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ERA-MBT Final dissemination report

Work Package 6

Communication, information management and dissemination

Publication date: November 2017

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EXECUTIVE SUMMARY

The FP7 ERA-MBT project (2013-2017) has been a network of European marine research funding organisations consisting of 19 partners from 14 countries who worked with stakeholders from industry and organisations to identify needs and gaps in the value chain from research and development, through optimising research results for proof of concept and industrial uptake and valorisation.

This report summarizes the outcome of all project activities with external contributions, taking place throughout the project. It includes project dissemination outputs, obtained from the translation of project results as well as from networking activities.

The project activities with external contributions can be categorized into **8 major achievements**:

- Enhancement of dialogue between science, industry and policy through stakeholders events
- Development of a Strategic Roadmap to guide future marine biotechnology research and innovation activities
- Identification of the needs and gaps in the existing interactions between the industry and academia
- Promotion of the training and education strategy for marine biotechnology
- Strengthening collaborations with partners from other European Bioeconomy projects
- Enhancement of public awareness and accessibility of information in the field of marine biotechnology
- Mobilization of competitive funds for research through joint calls
- Consolidation and expansion of the network of marine research funding organisations

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BACKGROUND

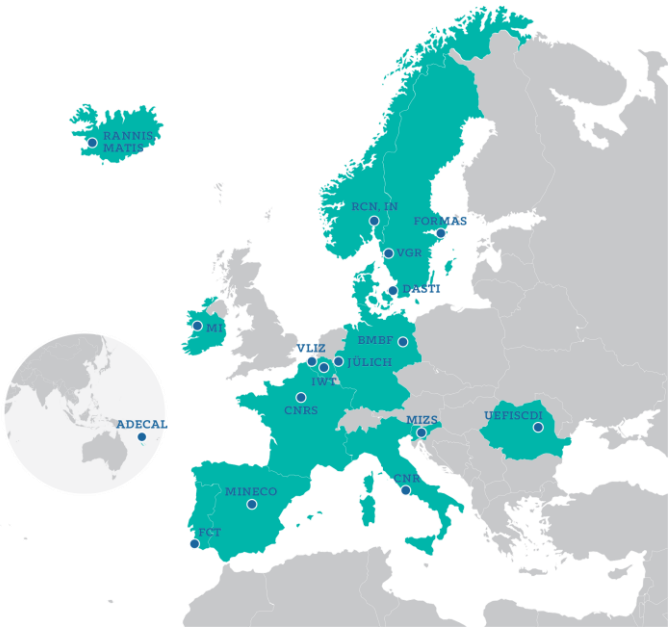
While the application of marine biotechnology represents a large potential for **European added value**, the level of collaborative research was limited at the start of the project. Interdisciplinary cooperation and networking has a high added value to bring together basic research in the fields of marine biology, physiology of marine plants, microorganisms and invertebrates, taxonomy, microbiology, biotechnology, nanotechnology, systems biology, bioinformatics, toxicology, *-omics* technologies and chemistry. These collaborations can result in new applications related to drug discovery, novel foods and food ingredients, bioremediation, biomaterials, aquaculture, diagnostics, production processes and bio-energy.

No single country or region has the necessary capacity, knowledge or resources to fully exploit research and innovations from the marine environment. Advanced infrastructures both at sea and in the laboratories is needed. Europe needed to focus and strengthen its effort in the area of marine biotechnology in order to find competitive niches. **Trans-European collaboration** provides synergies and more value for the money by a coordinated European funding and coordination activity within this area.

The **CSA MarineBiotech**[1] was therefore designed to deliver the first concrete steps towards this. Through the **ERA-NET in marine biotechnology (ERA-MBT)**[2]**,** better coordination of relevant national and regional RTDI programmes in Europe have been achieved, contributing to '*smart, sustainable and inclusive growth*', a core objective of the Europe 2020 Strategy.

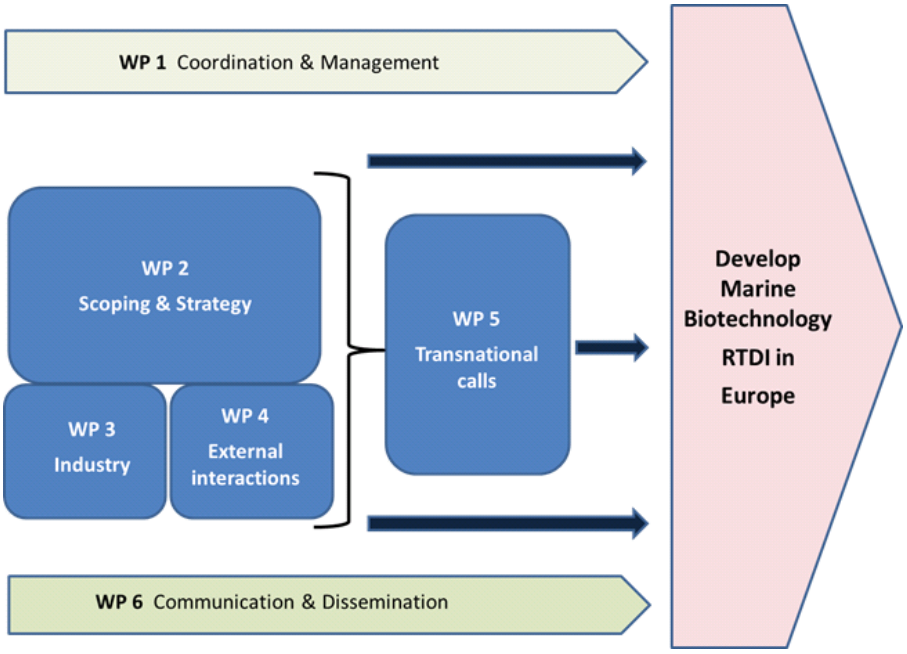
The FP7 ERA-MBT project (2013-2017) was a network of European marine research funding organisations consisting of **19 partners from 14 countries** who worked with stakeholders from industry and organisations to identify needs and gaps in the value chain from research and development, through optimising research results for proof of concept and industrial uptake and valorisation.

*The **vision of the ERA-MBT project** was to support Europe's marine biotechnology community to participate in a lasting enterprise-driven network that adds value to marine biological resources in ways that nurture and sustain the lives of European citizens.*



[1] http://www.marinebiotech.eu/csa-marine-biotechnology
[2] http://www.marinebiotech.eu/marine-biotechnology-era-net

The workplan of ERA-MBT was set up to ensure that Work Packages and Tasks were well integrated and fed into each other as the project proceeded.



Project Coordinator

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ENHANCEMENT OF DIALOGUE BETWEEN SCIENCE, INDUSTRY AND POLICY THROUGH STAKEHOLDER EVENTS

Three public stakeholder events were held throughout the project to expand and reinforce the network of researchers, industry, policy makers and funding agencies. These strategic fora were open to everyone aiming to influence the future of the ERA-MBT and furthering European Marine Biotechnology research and development.

FIRST ERA-MBT STAKEHOLDER MEETING

WAVES OF INNOVATION
Integrating National Efforts to Build the Future of Marine Biotechnology
8th - 29th October 2014, Olissippo Oriente Hotel, Lisbon, Portugal

Participants at the ERA-MBT first Stakeholder meeting in Lisbon.

SESSIONS	ACHIEVEMENTS	PARTICIPATION/OUTPUT
• I: State of the Art of Marine Biotechnology. • II: Where do we go? • III: Next steps of Marine Biotechnology ERA-NET.	• The European Commission and the ERA-MBT consortium presented their perspective on marine biotechnology research. • Following introductory presentations by representatives of the industry and academia, workshop sessions in breakout groups provided participants with the opportunity to discuss marine biotechnology *challenges*, *barriers* and *opportunities*. • Some of the main activities that are planned in the four-year project were highlighted, including the structure and content of the first call. • Time was available for networking and partnering for project collaboration.	• 100 participants • Powerpoint presentations • Participant list • News report • Public report[3] • Photo gallery

[3] First ERA-MBT Stakeholder meeting report, 2015. Marine Biotechnology ERA-NET. http://www.marinebiotech.eu/outreach-material

SECOND ERA-MBT STAKEHOLDER MEETING

MARINE BIOTECHNOLOGY
Enabling future innovations
13th - 14th October 2016, Hotel Marivaux, Brussels, Belgium

Participants during the break-out session at the first ERA-MBT Stakeholder meeting in Lisbon, which was organized for participants to influence the future of the ERA-MBT.

SESSIONS	ACHIEVEMENTS	PARTICIPATION/OUTPUT
• I: Marine biotechnology, an industry perspective • II: Creating a marine biotechnology business. • III: Supporting marine biotechnology RTDI. • IV: ERA-MBT and other EU supported marine biotechnology projects. • V: Future research opportunities and setting priorities.	• Speakers from different industry sectors described how they use a range of novel marine materials in commercial applications. • The challenges of building a business venture based on marine biotechnology, including financing a new biotechnology enabled venture, managing knowledge transfer and intellectual property were presented. • Leading industry practitioners gave their perspectives on the future opportunities to develop new research tools and infrastructure; novel processes and applications in the health, food and food ingredients sectors. • Participants learned of the impacts and outputs from some of Europe's major publicly funded marine biotechnology research projects and heard of the progress on projects funded by the first ERA-MBT call for research proposals. • Discussions on mechanisms to support marine biotechnology and to set priorities for marine biotechnology research and innovation.	• 90 participants • Powerpoint presentations • Program and participant list • Public report[4] • Photo gallery

[4] Second ERA-MBT Stakeholder meeting report, 2016. Marine Biotechnology ERA-NET. http://www.marinebiotech.eu/outreach-material

ERA-MBT FINAL CONFERENCE

ERA-MBT FINAL CONFERENCE
Oceans of opportunities
20th – 21st November 2017, The Research Council Norway, Oslo

Participants at the first ERA-MBT Final Conference in Oslo.

SESSIONS	ACHIEVEMENTS	PARTICIPATION/OUTPUT
• I: Achievements of ERA-MBT • II: Status, achievements and views from the funded projects • III: Marine Biotechnology after ERA-MBT	• Results obtained by ERA-MBT were presented • A dialogue on the five thematic areas identified in the Marine Biotechnology Strategic Research and Innovation Roadmap. • The goals and outcome of the projects funded by ERA-MBT in Call 1 on Biorefinery processes, Call 2 on Biodiscovery and Call 3 on Metagenomics were presented. • New initiatives where marine biotechnology will be taken further to build the blue bioeconomy in Europe were discussed.	• 80 participants • Online presentations • Online programme and participant list • News report • Public report[5] • Photo gallery

[5] ERA-MBT Final Conference report, 2016. Marine Biotechnology ERA-NET. http://www.marinebiotech.eu/outreach-material

DEVELOPMENT OF A STRATEGIC ROADMAP TO GUIDE FUTURE MARINE BIOTECHNOLOGY RESEARCH AND INNOVATION ACTIVITIES

A key deliverable of the ERA-MBT project was the development of a "*Marine Biotechnology Strategic Research and Innovation Roadmap*"; a plan informed by a number of different interventions including stakeholder workshops, targeted surveys, desk studies and a modified "foresight" type study we called an "Outlook". Together, contributions from these activities provided guidance to the identification and definition of research themes.

These feedback mechanisms generated insights to help funding agencies and policy makers identify new opportunities and measures to support future marine biotechnology related research and innovation and contribute to building stronger networks.

OUTLOOK ANALYSIS OF THE FUTURE OF MARINE BIOTECHNOLOGY

The "OUTLOOK" analysis was carried out to explore future scenarios for marine biotechnology based on the contribution of research and innovation to support the societal challenges as outlined in Horizon 2020. This **process** provided

1. A perspective on the contribution of marine biotechnology research and innovation to the achievement of these challenges and;
2. The key characteristics of a marine biotechnology network required to support the achievement of these grand challenges.

The OUTLOOK process was built around three stages; a scoping activity, a one-day facilitated workshop, and the production of a report that describes the outputs from the workshop:

- **SCOPING**: This pre-workshop stage completed by the ERA-MBT partners delivered a document to provide the scope and context to the exercise, give insights to key trends and facts related to marine biotechnology, an analysis of the current situation of European marine biotechnology activity and define the questions to be addressed in the workshop.
- **WORKSHOP**: This one day facilitated event considered the key questions with a view to describing likely scenarios for marine biotechnology in the year 2030; identify possible threats; highlight areas of opportunity that require to be developed to meet societal challenges; highlight the key characteristics of marine biotechnology funding networks; and establish a vision for future marine biotechnology RTDI. The **expert panel**, limited to less than 20 persons with diverse backgrounds, met formally on the 2nd December 2014.
- **OUTPUT**: The ERA-MBT management delivered a report[6] based on these findings.

[6] ERA-MBT Foresight report, 2015. Marine Biotechnology ERA-NET.

STRATEGIC GUIDANCE AND ADVICE BY THE IAG

The International Advisory Group (IAG) served as ERA-MBT's "think-tank" and as a reference point for strategic initiatives undertaken by the ERA-MBT consortium. The IAG has been involved in ERA-MBT over the life-time of the project.

The diverse background and experience of the 10 IAG members[7] was of great importance when providing input to the development of the strategic roadmap.

THE INTERNATIONAL ADVISORY GROUP (IAG)


Adrianna Ianora


Alan Dobson


Ernst Kloosterman


Fernando de la Calle


Frank Oliver Glöckner


Helena Vieira


Nathalie Moll


Patrick Sorgeloos


Rachel Ritchie


Uwe Waller

MEETINGS	ACHIEVEMENTS
• 27/10/2014, Lisbon • 15/12/2016, Oslo • 12/10/2016, Brussels	• Discussion on strategic gaps and future direction of ERA-MBT • Discussion on marine biotechnology RTDI focus to maximize the value from exploiting marine biomass • Discussion on conditions necessary in 2030 to enable Europe's enterprise sector to benefit from marine biotechnology research. • Discussion on possible themes for the Calls for research proposals

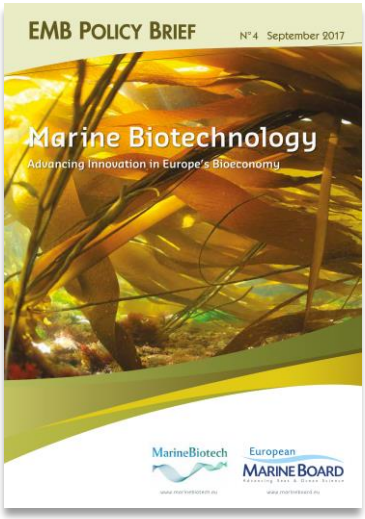
[7] http://www.marinebiotech.eu/international-advisory-group

MARINE BIOTECHNOLOGY STRATEGIC RESEARCH AND INNOVATION AGENDA

The **ERA-MBT strategic research and innovation roadmap**[8] highlights research and innovation as spanning scientific, technological, economic and societal challenges and sets a marine biotechnology research and innovation agenda to 2030. The roadmap identifies five thematic areas; the first three enable exploration of the marine environment; support biomass production and processing; and contribute to product innovation and differentiation. Two other themes, policy support and stimulation; and the provision of enabling technologies and infrastructure; provide the foundation to support growth in the Blue Bioeconomy. National and European policy organisations can use the roadmap in developing measures to maximise the contribution of the Ocean's bioresources to the bioeconomy and societal welfare, and funding agencies can use it to identify marine biotechnology related research themes.

ERA-MBT launched the Marine Biotechnology Strategic Research and Innovation Roadmap on the 12th October 2016 at Hotel Marivaux, Brussels. An addendum to the roadmap informs that no major update is needed since it was published.

The publication of the ERA-MBT research and innovation roadmap attracted significant interests at national and international levels. The European Marine Board together with ERA-MBT published a **policy brief** [9] promoting the roadmap, which recognised the role of marine biotechnology in adding value to marine biomass and advancing innovation in Europe's bioeconomy.



The ERA-MBT roadmap established a foundation for European marine biotechnology research and innovation. It is expected that others will be able to build on the roadmap, providing supports that enable the challenges in adding value to marine biomass to be met. It is also hoped that in time the roadmap will be revised, and in doing so, continue to inform and guide policy, funding agencies, industry and the research community about the opportunities offered by our ocean resources.

[8] Hurst, D.; Børresen, T.; Almesjö, L.; De Raedemaecker, F.; Bergseth, S. (2016). Marine biotechnology strategic research and innovation roadmap: Insights to the future direction of European marine biotechnology. Marine Biotechnology ERA-NET: Oostende.

[9] European Marine Board and Marine Biotechnology ERA-NET (2017). Marine Biotechnology: Advancing Innovation in Europe's Bioeconomy. EMB Policy Brief No. 4, September, 2017. ISSN: 0778-3590 ISBN: 978-94-92043-35-1

LAUNCH OF THE MARINE BIOTECHNOLOGY STRATEGIC RESEARCH AND INNOVATION ROADMAP

LAUNCH OF THE
Marine Biotechnology Strategic Research and Innovation Agenda
12th October 2014, Hotel Marivaux, Brussels, Belgium

The ERA-MBT Coordinator, Steinar Bergseth, handed over the first issue of the printed roadmap to Policy Officer Vanessa Campo Ruiz from DG RTDI of the EC.

ACHIEVEMENTS	PARTICIPATION/OUTPUT
• Invited speakers gave examples on how the Roadmap can give important policy supported directions for developments within the industry and the research communities. • Speakers emphasised the importance of establishing good networks and international collaborations • The importance of proper Access and Benefit Sharing for successful bioprospecting was pointed out. • Maintaining balanced, healthy and productive marine ecosystems will be more complex in the future, which calls for increased multi-national collaboration and increased interdisciplinary work. • The marine biotechnology roadmap provides a framework for future marine biotechnology research and innovation activities creating new biomaterial supply chains.	• 65 participants • PowerPoint presentations • Programme and participant list • News report • Photo gallery

IDENTIFICATION OF THE NEEDS AND GAPS IN THE EXISTING INTERACTIONS BETWEEN THE INDUSTRY AND ACADEMIA

An important task for ERA-MBT has been to improve the interactions between academia and industry, and as part of this work, focus has been on releasing the potential of marine bioresources to sustain the societal challenges and develop new and sustainable products. Among the challenges are technology transfer mechanisms, IPR issues, public and private financial issues, options for public private partnerships, etc.

A combination of online consultations, desk studies and events involving industries and stakeholders were organized to explore and identify challenges on the road to develop marine biotechnology into a sustainable and strong driver supporting industrial development and valorisation in Europe.

OPEN STAKEHOLDER CONSULTATION

Between 25 June and 15 August 2014, the Marine Biotechnology ERA-NET has consulted its stakeholders to get a better overview of the existing interactions between the industry and academia in the area of marine biotechnology. In particular, the aim of this open consultation was to identify the needs and gaps in such interactions.

126 Answers from our marine researchers, industrial stakeholders and policy makers were received. The outcome is summarized in a report[10], which has been used to explore and identify challenges on the road to develop marine biotechnology into a sustainable and strong driver supporting industrial development of marine biotechnology in Europe. The aggregated results have further been used for the purpose of increasing awareness in industrial development environments about the potentials within marine biotechnology. These will be taken further in continued efforts and projects with marine biotech relevance.

INDUSTRY WORKSHOP

In order to investigate what the most important factors would be for developing a communication tool for successful commercialization of knowledge outputs from R&D, ERA-MBT joined forces with the EU supported COLUMBUS project working on ‘knowledge transfer for blue growth’, managed by AquaTT, Ireland. A one-day workshop was arranged in Brussels 1st June 2017, where 16 experts experienced in biotechnology value chains were invited, representing academia, funding agencies, venture capital, technology transfer offices, legal expertise, and small and large enterprises.

[10] Report on ERA-MBT Open Stakeholder Consultation, 2015. Marine Biotechnology ERA-NET.

Prior to the workshop a survey had been sent to the participants, in which they were asked to identify five critical aspects of communication/information flow in the value chain, suggest actions to improve the present situation, and if possible, give examples of good practice.

The answers were analysed, grouped into categories, and statements were extracted for discussion at the workshop.

Cases were also presented, and the participants were asked to prioritize the most important communication elements in the value chain, and identify typical bottlenecks and risks.

INDUSTRY WORKSHOP
From academic knowledge to value creation based on marine biotechnology
1st June 2017, Brussels, Belgium

Participants at the ERA-MBT industry workshop in Brussels.

ACHIEVEMENTS	PARTICIPATION/OUTPUT
• The output from the workshop was grouped into statements of 'lessons learned' and 'proposed actions' for the different steps in the value chain, starting with the identification of the knowledge output, which would form the basis for setting the team and projecting timelines for the further stages, being 'proof of principle', 'proof of concept', 'pre-commercial trials', before reaching the final stages of commercialising the products. • The requirements identified are organised in a set of **guidelines** consisting of six specific steps according to the stages described above. • It is anticipated that the tool developed will be useful for market driven, as well as curiosity driven research. Although adapted to the marine biotechnology value chains, it might also be applicable in other areas.	• 16 experts • News report • Public report with guidelines • Communication guidelines Excel tool

PROMOTION OF THE TRAINING AND EDUCATION STRATEGY FOR MARINE BIOTECHNOLOGY

Training courses or modules in marine biotechnology are provided all over Europe and for different target audiences (Bachelor-/Master students, doctoral-/postdoctoral researchers, technical staff...). However, current expertise in marine biotechnology is often found in scattered spots across the European Union.

ONLINE TRAINING SURVEY

In order to promote and to reinforce the Training and Education strategy for marine biotechnology and the utilisation of the marine bioresources all over Europe and for different target audiences, the Marine Biotechnology ERA-NET designed an online survey for mapping the existing operational programs, while aiming to identify needs and gaps. The survey was distributed to all stakeholders and participation was available between November 2014 and February 2015. A total of 48 respondents from 16 different countries responded to the online survey, only 18 out of these respondents completed the Needs and Gaps section of the survey.

The **needs and gaps** related to current education or training programs within a marine biotechnology context that were identified by stakeholders in this survey were analysed and disseminated in a report[11]. This report describes the results of the survey and the strategy for making the data accessible via the European Marine Training portal.

The **existing education or training programs** within a marine biotechnology context (including fundamental knowledge and education on integrative biology of marine organisms and biotechnology exploitation) that were summarised in this survey have been made publicly available in the European Marine Training portal[12].

NEEDS AND GAPS OF EDUCATION AND TRAINING PROGRAMS

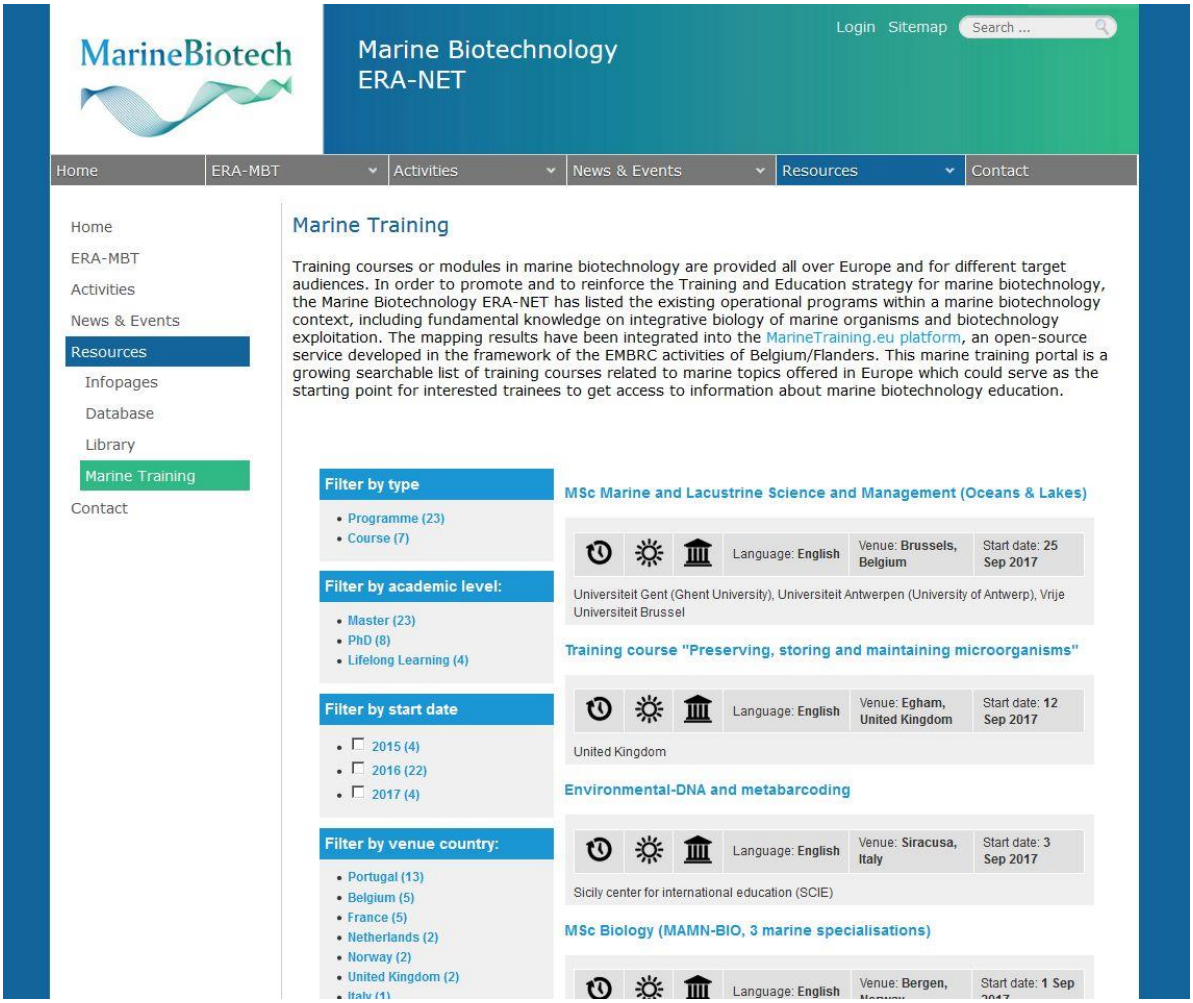
In the 'Summary of the training activities' report, an overview of the different courses (master programmes, doctoral schools, summer schools, hands-on training, online courses...) is given, which was aimed to compile a list of training possibilities within Europe and to make this information accessible through an online portal.

[11] Summary of training activities, 2015. Marine Biotechnology ERA-NET.
[12] http://www.marinebiotech.eu/marine-training

MARINE TRAINING PORTAL

In order to avoid duplication of already existing European initiatives, connections were established with the MarineTraining Office Contact at Gent University, who has developed, in the framework of EMBRC, the European Marine Training Portal (http://www.marinetraining.eu/). This portal is an open-source, centralized access point for education and training in the field of marine sciences and offers a quite comprehensive catalogue of training courses related to marine topics existing in Europe. All records that were sufficiently documented in this survey were added and linked to a special collection in the portal, which can be consulted at: http://www.marinetraining.eu/grouping/era-net-marine-biotechnology.

The marine training portal is a growing searchable list of training courses and serves as the starting point for interested trainees to get access to information about marine biotechnology education. The records will be updated during follow-on activities with marine biotech relevance.



STRENGTHENING COLLABORATIONS WITH PARTNERS FROM OTHER EUROPEAN BIOECONOMY PROJECTS

Despite the high number of individual projects and initiatives in the fields of relevance to (marine) biotechnology, many of them can be unified under the roof of bio-economy. Often, goals and objectives are overlapping such as building scientific communities, establishing a higher R&D&I level at enterprises, avoiding fragmentation, etc. Moreover, the framework in which these types of initiatives are operating is changing. New formats (i.e. ERA-NET Cofunds), globalisation, less funding budget from the EC and more time pressure are all factors that affect their way of working. Hence, one of the ERA-MBT aims was to search for collaboration opportunities, joint actions, and aligned activities.

ERA-MBT WORKSHOP ON COLLABORATION OPPORTUNITIES

One of the tasks designed to reach this aim was to link the activities of ERA-MBT with national, European and international activities and to reduce fragmentation of research efforts in marine biotechnology via better coordination and cooperation between relevant players.

To this end, the Marine Biotechnology ERA-NET organized a workshop to which related initiatives and research programmes were invited. Eighteen participants from eleven different initiatives participated in the workshop. The objective was, by means of interactive and iterative discussions, to identify at least one concrete action for collaboration.

This resulted in a long list of actions developed in the brain storming, from which 4 big themes were selected:

1. Capacity building - Tech Transfer - Knowledge Transfer
2. Consultation of stakeholders - strategic input
3. Scientific conferences - showcases
4. Harmonisation - joint timelines

For each of the themes a concrete action was defined, with specific timelines. The implementation of the actions were the responsibility of the members of each group.

ERA-MBT WORKSHOP
Collaboration opportunities
8th and 9th September 2015, Berlin, Germany

Participants at the ERA-MBT workshop on collaboration opportunities in Berlin.

SESSIONS	ACHIEVEMENTS	PARTICIPATION/OUTPUT
• I: Presentation of participants • II: Identification of potential actions for collaboration • III: Concretisation of actions for collaboration.	• Representatives of 13 networks and projects were present at the meeting (ERA-MBT, ERA-PLATFORM, ERA-NET SUSFOOD, FACCE SURPLUS, ERA-SysAPP, IraSME, JPI Oceans, EMBRIC, FACCE JPI, ERA-Bioenergy, ERASynBio, ERA-ib2, EEN). • 4 concrete collaborative actions with an accompanying action plan were developed	• 18 participants • News report • Public report[13] • Photo gallery

[13] Outlining opportunities for collaboration with other initiatives, 2016. Marine Biotechnology ERA-NET. http://www.marinebiotech.eu/outreach-material

CONTRIBUTION TO EXTERNAL EVENTS

Throughout the course of the ERA-MBT project, several opportunities were seized to present the ERA-MBT achievements at international events and workshops in the area of marine biotechnology. Exchanging information at those events was a good chance to raise awareness of the importance of marine biotechnology as an enabling tool to achieve knowledge, innovations and understanding of how this can contribute to sustainable solutions to societal challenges.

The variety of events where participation of ERA-MBT was requested illustrates the broad impact biotechnology can have in many scientific areas and for a variety of stakeholders.

ERA-MBT participation at external events

EVENT	PLACE, DATE	INVOLVEMENT
• 2nd JPI Oceans conference	• Lisbon, 26 October 2017	• RCN
• Platform annual event 2017	• Rome, 5-6 October 2017	• CNR
• EMBRIC 2nd general assembly	• Faro, 11-13 September 2017	• RCN
• 9th Rendez-vous de Concarneau	• Brittany, 25-26 September 2017	• RCN
• PharmaSea final conference	• Granada, 13-14 March 2017	• RCN
• Bioprosp_17 Conference	• Tromsø, 8-10 March 2017	• RCN
• Functional Annotation of salmonid genomes (FAASG) meeting	• San Diego, January 2017	• RCN
• COFASP Policy Day	• Brussels, 10 January 2017	• RCN
• COFASP Final Conference	• Kiel, 7-9 December	• RCN
• Baltic Blue Biotechnology Alliance Matchmaking event	• Helsinki, 26-27 October 2016	• RCN
• 8th Rendez-vous de Concarneau	• Concarneau, 29-30 September 2016	• RCN
• Workshop BRAAVOO project	• Messina, 19-20 May 2016	• CNR
• The Salmonid Genome Project	• Toronto, April 2016	• RCN
• European Roadmap for an algae-based industry	• Algarve, 6-8 April 2016	• RCN
• Bioeconomy Investment summit	• Brussels, 9-10 November	• RCN, DASTI, VLIZ
• MICRO B3 Final Conference	• Brussels, 2-5 November 2015	• DASTI
• 7th Rendez-vous de Concarneau	• Concarneau, 15-16 October 2015	• IFD
• ERA-Platfrom meeting	• Riga, 2-3 September 2015	• IFD
• Bioprosp_15 Conference	• Tromsø, 18-20 February 2015	• RCN
• 6th Rendez-vous de Concarneau	Concarneau, 9-10 October 2014	• CNRS, CNR
• International Biotech Fair	• Hannover, 7-10 October 2014	• Juelich
• IFIB Italian Forum for Italian Biotechnology	• Genoa, 25-26 September 2014	• CNRS
• Annual Algae Table/	• Köthen, 3-4 June 2014	• Juelich
• National Conference Oil-Spill	• Messina, 27 May 2014	• CNR
German Biotechnology Days 2014	• Hamburg, 9-10 April	• Juelich

The reports of these exchanges can be read in news items on the ERA-MBT news pages and in the ERA-MBT newsletters.

ENHANCEMENT OF PUBLIC AWARENESS AND ACCESSIBILITY OF INFORMATION IN THE FIELD OF MARINE BIOTECHNOLOGY

AN ONLINE AND OPEN-ACCESS PORTAL

The ERA-MBT website: www.marinebiotech.eu has been the main source of information for all consortium members and stakeholders. It served as the key communication tool to raise the awareness of ERA-MBT and its activities. It includes the project description and a description of activities, partner information, current news and events, projects selected for funding through joint transnational calls etc. It also served as a source of information on the CSA MarineBiotech, as the basis for all ERA-MBT activities.

An important part of the website is the RESOURCES subpage, which aims at disseminating general information about marine biotechnology in Europe. It includes:

- the Infopages created within the coastal and marine Wiki: 'an Internet encyclopedia providing up-to-date high quality information for and by coastal and marine professionals', allow users to collaboratively create, edit, link, and organize information on marine biotechnology, with the goal to improve the understanding of marine biotechnology research tools, technologies and application areas.
- the Integrated Marine Information System (IMIS) database as an Information Management System put in place to offer access to information about Marine Biotechnology stakeholders (persons and institutions) and projects in Europe and beyond.
- a library of most important resources, containing publications from external sources and those related to the CSA and ERA-NET in Marine Biotechnology.

The website is well positioned on Google search, coming up as the third hit under the search inquiry marine biotechnology and as the first hit under the inquiry marine biotech (January 2018).

SOCIAL MEDIA

An ERA-MBT communication forum was established with the aim to provide an intellectually attractive environment for young scientists and a discussion forum for all to respond rapidly to societal needs, policy issues and opportunities for collaboration in international research programmes.

A Linked In communication group has been set up in January 2014 to support exchanges between students, academics, the industry, policy makers, national funding agencies and other stakeholders to highlight opportunities for interlinkage and collaboration. A job section allowed the enhancement of opportunities for career development in different fields. 262 members were recorded upon the end of the ERA-MBT project.

A twitter account was developed in November 2014. Through the ERA-MarineBiotech twitter account @ERA_MBT, all activities of this 'consortium of national funding agencies undertaking joint funding of transnational projects in the area of marine biotechnology' could be promoted. Other marine biotech related news could be retweeted and followed. All partners could use the Twitter account to announce news on national activities or achievements. ERA-MBT had 210 followers upon the end of the project.

Stakeholders linked to both social media accounts will be referred to the Blue Bioeconomy Cofund project to continue following up the marine biotech related activities in Europe in the future.

MOBILIZATION OF COMPETITIVE FUNDS FOR RESEARCH THROUGH JOINT CALLS

ERA-MBT CALLS

CALL 1
The development of biorefinery processes for marine bioresources

TIMELINE	CALL DOCUMENTS	OUTPUT
• 10 December 2014: 37 Pre-proposals • 30 April 2015: 23 Full proposals • July 2015: Funding decision	• Call text • Guidelines for Applicants • Call brochure	• Web page • News article • Project factsheets

Funded projects

PROJECT ACRONYM	PROJECT NAME	DURATION (MONTHS)	COORDI-NATING COUNTRY	REQUESTED FUNDING (€)	FUNDED BY
NEPTUNA	Novel Extraction Processes for mulTiple high-value compoUNds from selected Algal source materials	24	IE	759,976	BE-FWO, IE-MI, NO-RCN
SeaRefinary	The Seaweed Biorefinery – for high value added products	36	DK	1,406,156	BE-IWT, DK-IFD, IS-RANNIS, IE-MI, NO-IN
MARBioFEED	Enhanced biorefining methods for the production of marine biotoxins and microalgae fish feed	36	IE	615,000	NO-RCN, ES-MINECO, IE-MI
ThermoFactories	Thermophilic cell factories for efficient conversion of brown algae biomass to high-value chemicals	36	NO	1,946,559	DK-IFD, IS-RANNIS, NO-RCN, PT-FCT, SE-FORMAS
MicroMBT	Discovery and training of microbial biocatalysts for biomass conversion using moving bed technology (MBT)	36	NO	1,503,285	NO-RCN, PT_FCT, SE-FORMAS
Mar3Bio	Biorefinery and biotechnological exploitation of marine biomasses	36	NO	2 ,180,424	NO-RCN, NO-IN, SI-MIZS, SE-

CALL 2
Bioactive molecules from the marine environment – Biodiscovery

TIMELINE	CALL DOCUMENTS	OUTPUT
• 16 March 2016: 41 Full proposals • September 2016: Funding decisions	• Call text • Guidelines for Applicants • Call brochure	• Web page • News article • Project factsheets

Funded projects

PROJECT ACRONYM	PROJECT NAME	DURATION (MONTHS)	COORDI-NATING COUNTRY	REQUESTED FUNDING (€)	FUNDED BY
BlueShell	Exploring Shellfish By-products as sources of Blue Bioactivities	36	BE	1,152,000	BE-FWO, SE-FORMAS, IT-MIPAAF, NO-RCN, IE-MI
BLUETEETH	Marine Origin Biopolymers as Innovative Building Blocks from the Sea for the Development of Bioresorbable Multilayered Membranes for Guided Bone Regeneration	36	PT	797,000	PT-FCT, IS-RANNIS, NO-IN
CYANOBESITY	Cyanobacteria as a source of bioactive compounds with effects on obesity and obesity-related co-morbidities	36	PT	1,289,000	PT-FCT, SE-FORMAS, DE-BMBF/PtJ, IS-RANNIS
MARPLAST	Marine microorganisms for bioplastics production	36	NO	1,261,000	NO-RCN, SE-FORMAS, RO-UEFISCDI
Novofeed	Novel feed ingredients from sustainable sources	36	NO	1,283,000	NO-RCN, BE-FWO, IT-MIPAAF, IS-RANNIS

CALL 3
Metagenomic approaches for valorization from the marine environment

TIMELINE	CALL DOCUMENTS	OUTPUT
• 7 March 2017: 16 Full proposals • July 2017: Funding decision	• Call text • Guidelines for Applicants • Call brochure	• Web page • News article • Project factsheets

Funded projects

PROJECT ACRONYM	PROJECT NAME	DURATION (MONTHS)	COORDI-NATING COUNTRY	REQUESTED FUNDING (€)	FUNDED BY
DIVE-IT	Droplet In-Vitro transcription/translation Enzyme IdenTification	36	DE	1,032,000	DE-BMBF/PtJ, CA-Genome BC, ES-MINECO
MarBioTech	Advanced Marine Biotechnology toolbox for accessing the uncultivated marine microbial biodiversity and its novel biomolecules	36	DE	1,515,000	DE-BMBF/PtJ, NO-RCN, CA-Genome BC, NO-IN
META-MINE	Mining the microbiomes from marine wood-digesting bivalves for novel lignocellulose depolymerizing enzymes	36	NO	1,711.000	NO-RCN, DE-BMBF/PtJ, RO-UEFISCDI, FRCT-SRMCT-GRA-PO
ProBone	New tools for prospecting the marine bone-degrading microbiome for new enzymes	36	NO	940,000	NO-RCN, ES-MINECO, DE-BMBF/PtJ, RO-UEFISCDI
PROMiSE	Protist Metabolome Screening	36	DE	1,074,000	DE-BMBF/PtJ, ES-MINECO, CA-Genome BC

JOINT CALLS WITH OTHER INITIATIVES

One of the tasks foreseen within ERA-MBT activities was the exploration of the possibility of launching a 4th call with other initiatives, with the intention to build fruitful cooperation between "sister" initiatives. Considering this goal, two actions were implemented. One in collaboration with ERA-IB-2 (Industrial Biotechnology) and another with COFASP (Cooperation in Fisheries, Aquaculture and Sea food Processing).

In November 2015, six of the ERA-MBT partners (IWT, FCT, UEFISCDI, RCN, IFD and MINECO) joined the ERA-IB-2 7th call launched under the topic: "Industrial Biotechnology for Europe: an integrated approach." This topic foresees the utilization of biomass for the development of innovative and industry relevant Industrial Biotechnology projects. The inclusion of ERA-MBT participation highlights the possibility for the utilization of marine biomass, as a valuable alternative source for academia and industries to apply the biotechnology toolbox. Out of the **37 full proposals** accepted for evaluation, three projects utilized marine biomass, namely the projects with the acronyms: VALORIZE, Fish for Future and HABVAL, however none of these projects were funded.

In March 2016, two of the ERA-MBT partners (RCN and RANNIS) joined the 3rd call of ERA-NET COFASP, which was launched in selected topics within the areas cross boarding the two ERA-NETs, where new biotechnological approaches and developments have the potential to enable new and innovative developments within the fisheries, aquaculture and seafood processing sectors covered by COFASP. Applications were required to demonstrate a significant biotechnology component, using elements of the marine biotechnology "toolbox" with a clear potential to promote innovative solutions for the three COFASP main areas. Out of **12 eligible full proposals** accepted for evaluation, 5 projects could be funded. All of them include a relevant element of biotechnology, as required.

JOINT CALL IB2		
TIMELINE	CALL DOCUMENTS	OUTPUT
• 1 February 2016: 37 Full proposals • May 2016: Funding decision	• Call text • Guidelines for Applicants	• ERA-MBT webpage • IB2 webpage
JOINT CALL COFAP		
TIMELINE	CALL DOCUMENTS	OUTPUT
• 22 April 2016: 12 Full proposals • October 2017: Funding decision	• Call text • Guidelines for Applicants	• ERA-MBT webpage • COFASP webpage • Project factsheets

CONSOLIDATION AND EXPANSION OF THE NETWORK OF MARINE RESEARCH FUNDING ORGANISATIONS

ERA-MBT has in cooperation with the recently ended ERA-net on fisheries, aquaculture and seafood processing (COFASP) and JPI Oceans worked with the EU-COM to take up the legacy from the two ERA-NETs with a strong link to the activities in JPI Oceans. The objective is to valorise aquatic bioresources to create jobs, provide food, feed and bio-based products, and pave the way for a sustainable and competitive European blue bioeconomy. These efforts have resulted in a call for a Cofund ERA-NET in the work programme 2018 – 2020 (BG-02-2018).

29 partners from 17 countries including new member states, associated countries and countries outside Europe have provided indicative commitment of more than €20 million with the ambition to launch additional calls. A contribution of €8 million from EC is envisaged and additional interests expressed by international partners will be followed up.

This Cofund engages relevant funding agencies in the aquatic field to implement a co-funded call focusing on Blue Knowledge and technological developments to respond to needs and gaps for R&I. The Cofund will create critical mass along the value chains from biomass to products and markets. It will apply the '3R principle' of Reducing, Reusing and Recycling to achieve a circular economy. Innovative, sustainable and climate-friendly utilisation of aquatic biomass at different trophic levels will be explored, as well as sustainable harvesting, and novel aquaculture production systems targeting a range of markets. Biotechnology makes it possible to target new genetic resources and biomolecules, and utilise close to 100 % of the available biomass in new, integrated biorefineries.

The ERA-NET Cofund will address gaps such as: developing innovative uses of underutilised and waste material from fisheries and aquaculture to achieve zero waste; using biotechnology and ICT to develop smart, efficient, traceable food systems and create synergies between aquaculture and fisheries (genetic assessment); unlock the potential of microbiomes in aquaculture, fisheries, food processing and biotechnology; apply the latest developments in ICT to the Blue Bioeconomy; creating predictive tools to improve the identification and targeting of biodiversity "hot-spots" in the oceans (omics based technologies); explore synergies with land-based production in areas such as food and feed processing, biorefining, bioenergy, biomaterials, chemicals and nutrients and include waste streams from aquatic to terrestrial value chains; improving aquaculture and fisheries by using biotechnology to create innovative feeds, improve brood stock, introduce new species, define stock baselines, and assess stocks.

The Cofund will contribute to the creation of new knowledge driven industries and jobs in rural and coastal areas and sustainable Blue Growth for future generations. It will provide consumers with the knowledge needed to make informed decisions about safe, healthy and sustainable food and policy makers with robust scientific advice. Involvement of the users from the outset will secure the market and social relevance and update of outcomes. The Cofund will undertake additional activities and calls to strengthen impact through capacity building and mobility, networking, foresight/case and pilot studies, and use of European and national infrastructures thereby enhancing the leveraging effect of the EU investments in the partnership.

APPENDICES

APPENDIX 1: LIST OF PUBLIC ERA-MBT PUBLICATIONS

- A Vision for ERA-MBT, 2014. Marine Biotechnology ERA-NET.
  Online access
- Membership of the International Advisory Board (IAG), 2014. Marine Biotechnology ERA-NET.
  Online access
- Definition of Marine biotechnology as a subset of biotechnology in general, 2014. Marine Biotechnology ERA-NET.
  Online access
- Report on ERA-MBT Open Stakeholder Consultation, 2015. Marine Biotechnology ERA-NET.
  Online access
- First Marine Biotechnology Stakeholder meeting report, 2015. Marine Biotechnology ERA-NET.
  Online access
- Updated mapping of the MBT environments, 2015. Marine Biotechnology ERA-NET.
  Online access
- Update of relevant regional, national and European initiatives and list of research projects, 2015. Marine Biotechnology ERA-NET.
  Online access
- Map of Tech-Transfer Practice and Policy, 2015. Marine Biotechnology ERA-NET.
  Online access
- Industry needs for new legislation for IPR/IPP, 2015. Marine Biotechnology ERA-NET.
  Online access
- Update global priority list of relevant international initiatives, 2015. Marine Biotechnology ERA-NET.
  Online access
- Funding schemes and mapping of marine biotechnology financing, 2015. Marine Biotechnology ERA-NET.
  Online access
- Marine Biotechnology and utilization of Marine Bioresources: Mapping existing training/education and gap analysis, 2015. Marine Biotechnology ERA-NET.
  Online access
- Mapping of National Research and Policy Priorities on Marine Biotechnology of the ERA-MBT Partner Countries, 2016. Marine Biotechnology ERA-NET.
  Online access
- Marine Biotechnology Research Projects funded for Blue Growth under Horizon 2020, 2016. Marine Biotechnology ERA-NET.
  Online access

- Outlining opportunities for collaboration with other initiatives, 2016. Marine Biotechnology ERA-NET.
  Online access
- ERA-MBT Foresight report, 2016. Marine Biotechnology ERA-NET.
  Online access
- The Marine Biotechnology Strategic Research and Innovation Roadmap, 2016. Marine Biotechnology ERA-NET.
  Online access
- Second ERA-MBT Stakeholder meeting report, 2016. Marine Biotechnology ERA-NET.
  Online access
- Addendum to the ERA-MBT Marine Biotechnology Research and Innovation Roadmap, 2017. Marine Biotechnology ERA-NET.
  Online access
- Report on status seminar, 2017. Marine Biotechnology ERA-NET.
  Online access
- Scoping industrial needs for sustainable development, 2017. Marine Biotechnology ERA-NET.
  Online access
- Final Conference report, 2017. Marine Biotechnology ERA-NET.
  Online access
- Report on European policy and activities in biotechnology, 2017. Marine Biotechnology ERA-NET.
  Online access
- New funding tools, 2017. Marine Biotechnology ERA-NET.
  Online access
- Self sustainable network founded, 2017. Marine Biotechnology ERA-NET.
  Online access
- Preferred mechanism for bringing ideas to market, 2017. Marine Biotechnology ERA-NET.
  Online access
- Final dissemination report, 2017. Marine Biotechnology ERA-NET.
  Online access