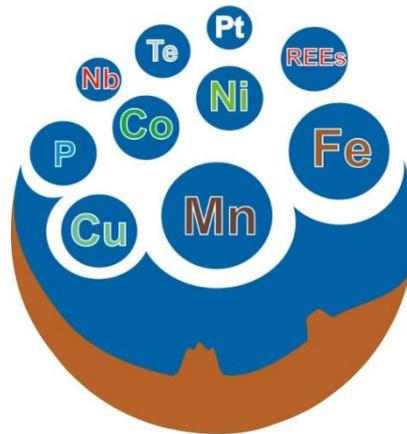


MINDeSEA

Seabed Mineral Deposits in European Seas: Metallogeny and Geological Potential for Strategic and Critical Raw Materials



MINDeSEA

Deliverable 5.5: WP5 Literature review report on present-day status of regulation, legislation and exploitation of placer deposits, with emphasis on the impact of a pan-European research approach

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1. INTRODUCTION

GeoERA is a Co-Fund ERA-NET action under Horizon 2020, towards "**Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe**". Its main objective is to contribute to the optimal use and management of the subsurface.

The project **MINDeSEA**, materialized in the frame of the GeoERA Raw Materials Theme (*Grant Agreement N° 731166, project GeoE.171.001*), resulted from the collaboration between eight GeoERA Partners and four Non-funded Organizations at various points of common interest for exploration and investigation on seafloor mineral deposits.

2. PURPOSE

This document is a literature review report on the present-day status of regulation, legislation and exploitation of placer deposits, elaborated in the frame of MINDeSEA Work Package 5 (WP5) "**Marine Placer Deposits**", led by the Hellenic Survey of Geology & Mineral Exploration (HSGME). The main aspects of this work are summarized as follows:

1. Identification of stakeholders
2. Literature review of present-day status of regulation, legislation and exploitation of placer deposits in EU level and member countries
3. Future directions

The purpose of this work is to provide a comprehensive inventory of the aforementioned information to serve as a working basis for all parties involved in marine placers research, exploration and exploitation and allow sustainable use and management of the subsurface.

The geographical scope of the project, with a pan-European ambition, focuses on delivering comprehensive information for the Marine Placer Deposits within European maritime territory: Mediterranean Sea, Celtic Seas, North Sea, Baltic Sea, Macaronesia, Bay of Biscay and the Iberian coasts, North Atlantic and Arctic, Norwegian Sea, Black Sea ([Figure 1](#)).

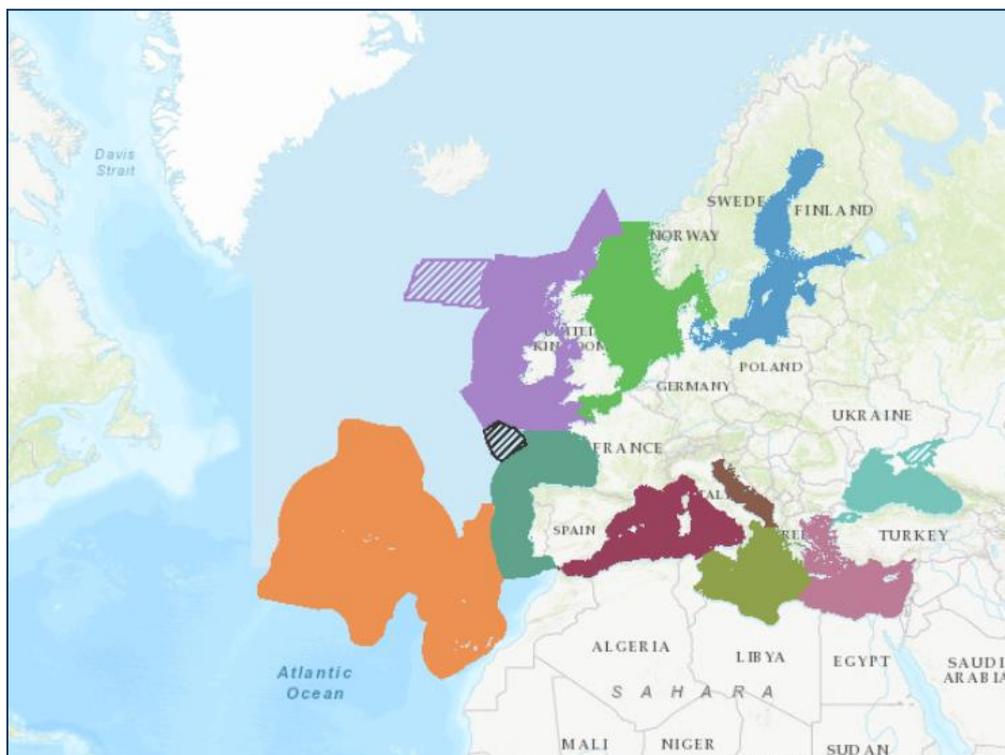


Figure 1: Delimitation of the European marine regions and subregions:

http://marine.discomap.eea.europa.eu/arcgis/rest/services/Marine/Marine_regions_subregions_v1/MapServer

Moreover, we distinguish the relict/fossil/submerged placer deposits, formed in the geologic past and changed from a sub-aerial to a marine environment due to various reasons (climate change, tectonic movements etc). These are classified based on depositional environment, i.e. fluvial, eolian, glacial, beach-nearshore deposits.

The prerequisites for the formation of marine placers are: (a) a primary mineral source (usually crystalline rocks), (b) a suitable weathering environment and (c) means of transportation (e.g. running water, wind). Given that all the above conditions are satisfied, the placer-forming minerals are derived from source rocks, transported and deposited to areas of concentration. Thus, the process of marine placers' formation is controlled by three major factors (Davis and Clifton 1987):

- ✓ Sediment supply: can be materialized by means of modern fluvial discharge and coastal (bedrock/unconsolidated bluffs) or submarine erosion.
- ✓ Sea-level fluctuations: eustatic and isostatic variations influence the sediment supply (type and volume) and thus control the location and extent of marine placer occurrences.
- ✓ Marine energy: the hydraulic conditions (e.g. waves, currents) greatly affect the sediment transport reworking and deposition and regulate the concentration of marine placers.

The potential for the occurrence of placer deposits within the sedimentary accumulations of the continental shelf is significant. However, current knowledge is sparse, mostly limited to seafloor deposits on shallow waters which are more accessible for exploration (Figure 2). Thus, the need for an integrated research approach on the European seas is imminent, given the present-day RM demands and exploitation technological advances, towards sustainable use and management of the subsurface. In addition to the coastal zone, the whole continental margin must be considered to examine whether Pleistocene sea level fluctuations could have concentrated heavy minerals in deeper waters.

4. STAKEHOLDER IDENTIFICATION

4.1 General

Over the years multiple definitions for stakeholders have been proposed; for the purpose of the present report the definition of Grimble and Wellard (1997) is adopted, which defines stakeholders as:

“... any group of people, organized or unorganized, who share a common interest or stake in a particular issue or system ...who can be at any level or position in society, from global, national and regional concerns down to the level of household or intra-household, and be groups of any size or aggregation”.

The role of a stakeholder may be positive, being an effective part of the effort to locate, retrieve and use marine raw material resources, or negative, negatively affecting the aforementioned task. It is of vital importance the identification of stakeholders at the early stages of marine raw materials' exploration and exploitation, for their optimum management and the achievement of stakeholder engagement by all available means (e.g. education, involvement in planning etc).

Maritime Spatial Planning (MSP) is often considered as a tool to resolve conflict between stakeholders, integrate multiple sectors, and rationalise the multifaceted complexities of marine management (Douvere *et al.* 2007, Ehler and Douvere 2009). To achieve this goal, with the increase of offshore raw materials exploration and exploitation, it is of vital importance the thorough identification and subsequent analysis of all involved stakeholders.

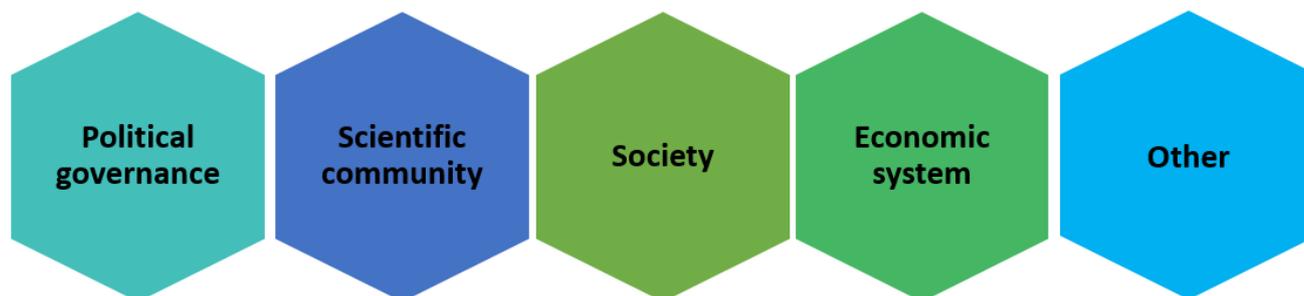
Several global initiatives, projects and organizations have been dealing with stakeholder analysis in raw materials exploration (e.g. MICA 2016, FORAM 2018); however, a thorough approach focused on the marine sector is lacking. The scope of this report is to identify stakeholders involved in marine raw materials exploration and exploitation, with focus on marine placer deposits, and, thus, provide the basis for a future thorough stakeholder analysis at a European and national level.

4.2 Stakeholder identification principles

To identify stakeholders of marine placer deposits exploration and exploitation the general principles from MICA stakeholder analysis (MICA 2016) have been adopted.



To identify stakeholders the following general groups of involved parties are examined:



Mitchell *et al.* (1997) point out the following main stakeholder attributes:

- ✓ Power: A stakeholder may have (actual or potential) power to the extent it can impose its will in a relationship, e.g. by access to coercive, utilitarian or normative means.
- ✓ Legitimacy: A stakeholder may have legitimacy by pursuit of a desirable social stake that is negotiated at different levels of social organization and broadly shared.
- ✓ Urgency: A stakeholder may be attributed urgency in case there is both time sensitivity and claims or relationships that are perceived as highly important.

Depending on whether one, two or three of these attributes are present, Mitchell *et al.* (1997) distinguish seven types of stakeholders (Figure 3). Stakeholders are not necessarily conscious of possessing these attributes and may or may not choose to act on their claims or influence.

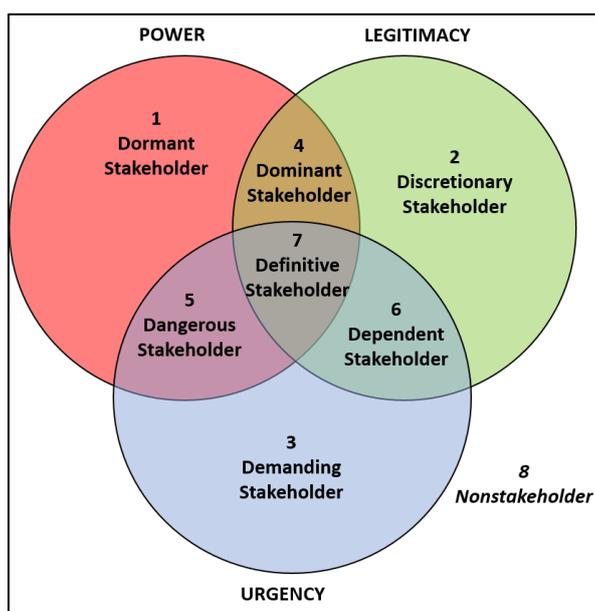


Figure 3: Stakeholder types (reproduced from Mitchell et al. 1997)

Thus, based on the above, seven (7) distinct categories are defined and all stakeholders (users, governance, influencers, providers) are classified amongst them.

Additionally, stakeholders are characterized of their *influence* and *importance* levels and classified in an importance/ influence Matrix.

4.3 Political governance stakeholders

Political governance stakeholders include all official governance bodies at a world, EU and national level, involved in the establishment of policies, legislation, exploration and exploitation of marine placer deposits. In general, their role is positive towards marine placer deposits exploration and exploitation, often ranking high in the influence/ importance matrix.

Political governance stakeholders are listed below, in alphabetical order:

STAKEHOLDER DESCRIPTION	EXAMPLES
EU advisory bodies	e.g. European Committee of the Regions (CoR)
EU agencies	e.g. European Environment Agency (EEA)
EU Commissioners	e.g. Commissioner for Maritime Affairs and Fisheries
EU Directorate-General bodies	e.g. Maritime Affairs and Fisheries (DG-MARE), Internal Market, Industry, Entrepreneurship and SMEs (DG-GROW)
EU executive agencies	e.g. European Climate, Infrastructure and Environment Executive Agency (CINEA)
International legislation-policy organizations	e.g. International Seabed Authority (ISA), European Marine Board (EMB)
Local authorities	e.g. Prefectures, municipalities
Member States' ministries of Economic Affairs	e.g. Ministry of Economy & Finance (France), Ministry of Economic Affairs and Digital Transformation (Spain)
Member States' ministries of Education	e.g. Ministry of Education & Science (Portugal), Flemish Ministry of Education & Training (Belgium)
Member States' Ministries of Environment	e.g. Ministry of Environment & Energy (Greece), Ministry of Environment (Spain)
Member States' ministries of Research and Development	e.g. Ministry of Development & Investment (Greece), Federal Ministry of Economic Cooperation & Development (Germany)
Member States' Ministries/Bodies of Spatial Planning	e.g. Directorate General of Spatial Planning (Greece), Ministry of Environment and Spatial Planning (Slovenia)
National elected politicians	Members of the government and the opposition parties
National government organizations	e.g. Marine research authorization committees
Other EU Institutions	e.g. European Commission, European Council
Other international bodies	e.g. United Nations Economic Commission for Europe (UNECE), United Nations International Maritime Organization (UN-IMO), United Nations Sustainable Development Solutions Network (UN-SDSN)
Parliaments	European Parliament, Parliaments of Member States
Standardization bodies	e.g. Pan-European Reserves & Resources Reporting Committee (PERC)

4.4 Scientific community stakeholders

Scientific community stakeholders include all scientific organizations, institutions, researchers at a world, EU and national level, involved in the exploration and exploitation of marine placer deposits. In general, their role is positive towards marine placer deposits exploration and exploitation, often ranking high in importance and medium to high in influence.

Scientific community stakeholders are listed below, in alphabetical order:



STAKEHOLDER DESCRIPTION	EXAMPLES
EU geological surveys	e.g. EuroGeoSurveys (EGS) and relevant expert groups [Marine Geology Expert Group (MGEG), Mineral Resources Expert Group (MREG) etc]
EU research bodies	e.g. European Institute of Innovation and Technology (EIT), European Raw Materials Alliance (ERMA)
EU scientific initiatives	e.g. European Network of Scientists for Social and Environmental Responsibility (ENSSER)
Geological surveys worldwide	e.g. United States Geological Survey (USGS)
Individual researchers	e.g. marine geologists, sedimentologists, geochemists
International professional organizations	e.g. European Federation of Geologists (EFG), European Association of Geoscientists & Engineers (EAGE)
International research organizations	e.g. International Association of Palaeontologists (IAS), International Marine Minerals Society (IMMS)
International scientific bodies	e.g. International Union of Geological Sciences (IUGS)
Member States' geological surveys	e.g. Instituto Geológico y Minero de España (Spain), Bundesanstalt für Geowissenschaften und Rohstoffe (Germany)
National professional organizations	e.g. Geotechnical Chamber of Greece (GEOTEE), Spanish Official Professional Association of Geologists (ICOG)
National public research institutes	
Non-government research institutes	
Professional education institutions	Universities, colleges and other professional education institutions
Research projects	e.g. Seabed Mineral Deposits in European Seas: Metallogeny and Geological Potential for Strategic and Critical Raw Materials (MINDeSEA)
Scientific data management infrastructures	e.g. European Geological Data Infrastructure (EGDI), pan-European Infrastructure for Ocean & Marine Data Management (SeaDataNet)
Third party research bodies	

4.5 Society stakeholders

Society stakeholders include all organizations, groups and individuals at a world, EU and national level, involved in and affected by (either directly or indirectly) the exploration and exploitation of marine placer deposits. Their role can be either positive or negative (even within the same stakeholder group) towards marine placer deposits exploration and exploitation, usually ranking medium to high in importance and low to medium in influence.

Scientific community stakeholders are listed below, in alphabetical order:

STAKEHOLDER DESCRIPTION	EXAMPLES
Education	e.g. primary and high school teachers/professors and pupils/students
Foundations	

Individuals	e.g. end-users of products, residents of area under exploration/ exploitation
Influencers	
Informal community groups	
International protection/conservation organizations	e.g. World Commission of Protected Areas, UNESCO Marine World Heritage Program
Labor unions	
Local manpower	e.g. personnel for off-shore exploration and exploitation work
Local politicians	e.g. elected members of Local Communities
Local small-scale business	e.g. fishermen, tourism
Media	e.g. newspapers, social media, TV
Non-government organizations (NGOs)	e.g. Advisory Board on the Technical Aspects of the Law of the Sea (ABLOS), Advisory Committee on Protection of the Sea (ACOPS)
Official local communities	
Society at large	
Society engagement groups	

4.6 Economic system stakeholders

Economic system stakeholders include all industry, organizations, groups and individuals at a world, EU and national level, involved in and affected by (either directly or indirectly) the exploration and exploitation of marine placer deposits. Their role is usually positive or negative towards marine placer deposits exploration and exploitation, usually ranking medium to high in importance and medium to high in influence.

Scientific community stakeholders are listed below, in alphabetical order:

STAKEHOLDER DESCRIPTION	EXAMPLES
Equipment manufacturing industry	e.g. marine research equipment
Exploration support	e.g. project management agencies, consulting
Extraction equipment providers	e.g. dredging equipment
International industry associations	e.g. International Association of Dredging Companies (IADC)
Investors	e.g. private companies funding marine placers exploration
Marine placer deposits commerce	e.g. tin, titanium
Other infrastructure industry	e.g. software, digital & information services
Other international maritime associations	e.g. International Association of Marine Consultants and Surveyors (IAMCS)
Physical operations support	
Placers mining and extraction industry	
Production industry	e.g. industry using tin, titanium etc.
Project management agencies	



Repair & maintenance industry	
Research vessels providers	
Sustainable industry	e.g. the World Business Council for Sustainable Development (WBCSD)

5. DEFINITIONS

To assess the present-day status of marine placer deposits regulation, legislation and exploitation in an pan-European level common terminology has to be used.

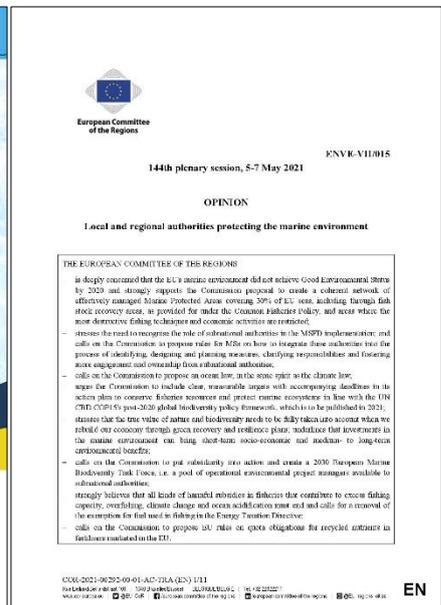
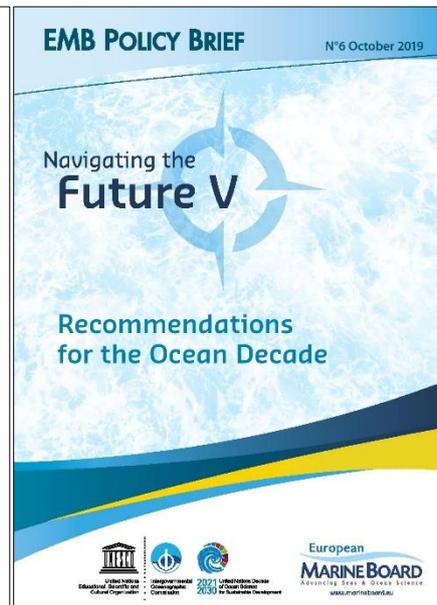
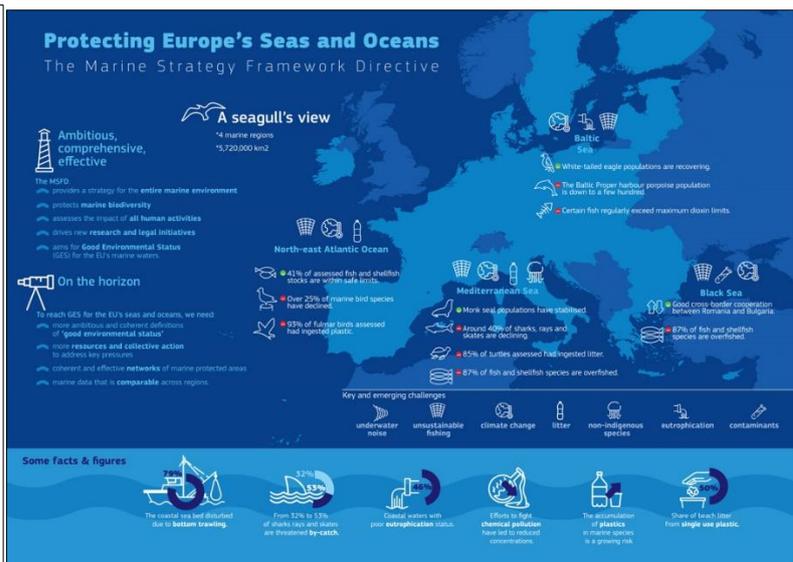
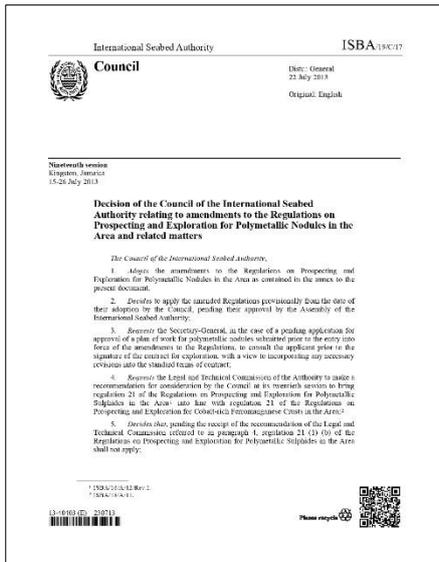


Figure 4: Examples of EU Regulation, Directive, Decision, Recommendation and Opinion documents

Based on EU Regulations, Directives and other acts (<https://europa.eu/european-union/legal-acts/>):

- **Regulation:** is a binding legislative act, applied in its entirety across EU (e.g. Exploration Regulations by the International Seabed Authority; Figure 4a).



shelf (Figure 5). A country with a continental shelf that extends further than 200 nautical miles from its shoreline has to submit a claim on the part of the shelf that occurs beyond the 200-nautical-mile limit.

6. PRESENT-DAY STATUS

MINDeSEA aims to provide a solid and common understanding of the current status of knowledge on marine minerals in European seas. These data will provide the framework to support a subsequent EU's position in the global marine minerals context, contributing to international agreements, and also to assess impacts, risks and opportunities. The MINDeSEA project intends to address a wide range of stakeholders, comprising not only mineral-policy makers, geological surveys or marine mining and technological industries, but also other business, research institutes as well as the Society.

The present-day status analysis of knowledge on marine minerals in European seas will increase: the knowledge and management capacities on innovation for exploration and exploitation of strategic and CRM in the marine mineral deposits; the good practice policies and practical experiences for policy implementation and transferability in the European and global context; the promotion of guidance, networking and exchange of knowledge and training in our marine professional environment. All of them will produce a wide-spread dissemination and promotion of the latest scientific results on minerals policy issues and industrial innovation.

The scope of this analysis is twofold: (a) document the current situation, and (b) demonstrate the efficiency of a pan-European research approach.

6.1 Regulation – Legislation

The exploration and exploitation of marine resources in EU is subjected to international, European and national regulations and legislation, usually applicable to a broad range of marine raw materials, and consequently marine placer deposits. Thorough documentation of the legal framework applied for the Raw Materials' exploration and exploitation (regarding both on-shore and off-shore areas) was presented by the European Commission's Raw Materials Information System (RMIS), developed by the Directorate-General (DG) Joint Research Centre (JRC) in cooperation with the DG for Internal Market, Industry, Entrepreneurship and SMEs (GROWTH). Based on that content – available online through EU Science Hub at <https://rmis.jrc.ec.europa.eu/> – the main regulatory and legislative framework for marine raw materials, and especially placer deposits where distinguished, is presented.

6.1.1 International Conventions

The International Conventions define worldwide or transboundary (e.g. for the Atlantic Ocean) regulations, dealing with environmental protection, nature conservation, health and safety issues, and the sustainable use of natural resources in international waters. The major conventions, applicable to all or some EU Member States are listed below, in chronological order (date of entry into force):

- **Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter:** the "London Convention" for short, is one of the first global conventions to protect the marine environment from human activities and has been in force since 1975. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter. Currently, 87 States are Parties to this Convention.
Issued: 29.12.1972, London
Entry into force: 30.08.1975
Reference: <https://www.imo.org/en/OurWork/Environment/Pages/London-Convention-Protocol.aspx>
- **Convention for the Protection of the Mediterranean Sea Against Pollution:** the main objectives of the "Barcelona Convention" are: (a) to assess and control marine pollution; (b) to ensure sustainable management of natural marine and coastal resources; (c) to integrate the environment in social and economic development; (d) to protect the marine environment and coastal zones through prevention and reduction of pollution, and as far as possible, elimination of pollution, whether land or sea-based; (e) to protect the natural and cultural heritage; (f) to strengthen solidarity among Mediterranean coastal States; (g) to contribute to improvement of the quality of life. The Barcelona Convention has given rise to seven (7) protocols, of which most important for offshore raw materials exploration and exploitation is the *Offshore Protocol* (pollution from exploration and exploitation).
Issued: 16.02.1976, Barcelona



Entry into force: 12.02.1978

*Reference: <https://www.unep.org/unepmap/who-we-are/barcelona-convention-and-protocols> &
<https://www.unep.org/unepmap/who-we-are/contracting-parties/6-offshore-protocol>*

* The Barcelona Convention was amended in 1995 and renamed as the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. The amendments to the Barcelona Convention entered into force in 2004.

- **Convention on long-range transboundary air pollution:** aimed to deal with air pollution on a broad regional basis. The Convention entered into force in 1983, laying down the general principles of international cooperation for air pollution abatement and setting up an institutional framework which has since brought together research and policy. Over the years, the number of substances covered by the Convention and its protocols has been gradually extended, notably to ground-level ozone, persistent organic pollutants, heavy metals and particulate matter.
Issued: 13.11.1979, Geneva
Entry into force: 16.03.1983
Reference: <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>
 - **Control of Transboundary Movement of Hazardous Wastes and their Disposal:** the main objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics, as well as two types of wastes defined as “other wastes” - household waste and incinerator ash.
Issued: 22.03.1989, Basel
Entry into force: 05.05.1992
Reference: <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>
 - **Convention on biological diversity:** the main objectives of the Rio de Janeiro Convention are the conservation of biological diversity, the sustainable use of their components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.
Issued: 05.06.1992, Rio de Janeiro
Entry into force: 29.12.1993
Reference: <https://www.cbd.int/>
 - **Convention on the Law of the Sea on the Protection of the Black Sea Against Pollution:** the main objectives of the “Bucharest Convention” is to substantiate the general obligation of the Contracting Parties to prevent, reduce and control the pollution in the Black Sea in order to protect and preserve the marine environment and to provide legal framework for co-operation and concerted actions to fulfil this obligation. The Bucharest Convention has given rise to three (3) specific protocols and its implementation is managed by the Commission for the Protection of the Black Sea Against Pollution.
Issued: 21.04.1992, Bucharest
Entry into force: 21.04.1994
Reference: <http://www.blacksea-commission.org/convention.asp>
 - **United Nations Convention on the Law of the Sea (UNCLOS):** is an international agreement that establishes a legal framework for all marine and maritime activities*. The Convention has created three new institutions on the international scene: (a) the International Tribunal for the Law of the Sea (<https://www.itlos.org/en/>), (b) the Commission on the Limits of the Continental Shelf (https://www.un.org/depts/los/clcs_new/clcs_home.htm) and (c) the International Seabed Authority (<https://www.isa.org.jm/>)..
Issued: 10.12.1982, Montego Bay
Entry into force: 16.11.1994
Reference: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf
- * As of June 2016, 167 countries and the European Union are parties.
- **Convention on the protection and use of transboundary watercourses and international lakes (UNECE Water Convention):** is a legally binding instrument promoting the sustainable management of shared water resources, the implementation of the Sustainable Development Goals, the prevention of conflicts, and the promotion of peace and regional integration.
Issued: 17.03.1992, Helsinki
Entry into force: 06.10.1996
Reference: <https://unece.org/environment-policy/water>



- **Convention on environmental impact assessment in a transboundary context:** sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries.

Issued: 25.02.1991, Espoo

Entry into force: 10.09.1997

Reference: <http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx>



Figure 6: International conventions

- **Convention for the protection of the marine environment of the north-east Atlantic (OSPAR Convention):** the main objective of the Paris Convention is to promote cooperation of the Contracting Parties to cover all human activities that might adversely affect the marine environment of the North-East Atlantic*. It includes a series of Annexes dealing with the following specific areas: (I) Prevention and elimination of pollution from land-based sources; (II) Prevention and elimination of pollution by dumping or incineration; (III) Prevention and elimination of pollution from offshore sources; (IV) Assessment of the quality of the marine environment; (V) On the protection and conservation of the ecosystems and biological diversity of the maritime area.

Issued: 22.09.1992, Paris

Entry into force: 25.03.1998

Reference: <https://www.ospar.org/convention>

* In 2007 the OSPAR Commission adopted amendments to Annexes II and III to the Convention to allow the storage of carbon dioxide in geological formations under the seabed.

- **Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM):** was originally signed in 1974 by all Baltic Sea coastal countries*, seeking to address the increasing environmental challenges from industrialisation and other human activities and that were having a severe impact on the marine environment. The Helsinki Convention includes the protection of the Baltic Sea from all sources of pollution from land, air and sea. It also commits the signatories to take measures on conserving habitats and biological diversity and for the sustainable use of marine resources.

Issued: 09.04.1992, Helsinki

Entry into force: 17.01.2000

Reference: <https://helcom.fi/>

* The Helsinki Convention was updated in 1992 to take into account the geopolitical changes and emerging environmental challenges in the region, and was extended to ten Contracting Parties.

- **Convention on the Transboundary Effects of Industrial Accidents:** The Convention aims at protecting human beings and the environment against industrial accidents by preventing such accidents as far as possible, by reducing their frequency and severity and by mitigating their effects. It promotes active international cooperation between the contracting Parties, before, during and after an industrial accident.

Issued: 17.03.1997, Helsinki

Entry into force: 19.04.2000

Reference: <https://unece.org/more-1>

- **Convention on access to information, public participation in decision making and access to justice in environmental matters:** The Aarhus Convention* establishes a number of rights of the public (individuals and their associations) with regard to the environment. The Parties to the Convention are required to make the necessary provisions so that public authorities (at national, regional or local level) will contribute to these rights to become effective.
Issued: 25.06.1998, Aarhus
Entry into force: 30.10.2001
Reference: <https://ec.europa.eu/environment/aarhus/>
- * On 14 October 2020, the European Commission adopted a legislative proposal amending the Aarhus Regulation No. 1367/2006 to allow for better public scrutiny of EU acts affecting the environment. The legislative proposal is now with the European Parliament and with the Council.
- **European Landscape Convention:** the main objective of the Florence Convention is promote the protection, management and planning of the landscapes and organise international co-operation on landscape issues.
Issued: 20.10.2000, Florence
Entry into force: 01.03.2004
Reference: <https://www.coe.int/en/web/landscape>
- **Civil Liability for Damage Resulting from Activities Dangerous to the Environment:** the main objective of the Lugano Convention is to ensure adequate compensation for damage resulting from activities dangerous to the environment and provide for means of prevention and reinstatement.
Issued: 21.06.1993, Lugano
Entry into force: December 2009
Reference: <https://rm.coe.int/168007c079>
- **Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Water Convention):** is an international treaty pertaining to the uses and conservation of all waters that cross international boundaries, including both surface and groundwater.
Issued: 21.05.1997, New York
Entry into force: 17.08.2014
Reference: <https://unece.org/environment-policy/water/un-watercourses-convention>

6.1.2 EU Legislation

The **EU treaties (primary law)** are binding agreements between EU Member States. They set Community objectives, rules for EU institutions, procedures for decision-making and the relationship between the EU and its Member States. Every action taken by the EU is founded on the Treaties. However, non-energy mineral resources have not been the focus of EU policies and consequently not part of the legal framework of the EU for a long time. This, an integrated European strategy on the secure supply of raw materials, including minerals, had not been established before the Raw Materials Initiative was published in 2008 (European Commission 2008).

- **Treaty on the Functioning of the European Union (TFEU):** is one of two treaties forming the constitutional basis of the European Union (EU). It was signed on March 25th 1957 in Rome, entered into force on January 1st 1958.
- **Treaty on the European Union (TEU):** its purpose was to prepare for European Monetary Union and introduce elements of a political union. It was signed on February 7th 1992 in Maastricht, entered into force on November 1st 1993.
- **Treaty of Lisbon:** its purpose was to make the EU more democratic, more efficient and better able to address global problems, such as climate change, with one voice. It was signed on December 13th 2007 in Lisbon, entered into force on December 1st 2009.

EU Community secondary law, coming from the principles and objectives of the treaties, includes regulations, directives, decisions, recommendations and opinions. The main laws, governing marine raw materials, and especially placer deposits where distinguished, are quoted below:

Natural conservation (biodiversity) issues

- **Council Directive 92/43/EEC** of 21 May 1992, on the conservation of natural habitats and of wild fauna.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992L0043&qid=1488881418616>



Environment issues

- **Directive 2001/42/EC**, of the European Parliament and of the Council of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1488876630099&uri=CELEX:32001L0042>
- **Directive 2003/4/EC**, of the European Parliament and of the Council of 28 January 2003, on public access to environmental information and repealing Council Directive 90/313/EEC.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32003L0004&qid=1488876714858>
- **Directive 2003/35/EC**, of the European Parliament and of the Council of 26 May 2003, providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC.
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003L0035:EN:HTML>
- **Directive 2004/35/CE**, of the European Parliament and of the Council of 21 April 2004, on environmental liability with regard to the prevention and remedying of environmental damage.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004L0035&qid=1627729405358>
- **Council Decision 2006/61/EC**, of 2 December 2005, on the conclusion, on behalf of the European Community, of the UN-ECE Protocol on Pollutant Release and Transfer Registers.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006D0061&qid=1488878647039>
- **Regulation (EC) No 166/2006**, of the European Parliament and of the Council of 18 January 2006, concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/HR/TXT/?uri=celex:32006R0166>
- **Regulation (EC) No 1221/2009**, of the European Parliament and of the Council of 25 November 2009, on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499260510743&uri=CELEX:32009R1221>
- **Commission Decision 2009/607/EC**, of 9 July 2009, establishing the ecological criteria for the award of the Community eco-label to hard coverings (Notified under document C(2009) 5613) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009D0607>
- **Regulation (EC) No 66/2010**, of the European Parliament and of the Council of 25 November 2009, on the EU Ecolabel (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0066&qid=1627730123109>
- **Directive 2010/75/EU**, of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32010L0075>
- **Directive 2011/92/EU**, of the European Parliament and of the Council of 13 December 2011, on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0092>
- **Decision No 1386/2013/EU**, of the European Parliament and of the Council of 20 November 2013, on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013D1386>
- **Regulation (EU) No 377/2014**, of the European Parliament and of the Council of 3 April 2014, establishing the Copernicus Programme and repealing Regulation (EU) No 911/2010 Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499260510743&uri=CELEX:32014R0377>
- **Commission Decision (EU) 2015/2099**, of 18 November 2015 establishing the ecological criteria for the award of the EU Ecolabel for growing media, soil improvers and mulch (notified under document C(2015) 7891) (Text with EEA relevance).



<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503474545719&uri=CELEX:32015D2099>

- **Commission Decision (EU) 2017/1217**, of 23 June 2017, establishing the EU Ecolabel criteria for hard surface cleaning products (notified under document C(2017) 4241) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1504191830114&uri=CELEX:32017D1217>

Extractive waste issues

- **Directive 2006/21/EC**, of the European Parliament and of the Council of 15 March 2006, on the management of waste from extractive industries and amending Directive 2004/35/EC - Statement by the European Parliament, the Council and the Commission.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32006L0021&qid=1488879927870>
- **Commission Decision 2009/335/EC**, of 20 April 2009, on technical guidelines for the establishment of the financial guarantee in accordance with Directive 2006/21/EC of the European Parliament and of the Council concerning the management of waste from extractive industries (notified under document number C(2009) 2798).
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009D0335>
- **Commission Decision 2009/337/EC**, of 20 April 2009, on the definition of the criteria for the classification of waste facilities in accordance with Annex III of Directive 2006/21/EC of the European Parliament and of the Council concerning the management of waste from extractive industries (notified under document number C(2009) 2856).
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009D0337>
- **Commission Decision 2009/358/EC**, of 29 April 2009, on the harmonisation, the regular transmission of the information and the questionnaire referred to in Articles 22(1)(a) and 18 of Directive 2006/21/EC of the European Parliament and of the Council on the management of waste from extractive industries (notified under document number C(2009) 3011).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009D0358>
- **Commission Decision 2009/359/EC**, of 30 April 2009, completing the definition of inert waste in implementation of Article 22(1)(f) of Directive 2006/21/EC of the European Parliament and the Council concerning the management of waste from extractive industries (notified under document number C(2009) 3012).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009D0359>
- **Commission Decision 2009/360/EC**, of 30 April 2009, completing the technical requirements for waste characterisation laid down by Directive 2006/21/EC of the European Parliament and of the Council on the management of waste from extractive industries (notified under document number C(2009) 3013).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009D0360>

Health and safety issues

- **Council Directive 89/391/EEC**, of 12 June 1989, on the introduction of measures to encourage improvements in the safety and health of workers at work.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31989L0391&qid=1488890290440>
- **Council Directive 89/654/EEC**, of 30 November 1989, concerning the minimum safety and health requirements for the workplace (first individual directive within the meaning of Article 16 (1) of Directive 89/391/EEC).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31989L0654&qid=1488890316413>
- **Commission Directive 91/322/EEC**, of 29 May 1991, on establishing indicative limit values by implementing Council Directive 80/1107/EEC on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499235362172&uri=CELEX:31991L0322>
- **Council Directive 92/91/EEC**, of 3 November 1992, concerning the minimum requirements for improving the safety and health protection of workers in the mineral- extracting industries through drilling (eleventh individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992L0091&qid=1488890374124>
- **Council Directive 92/91/EEC**, of 3 November 1992, concerning the minimum requirements for improving the safety and health protection of workers in the mineral- extracting industries through drilling (eleventh individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC).



<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31992L0091&qid=1488890374124>

- **Directive 2001/95/EC**, of the European Parliament and of the Council of 3 December 2001, on general product safety (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32001L0095>
- **Directive 2003/10/EC**, of the European Parliament and of the Council of 6 February 2003, on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise) (Seventeenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32003L0010&qid=1488890590827>
- **Directive 2004/37/EC**, of the European Parliament and of the Council of 29 April 2004, on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC) (codified version) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499235409034&uri=CELEX:32004L0037>
- **Directive 2006/42/EC**, of the European Parliament and of the Council of 17 May 2006, on machinery, and amending Directive 95/16/EC (recast) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006L0042>
- **Directive 2009/104/EC**, of the European Parliament and of the Council of 16 September 2009, concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:32009L0104>
- **Council Directive 2013/59/Euratom**, of 5 December 2013, laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013L0059&qid=1488890623159>
- **Directive 2014/68/EU**, of the European Parliament and of the Council of 15 May 2014, on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503474970688&uri=CELEX:32014L0068>
- **Directive (EU) 2015/1535**, of the European Parliament and of the Council of 9 September 2015, laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L1535>

Industrial risk issues

- **Directive 2012/18/EU**, of the European Parliament and of the Council of 4 July 2012, on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0018>
- **Commission Implementing Decision 2014/895/EU**, of 10 December 2014, establishing the format for communicating the information referred to in Article 21(3) of Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances (notified under document C(2014) 9334) Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014D0895>

Information management and transparency issues

- **Directive 95/46/EC**, of the European Parliament and of the Council of 24 October 1995, on the protection of individuals with regard to the processing of personal data and on the free movement of such data.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31995L0046&qid=1488890943035>
- **Regulation (EC) No 45/2001**, of the European Parliament and of the Council of 18 December 2000, on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32001R0045&qid=1488891016020>



- **Directive (EU) 2019/1024**, of the European Parliament and of the Council of 20 June 2019, on open data and the re-use of public sector information.
<https://eur-lex.europa.eu/eli/dir/2019/1024/oj>
- **Directive 2004/109/EC**, of the European Parliament and of the Council of 15 December 2004, on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market and amending Directive 2001/34/EC.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499245112025&uri=CELEX:32004L0109>
- **Directive 2007/2/EC**, of the European Parliament and of the Council of 14 March 2007, establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32007L0002&qid=1488891091662>
- **COMMISSION STAFF WORKING DOCUMENT**, Evaluation Accompanying the document REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT On the implementation of Directive 2007/2/EC of March 2007, establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) pursuant to article 23.
<https://eur-lex.europa.eu/legal-content/ET/TXT/?uri=CELEX%3A52016SC0273>
- **Commission Decision 2011/833/EU**, of 12 December 2011, on the reuse of Commission documents.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536851184267&uri=CELEX:32011D0833>
- **Regulation (EU) 2016/679**, of the European Parliament and of the Council of 27 April 2016, on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536850807819&uri=CELEX:32016R0679>
- **Directive (EU) 2016/943**, of the European Parliament and of the Council of 8 June 2016, on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use and disclosure (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016L0943>
- **Commission Decision (EU, Euratom) 2017/46**, of 10 January 2017, on the security of communication and information systems in the European Commission.
<https://eur-lex.europa.eu/eli/dec/2017/46/oj>
- **Council Decision (EU) 2017/1842**, of 9 October 2017, on the open data policy of the Council and the reuse of Council documents.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536851065281&uri=CELEX:32017D1842>
- **Commission Decision (EU, Euratom) 2018/559**, of 6 April 2018, laying down implementing rules for Article 6 of Decision (EU, Euratom) 2017/46 on the security of communication and information systems in the European Commission.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536850963287&uri=CELEX:32018D0559>

Internal market issues

- **Directive 2005/36/EC**, of the European Parliament and of the Council of 7 September 2005, on the recognition of professional qualifications (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32005L0036>
- **Directive 2006/123/EC**, of the European Parliament and of the Council of 12 December 2006, on services in the internal market.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1488815244877&uri=CELEX:32006L0123>
- **Commission Regulation (EC) No 1287/2006**, of 10 August 2006, implementing Directive 2004/39/EC of the European Parliament and of the Council as regards record-keeping obligations for investment firms, transaction reporting, market transparency, admission of financial instruments to trading, and defined terms for the purposes of that Directive (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536850295482&uri=CELEX:32006R1287>
- **Directive 2013/34/EU**, of the European Parliament and of the Council of 26 June 2013, on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC Text with EEA relevance.



<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0034>

- **Directive 2014/23/EU**, of the European Parliament and of the Council of 26 February 2014, on the award of concession contracts Text with EEA relevance.

<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32014L0023>

Mineral issues

- **Council Regulation (EC) No 2368/2002**, of 20 December 2002, implementing the Kimberley Process certification scheme for the international trade in rough diamonds.

<https://eur-lex.europa.eu/eli/reg/2002/2368/2016-04-30>

- **Commission Regulation (Euratom) No 66/2006**, of 16 January 2006, exempting the transfer of small quantities of ores, source materials and special fissile materials from the rules of the chapter on supplies.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499255748815&uri=CELEX:32006R0066>

- **Commission Implementing Decision (EU) 2016/1757**, of 29 September 2016, on setting up the European Multidisciplinary Seafloor and Water Column Observatory — European Research Infrastructure Consortium (EMSO ERIC) (notified under document C(2016) 5542) (Text with EEA relevance).

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499238064922&uri=CELEX:32016D1757>

- **Regulation (EU) 2017/821**, of the European Parliament and of the Council of 17 May 2017, laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499237734213&uri=CELEX:32017R0821>

Noise issues

- **Directive 2000/14/EC**, of the European Parliament and of the Council of 8 May 2000, on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors.

<https://eur-lex.europa.eu/eli/dir/2000/14/oj>

- **Directive 2002/49/EC**, of the European Parliament and of the Council of 25 June 2002, relating to the assessment and management of environmental noise - Declaration by the Commission in the Conciliation Committee on the Directive relating to the assessment and management of environmental noise.

<https://eur-lex.europa.eu/legal-content/ET/TXT/?uri=CELEX%3A32002L0049&qid=1488881598785>

- **Commission Directive (EU) 2015/996**, of 19 May 2015, establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council.

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L0996&from=PT>

Standards issues

- **Commission Implementing Decision (EU) 2016/1032**, of 13 June 2016, establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the non-ferrous metals industries (notified under document C(2016) 3563) (Text with EEA relevance).

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499263339339&uri=CELEX:32016D1032>

Statistics issues

- **Council Regulation (EC) No 2223/96**, of 25 June 1996, on the European system of national and regional accounts in the Community.

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01996R2223-20130701&qid=1503668033250&from=EN>

- **Regulation (EC) No 184/2005**, of the European Parliament and of the Council of 12 January 2005, on Community statistics concerning balance of payments, international trade in services and foreign direct investment.

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503668710636&uri=CELEX:02005R0184-20160719>



- **Regulation (EC) No 1893/2006**, of the European Parliament and of the Council of 20 December 2006, establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503667064300&uri=CELEX:32006R1893>
- **Regulation (EC) No 471/2009**, of the European Parliament and of the Council of 6 May 2009, on Community statistics relating to external trade with non-member countries and repealing Council Regulation (EC) No 1172/95 (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503667669082&uri=CELEX:32009R0471>
- **Regulation (EU) No 691/2011**, of the European Parliament and of the Council of 6 July 2011, on European environmental economic accounts.
<https://eur-lex.europa.eu/eli/reg/2011/691/2014-06-16>
- **Commission Regulation (EU) No 557/2013**, of 17 June 2013, implementing Regulation (EC) No 223/2009 of the European Parliament and of the Council on European Statistics as regards access to confidential data for scientific purposes and repealing Commission Regulation (EC) No 831/2002 Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1503667540559&uri=CELEX:32013R0557>

Waste issues

- **Commission Decision 2000/532/EC**, of 3 May 2000, replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (notified under document number C(2000) 1147) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32000D0532>
- **Regulation (EU) No 1257/2013**, of the European Parliament and of the Council of 20 November 2013, on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC Text with EEA relevance.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499260791383&uri=CELEX:32013R1257>
- **Council Directive 2011/70/Euratom**, of 19 July 2011, establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0070&qid=1488880714113>
- **Commission Implementing Decision (EU) 2018/1147**, of 10 August 2018, establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C(2018) 5070) (Text with EEA relevance.)
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536848405705&uri=CELEX:32018D1147>

Water issues

- **Directive 2008/56/EC**, of the European Parliament and of the Council of 17 June 2008, establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (Text with EEA relevance).
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32008L0056>
- **Protocol**, of 9 January 2013, for the Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil.
[https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499257581143&uri=CELEX:22013A0109\(02\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499257581143&uri=CELEX:22013A0109(02))
- **Council Decision 2013/5/EU**, of 17 December 2012, on the accession of the European Union to the Protocol for the Protection of the Mediterranean Sea against pollution resulting from exploration and exploitation of the continental shelf and the seabed and its subsoil.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1499257581143&uri=CELEX:32013D0005>
- **Directive 2014/89/EU**, of the European Parliament and of the Council of 23 July 2014, establishing a framework for maritime spatial planning.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0089&qid=1488881325624>



EU policy on raw materials, is implemented by means of various initiatives and detailed implementation plans:

- **Raw Materials Initiative (RMI):** is the EU's raw materials strategic policy framework, adopted in 2008. This policy strategy is based on sustainable sourcing of raw materials from global markets, sustainable domestic raw materials production and resource efficiency and supply of secondary raw materials (SRM).
- **European Innovation Partnership on Raw Materials (EIP-RM):** is the strategic implementation plan of the RMI, launched in 2012. It comprises a stakeholder platform, which reinforces the RMI by translating the strategic policy framework into concrete targets, priorities and actions.
- **Trade policy and raw materials:** EU Trade policy as laid down by DG TRADE is actively committed to ensuring that the international raw materials markets operate in a free and transparent way.
- **Development policy and raw materials:** EU development policy promotes sustainable access to raw materials.
- **Environmental policy and raw materials:** Several EU environmental policies cover different aspects of raw materials. The environmental impacts of the raw materials sector are linked to natural resources, such as air, land, soil and water, and, furthermore, to more complex issues such as environmental assessment, nature and biodiversity, sustainable development and waste.
- **Research policy and raw materials:** EU research policy (Horizon 2020 and now Horizon Europe) aims to tap the full potential of primary and secondary raw materials and boost the innovation capacity of the EU raw materials sector in response to a number of challenges along the entire raw materials value chain.
- **Sustainable development policy and raw materials:** has since long been at the heart of the European project, and EU treaties give recognition to its economic, social and environmental dimensions, which should be tackled together.

6.1.3 Member States Legislation

The legislation and regulatory framework of the Member States concerning exploration and exploitation of raw materials, is presented in detail through the Raw Materials Information System (<https://rmis.jrc.ec.europa.eu/>). The information incorporate the “Study on the Legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU” (abbreviated as MINLEX) which ran from December 2015 until May 2017 (EC 2017), including detailed country reports, which can be retrieved from the RMIS.

6.2 Exploration - Exploitation

Marine placers are mined over the continental margin in various depths. The main materials extracted from placer deposits of the seabed, along with their potential uses are summarized in the United Nations report for Marine Mineral resources (2004).

Table 1: Main minerals extracted from marine placer deposits (UN-ISA 2004)

Placer Minerals	Mined Locations
Barium (in minerals barite and witherite)	A soft silvery-white heavy metal used for drilling fluids in oil wells, paints, fireworks, glass and rubber making, and as an x-ray tracer in medical applications
Chromium (in mineral chromite)	A lustrous, hard, bluish-gray metal used to make stainless steel; can be polished to a mirror-like finish and used as a decorative and protective plating; hardens steel and may be used in alloys; also used as a yellow coloring agent in the textile industry, and in tanning leather
Diamond (as mineral diamond)	Composed of carbon transformed into the hardest of all minerals used for jewelry and industrial cutting applications
Gold (as microscopic grains in various minerals and rocks)	A soft, shiny, malleable, ductile, non-corrosive metal used for currency, jewelry, dental work, electrical/electronic components, photography, heat shields, and pharmaceuticals



Phosphorus (in Phosphorite rocks made of apatite, fluorapatite and other phosphate minerals)	Used in fertilizers, insecticides, fireworks, baking powder, chinaware, glass, water softeners, soft drinks, pharmaceuticals, and metal treatments
Rare earth elements (REE) (in mineral monazite and rock-type basanite)	A series of 15 metallic elements variously used for heat resistant alloys, and Cd disks and alloys for powerful magnets and lasers; a coloring component in glass and ceramics, in carbon arc lamps, in certain nuclear applications, and color TV tubes
Thorium (in mineral monazite)	An abundantly radioactive metal used in high-temperature applications, such as incandescent gas mantles, tungsten filament castings, laboratory equipment, as well as in certain camera lenses and other optical instruments; it can be used as a nuclear fuel for breeder reactors
Tin (in mineral cassiterite from continental granite)	A soft, silvery-white metal used in food storage containers, coating on other metals and as an alloy in solder, pewter and bronze (with copper); in polymer additives for dyeing and marine anti-fouling paints
Titanium (in minerals ilmenite and rutile)	Corrosive resistant metal used in chemical production and anywhere light strong alloys are needed; also used in some white paints and as a pigment for coating paper and plastic, as a food additive, in sunscreen lotions, and in fireworks
Tungsten (from minerals scheelite and wolferamite)	Metal with the highest melting point of any element, used in alloys that resist great amounts of heat, such as light-bulb filaments, in television tubes, paints, lubricants, tanning leather, and fluorescent lighting; also used in high strength applications, such as furnaces, missiles, dental drills, and other cutting tools
Zirconium (in mineral zircon)	A hard, lustrous, gray-white metal resistant to water, most acids and bases; used as a shield against corrosive compounds in the chemical industry, for steel alloys, bricks, ceramics and abrasives, flashbulbs, explosive primers, lamp filaments, and artificial gemstones

The potential for the occurrence of placer deposits on and within the sedimentary accumulations of entire continental margins (continental shelf, slope and rise) associated with land sources of minerals is great. However, current knowledge of the occurrence is limited by the extent of exploration carried out up to the present time, which has only located the most accessible deposits on or near the seafloor of small areas of inner portions of the continental shelves that have been systematically explored. The sediment column of the entire continental margin has potential for the occurrence of such deposits, but the deposits most accessible for exploration and exploitation under current conditions lie on the seafloor in shallow water (UN-ISA 2004).

Marine placer deposits are mined worldwide, over the continental margin, with the main exploitation areas located offshore Australia, Africa and SE Asia (Table 2):

Table 2: Principle marine placer mining activities (from Murton 2000)

Placer Minerals	Mined Locations
Rutile and ilmenite	SE and SE Australia, eastern South Africa, South India, Mozambique, Senegal, Brazil, Florida
Ti-rich magnetite	North Island, New Zealand, Java, Indonesia, Luzon, Philippines, Hokkaido, Japan
Tin	Indonesian Sunda shelf, extending from the islands of Bangka, Belitung, and Kundur Malaysia Thailand
Diamonds	West Coast, South Africa Namibia Northern Australia

A thorough review of worldwide and over the years' marine placers mining is presented in the 2004 United Nations publication, however the presentation of these data is out of the scope of the current report.

In the frame of GeoERA MINDeSEA project, building upon previous mineral resources databases (e.g. EMODnet WP7-Minerals and MARMIN), an updated – and with detailed attributes – database was compiled, listing occurrences of marine placer deposits in the European seas.

Table 3: Marine placer occurrences in the European Seas (MINDeSEA, July 2021)

ID	LONGITUDE	LATITUDE	CODE	GEO_AREA	STATUS
1	21.723726	57.591732	LVA	Baltic Sea	not operating
2	22.053935	57.637258	LVA	Gulf of Riga	not operating
3	22.277343	57.751483	LVA	Gulf of Riga	not operating
4	21.046862	56.742395	LVA	Baltic Sea	not operating
5	21.246978	56.944928	LVA	Baltic Sea	not operating
6	21.412286	57.256266	LVA	Baltic Sea	not operating
7	20.977501	56.316086	LVA	Baltic Sea	not operating
8	14.602395	54.345561	POL	Baltic Sea	not operating
9	14.674810	54.322292	POL	Baltic Sea	not operating
10	-6.506717	36.736918	ESP	Bay of Biscay	not operating
11	-1.948389	36.858114	ESP	Mediterranean Sea – W. Basin	not operating
12	-8.771724	42.242889	ESP	Bay of Biscay	not operating
13	0.839937	40.654122	ESP	Mediterranean Sea – W. Basin	not operating
14	3.209094	42.013990	ESP	Mediterranean Sea – W. Basin	not operating
15	3.141903	42.196895	ESP	Mediterranean Sea – W. Basin	not operating
16	-1.720988	37.295914	ESP	Mediterranean Sea – W. Basin	not operating
17	-1.759067	37.263123	ESP	Mediterranean Sea – W. Basin	not operating
18	-8.289988	43.561865	ESP	Bay of Biscay	not operating
19	-8.676500	42.416300	ESP	Bay of Biscay	not operating
20	-8.685700	42.276000	ESP	Bay of Biscay	not operating
21	-0.848200	37.581800	ESP	Mediterranean Sea – W. Basin	not operating
22	-2.490000	47.480000	FRA	Bay of Biscay	not operating
23	-3.530000	47.750000	FRA	Bay of Biscay	not operating
24	-4.810000	48.450000	FRA	Bay of Biscay	not operating
25	-2.820000	48.650000	FRA	English Channel	not operating
26	-2.530000	47.360000	FRA	Bay of Biscay	not operating
27	-4.053100	52.716100	GBR	Irish Sea & St. George's Channel	not operating
28	-6.330400	56.941000	GBR	Inner Seas off the West Coast of Scotland	not operating
29	-1.841500	57.622300	GBR	North Sea	not operating
30	-3.651300	58.113700	GBR	North Sea	not operating
31	-6.071200	56.448500	GBR	Inner Seas off the West Coast of	not operating

				Scotland	
32	-6.021000	57.177000	GBR	Inner Seas off the West Coast of Scotland	not operating
33	-6.145355	56.353913	GBR	Inner Seas off the West Coast of Scotland	not operating
34	-7.041535	56.904234	GBR	Inner Seas off the West Coast of Scotland	not operating
35	-6.370241	56.907174	GBR	Inner Seas off the West Coast of Scotland	not operating
36	-6.292483	56.921725	GBR	Inner Seas off the West Coast of Scotland	not operating
37	1.026119	51.510454	GBR	North Sea	not operating
38	-1.568228	55.389798	GBR	North Sea	not operating
39	1.778482	54.300520	GBR	North Sea	not operating
40	-4.721392	50.320170	GBR	English Channel	not operating
41	-4.767415	50.283976	GBR	English Channel	not operating
42	-5.486243	50.097905	GBR	English Channel	not operating
43	-5.433279	50.219215	GBR	Celtic Sea	not operating
44	-5.249708	50.292698	GBR	Celtic Sea	not operating
45	-5.184731	50.352844	GBR	Celtic Sea	not operating
46	4.750000	53.000000	DNK	North Sea	not operating
47	-22.500000	64.500000	ISL	Arctic Ocean	not operating
48	33.274000	34.714000	CYP	Mediterranean Sea – E. Basin	not operating
49	33.369000	34.731000	CYP	Mediterranean Sea – E. Basin	not operating
50	33.559000	34.820000	CYP	Mediterranean Sea – E. Basin	not operating
51	19.350842	40.626115	ALB	Adriatic Sea	feasibility
52	19.325326	40.656877	ALB	Adriatic Sea	feasibility
53	19.480002	40.982951	ALB	Adriatic Sea	feasibility
54	19.436136	40.906386	ALB	Adriatic Sea	feasibility
55	19.382405	40.775407	ALB	Adriatic Sea	feasibility
56	19.412096	40.814349	ALB	Adriatic Sea	feasibility
57	19.388111	40.737767	ALB	Adriatic Sea	feasibility
58	19.462076	41.092635	ALB	Adriatic Sea	feasibility
59	19.515084	41.226237	ALB	Adriatic Sea	feasibility
60	19.513307	41.473058	ALB	Adriatic Sea	feasibility
61	19.493746	41.443551	ALB	Adriatic Sea	feasibility
62	19.579851	41.660944	ALB	Adriatic Sea	feasibility
63	19.583728	41.584779	ALB	Adriatic Sea	feasibility
64	19.599896	41.608485	ALB	Adriatic Sea	feasibility

65	19.603312	41.691960	ALB	Adriatic Sea	feasibility
66	19.600633	41.711941	ALB	Adriatic Sea	feasibility
67	12.631546	41.440297	ITA	Mediterranean Sea – W. Basin	feasibility
68	10.250000	42.820000	ITA	Mediterranean Sea – W. Basin	feasibility
69	11.800000	42.000000	ITA	Mediterranean Sea – W. Basin	feasibility
70	30.453454	46.020108	UKR	Black Sea	not operating
71	30.730743	46.258567	UKR	Black Sea	not operating
72	29.732783	45.555725	UKR	Black Sea	not operating
73	31.165706	45.802137	UKR	Black Sea	not operating
74	32.017645	46.019846	UKR	Black Sea	not operating
75	30.879021	46.477995	UKR	Black Sea	not operating
76	31.375787	44.562761	UKR	Black Sea	not operating
77	31.190058	44.250467	ROU	Black Sea	not operating
78	31.232663	44.481894	ROU	Black Sea	not operating
79	30.891237	44.041482	ROU	Black Sea	not operating
80	30.510878	43.807730	ROU	Black Sea	not operating
81	30.134359	43.630485	BGR	Black Sea	not operating
82	43.666046	66.169447	RUS	Arctic Ocean	not operating
83	42.299388	66.574300	RUS	Arctic Ocean	not operating
84	45.947772	67.718700	RUS	Arctic Ocean	not operating
85	51.913533	72.171223	RUS	Arctic Ocean	not operating
86	53.434683	73.217309	RUS	Arctic Ocean	not operating
87	55.955702	74.639675	RUS	Arctic Ocean	not operating
88	37.902552	63.964503	RUS	Arctic Ocean	not operating
89	33.185160	66.762019	RUS	Arctic Ocean	not operating
90	24.282529	40.594449	GRE	Aegean Sea	not operating

7. RELEVANT INTERNATIONAL PORTALS & E-INFRASTRUCTURES

During the past year several portals and e-infrastructures have been created providing information on data, legislation, policies and stakeholders concerning marine raw materials exploration and exploitation. The main ones are presented below, in alphabetical order:

- **Data Europa EU** (<https://data.europa.eu/en>): the portal, originally set up in 2012 (former EU Open Data Portal) following European Commission Decision 2011/833/EU on the reuse of Commission documents, provides access to an expanding range of data from the EU institutions and other bodies.
- **EGDI** (<http://www.europe-geology.eu>): is EuroGeoSurveys' European Geological Data Infrastructure, providing access to Pan-European and national geological datasets and services from the Geological Survey Organisations of Europe.
- **EMODnet Geology project** (www.emodnet-geology.eu): initiated as a pilot project in 2009 (ur-EMODnet), is now running its fourth phase (2019-2021). WP7 (Minerals) of the project has established a framework for collecting harmonized data of marine mineral occurrences across all European Seas, including Marine Placer Deposits.



- **European Environment Agency** (<https://www.eea.europa.eu>): is tasked with providing sound, independent information on the environment. It operates as major information source for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public.
- **European Innovation Partnership (EIP) on Raw Materials** (<https://ec.europa.eu/growth/tools-databases/eip-raw-materials/en/content/european-innovation-partnership-eip-raw-materials>): is a stakeholder platform bringing together representatives from industry, public services, academia and NGOs. Its mission is to provide high-level guidance to the European Commission, Members States and private actors on innovative approaches to the challenges related to raw materials.
- **European Marine Board** (<https://www.isa.org.jm/>): The European Marine Board is a strategic pan-European Forum for seas and ocean research and technology. It provides a strategic forum to develop marine research foresight, initiate state-of-the-art analyses and translate these into clear policy recommendations to European institutions as well as national governments.
- **European MSP Platform** (<https://www.msp-platform.eu/>): funded by the EU Directorate General for Maritime Affairs and Fisheries (DG MARE), the European MSP Platform acts as the central exchange forum for the rich knowledge generated in past, current and upcoming MSP processes and projects. This will allow officials, planners and other stakeholders interested in MSP to build on what is already available, avoid duplication of efforts, assist in capacity building and foster development of new practices.
- **FORAM** (<http://www.foramproject.net/>): the project's scope is to contribute to consolidate the efforts towards a more joint and coherent approach towards raw materials policies and investments worldwide, by closely working with the relevant stakeholders in industry, European and international organisations, governments, academia and civil society. Synergies with relevant EU Member States initiatives will be explored and fostered.
- **Geochemical Atlas of Europe (FOREGS)** (<http://weppi.gtk.fi/publ/foregsatlas/>): the Geochemical Baseline Mapping Programme was initiated in 1998 aiming to provide high quality environmental geochemical baseline data in Europe.
- **GeoERA Project** (<https://geoera.eu/>): has as a main objective to contribute to the optimal use and management of the subsurface. One of its main themes comprises the Raw Materials, which with four running projects – for onshore and offshore resources – assists in identifying high potential areas that may add to responsible sourcing and supply within Europe. MINDeSEA Project aims at assessing the metallogeny and geological potential for strategic and Critical Raw Materials (CRM) in the European seas, while FRAME project focuses on forecasting and assessing Europe's strategic raw materials' needs. The data and products of GeoERA will be freely available through the GeoERA Information Platform (GIP).
- **Geo-Seas** (<https://www.geo-seas.eu/>): the project was designed to provide an e-infrastructure of harmonised and federated marine geological and geophysical datasets (sediment samples, cores, profiles etc), using common data standards and exchange formats.
- **INSPIRE** (<https://inspire.ec.europa.eu/>): the INSPIRE knowledge base towards implementation of the INSPIRE Directive. Crucial for raw materials data management are the INSPIRE D2.8.II.4 Data Specification on Geology – Technical Guidelines (<https://inspire.ec.europa.eu/Themes/128/2892>) and INSPIRE D2.8.III.21 Data Specification on Mineral Resources – Technical Guidelines (<https://inspire.ec.europa.eu/id/document/tg/mr>).
- **International Seabed Authority** (<https://www.isa.org.jm/>): the portal of the ISA provides, amongst other information, an online deep data database, details about exploration contracts, national legislation database and other legal documents.
- **InterRidge** (<http://www.interridge.org/>): is a non-profit organization concerned with promoting all aspects of ocean floor research (its study, use, and protection) which can only be achieved by international cooperation.
- **Marine Strategy Framework Directive** (<http://www.msfd.eu/>): a knowledge base for the sustainable management of European Seas. The European Union Marine Strategy Framework Directive provides a legislative framework to sustainably manage human activities at all scales - from local to national to regional seas.



- **Minerals4EU** (<http://www.minerals4eu.eu>): the project was designed to meet the recommendations of the Raw Materials Initiative and develop an EU Mineral intelligence network structure. The study area covered onshore deposits, for which detailed attributes were compiled.
- **Minventory** (<https://ec.europa.eu/jrc/en/scientific-tool/minventory>): is one of the scientific tools provided by EU Science Hub. The Minventory metadata portal is a directory of statistical data holders, the characteristics of the data they hold and – where possible – links to where the data may more easily be located. It covers the EU Member States and a number of neighbouring countries.
- **OSPAR** (<https://www.ospar.org/>): OSPAR is the mechanism by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic.
- **Other EMODnet Lots** (www.emodnet.eu): EMODnet project, apart from Geology, involves several thematic areas: Bathymetry, Seabed Habitat, Chemistry, Biology, Physics and Human Activities. Their datasets provide relevant information (e.g. Human Activities) and can be used as background data (e.g. bathymetry) for the compilation of mineral-potential, prospectivity maps and models of formation for the main provinces.
- **Raw Materials Information System** (<http://rmis.jrc.ec.europa.eu>): the portal, available through the EU Science Hub, provides information and data on Raw Materials in terms of Policy & Legislation, Terminology, Environmental & Social Sustainability, Economics & Trade, Industry & Innovation, Raw Materials' Profiles, Country Profiles.
- **SeaDataNet** (<https://www.seadatanet.org>): SeaDataNet is a major pan-European infrastructure for managing, indexing and providing access to marine data sets and data products, acquired by countries neighbouring the European seas.

8. SUMMARY

This report was elaborated in the frame of MINDeSEA project “Seabed Mineral Deposits in European Seas: Metallogeny and Geological Potential for Strategic and Critical Raw Materials”, WP5: Marine Placer Deposits; it constitutes **Deliverable 5.5 – WP5 Literature review report on present-day status of regulation, legislation and exploitation of placer deposits, with emphasis on the impact of a pan-European research approach**.

The compilation of the present report is a synthesis of all available information concerning the present-day status of regulation, legislation and exploitation of placer deposits; the scope of this work to screen information from existing publications from the EU organizations – most of which were focused on onshore deposits – and provide a summary of the data in question for offshore raw materials, and marine places where distinguished.

Finally, a thorough stakeholder identification is presented, in an effort to emphasize the need for engagement and the impact of a pan-European approach in raw materials research and exploration.

9. REFERENCES

- Baker, E., Gaill, F., Karageorgis, A., Lamarche, G., Narayanaswamy, B., Parr, J., Raharimanarina, C., Santos, R. and Sharma, R. (2014). Chapter 23: Offshore Mining Industries, United Nations publication, pp. 1-25. Available online at: http://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_23.pdf
- Daesslé, L.W. and Fischer, D.W. (2001). Marine Minerals in the Mexican Pacific: Toward Efficient Resource Management. *Marine Georesources & Geotechnology*, 19(3), 197-206.
- Davis, R.A. and Clifton, H.E. (1987). Sea-level change and the preservation potential of wave-dominated and tide-dominated coastal sequences. In: *Sea-level Fluctuation and Coastal Evolution*, Society of Economic Paleontologists and Mineralogists, Special Publication No. 41, 167-178.
- Douvere, F., Maes, F., Vanhulle, A. and Schrijvers, J. (2007). The role of marine spatial planning in sea use management: The Belgian case. *Marine Policy*, 31(2), pp. 182–191. <https://doi.org/10.1016/j.marpol.2006.07.003>
- Ehler, C. and Douvere, F. (2009). *Marine Spatial Planning - A Step-by-Step Approach*. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, ICAM Dossier No. 6., Paris, pp. 100.



- Emery, K.O. and Noakes, L.C. (1968). Economic placer deposits of the continental shelf: United Nations Economic Commission for Asia and the Far East. Committee for Coordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas, Technical Bulletin, v.1, 95-111.
- Emory-Moore, M. and Solomon, S. (1989). Placer gold potential offshore Newfoundland: A preliminary assessment. Current Research, Newfoundland Department of Mines, Geological Survey of Newfoundland, Report 89-1, 229-236.
- European Commission (2008). COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL: The raw materials initiative — meeting our critical needs for growth and jobs in Europe. {SEC(2008) 2741} pp. 1-14.
- European Commission (2017). Study – Legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU. DG-GROW Brussels, pp. 1-1967.
- FORAM (2018) – Vidovic, J. D2.1 Composition and Structure of the Stakeholder Network and Advisory Board, pp. 1-28. Available online at: <http://www.foramproject.net/>
- Grimble, R. and Wellard, K. (1997). Stakeholder Methodologies in Natural Resource Management: A Review of Principles, Contexts, Experiences and Opportunities. Agricultural Systems, 55, 173-193. [http://dx.doi.org/10.1016/S0308-521X\(97\)00006-1](http://dx.doi.org/10.1016/S0308-521X(97)00006-1)
- Harben, P.W. and Bates, R.L. (1990). Industrial minerals: geology and world deposits. Metal Bulletin Plc.
- Kartashov, I.P. (1971). Geological features of alluvial placers. Economic Geology, 66, 879-885.
- Lenoble, J.P., Augris, C., Cambon, R., Saget, P. (1995). Marine Mineral Occurrences and Deposits of the Economic Exclusive Zones, MARMIN: A Data Base: Editions IFREMER, pp. 1-274.
- MICA (2016) – Erdmann, L., Eckartz, K., Moller, B., Tercero, L., Teufel, B., Fuchs, M., Machacek, E., Thorsøe, K., Petavratzi, E., Brown, T., van der Voet, E., Falck, E., Bisevac, V., Hofmeister, T., Quental, L., Katalin, S., Radwanek-Bak, B., Arnbom, J.-O. D2.1 Stakeholder report: identification and analysis, pp. 1-119. Available online at: <http://www.mica-project.eu/>
- Mitchell, R., Agle, B. & Wood., D. 1997: Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. In: The Academy of Management Review, 22(4) 853-886.
- Murton, B.J. (2002). A Global review of non-living resources on the extended continental shelf. Brazilian Journal of Geophysics, 18(3), 281-306.
- Schubert, C., Vuollo, J., Tomas, R., Cassard, D. and WP5 Partners (2014). Code Lists proposal for Minerals4EU. Minerals Intelligence Network for Europe Technical Guide, 1st Version, pp. 1-330.
- UNCLOS (1994). Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397. Enacted as: entered into force 16 November 1994, as the “United Nations Convention on the Law of the Sea”.
- United Nations (2004). Marine mineral resources: Scientific advances and economic perspectives. International Seabed Authority, pp. 126.



APPENDIX I

LIST OF ACRONYMS

- ABLOS:** Advisory Board on the Technical Aspects of the Law of the Sea
- ACOPS:** Advisory Committee on Protection of the Sea
- CINEA:** European Climate, Infrastructure and Environment Executive Agency
- CoR:** European Committee of the Regions
- CRM:** Critical Raw Materials
- DG_GROW:** Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
- DG-MARE:** Directorate-General for Maritime Affairs and Fisheries (DG MARE)
- DG-RTD:** Directorate-General for Research and Innovation
- EAGE:** European Association of Geoscientists & Engineers
- EASME:** Executive Agency for Small and Medium-sized Enterprises
- ECS:** Extended Continental Shelf
- EEA:** European Economic Area
- EEA:** European Environmental Agency
- EEZ:** Exclusive Economic Zone
- EFG:** European Federation of Geologists
- EGDI:** European Geological Data Infrastructure
- EGS:** EuroGeoSurveys
- EIP:** European Innovation Partnership
- EIP-RM:** European Innovation Partnership on Raw Materials
- EIT:** European Institute of Innovation & Technology
- EMB:** European Marine Board
- EMODnet:** European Marine Observation and Data Network
- ENSSER:** European Network of Scientists for Social and Environmental Responsibility
- ERC:** European Research Council
- ERMA:** European Raw Materials Alliance
- EU:** European Union
- FOREGS:** Forum of European Geological Surveys
- FRAME:** GeoERA project on Forecasting and Assessing Europe's Strategic Raw Materials needs
- GeoERA:** ERA-NET action under Horizon 2020; Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe
- GEOTEE:** Geotechnical Chamber of Greece
- GIP:** GeoERA Information Platform Project
- HELCOM:** Convention on the Protection of the Marine Environment of the Baltic Sea Area
- IADC:** International Association of Dredging Companies
- IAMCS:** International Association of Marine Consultants and Surveyors
- IAS:** International Association of Palaeontologists



ICOG: Spanish Official Professional Association of Geologists

IMMS: International Marine Minerals Society

INSPIRE: Infrastructure for spatial information in Europe

ISA: International Seabed Authority

IUGS: International Union of Geological Sciences

MGEG: Marine Geology Expert Group

Minerals4EU: EU-FP7 project uniting European national resource databases into a common data infrastructure and generating a European minerals yearbook

MINLEX: Study on the Legal framework for mineral extraction and permitting procedures for exploration and exploitation in the EU

MPS: Marine Spatial Planning

MREG: Mineral Resources Expert Group

MSFD: Marine Strategy Framework Directive

OGC: Open Geospatial Consortium

PERC: Pan European Reserves and Resources Reporting Committee

REEs: Rare Earth Elements

RM: Raw Materials

RMI: Raw Materials Initiative

RMIS: Raw Materials Information System

TEU: Treaty on the European Union

TFEU: Treaty on the Functioning of the European Union

UNCLOS: United Nations Convention on the Law of the Sea

UNECE: United Nations Economic Commission for Europe

UN-IMO: United Nations International Maritime Organization

UN-SDSN: United Nations Sustainable Development Solutions Network

USGS: United States Geological Survey

WBCSD: World Business Council for Sustainable Development

