is needed to understand the impact of deep sea mining on the ecosystem and underwater cultural heritage and how this ecosystem recovers after mining. Close collaboration between mining companies and scientists is needed, e.g. the example of the Solwara 1 site in the Manus Basin (Papua New Guinea) explored by Nautilus Minerals. For more information, VLIZ refers to Van Dover (2011).

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#### CONSULTED WEBSITES

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<http://www.emodnet.eu/>

[http://ec.europa.eu/dgs/maritimeaffairs\\_fisheries/consultations/seabed-mining/index\\_en.htm/](http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/seabed-mining/index_en.htm/)

[http://ec.europa.eu/maritimeaffairs/policy/seabed\\_mining/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/policy/seabed_mining/index_en.htm)

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