

# Deep sea mining: Exploring the unknowns

**Multi-stakeholder conference – 26<sup>th</sup> April 2016, Brussels**

**Background paper:  
EU funded deep sea mining related research**

This event is organised by:  
[Seas At Risk](#), Rue d'Edimbourg 26, Bruxelles 1050  
[Deep Sea Conservation Coalition](#), Postbus 59681, 1040 LD  
Amsterdam, Netherlands  
[The Royal Flemish Academy for Arts and Sciences](#), Hertogsstaat 1-  
1000 Brussels

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## Context

This paper is intended as background information for the SAR-DSCC multi-stakeholder conference, which will take place in Brussels on the 26th of April 2016. It presents an overview of past and ongoing EU research projects related to deep seabed mining (and including research into the functioning of the deep sea ecosystem), and analyses the proportion of funding going to environmental and technology research. Information has been obtained from the European Commission website, the individual projects' descriptions and by consulting recent deep sea mining related studies.<sup>1</sup>

While the European Commission's policy on deep sea mining is still emerging, past studies and research have already identified many uncertainties and gaps in the knowledge and information base for the emerging sector of deep sea mining – with respect to technology, environmental impacts and socio-economic benefits and impacts. It is therefore the aim of this overview to gain insight in the way EU research funding is currently being used to address these gaps and how research projects are supporting policy making in deep sea mining related areas.

## EU funding schemes

The main funding instruments from the EU to finance projects related to deep sea mining were the sixth and seventh research Framework Programmes ([FP6](#) – which ran from 2002 to 2006 and [FP7](#), 2007-2013), and Horizon 2020 (2014-2020) – the EU's biggest ever research and innovation framework programme, with almost € 80 billion in funding.

Horizon 2020 aims to contribute to the achievement of the objectives of the Europe 2020 strategy, providing a strategic framework for research and innovation (R&I). There have been (and will be) numerous<sup>2</sup> calls for proposals under Horizon 2020 in different fields and sectors; Blue Growth objectives are also included, targeting R&I activities and policy measures to support the realisation of the potential of seas and oceans.

Relevant information on the majority of projects funded by the EU is available on the Community Research and Development Information Service portal, [CORDIS](#), which contains over 100,000 EU-funded research projects including Horizon 2020 and FP7 (with results stretching back over 25 years).

## EU funded research projects

Based on the information obtained about the projects and their funding, it is estimated the EU invested **€65.73 M** in present and past research projects related to the deep sea ecosystem and deep sea mining, i.e.

- €15.5 M under FP6 (running from 2002 to 2006);
- €33.73 M under FP7 (2007-2013); and
- €13.9 M under Horizon 2020 (2014-till date).

This includes:

- Four on-going research projects – Robust, Blue Mining, Blue Nodules and MIDAS, aimed at raising awareness of the field, improving technologies or addressing fundamental ecological

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<sup>1</sup> In particular, the report "State of Knowledge on Deep-Sea Mining" commissioned by the EC's DG MARE, officially released June 2015.

<sup>2</sup> [https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/master\\_calls.html](https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/master_calls.html)

impacts. The total budget for these projects is €32.9 M under the FP7 and H2020 programmes.

- Six closed projects (Table B) with an overall budget of €32.83 M under the FP6, FP7 and H2020 programmes, and also including a €2.6 M desk study made by Ecorys on behalf of DG MARE.

In order to better classify the different projects, they were considered according to their rationale and activities as described on their respective websites. We have identified two distinct types:

- “Technology projects” are those that aim at research and investigate the latest technological developments, from exploration to exploitation activities.
- “Environmental projects” include research into the functioning of the deep sea ecosystem, environmental issues related to the exploitation of deep sea minerals, and the different management options with a view to reducing or mitigating the impacts on marine ecosystems (fig.3).

A more detailed explanation of the different projects including i) timeframe, ii) budget, iii) partners, iv) website details, and v) summaries, is contained in table A. Past projects financed by the EU and relevant for the scope of this review are summarized in table B.

The analysis shows that between 2004 and 2014 the EU has invested mostly in understanding the deep sea ecosystem and the environmental implications of deep sea mining, whereas recent projects are more oriented towards developing new technologies to allow for seabed mining and even establishing the first deep sea mining test facility. Technology projects now amount to 73% of the €32.9 M allocated for ongoing deep sea mining research.

## Other research

There are also a number of European projects funded through other mechanisms than the EU research programmes:

### European Innovation Partnerships Projects

Deep sea mining is also related to EU policies related to the sustainable supply of raw materials, and in particular the Raw Materials Initiative, which sets out an integrated strategy to secure supply of raw materials in the EU, and also includes recycling and efficiency among its priorities. This overview therefore also addresses research being developed under the umbrella of the Raw Materials Initiative.

**European Innovation Partnerships (EIPs) on Raw Materials** are a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. The scope of the platform is to provide high-level guidance to the European Commission, member states and private actors on innovative approaches to the challenges related to raw materials. The Strategic Implementation Plan (SIP) is the EIP’s action plan, setting specific objectives and targets and proposing a range of actions necessary to achieve these, including research and innovation along the value chain, raw materials knowledge, best practice, revision of relevant legislation, licensing steps, standardisation, and policy dialogues.

To achieve EIP's objectives<sup>3</sup>, a series of joint undertakings with several partners (called “Commitments”) have been set up, aimed at delivering innovative products and processes. However in October 2013, as existing action by EU institutions alone was deemed insufficient to achieve the objectives set out in the EIP's Strategic Implementation Plan, the European Commission launched a

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<sup>3</sup> <https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/strategic-implementation-plan-sip-0>

call for commitments to relevant stakeholders, including member states, industry, academia and others. Little information is available online on the total funding of these projects and most of the EIPs are not funded by the EU (see Table C). Nevertheless, there are two projects that seem to be funded under FP7 programme and by the European Regional Development Fund, but it was not possible to determine the total budget and the fund sourced from the EU.

### **JPI Oceans**

The Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) was established in 2011 as a coordinating and integrating strategic platform, open to all EU member states and Associated Countries who invest in marine and maritime research. JPI Oceans is a broad based program covering a wide range of oceans issues which includes “exploring deep-sea resources” as one of the areas of research in its 10-point Strategic Research and Innovation Agenda. In 2014, in order to study the long-term ecological effects of deep sea mining, [JPI Oceans](#) decided to create a pilot action on the "Ecological Aspects of Deep Sea Mining". The plan aims to assess the ecological impacts that could arise from commercial mining activities in the deep sea. For this, the German Federal Ministry of Education and Research (BMBF) offered 90 days on-site research on the former fishing trawler RV Sonne (plus an additional 18 days for vessel transit) for a cruise in the Pacific in 2015. After carrying out an in-depth analysis of the data acquired, the European team aims to have enough data to analyse the long-term ecological impacts of deep sea mining and ultimately, make recommendations to policy-makers, industry and the ISA. This project has a budget of Approx. €9.7m (total funding: ~6.2m €; + ship days).

### **Other projects**

There are also some projects that are not strictly related to deep sea mining activities. Those projects look at the environmental impacts and economic or legal aspects of deep sea mining exploration and exploitation activities. However their central focuses are broader than deep sea mining. Further information about all these projects is available in the Table D below.

Table A. Ongoing research projects (co)funded by the EU

Project	EU contribution in EUR	Coordinator (Organization and Country)	Duration	Short Description[1]	Website	Sector
<b>Blue Nodules:</b> Breakthrough Solutions for the Sustainable Harvesting and Processing of DeepSea Polymetallic Nodules	Total costs / Total EC Funding: 8 M under HORIZON 2020	IHC MINING BV- Netherlands.  <i>Project Coordinator Rodney Norman r.norman@ihcmerwede.com</i>	February 2016 – January 2020	The project aims to address the challenge of creating a viable and sustainable value chain to retrieve polymetallic nodules from the ocean floor. It will develop and test new highly-automated and sustainable technologies for deep-sea mining with minimal environmental pressures. Blue Nodules will build on the results of the European FP7 projects, MIDAS and Blue Mining, and the EcoMining pilot action funded by the JPI Oceans initiative of the European science foundations. Within the project, there is a dedicated WP focusing on environmental issues and on an Environmental Impact Assessment (EIA).	<a href="http://www.blue-nodules.eu/">http://www.blue-nodules.eu/</a>	TECHNOLOGY
<b>ROBUST:</b> Robotic subsea exploration technologies	Total costs / Total EC Funding: 5.9 M under HORIZON 2020	TWI LIMITED, United Kingdom	December 2015- January 2020	The ROBUST proposal aims at developing sea bed in situ material identification through the fusion of two technologies, namely laser-based in-situ element-analysing capability merged with underwater AUV (Autonomous Underwater Vehicle) technologies for sea bed 3D mapping, in order to have a detailed identification of the raw materials contained in a mining sites and enable targeted mining only of the richest resources existing.	N/a for the project its self, only the general one <a href="http://www.twi-global.com/">http://www.twi-global.com/</a>	TECHNOLOGY

<b>BLUE MINING:</b> Breakthrough Solutions for the Sustainable Exploration and Extraction of Deep-sea Mineral Resources	Total costs: 15 M€ Total EC Funding: 10 M€ under FP7	Project Coordinator MTI Holland BV, The Netherlands. <i>Dr Robert van de Ketterij</i> <i>r.vandeketterij@mtiholland.com</i>	February 2014- January 2018	The project aims at developing the technical capabilities to adequately and cost-effectively discover, assess and extract deep sea mineral deposits up to 6,000 m water depths (this is the required range where valuable seafloor mineral resources are found). The project addresses all aspects of the entire value chain in Deep-sea Mining, from resource discovery (WP1) to resource assessment (WP2), from exploitation technologies (WP3) to the legal and regulatory framework (WP5).	<a href="http://www.bluemining.eu/">http://www.bluemining.eu/</a>  FICHE EU: <a href="http://cordis.europa.eu/project/rcn/111346_en.html">http://cordis.europa.eu/project/rcn/111346_en.html</a>	TECHNOLOGY
<b>MIDAS:</b> Managing Impacts of Deep-sea resource exploitation	Project budget: € 12 M EU contribution: € 9 M under FP7	Seascope Consultants Ltd, United Kingdom. Coordinator: Dr Phil Weaver	November 2013 – November 2016	The MIDAS project addresses fundamental environmental impacts relating to the exploitation of deep-sea mineral and energy resources; specifically polymetallic sulphides, manganese nodules, cobalt-rich ferromanganese crusts, methane hydrates and the potential mining of rare earth elements.	<a href="http://www.eu-midas.net/">http://www.eu-midas.net/</a>  FICHE EU: <a href="http://cordis.europa.eu/project/rcn/110856_en.html">http://cordis.europa.eu/project/rcn/110856_en.html</a>	ENVIRONMENTAL

**Tot.EU funding** €32.9 M

**Overall budget** €40.9 M

Table B. Closed projects totally or partially funded by the EU

Project	EU contribution in EUR	Coordinator (Organization and Country)	Duration	Short Description[1]	Website	Sector
<b>DS3F:</b> The 'Deep-sea and sub-seafloor frontier' project	Total costs / Total EC Funding: 1 M under FP7	MARUM - Center for Marine Environmental Sciences Marine Geotechnics Prof. Dr. Achim J. Kopf Email: akopf@uni-bremen.de	January 2010- June 2012	DS3F's primary objective was to provide a pathway towards sustainable management of oceanic resources at a European scale, develop sub-seafloor sampling strategies for enhanced understanding of deep-sea environment; connecting marine research in life and geosciences, climate and environmental change, with socio-economic issues and policy building.	<a href="http://www.deep-sea-frontier.eu/front_content.php?idcat=491">http://www.deep-sea-frontier.eu/front_content.php?idcat=491</a>  FICHE EU: <a href="http://cordis.europa.eu/project/rcn/93532_en.html">http://cordis.europa.eu/project/rcn/93532_en.html</a>	ENVIRONMENTAL
<b>DEEPCO:</b> Connectivity of deep-sea ecosystems under increasing human stressors	Total costs / Total EC Funding: 330 380,5 under FP7	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS, Spain. Administrative contact: Alberto Sereno Alvarez	Grant agreement terminated in 2014	An interdisciplinary project that involved biologists, oceanographers, modellers and end-users. The aim was to provide scientific information and evaluate management options to reduce or mitigate fishing and mining impacts on the marine environment and determine population connectivity in New Zealand and Mediterranean deep-sea habitats. There aren't publication or end of the project report to actually verify if the objective was achieved.	FICHE EU: <a href="http://cordis.europa.eu/project/rcn/108780_en.html">http://cordis.europa.eu/project/rcn/108780_en.html</a>	ENVIRONMENTAL

<b>The Deep Sea Minerals Project</b>	Total costs / Total EC Funding: 4.4 M under FP7	Geoscience and Technology Division (AGTD) of the Secretariat of the Pacific Community (SPC).	2011-2015	<p>The Deep Sea Minerals Project was a collaboration between the Secretariat of the Pacific Community (SPC) and the European Union (EU) which lasted 4 years.</p> <p>Initiated in 2011, the project aimed at helping Pacific Island countries to improve the governance and management of their deep-sea minerals resources in accordance with international law, with particular attention to the protection of the marine environment and securing equitable financial arrangements for Pacific Island countries and their people, the project provided capacity building training opportunities to 51 people from the Pacific Islands (data from summer 2015)</p>	<a href="http://gsd.spc.int/dsm/">http://gsd.spc.int/dsm/</a>	ENVIRONMENTAL
<b>HERMES</b>	Total costs / Total EC Funding: 15.5 M under FP6	National Oceanography Centre Southampton European Way, United Kingdom. Project Manager, Dr Vikki Gunn: <a href="mailto:vkg@noc.soton.ac.uk">vkg@noc.soton.ac.uk</a>	2004-2009	<p>HERMES study sites extend from the Arctic to the Black Sea and include biodiversity hotspots such as cold seeps, cold-water coral mounds and reefs, canyons and anoxic environments, and communities found on open slopes. These important systems were chosen as a focus for research due to their possible biological fragility, unique genetic resources, global relevance to carbon cycling and susceptibility to global change and human impact. HERMES was succeeded by HERMIONE</p>	<a href="http://www.eu-hermes.net/intro.html">http://www.eu-hermes.net/intro.html</a>	ENVIRONMENTAL

<b>HERMIONE</b>	Total costs / Total EC Funding: 9 M under FP7	National Oceanography Centre Southampton European Way, United Kingdom. Project Manager Prof. Philip P.E. Weaver ppew@noc.soton.ac.uk	2009-2012	The HERMIONE project focused on investigating ecosystems such as cold-water coral reefs and hydrothermal vents and other ecosystems, including submarine canyons, seamounts, cold seeps, open slopes and deep basins. Scientists from a range of disciplines researched their natural dynamics, distribution, and how they interconnect. A major aim of HERMIONE was to use the knowledge gained during the project to contribute to EU environmental policies.	<a href="http://www.eu-hermione.net/">http://www.eu-hermione.net/</a>	ENVIRONMENTAL
Study: State of Knowledge on Deep-Sea Mining	Total costs / Total EC Funding: 2.6 M under contract MARE/2012/06 - SC E1/2013/04	ECORYS Nederland BV. Coordinator: Roelof Jan Molemaker, roelof-jan.molemaker@ecorys.com	2012-2014	The study covers the current and latest state of knowledge of deep-sea mining, including the geological potential, the relevant technologies, the economic viability, the environmental implications, the legal regime, and an inventory of ongoing exploration and exploitation projects.	<a href="https://webgate.ec.europa.eu/maritimeforum/en/node/3732">https://webgate.ec.europa.eu/maritimeforum/en/node/3732</a>	The study provides an overview of relevant technologies, environment and economic implications

**Tot.EU funding** €32.83 M

**Overall budget** €32.83 M

Table C - European Innovation Partnerships Projects

<p><b>SecPRIME</b>, Securing the supply of Primary resources</p>	<p>Existing EU contribution: FP 7, Cohesion Policy Funds: European Regional Development Fund: total budget n/a</p>	<p>Luleå University of Technology, Sweden.</p>	<p>From January, 2014 to 31 December 2020</p>	<p>The consortium behind this commitment has the ambition to work for an integrated, systemic view on Primary resources technologies and related non-technology actions as defined below. The project works in an integrated way, tackling challenges related to exploration (including geometallurgy) deep exploration and primary resources extraction, including deep-sea mining</p>	<p><a href="https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/securing-supply-primary-resources">https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/securing-supply-primary-resources</a></p>	<p>TECHNOLOGY</p>
<p><b>BLUE ATLANTIS</b></p>	<p>Total cost: (not clear, I have sent an email to the coordinator) under FP7</p>	<p>German Association for Marine Technology GMT part of DSMA, Germany. <i>Team Manager: Michael Jarowinsky, jarowinsky@maritime-technik.de</i></p>	<p>April 2015-March 2020</p>	<p>Establishment of the first deep-sea mining test facility, covering RTD, mining tests, development of standards and support of market access in the seafloor around the Azores Archipelago, which is considered an ideal location for a deep-sea mining test facility in waters under the jurisdiction of European Union. The Member States. 45 partners from the 8 European as well as the company Nautilus Minerals of Canada is involved. The consortium has strong links to the recent European FP7 R&amp;D projects MIDAS and Blue Mining</p>	<p><a href="https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/innovative-mining-marine-mineral-resources-%E2%80%93-european-pilot-mining-test-atlantic-tools">https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/innovative-mining-marine-mineral-resources-%E2%80%93-european-pilot-mining-test-atlantic-tools</a></p>	<p>TECHNOLOGY</p>
<p><b>ALBATROSS</b> - Alternative Blue Advanced Technologies for Research On Seafloor Sulfides</p>	<p>Existing EU contribution: No</p>	<p>ERAMET SA, France</p>	<p>1 January, 2015 to 31 December, 2020</p>	<p>An EIP on raw materials whose aim is to develop and test cost-effective technologies to explore and evaluate SMS deposits and enable sustainable access to resources in EEZ.</p>	<p><a href="https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/commitment-detail/431">https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/commitment-detail/431</a></p>	<p>TECHNOLOGY</p>

<b>SeaFlores</b> - Breakthrough Solutions for Seafloor Mineral Extraction and Processing in deep water environment	Existing EU contribution: No	Technip, France.		An EIP on raw materials with the aim of developing and testing innovative DSM system. The key innovation in this project is the generic design and in-situ demonstration activities of a cost-efficient and environmentally-acceptable deep-sea mining pilot system. This project is complementary to ALBATROSS.	<a href="http://ec.europa.eu/eip/raw-materials/en/content/breakthrough-solutions-seafloor-mineral-extraction-and-processing-deep-water-environment">http://ec.europa.eu/eip/raw-materials/en/content/breakthrough-solutions-seafloor-mineral-extraction-and-processing-deep-water-environment</a>	TECHNOLOGY
<b>ERDEM</b>	Existing EU contribution: No	BMT Group Ltd, United Kingdom.	Period to implement the commitment : 1 June, 2014 to 31 May, 2019	Is an EIP which aspires to develop a novel set of solutions for exploration, extraction and in-situ pre-processing of deep-sea ores and integrated robotic and sensor technologies to achieve lower cost and more efficient real time monitoring of environmental impact. It will assess the resilience of Deep Sea Ecosystems and of biodiversity to resource extraction activities and it will provide advanced understanding of deep sea mining associated geological processes	<a href="https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/environmentally-responsible-deep-sea-mining">https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/environmentally-responsible-deep-sea-mining</a>	TECHNOLOGY
<b>EUROASSET</b>	Existing EU contribution: No	Dassault Systemes GEOVIA Ltd, United Kingdom	Period to implement the commitment : 1 January, 2015 to 31 December, 2018	The project will facilitate the formation of a globally accepted unified data model for the storage and sharing of all spatial data related to raw materials and overcome the barriers that currently constrain the European Mineral Sector, DSM extraction is included but few details are available about the methodology. The unified system of geological resource evaluation and visualisation will be developed on three key initiatives; 1. Data Model, Data Storage, Connectivity and Presentation 2. Rapid Exploratory Modelling of Raw Material Deposits. 3. Rapid Economic Analysis of Raw Material Deposits	<a href="https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/3ds-european-mineral-asset-definition-and-valuation-system">https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/3ds-european-mineral-asset-definition-and-valuation-system</a>	TECHNOLOGY

Table D – Other projects

Project	EU contribution in EUR	Coordinator (Organization and Country)	Duration	Short Description	Website	Sector
JPI Oceans <b>Ecological Aspects of Deep-Sea Mining</b>	Existing EU contribution: No	GEOMAR Helmholtz Centre for Ocean Research Kiel. Project Coordinator: Dr. Matthias Haeckel, mhaeckel@geomar.de	2015-2018	Jointly analyse the long-term ecological consequences of deep-sea polymetallic nodule mining to inform the international regulation of deep sea mining activities by: <ul style="list-style-type: none"> <li>• Predicting the ecological, biogeochemical and hydrodynamic consequences of a mining impact.</li> <li>• Testing a range of modern rapid assessment methods and monitoring techniques for defining the ecosystem status.</li> <li>• Communicating the results to stakeholders and policymakers.</li> <li>• Conducting a comparative baseline study across different deep-sea environments (eg. trophic states and seamounts)</li> </ul>	<a href="http://www.oceanblogs.org/easdm/">http://www.oceanblogs.org/easdm/</a>	ENVIRONMENT
<b>SUSTAINABLE-OCEAN</b>	Total cost/ EU contribution: 1M. ERC Starting Grant	University of Utrecht, The Netherlands. Dr. Seline Trevisanut Email: s.trevisanut@uu.nl	From October 2015 to October 2020.	Analysing three legal frameworks that are most relevant to the offshore industry: the law of the sea, climate change law, and energy law, in order to identify patterns of regime interaction and assess their impact on the different uses of the sea.	<a href="http://www.uu.nl/en/research/sustainable-ocean">http://www.uu.nl/en/research/sustainable-ocean</a> FICHE EU: <a href="http://cordis.europa.eu/project/rcn/197437_en.html">http://cordis.europa.eu/project/rcn/197437_en.html</a>	GOVERNANCE

<b>ABYSS:</b> Training network on reactive geological systems from the mantle to the abyssal sub-seafloor	Total costs / Total EC Funding: 4.1 M under FP7 (FP7-PEOPLE-2013-ITN)	Centre National de recherche scientifique, France. <i>Administrative contact: Jocelyn Mere Tel.: +33467613535</i>	March 2014-February 2018	ABYSS will provide training for 12 Early Stage Researchers and 3 Experienced Researchers through a structured and extensive program of collaboration, training and student exchange. ABYSS aims at developing the scientific skills and multi-disciplinary approaches to make significant advances in the understanding of the coupled tectonic, magmatic, hydrothermal and (bio-)geochemical mechanisms that control the structure and composition of the oceanic lithosphere and the microbial habitats it provides. An improved understanding of these complex processes is critical to assess the resource potential of the deep-sea.	<a href="http://abyss-itn.eu/">http://abyss-itn.eu/</a> FICHE EU: <a href="http://cordis.europa.eu/project/rcn/109123_en.html">http://cordis.europa.eu/project/rcn/109123_en.html</a>	TRAINING
<b>VAMOS:</b> Viable and Alternative Mine Operating System!	Total costs / Total EC Funding: 9.2 M under HORIZON 2020	BMT Group Ltd, United Kingdom. <a href="http://vamos-project.eu/contact/">http://vamos-project.eu/contact/</a> . <i>No coordination person identified.</i>	February 2015-August 2018	The aim of the project is to design and build a robotic, underwater mining prototype with associated launch and recovery equipment, which will be used to perform field tests at four EU mine sites. With the ultimate goal of enabling the exploitation and rehabilitation of underexploited and abandoned European deposits of mineral raw materials.	<a href="http://vamos-project.eu/">http://vamos-project.eu/</a>  FICHE EU: <a href="http://cordis.europa.eu/project/rcn/193919_en.html">http://cordis.europa.eu/project/rcn/193919_en.html</a>	TECHNOLOGY
Assistance in elaboration and prospective evaluation of the Atlantic Action Plan	Total costs / Total EC 449,814 under MARE/2011/01 Lot 1 Maritime Policy DG Mare	COWI Belgium. Mr Zayat Raphael, Managing Director,	August 2012-April 2012	The objective is to provide background knowledge and analysis that will support the impact assessment that will follow the Green Paper on Marine Knowledge 2020 to be adopted in summer 2012.	<a href="https://webgate.ec.europa.eu/maritimeforum/sites/maritimeforum/files/08_Final%20evaluation_report.pdf">https://webgate.ec.europa.eu/maritimeforum/sites/maritimeforum/files/08_Final%20evaluation_report.pdf</a>	CONSULTANCY



for the protection and restoration of the marine environment

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Seas At Risk

Rue d'Edimbourg 26, 1050 Brussels, Belgium

Tel: +32 (0)2 893 0965

E-mail: [secretariat@seas-at-risk.org](mailto:secretariat@seas-at-risk.org)

Twitter: [@SeasAtRisk](https://twitter.com/SeasAtRisk)

[seas-at-risk.org](http://seas-at-risk.org)