PLASMAR

Bases para la planificación sostenible de áreas marinas en la Macaronesia

DELIVERABLE 2.1.1B3 - TECHNICAL REPORT ON IMPLEMENTATION OF THE ENVIRONMENTAL LEGISLATION IN THE MACARONESIAN REGION – REPORT FOR THE MADEIRA SUBDIVISION

PEDRO SEPÚLVEDA, VÍTOR JORGE, ISABEL LOPES & MANUEL ARA OLIVEIRA

Região Autónoma da Madeira
Secretaria Regional do Ambiente e Recursos Naturais

PROYECTO COFINANCIADO POR LA UNIÓN EUROPEA
Investigación e Innovación

MAC 2014-2020
Cooperación Territorial

Interreg

www.plasmar.eu

To cite this report:

Sepúlveda, P.; Jorge, V.; Lopes, I & Oliveira, M.A. 2018. DELIVERABLE 2.1.1B3 – TECHNICAL REPORT ON IMPLEMENTATION OF THE ENVIRONMENTAL LEGISLATION IN THE MACARONESIAN REGION – REPORT FOR THE MADEIRA SUBDIVISION. DROTA – Direção Regional de Ordenamento do Território e Ambi*ente*. Report prepared as part of PLASMAR Project (co-financed by ERDF as part of POMAC 2014-2020). *36*pp.

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I. INTRODUCTION

1 Marine Strategy Framework Directive

This study lists the requirements of the EU environmental directives that apply on marine and coastal areas and presents the current state of play of the implementation, including the actions that have been applied for the Madeira Archipelago. It is necessary to understand what is already done due the implementation of the environmental policies, so it can be considered and potentially reused in the Maritime Spatial Planning process.

The present report is focused on the implementation of the Marine Strategy Framework Directive 2008/56/EC (MSFD), European legal instrument on Integrated Marine Management, as the Directive requirements overlap with the European environmental legislation that partially applies to the sea.

Regarding the accessibility, REPORTNET portal (Reporting Document Repository and an Integrating Part of the European Environment Information and Observation Network) was chosen as a main tool and information source point. REPORTNET hosts data and information reported during the first cycle (2010 – 2018) of the MSFD implementation process.

To examine MSFD implementation state of the play REPORTNET was accessed during September 2017 – January 2018.

II. Competent authority

2 MSFD report on Marine Subregion - competent authority

Portugal decided that the implementation of MSFD would been done by subdividing its territory in four areas:

1. *Subdivision Açores;*
2. *Subdivision Madeira;*
3. *Subdivision Plataforma Continental Estendida;*
4. *Subdivision Continente*

For the Madeira subdivision, the responsibility was given to the Regional Government, though the Regional Secretariat for the Environment and Natural Resources (SRA).

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do Território e Ambiente

III. Initial Assessments, Good Environmental Status, Environmental targets & associated indicators, geographic areas, regional cooperation and metadata

3 MSFD reporting on Initial Assessments (Art. 8), Good Environmental Status (Art.9), Env. targets & associated indicators (Art.10) & related reporting on geographic areas, regional cooperation and metadata

The Initial Assessment was coordinated by the Regional Directorate for Territorial Ordering and Environment (DROTA). In this process were involved regional entities (ex: Parque Natural da Madeira, Direção Regional de Florestas[1], Direção Regional das Pescas, Estação de Biologia Marinha, Museu Municipal do Funchal, Museu da Baleia, Universidade da Madeira, etc.) and several other investigators, to contribute with information from previous works, bibliography of interest, to give their best judgement for the assessment or to contribute with ideas for the design of the Monitoring Programs and Programs of Measures.

The report for Portugal was delivered in early 2015, combining data for 2014, and for this period was required to make an initial assessment, to determine a set of characteristics for good environmental status and establish a comprehensive set of environmental targets and associated indicators for their marine waters to guide towards achieving good environmental status in the marine environment taking into account the indicative lists of pressures and impacts and characteristics. Additionally, it was required to each MS to define area of the competence where MSFD would be implemented.

3.1 Geographical data and regional cooperation_MSFD4Geo

Portugal will implement MSFD in the Exclusive Economic Zone established in Atlantic Sea. Formal subdivision:

1. Subdivision Açores;
2. Subdivision Madeira;
3. Subdivision Plataforma Continental Estendida;
4. Subdivision Continente.

The first envelope with spatial data was provided in January 2015. Envelope includes shp. files, and is available at:

http://cdr.eionet.europa.eu/pt/eu/msfd8910/msfd4geo/envvk__ea/

Spatial data provided only includes the territorial sea, exclusive economic zones and continental shelf.

3.2 Metadata on data & assessment by 2014

There were no metadata reported.

[1] Nowadays IFCN- IP-RAM (Instituto de Florestas e Conservação da Natureza)

3.3 National text-based paper report: Art 8, 9 & 10

Initial assessment, GES (Good Environmental Status), environmental targets and associated indicators were subdivided into 4 regions (Madeira, Azores, Continente and Plataforma Continental Estendida) and delivered as a single pdf file, which facilitates the access. The report for the Madeira subdivision is available at:

http://cdr.eionet.europa.eu/pt/eu/msfd8910/msfd4text/envvk_56g/MSFD_Madeirasubdivision_Art_8_9_10

3.3.1 Framework and Strategy

The strategy for the Madeira subdivision will be based in three major domains: location, heritage and knowledge.

As for the location, it must be highlighted its Atlantic dimension and its centrality in the Macaronesian sub-region. Regarding its immense water, geological and biological heritage, highlights its biodiversity, its geodiversity, and the size and extent of its water bodies and seabed. And as far as the domain "knowledge" is concerned, it emphasizes not only the value that knowledge contained in itself but also its function enhancing the values associated with the location and heritage of the subdivision.

In this way it is intended to know, quantify and qualify the waters of the subdivision, their environmental state, and to highlight their role as an important component of the ocean currents, and as a guarantee of the ecosystem continuum. Also, to highlight the role of its biodiversity at regional, Atlantic and global scale, highlighting the oceanographic and ecological relevance of its water bodies and deep environments, its archipelagic seas and seamounts. Ensure an ecosystem approach to protecting and preserving the marine environment, preventing its deterioration, and promoting the sustainability of its functions and uses. The diagram below shows a schematic view of the domains, and their relationship, selected to design the marine strategy for the subdivision of Madeira.

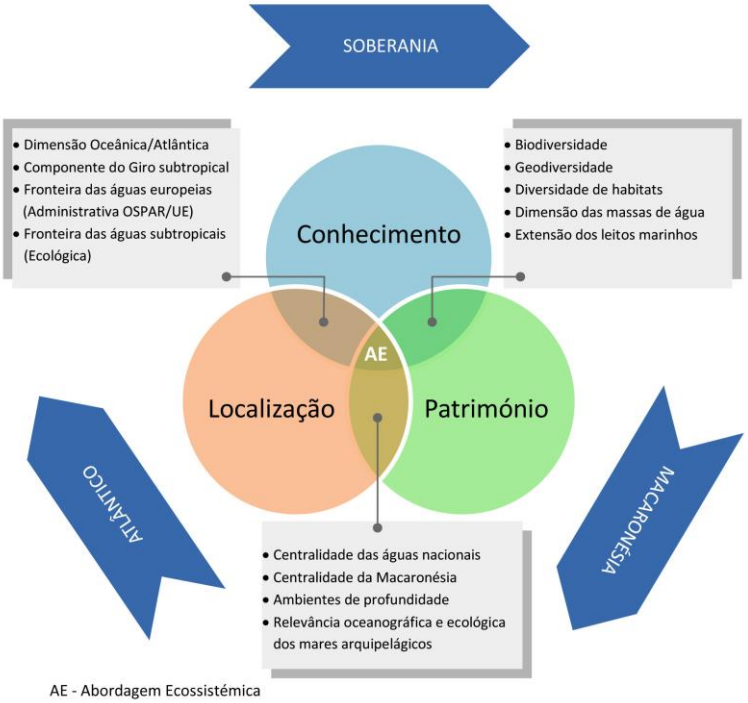


Figure 1 – The Madeira Archipelago, the ecosystem approach and its relation with the 3 main domains (knowledge, location and natural heritage).

Following are the objectives for the subdivision that correspond generally to the objectives of the MSFD itself. Some opportunities associated with each of the three domains have also been listed.

Objectives

- To protect and preserve the marine environment, stopping its deterioration or, whenever possible, to restore affected areas in the marine ecosystems.

- To prevent and reduce the entrants into the marine environment to eliminate pollution, as defined in Article 3 (n.8), in order to ensure that there are no impacts or significant risks to marine biodiversity, marine ecosystems, human health or for the legitimate uses of the sea.

Opportunities

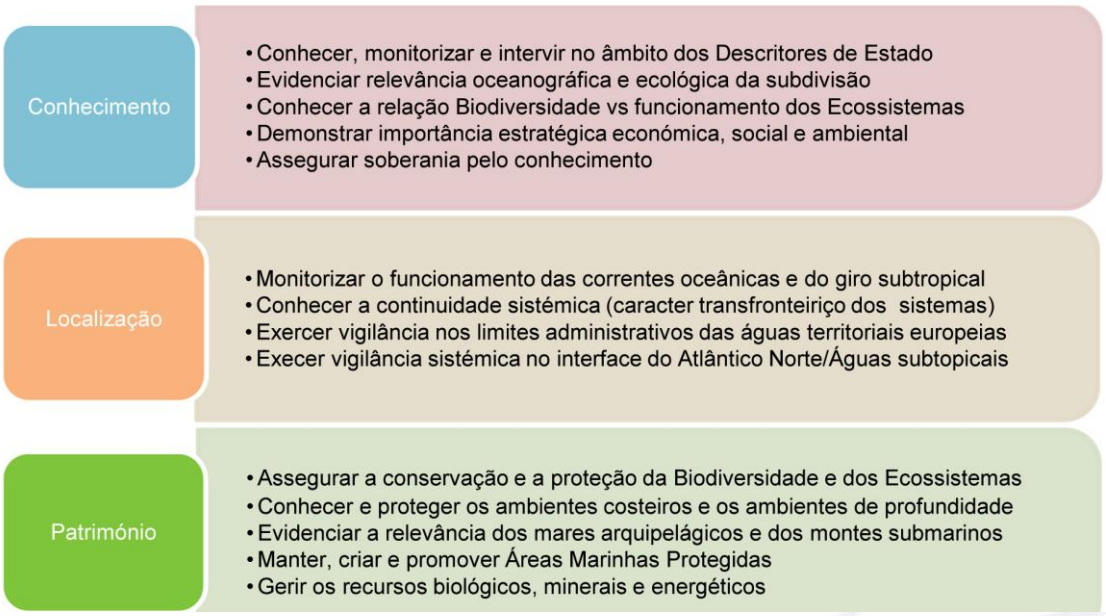


Figure 2 – Main identified opportunities within the 3 main domains

Analysing the report for the Madeira subdivision environmental targets we identified the relevancy of not only both objectives, but also of the following opportunities for the PLASMAR project and MSP process:

1) Within the first set of opportunities – knowledge:
   a) To know, monitor and intervene in the scope of GES Descriptors;
   b) To evidence the oceanographic and ecological relevance of the subdivision;
   c) To know the relation between biodiversity and ecosystem functioning;
   d) To demonstrate the economic, social and environmental strategic importance;

2) Within the second set of opportunities – location:
   a) To know the ecosystem continuity (transboundary character of the systems);

3) Within the third set of opportunities – heritage:

a) To ensure the conservation and protection of Biodiversity and Ecosystems;
b) To know and protect the coastal and depth environments;
c) To evidence the relevance of the archipelagic seas an seamounts;
d) To maintain, create and promote MPA's;
e) To manage the biological, mineral and energetic resources.

As the report was delivered in 2015, it should be examined what is the current state of art to obtain the proposed objectives, and what has been done towards taking advantage of the opportunities, particularly the ones that were identified:

- Include analysis objectives VS results, what is overlapped with PLASMAR and what will be done in the PLASMAR framework
- MPAs updated from NATURA 2000 reporting

3.3.2 Delimitation of the Madeira subdivision

In this chapter of the report it is presented the delimitation of the Madeira subdivision, which is part of the MSFD Macaronesian sub-region.

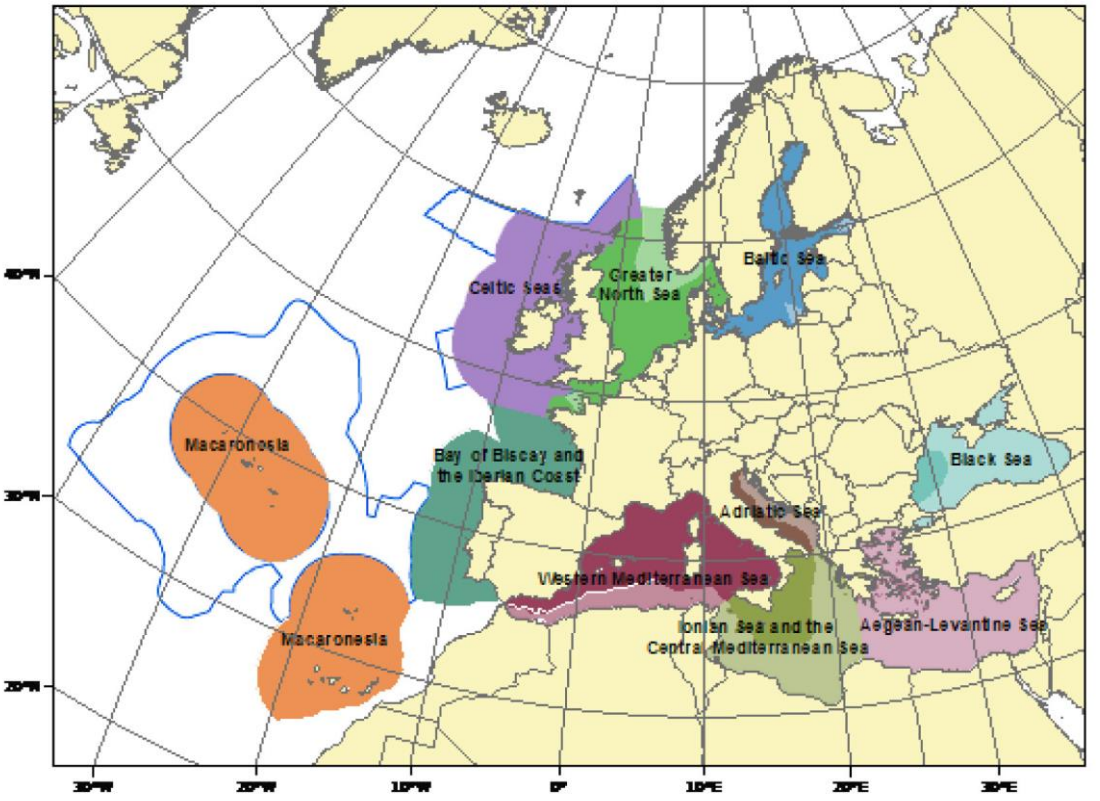


Figure 3 – MSFD sub region delimitation. The blue line corresponds to the Extended Continental Shelf claims.

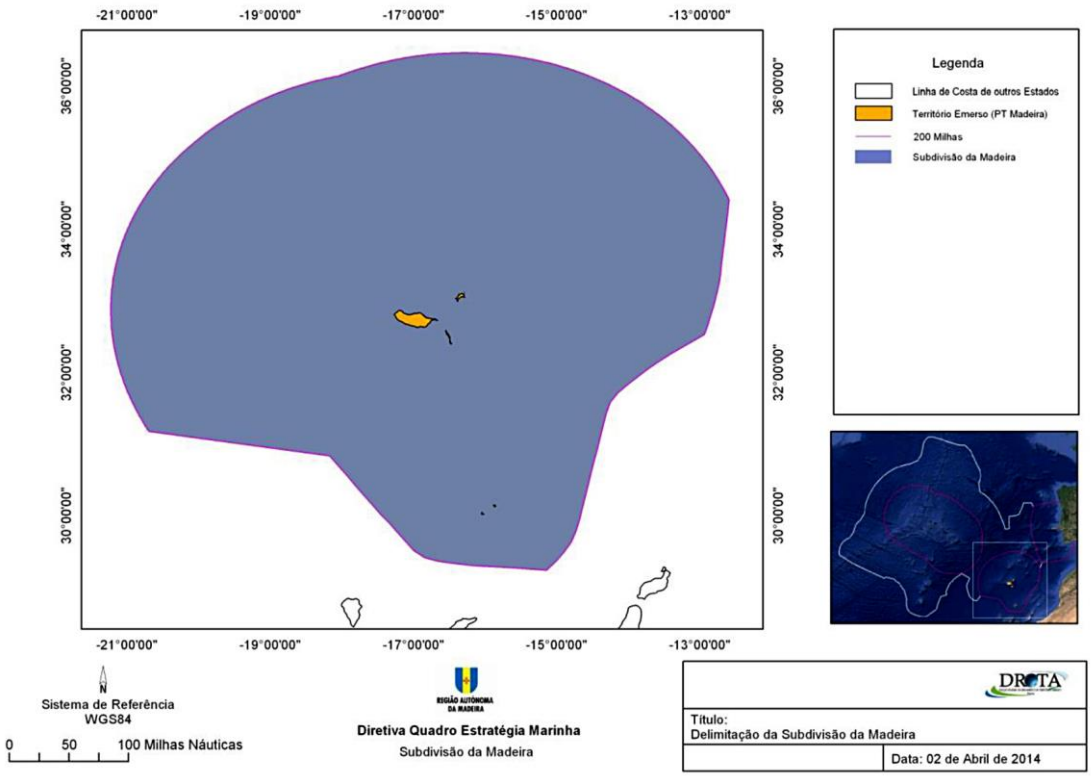


Figure 4 – The delimitation of the Subdivision Madeira

It is also presented the current MPA's designated areas, including the legal framework (regional, national, European and international) used in the classification, and also potential MPA's, like seamounts or important areas for cetacean species.

Figure 5 – Identification of the MPA's in Madeira Autonomous Region

Information of special interest for the project PLASMAR:

- Description of main habitats and species;
- Cartography (just maps, not shapefiles) and type of habitats protection.

3.3.3 Characterization of the Madeira subdivision

This chapter includes three sub-chapters: 1) an evaluation of the state of physic and chemical characteristics, including topography & bathymetry, oceanographic characterization, primary productivity, nutrients and acidification; 2) biological diversity characterization, including species (littoral and pelagic fish, marine mammals, marine reptiles and marine birds), habitats (predominant, classified or protected) and ecosystems and; 3) trophic chains.

Information on special interest for the project PLASMAR:

- Sources of the environmental data, information and products.
- Description of main species groups relevant for the archipelago;

3.3.4 Main Pressures and Impacts

This chapter presents an analysis of the main pressures and impacts on the environmental status of the marine waters as a result of human activities, and is organized according to the impacts and pressures listed in the table 2 of annex III of the MSFD, namely losses and physical damages, underwater noise, marine litter, interference in hydrological process, hazardous substances contamination, nutrient and organic enrichment, non-indigenous species, species selective extraction and pathogenic microbes.

In each sub-chapter the areas and methodologies of evaluation (including criteria and indicators) were identified and in most cases, the characterization of the situation at the time of the report.

Finally, this document includes analysis of overlaps and integration with other EU Directives that apply on the sea. This chapter and included analysis confirms our initial premise that we analyse exclusively MSFD as Integrated Marine Management, that includes actions related to whole EU environmental legislation that apply on the sea (Sea Figure x cake diagram).

Maps and data of interest for PLASMAR project presented in this chapter of the report:

- Tabela IV.10 Volumes de areia extraídos por zona (m^3) 2007-2013
- Tabela IV.11 Volumes parciais dragados nos portos da Região
- Tabela IV.12 COSTMADI2. Infraestruturas relevantes na massa de água costeira
- Figura IV.33 Distribuição dos lixos flutuantes conforme observado e registado durante as campanhas de mar para os censos náuticos no âmbito do projeto de conservação dos cetáceos no arquipélago da Madeira.
- Tabela IV.19 Número de estruturas de origem humana, por tipologia, existentes ao longo da costa da subdivisão da Madeira, caracterizadas por alteração hidrodinâmica de grau médio ou alto
- Tabela IV.20 Critérios de classificação por pressão
- Figura IV.37 Tipologias da categoria águas costeiras na subdivisão da Madeira (Fonte: Plano de Gestão da Região Hidrográfica – PGRH, 2014)

- Figura IV.38 Outras redes de monitorização de águas superficiais – Rede de monitorização das substâncias perigosas (Fonte: Plano de Gestão Hidrográfica – PGRH, 2014)
- Figura IV.49 Localização dos pontos de amostragem
- Tabela IV.32 Avaliação do estado inicial da área A1
- Tabela IV. 33 Espécies não indígenas marinhas registadas na área de avaliação da subdivisão da Região Autónoma da Madeira
- Figura IV – Conformidade das águas balneares costeiras da Região Autónoma da Madeira – DIR 2006/7/CE.

3.3.5 Social and economical analysis

This chapter is divided in three subchapters. In the first subchapter is presented a socio-economic analysis, subdivided in the several economic sectors that intervene in the marine environment, namely commercial fishing, fish processing industry, aquaculture, shipbuilding and repair, maritime transport, tourism, geological extraction, renewable energy, submarine cables and pipelines, gas storage, defence and educational and investigation activities, in the terms of economic benefit and generated impact for the Madeira archipelago.

Analysis, information and data can be used for drafting 2.1.1a and to provide more exact projection for maritime sectors in Madeira.

In the second subchapter is presented an analysis of the costs of the marine environment degradation, following the *cost-bases approach* methodology, which is based on the annual cost granted for its prevention.

The third and last subchapter is a short resume of the previous ones, followed by a brief proposal on the future actions that must be taken to grant a more exhaustive and comprehensive socio-economic analysis of the Blue Economy.

3.3.6 Quality Descriptors Assessment

In this chapter the evaluation on the GES of the marine waters of the Madeira subdivision is presented, made from the results of the characterization carried out in the previous chapter.

The evaluation is made by descriptor and for each evaluation area considered. Whenever the establishment of a reference level or the quantification of values for the indicator was not feasible, the evaluation was made by expert analysis. For each of the indicators considered, the GES (either accomplished or not) is accompanied by a degree of confidence (low, medium or high), reflecting the limitations encountered given the available information or the performed analysis.

Descriptor 1: Biodiversity

This sub-chapter defines what means “to maintain GES” in relation to the biodiversity. It is said that GES occurs whenever the biological diversity is maintained and the occurrence and quality of the habitats, as well as the distribution and abundance of the species are according with the geographic, climatic and physiographic conditions.

To evaluate the environmental status, the definition of biological diversity defined by the Convention on Biological Diversity was used and were considered only the species and habitats, since there is scarce or no information available regarding ecosystems.

The following table resumes the evaluation of GES and tendencies of the ecosystem components analysed:

Table 1 – Ecosystem components (species and habitats) tendencies, with confidence degree

Tabela V.2. Tendência para as componentes do ecossistema.

Componente do ecossistema		Tendência	Grau de confiança
Espécies	*Monachus monachus*	Crescente	Elevado
	Pterodroma deserta	Estável	Elevado
	Pterodroma madeira	Estável	Elevado
	Calonectris deomedea borealis	Crescente	Elevado
Habitats	Reserva Natural do Garajau	Estável	**Moderado**
	Reserva Natural das Ilhas Desertas	Estável	Elevado
	Reserva Natural da Rocha do Navio	Estável	Moderado
	Área Protegida dos Ilhéus do Porto Santo	Estável	Elevado
	ZPE / ZEC Ponta de São Lourenço	Estável	Moderado
	Reserva Natural das Ilhas Selvagens	Estável	Elevado

Table 2 – Environmental status evaluation for the ecosystem components (species and habitats)

Tabela V.3. Avaliação do Estado Ambiental das componentes do ecossistema da subdivisão.

Componente do Ecossistema		Estado Ambiental	Grau de Confiança
Espécies	*Monachus Monachus*	Bom Estado Ambiental	Elevado
	Globicephala macrorhynchus	Bom Estado Ambiental	Elevado
	Delphinus delphis	Bom Estado Ambiental	Elevado
	Stenella frontalis	Bom Estado Ambiental	Elevado
	Tursiops truncatus	Bom Estado Ambiental	Elevado
	Pterodroma deserta	Bom Estado Ambiental	Elevado
	Pterodroma madeira	Bom Estado Ambiental	Elevado
	Calonectris deomedea borealis	Bom Estado Ambiental	Elevado
Habitats	Reserva Natural do Garajau	Bom Estado Ambiental	**Moderado**
	Reserva Natural das Ilhas Desertas	Bom Estado Ambiental	Elevado
	Reserva Natural da Rocha do Navio	Bom Estado Ambiental	Moderado
	Área Protegida dos Ilhéus do P. Santo	Bom Estado Ambiental	Elevado
	ZPE / ZEC Ponta de São Lourenço	Bom Estado Ambiental	Moderado
	Reserva Natural das Ilhas Selvagens	Bom Estado Ambiental	Elevado

Descriptor 2: Non-indigenous species

This sub-chapter defines that GES, in relation to the non-indigenous species, is attained when the non-indigenous species introduced in the evaluation area by human activities, are at a level which does not cause negative changes in the species, communities, habitats or ecosystems.

On this evaluation it was considered that, at the time, there was no evidence of negative changes attributable to the non-indigenous species, on what regards to species, communities, habitats or ecosystems, so the GES was attained.

Even though, the confidence degree was considered low, given that the area evaluated was not exhaustive, there was insufficient data on the abundance of the species and there were several gaps about the magnitude of the distribution of the species, either temporarily or spatially.

No spatial data is presented, with relevance for the PLASMAR.

Descriptor 3: Populations of commercially exploited mollusc and fish species

This sub-chapter defines GES for the population of the commercially exploited fish and mollusc species, including all three criteria/indicators. It provides the combined list of the commercial species that represented a total of 97% of value created (landed) for Madeira in the period 2008-2012, and assessment for the species, where there is historical series of biological, abundance and/or exploitation level data.

Table 3 – GES evaluation per specie and criteria

Tabela V.9 Classificação do Bom Estado Ambiental por espécie e critério.

Nome científico	Nome vulgar	Área de avaliação	Critérios					
			3.1		3.2		3.3	
Peixes ósseos								
Aphanopus spp	Peixe-espada preto	CECAF34.1.2.						E
Thunnus obesus	Atum patudo	ICCAT (Atlântico)		M		M		
Katsuwonus pellamis	Gaiado	ICCAT (Atlântico oriental)		M		M		
Trachurus picturatus	Chicharro	CECAF34.1.2.		E				M
Scomber colias	Cavala	CECAF34.1.2.		E				M
Thunnus alalunga	Atum voador	ICCAT (Atlântico norte)		M		B		
Pagrus pagrus	Pargo	CECAF34.1.2.		B				M
Moluscos								
Patella candei	Lapa preta	CECAF34.1.2.		E				M

Additional maps and spatial data of interest for PLASMAR project:

- Figura V.2 Área de avaliação para o descritor 3 na subdivisão Madeira da ZEE Nacional;
- Figura V.3 Área de avaliação para o descritor 3, localizada nas divisões 1.2 e 2.0 da área de pesca CECAF 34 (Fonte: http://www.fao.org/fishery/area/Area34/en).

Descriptor 4: Food Webs

The criteria and indicators were established. However, given the lack of knowledge, temporal replication and the need to update the existing information, no evaluation was possible on the current environmental status of the food webs.

Descriptor 5: Anthropogenic Eutrophication

This sub-chapter is delivered including data & assessments done for the coastal waters in the scope of WFD implementation.

It concludes that, in both evaluated areas, the GES is attained, with a high degree of confidence for the coastal area and low degree of confidence for the offshore area.

Table 4 – Environmental Status Evaluation for the Descriptor 5.

Tabela V.13. Resumo da avaliação do Descritor 5 para a subdivisão da Madeira.

Área de avaliação	Estado Ambiental	Grau de confiança
A1	Bom Estado Ambiental Atingido	ELEVADO
A2	Bom Estado Ambiental Atingido	BAIXO

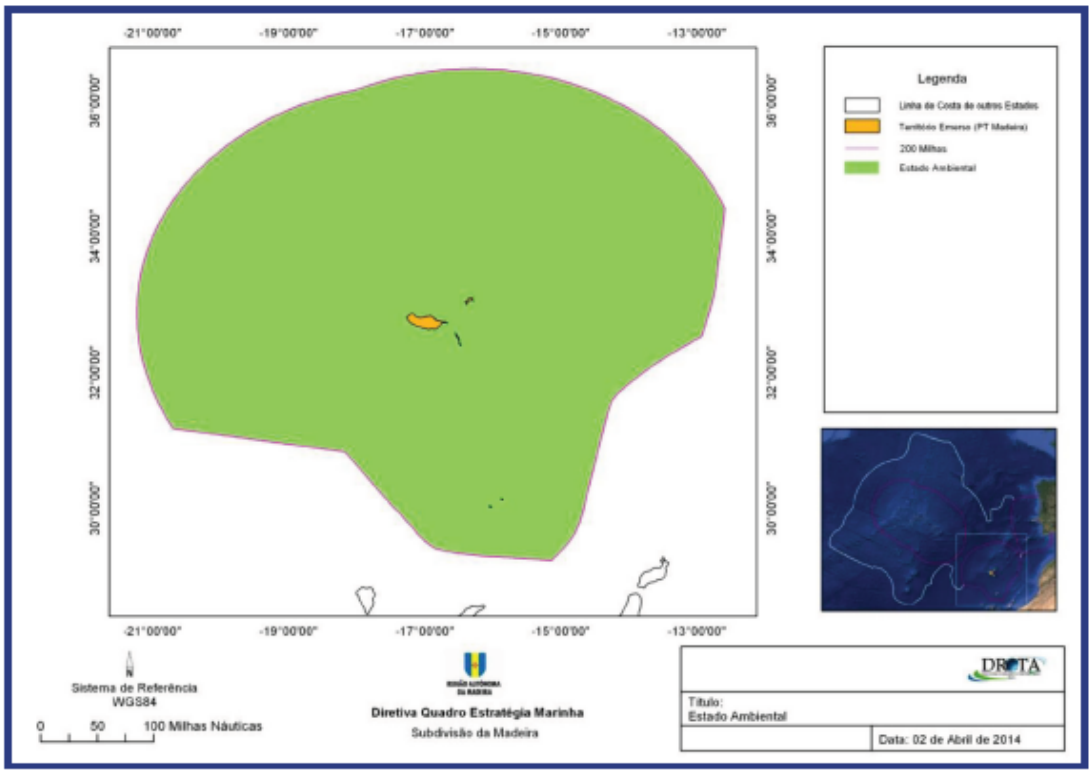


Imagem V.4 Mapa para o Descritor 5 com a classificação final da avaliação do estado ambiental na subdivisão da Madeira.

Descriptor 6: Seafloor integrity

This sub-chapter defines seafloor integrity descriptor, divided in two distinct areas: coastal and high-seas.

In the first area, the indicators regarding the quantification of physical damage in result of anthropic activities were considered and approached, but it was not possible to evaluate the impact that this pressure have on the seafloor, given that is not known the extension of seabed affected, mainly because of the inexistence of directed studies.

Table 5 – Environmental Status Evaluation for Costal Waters in the Descriptor 6.

Tabela V.14 - Estado Ambiental da Área de Avaliação "Águas Costeiras" da subdivisão.

Área Avaliação	Estado Ambiental	Grau de Confiança
COSTMADI1 e COSTMADI2	Indeterminado	-
COSPORI	Bom Estado Ambiental Atingido	BAIXO

In the high-seas area, no anthropogenic actions are known that result in permanent or temporarily changes in the seafloor integrity conditions. So, it is considered that is this area the GES is attained, but with a low degree of confidence, given the scarcity in the available data.

Table 6 – Environmental Status Evaluation for High-Seas in the Descriptor 6.

Tabela V.15 - Estado Ambiental da Área de Avaliação Alto-Mar da subdivisão.

Área Avaliação	Estado Ambiental	Grau de Confiança
Alto-Mar	Bom Estado Ambiental Atingido	BAIXO

Descriptor 7: Hydrographical Conditions

The initial evaluation respecting this descriptor was presented in the section Iv.2.5 of the document. In this sub-chapter is presented a short resume. Constructed structures, that can change in a permanent way the hydrographical conditions, like piers and docks, were analysed, as well as changes in temperature and salinity profile arising from thermic power plants and other similar cooling circuits or desalinization plants. Submarine cables and similar communication structures as well as offshore aquaculture facilities were also considered in this evaluation.

In the areas evaluated, and generically among all the Madeira subdivision, the GES is attained, with a medium degree of confidence.

Table 7 – Evaluation resume (criteria, area, environmental status and degree of confidence) for the descriptor 7.

Tabela V.16 Resumo da avaliação do Descritor 7 para a subdivisão da Madeira.

Critérios	Área de avaliação	Estado atual	EA	GC
7.1. Caracterização espacial das alterações permanentes	A	**Ausência de estruturas de grande dimensão**		M
	B	**Ausência de estruturas de grande dimensão**		M
7.2. Impacto das alterações hidrográficas permanentes	A	**Ausência de estruturas de grande dimensão**		M
	B	**Ausência de estruturas de grande dimensão**		M

EA – Estado Ambiental; GC – Grau de confiança (B – BAIXO, M – MÉDIO, E – ELEVADO)

Table 8 – Environmental Status Evaluation for Descriptor 7.

Tabela V.17 Avaliação do estado ambiental para o Descritor 7.

Área de avaliação	Estado Ambiental	Grau de confiança
A	Bom Estado Ambiental Atingido	MÉDIO
B	Bom Estado Ambiental Atingido	MÉDIO

Descriptor 8: Contaminants

This report states that the GES is achieved when the levels of contaminants concentrations do not originate pollution, which, in methodological terms, means that less than 10% of the total evaluated area is subject to impacts or threats to the ecosystem.

The evaluation process consisted in the use of the indicator related to the contaminant concentration in the water and biota, and the results are presented in the table 9 (next page).

As a result of this evaluation, all areas in the Madeira subdivision achieve the GES.

Table 9 – Evaluation resume (contaminants concentrations in the waters and biota)

Tabela V.18. Resumo da avaliação do Descritor 8 (Indicador 8.1.1 A concentração dos contaminantes acima referidos, medidos segundo a matriz aplicável (biota e águas), de modo a assegurar a comparabilidade destas medidas com as avaliações a título da Diretiva 2000/60/CE) para a subdivisão da Madeira (Fonte: SRA-DRAmb, 2006).

	Condições de referência		Caracterização do Estado Atual		
	Água (ng/L)	Biota (µg/g)	Água (µg/L)	Biota (µg/g)	Água (µg/L)
			Massa de Água COSTMADI2		Massa de Água COSTPORI
Cd	200	0,25; 0,50; 1,5; 2,5; 5,0*	<0.13**	1,22	<0.13**
Pb	7200	1,0; 2,0; 2,5; 5,0*	<2.0**	< ref.	<2.0**
Hg	50	2,5; 5,0*	<0.1**	< ref.	<0.1**
Ni	20000	9,5	<2.0**	< ref.	<2.0**
Cu	***	95	<10**	< ref.	<10**
Zn	***	1925	<10**	< ref.	<10**
Cr	***	***	<0.4**	1,8	<0.4**
As	***	***	1,6	1,0	1,2
Antraceno	100	***	<0.0002**	<0,016**	<0.0002**
PBDE47****	0,2	***	-	-	-
PBDE99****	0,2	***	-	-	-
PBDE100****	0,2	***	-	-	-
PBDE153****	0,2	***	-	-	-
PBDE154****	0,2	***	-	-	-
DDT	10	***	<0.004**	<0,001**	<0.004**
Fluoranteno	100 250	***	<0.0002**	<0,0025**	<0.0002**
Hexaclorobenzeno	10	***	<0.023**	<0,007**	<0.023**
Nonilfenol****	300	***	-	-	-
Pentaclorobenzeno	0,7	***	<48**	-	Não analisado
Fenantreno	***	***	<0,4**	<0,0015**	Não analisado
Benzo-a-pireno	50	10; 25; 30*	<0.0002**	<2,7**	<0.0002**
Benzo-a-antraceno	***	***	<0,3**	<0,0014**	Não analisado
Benzo-b-fluoranteno	30	***	<0.0001**	<0,0014**	<0.0001**
Benzo-k-fluoranteno		***	<0.0001**	<0,0012**	<0.0001**
Indeno	2	***	<0.0003**	<0,0031**	<0.0003**
Benzo-e-perileno	***	***	<0.0002**	<0,0028**	<0.0002**
TBT	0,2	***	<0,015**	-	<0,015**
CB52	***	0,83	<0,0036**	<0,0018**	Não analisado
CB101	***	0,016	<0,0035**	<0,0018**	Não analisado
CB118	***	0,0033	<0,0029**	<0,0020**	Não analisado
CB138****	***	0,398	-	-	-
CB153	***	16	<0,0029**	<0,0014**	Não analisado
CB189****	***	0,630	-	-	-

* Valores de ref. dependente da espécie de organismo marinho; ** Limite de deteção do equipamento;
*** Sem valor de referência estipulado na legislação em vigor; **** Parâmetro não analisado.

Descriptor 9: Contaminants in fish and seafood for human consumption

Based on the indicators defined for this descriptor, 21 species of fish and seafood were evaluated. The results are presented in the table below.

Table 10 – Evaluation resume (contaminants concentrations) in fish and seafood

Tabela V.18. Resumo da avaliação do Descritor 9: Critério 9.1. Níveis, número e frequência de contaminantes, indicadores 9.1.1 e 9.1.2; para a subdivisão Madeira.

Espécie	Contaminantes	Nível Regulamentar (mg/kg)	Caraterização do estado inicial	
			Indicador 9.1.1 Intervalo de valores encontrados (Indicador 9.1.2 Frequência %) (mg/kg)	
			Área de avaliação 1	Área de Avaliação 2
Aphanopus carbo	Hg	1		0,23 - 3,66 (Freq. 9)
Aphanopus carbo	Cd	0,05		0,01-0,05 (Freq. 3)
Beryx decadactylus	Hg	0,5		0,11 - 1,92 (Freq. 49)
Centrophorus squamosus	Hg	1		0,13 - 2,01 (Freq. 65)
Conger conger	Hg	0,5	0,12 - 1,47 (Freq. 41)	
Dentex gibbosus	Hg	0,5		0,03 - 0,93 (Freq. 3)
Epigonus telescopus	Hg	0,5		0,26 - 1,58 (Freq. 78)
Helicolenus dactylopterus	Hg	0,5		0,01 - 1,90 (Freq. 54)
Muraena helena	Hg	0,5	0,07 - 0,69 (Freq. 5)	
Pagellus bogaraveo	Hg	1	0,10 - 1,05 (Freq. 4)	
Pagrus pagrus	Hg	0,5	0,05 - 1,45 (Freq. 10)	
Parapristipoma octolineatum	Hg	0,5	0,15 - 0,59 (Freq. 8)	
Patella aspera	Cd	1	0,32 - 1,2 (Freq. 7)	
Patella candei	Cd	1	0,19 - 1,3 (Freq. 7)	
Phycis phycis	Hg	0,5	0,04 - 0,60 (Freq. 1)	
Plesionika edwardsii	Hg	0,5		0,07 - 0,64 (Freq. 2)
Polymixia nobilis	Hg	0,5		0,11 - 0,76 (Freq. 16)
Polyprion americanus	Hg	0,5		0,11 - 0,51 (Freq. 4)
Pontinus kuhlii	Hg	0,5		0,08 - 0,59 (Freq. 3)
Ruvettus pretiosus	Hg	1		0,30 - 1,29 (Freq. 40)
Seriola sp.	Hg	0,5		0,07 - 2,79 (Freq. 23)
Sphyraena viridensis	Hg	0,5	0,02 - 0,57 (Freq. 10)	

Even though most of the positive deviations is found on deep sea species, these are less relevant commercially, with biological characteristics and high trophic chain position, that favour the contaminants bioaccumulation.

These deviations are not likely to result from a direct impact of anthropogenic activities with local origin, and so mitigation actions are not easily achievable.

However, the GES is only considered achieved in one of the areas evaluated.

Table 11 – Environmental Status Evaluation for Descriptor 9.

Tabela V.18. Avaliação do estado ambiental para o Descritor 9.

Área de Avaliação	Estado Ambiental	Grau de Confiança
Área 1	Bom Estado Ambiental Atingido	MÉDIO
Área 2	Bom Estado Ambiental Não Atingido	MÉDIO

Descriptor 10: Marine litter

The report states a need for the consistent monitoring programme on marine litter. The assessment is not provided due the lack of data and information for the GES indicators.

Descriptor 11: Energy including Underwater Noise

Just like descriptor 10, this descriptor could not be evaluated, given the lack of information on this subject at the time.

IV. MONITORING

4 Monitoring Programs & Programs of Measures

This envelop was submitted in January 2015. No geographical data and regional cooperation_MSFD4Geo is included, only a single text-based report for Monitoring and Measures Programs, including all 4 sub-divisions.
Envelop is available at http://cdr.eionet.europa.eu/pt/eu/msfd_mp/msfd4text/envvkaeg

At this first text-based report, monitoring programmes were established and since then, are being made operational to follow environmental status, but also efficiency of implemented measures for obtaining environmental targets.

Structurally, the document is subdivided in three parts:

- Part A – Framework, coordination and financing;
- Part B – Monitoring programs
- Part C – Programs of Measures (PoM)

4.1.1 Part A – Framework, coordination and financing

This part is subdivided in part **A1**, which starts with a small introduction, relating the monitoring and measure programs with the scope and objectives of the MSFD implementation. Some data about the relevance of the Portuguese seas when compared to other EU countries are shown, for example the percentage of Portuguese sovereignty in the Macaronesian sub-region or the mean of EEZ area (in squares quilometers per inhabitant, to show the amount of effort and resources that Portugal must allocate to comply with the MSFD, comparing with other EU member states.

It also describes how were developed the marine strategies for the subdivisions, obeying to an action plan divided in a preparation phase and a program of measures phase.

Afterwards are described the guiding principles, namely the ecosystem approach and the precaution principle, and it finalizes with a description of the Portuguese National Strategy for the sea 2013-2020.

The part **A2** explains the establishment of the environmental targets to achieve the good environmental status, which came directly from the assessment of the environmental state of marine waters.

Three different types of targets were considered:

- State: related to the state of a component of the marine environment, providing an indication of the physical, chemical or biological condition of the environment;
- Pressure: related to the pressure level in the marine environment, establishing the desired or acceptable level for a given pressure;
- Operational: directly linked with the nature of the management actions required, without, however, establish a specific measure.

Next, we present the table of Environmental Targets that were identified for the Madeira subdivision:

MSFD Environmental Targets	Target type	Descriptors (Anexx I MSFD)
Mad. 1 - Promover o conhecimento dos *habitats* e biocenoses marinhas, em particular os existentes nas faixas costeiras, de modo a obter informação quantitativa e qualitativa que permita definir um estado inicial e áreas de ocorrência (cartografadas). Estabelecer programas de monitorização visando manter e/ou recuperar *habitats* costeiros	Estado	D1, D2, D3, e D6
Mad. 2 - Explorar, de modo sustentável, o peixe-espada preto	Estado	D3
Mad. 3 - Estudar, reformular e gerir as redes de monitorização que permitam recolher informação de suporte à caracterização do meio marinho, com enfase para as situações que exigem maior atenção para manter ou atingir o Bom Estado Ambiental e para as que possam revelar as relações causais entre os resultados da monitorização e as atividades humanas	Operacional	D1, D2, D3, D4, D5,
Mad. 4 - Mapear e monitorizar o sistema meteo-oceanográfico à escala da subdivisão (incluindo, ondas e correntes de superfície induzidas pelos ventos locais, assim como correntes de mar-aberto e de profundidade) de forma a melhorar a avaliação das condições ambientais e de potencial energético dos diversos descritores ambientais, e auxiliar os processos de decisão	Operacional	D1, D4, D5, D6, D7, D8, D10, D11
Mad. 5 - Estudar e compreender as rotas migratórias de espécies de ampla distribuição geográfica de modo a evidenciar a relevância e a importância ecológica dos mares arquipelágicos e dos montes submarinos no contínuo ecossistémico, e a sua dimensão oceânica e global	Operacional	D1, D3 e D4
Mad. 6 - Promover e sistematizar o conhecimento das redes tróficas tanto dos *habitats* costeiros como dos ecossistemas de profundidade, incluindo o estudo de organismos chave, assim como o efeito das variações sazonais, com vista ao desenvolvimento de novos indicadores para avaliação futura do estado das redes tróficas e assim definir adequadamente o Bom Estado Ambiental das mesmas	Operacional	D1, D3 e D4
Mad. 7 - Ampliar até 2020 a Área Marinha Protegida da subdivisão (atualmente 2083 Km2), visando a proteção e conservação de espécies e *habitats* prioritários	Operacional	D1, D3, D4, D6, D10 e D11
Mad. 8 - Desenvolver estudos para obter dados que permitam caracterizar a quantidade, distribuição e composição das micropartículas, e a sua evolução ao longo do tempo. Estabelecer protocolos com os procedimentos de amostragem e respetiva metodologia de avaliação dos resultados	Operacional	D10
Mad. 9 - Acompanhar e sistematizar os resultados de estudos científicos sobre a relação de causa-efeito entre o lixo marinho, o biota e o meio marinho, selecionar para a subdivisão da Madeira o indicador biológico mais adequado para avaliar o impacto do lixo marinho na biota e estabelecer os protocolos adequados para avaliar o indicador 10.2.1	Operacional	D2 e D10
Mad. 10 - Avaliar a potencialidade das Ilhas Selvagens como espaço de excelência para monitorizar o lixo marinho no Atlântico e a forma como este é transportado, procurando criar um indicador do funcionamento e estado ambiental das correntes oceânicas	Operacional	D2 e D10
Mad. 11 - Elaborar estudo que avalie as condições e recursos necessários à instalação e funcionamento dos dispositivos de monitorização de ruído acústico submarino	Operacional	D11

The part **A3** explains which governmental entities are responsible for the coordination and monitoring of both programs (Monitoring and Measures), how they relate with the technical/scientific institutions and experts, and with European Commission, EIONET, OSPAR and others, and also how the financial support needed to implement the programs is expected to be gathered.

4.1.2 Part B – Monitoring Programs – Madeira Subdivision

The monitoring programs were subdivided in 4 axes:

- 1st axis – Monitoring of the contaminants in species with commercial interest for human consumption

  The annex 5 of the MSFD specifies as a relevant element to consider in the monitoring programs, the presence of chemical contaminants in species intended for human consumption from commercial fishing areas. Simultaneously, in the Initial Report for the Madeira subdivision, it was determined that the Descriptor 9 hadn't achieved the good environmental status, particularly in deep-sea species. As so, one monitoring project was established "Contaminantes químicos em espécies de interesse comercial (CEIC)" (Chemical contaminants in commercially interesting species), with monitoring sheet MO01-1) that will evaluate the contamination levels in the main pelagic, demersal and deep-sea commercial species.

- 2nd axis – Monitoring of the descriptors that were considered not achieving the good environmental status

  In the Initial Report for the Madeira subdivision, apart from the Descriptor 9 – Contaminants in fishes and shellfish for human consumption (which is already dealt with in the 1st axis), no other descriptors were identified as not achieving the good environmental status. Given that, no monitoring programmes /projects were predicted in this axis.

- 3rd axis – Monitoring of the descriptors for which there are evidences that they might deviate from the good environmental status within 5 years

  This axis was based on the expert judgement of the teams involved in the Initial Report. Six monitoring programs were established, related with Descriptors 1, 2, 3, 4 and 10.

- 4th axis – Monitoring of the human activities susceptible of adversely affecting marine protected areas or sensitive or high natural value marine areas

  It was intended that this axis drove the monitoring efforts toward the activities that might impact sensitive ecosystems, detecting cases that justify the implementation of precautionary measures. Two projects were established, one to monitor the fishing activities and maritime traffic, and another to monitor the interactions between cetaceous and the whale-watching boats.

The table below shows the framework of the monitoring projects in the 4 axis defined for the Madeira subdivision. The complete Monitoring Programs sheets can be found in the annex I of the report.

Axis	Descriptor	Monitoring project name	Ecossystem compoent, pressures and monitored impacts	Criteria/indicator	Location	Existing monitoring	Coordination	Target	Reference
I	D9	**CEIC** Contaminantes químicos em espécies de interesse comercial da área marítima portuguesa	Contaminação de espécies comerciais pelágicas, demersais e de profundidade por substâncias perigosas	9.1.1, 9.1.2	Madeira (costeiras, territoriais, ZEE)	Em planeamento	RAM	Mad.3	MO01-I
III	D3	**PNAB/DCF** Estudo de populações Peixe-espada preto	Peixe-Espada Preto	3.1, 3.3	Madeira (costeiras, territoriais, ZEE)	Em planeamento	RAM	Mad. 2 Mad. 3	MO02-II/III
	D1	**MIONITAVES** Monitorização de espécies da Diretiva Aves nas subdivisões do continente e Madeira	Estrutura das populações de aves marinhas, designadamente caraterização, distribuição e abundância; Perturbação física e biológica.	1.1.1, 1.1.2, 1.2.1	Madeira (costeiras, territoriais e ZEE)	Parcialmente	RAM	Mad.3 Mad.5 Mad.6	MO04-III
	D1 e D4	**DIVTROFICA** Monitorização dos *habitats* pelágicos e bentónicos e das teias tróficas	Comunidades biológicas associadas aos *habitats* predominantes do fundo marinho e das colunas de água	1.1.1, 1.2.1, 1.3.1, 1.4.1, 1.4.2, 1.6.1, 1.6.2, 1.7.1, 4.1.1, 4.2.1, 4.3.1	Madeira (costeiras, territoriais, ZEE)	Parcialmente	RAM	Mad.3 Mad.6	MO06-III
	D2	**NISPOR** Monitorização da abundância e do impacte de espécies não-indígenas na costa portuguesa	Espécies marinhas não indígenas de substrato rochoso e sedimentar em ambientes intertidais e subtidais	2.1.1, 2.2.1, 2.2.2 Indicador candidato OSPAR - D2 NIS 1	Madeira (territoriais e costeiras)	Não	IPMA	Mad.3	MO07-III
	D10	**DELIXOMAR** Propriedades e Distribuição Espacial do Lixo Marinho e Impactes na Vida Marinha	Lixo marinho e libertação sistemática e/ou intencional de substâncias em *habitats* do leito marinho e das colunas de água, e comunidades biológicas associadas	10.1.1, 10.1.2, 10.1.3, 10.2.1	Madeira (costeiras e territoriais)	Em planeamento	RAM	Mad.8 Mad. 9	MO09-III
	D1	**MONIKETOS** Monitorização de cetáceos nas águas costeiras e territoriais da subdivisão da Madeira	*Habitat*, População, distribuição	1.1.1, 1.1.2, 1.2.1	Madeira (costeiras, territoriais)	Em planeamento	RAM	Mad. 5 Mad. 6 Mad. 7 Mad. 11	MOM01-III
IV	D3	**Fish &Ships** Monitorização das atividades de pesca e tráfego marítimo em Áreas Marinhas Protegidas *offshore*	Perturbações biológicas, extração seletiva de espécies e integridade dos fundos marinhos;	- Densidade de embarcações - Densidade de tráfego marítimo	Madeira (ZEE)	Em planeamento	DGRM	Mad.3 Mad.7 Mad11	MO11-IV
	D1 e D11	**Whales &Ships** Monitorização das actividades de observação de cetáceos na subdivisão da madeira	Tráfego marítimo	- Densidade de embarcações - Número de cetáceos arrojados	Madeira (costeiras e territoriais)	Em planeamento	RAM	Mad. 7 Mad. 11	MOM02-IV

4.1.3 Part C – Programs of Measures – Madeira Subdivision

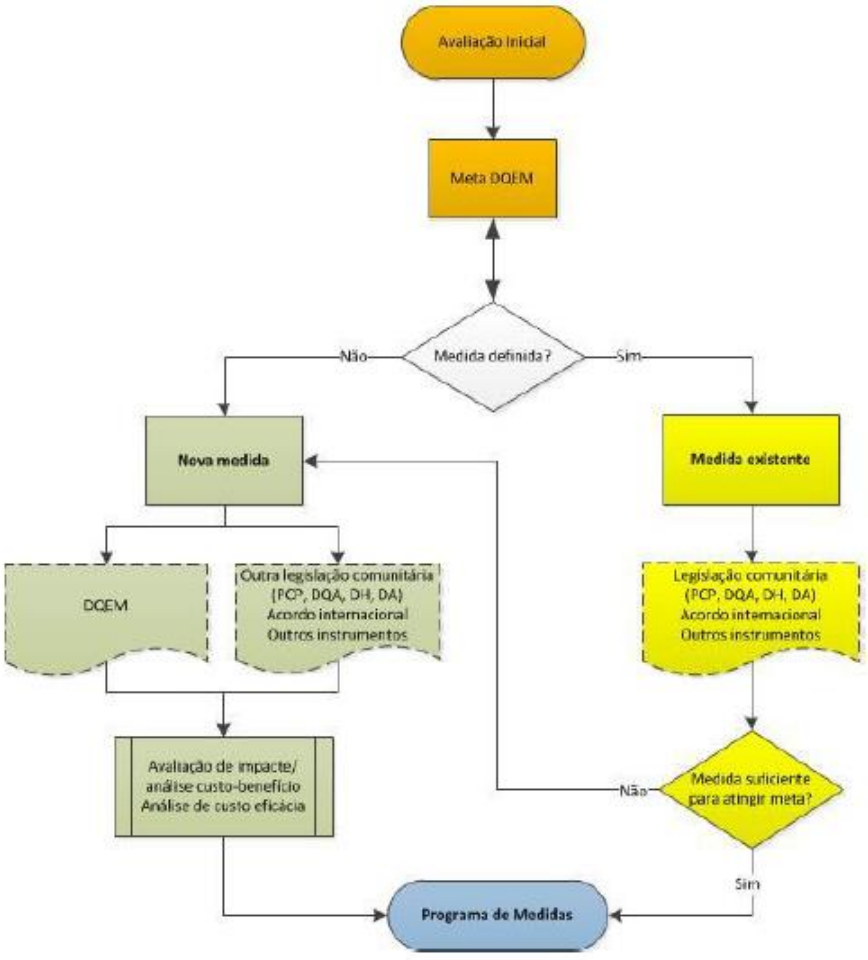
The present Program of Measures takes in consideration 2 different documents:

- the determinations from the MSFD itself;
- the non-mandatory recommendations from the technical working groups of the European Commission, for the MSFD implementation.

A short description of the adopted methodology is presented, and the approach followed to identify the measures to prosecute the Environmental Targets, established by the MSFD, is the following:

1. Identify the MSFD Environmental Target;
2. Verify if the measure is already predicted (either implemented, not totally implemented or not implemented) in other legal frameworks (such as Water Frame Directive, Habitat Directive, Bird Directive, etc.) – Existing Measure.
3. Analyse if the Existing Measure has enough comprehensiveness to reach the MSFD Environmental Target;
4. Define an additional measure, within the scope of the legal frameworks (MSFD or the other defined in the 2nd point) in the cases where the predicted measure is not sufficient, or when there is no Existing Measure – New Measure.
5. Perform an impact evaluation for the New Measure, including cost-benefit and cost-efficiency analysis.

Schematically the methodology is the following:



Next, we present the structure of the Program of Measures. The identification of the Existing Measures was done using the previously presented methodology, and this Targets were designated as MSFD Measures.

The complete Program of Measures sheets can be found in the annex II of the report.

The Program of Measures integrates also another set of measures, designated as Other Measures, which are not directly aligned with the MSFD Environmental Targets, but are also considered relevant for the maintenance or achievement of the good environmental status. This are Complementary Measures (related to lack of knowledge or related to education and awareness) and Measures arising from other legal instruments or international agreements. Last but not least, the Program of Measures also incorporates Spatial Protection Measures, to comply with the number 4 of the article 13 of the MSFD.

State targets

For the Madeira Subdivision, the following measures were identified to meet the State Targets:

- Target Mad 1: Promote the Habitats and Marine Biocenosis knowledge

In this first implementation cycle of the MSFD, the measures to take were inevitably related to knowledge acquisition. The project BIOMAD (MEMAD01-D1) and SEDPLAT (MEMAD02-D6) were then implemented.

The project BIOMAD is meant to characterize littoral biocenosis (0-50m depth). Project SEDPLAT is meant to acquire data that allow, by comparison with 10-year-old studies, the evaluation on the geomorphological evolution of the coastal seabed of the Madeira Archipelago. Both of them are somewhat related with the Complementary Measures projects POOC-Porto Santo (MECMAD02-DV), POOC-Madeira (MECMAD03-DV), TOXIMAC (MECMAD04-D8), BentosMad (MECMAD05-D1), MONINTEGRID (ME10-DV) and ISED (MECMAD06-D6).

- Target Mad 2 – Sustainably exploit the black-scabbard fish

This measure intents to elaborate a management plan, PEPGEST (MEMAD03-D3) to sustainably exploit the black-scabbard fish, integrating the multiple commercial fleets that selectively extract this resource from the covered geographic areas. The monitoring of this target is done through the monitoring project Estudo das populações do peixe-espada preto (PNAB) (MO02-II/III).

Operational Targets

For the Madeira Subdivision, the following measures were identified to meet the Operational Targets:

- Target Mad 3 – Study, reformulate and manage the monitoring networks that allow the gathering of information to support the marine environment characterization, with emphasis for the situations that demand more attention to maintain or achieve the good environmental status and for the ones that can reveal causal relations between the monitoring results and the human activities.

It is very important that the information produced in the scope of the MSFD is properly treated and stored. For that, is established the project DATA-ATLÂNTICO (MEMAD04-DV), that consists in the implementation of a node that allow the sharing and dissemination of the data. To enhance that sharing it will be ensured the integration of the database obtained in the project NIPIM@R, through the project DQEMdata (M06-DT).

- Target Mad 4 – To map and monitor the meteo-oceanographic system in the subdivision (including waves and superficial currents induced by the local winds, as well as open sea and depth currents), in order to improve the evaluation of environmental conditions and the energy potential of the several descriptors and assist the decision-making process.

In the Initial Report three main domains were identified for the subdivision: knowledge, heritage and location. The interaction between these domains shows that the subdivision cannot be seen as a static unity, given its location (wide Atlantic) and its exposition to oceanic currents, but demands the integration of the meteorological and physical oceanographic knowledge. This implies the mapping and the monitoring of a meteo-oceanographic system, and for that is established the project ISMOM-A (MEMAD05-DV), which will consist in a monitoring system that combines fixed platforms at sea (buoys), and long-range mobile platforms (UAV and drifting-buoys).

- Target Mad 5 – To study and understand the migratory routes of large geographical distribution species, to evidence the relevance and ecological importance of archipelagic seas and seamounts in the ecosystem continuum, and their global oceanic dimension

In the Initial Report it is noted that the archipelago is an important site for marine species with great mobility, like the cetaceans. The knowledge of the routes and habits of migratory species stood out the importance of this subdivision in an oceanic context. As so, it is proposed the project M3.MigraMarMad (MEMAD06-D4), to obtain information about the main migrating species of birds, fishes, turtles and marine mammals, and their routes, in order to select the species that can become good bio-indicators of the good environmental status of the pelagic marine environment and the ecosystems continuity.

- Target Mad 6 – To promote and systematize the knowledge on food webs, both from the coastal habitats and the depth ecosystems, including the study of key organisms, as well as the effect of seasonal variations, in order to develop new indicators for future evaluation of the status of the food webs, and thus properly define their Good Environmental Status.

The monitoring project DIVTROFICA (MO06-III), through which is intended to gather further scientific knowledge for Descriptors 1 (Biodiversity) and 4 (Food Webs), is the main support to achieve this target. As so, no further measures are taken in the scope of the Measures Programs.

- Target Mad 7 – To enlarge, until 2020, the Marine Protected Area of the subdivision, aiming the protection and conservation of priority species and habitats

It was proposed the project HOME.SIC (MEMAD07-D1), to create an SCI all around Madeira, Porto Santo and Desertas Islands, to cover depths between the coastal line and bathymetric 2500m, with a total of 5560km^2. This area has already been proposed and approved in 2016.

- Target Mad 8 – To develop studies in order to obtain data that allow the characterization of the quantity, the distribution and the composition and evolution over time of the micro-particles and establish protocols with sampling procedures and proper results evaluation methodology.

This target is accomplished through the Monitoring Project DELIXOMAR (MO09-III) that intends to determine the quantities and properties of the marine litter in selected areas, as well as to estimate its impact on marine life. Given that, no measure is established on the scope of the Measures Programs.

- Target Mad 9 – To follow up and systematize the results of future scientific studies about the cause-effect relation between marine litter, biota and marine environment, to select the most suitable biological indicator, on the Madeira Subdivision, to evaluate the impact of the marine litter in the biota and establish the proper protocols to evaluate the indicator.

To achieve this target is proposed the project LiMar (ME04-D10). The selection of areas and most suitable species to monitor marine litter impacts will be supported by the results of this project. This measure will be developed along with the Monitoring Project DELIXOMAR (MO09-III).

- Target Mad 10 – To evaluate the potential of the Selvagens Islands as an excellence area to monitor the marine litter in the Atlantic, and the way that this litter is transported, to try to create an indicator of its operation and the environmental state of the oceanic currents.

Considering the isolation of Selvagem Pequena from pollution sources, and the high concentration of marine litter found there, it is thought that this island can be a source of knowledge about the ocean dynamic of litter. As so, it is developed the project VEGAS (MEMAD08-D10). This measure is in line with the Region Action Plan of OSPAR.

The knowledge of the wind induced transport regime and oceanic currents is fundamental to interpret and predict the marine litter trajectories. As so, the knowledge arising from the project ISMOM-A (MEMAD06-DV) and project DQEMSat (ME08-DV) will also be integrated.

- Target Mad 11 – To elaborate a study to evaluate the conditions and resources needed to install and properly functioning of devices to monitor the acoustic underwater noise.

Despite Portuguese marine waters include the distribution of a third of the cetacean species of the whole world, no continuous studies on the noise levels are conducted, only sporadic ones. The measure to implement, through the project CAASPER (ME05-D11), is intended to evaluate the requirements and resources needed to install devices to monitor underwater acoustic noise. In the Madeira subdivision, this project should be coherent with the Monitoring Projects MONIKETOS (MOM01-III) and Whales&Ships (MOM02-IIV).

The table below shows the MSFD Programs of Measure set for the Madeira subdivision, according to the Targets set. The complete PoMs can be found in the annex II of the report.

Tabela C.7 Medidas DQEM para a subdivisão da Madeira

Meta	Medida	Nova Medida	Tipologia Medida[1]	Descritor	Coordenação	Ficha Código
Mad.1	**BIOMAD** - Estudar, identificar, caracterizar e georreferenciar os *habitats* e biocenoses marinhas costeiras.	Sim	T5	D1	RAM	MEMAD01-D1
	SEDPLAT - Quantificar, caracterizar e georreferenciar sedimentos de origem biogénica e telúrica	Sim	T5 e T7	D1 e D6	RAM	MEMAD02-D6
Mad.2	**PEPGEST** – Elaborar Plano de gestão para a pesca do peixe-espada preto	Sim	T1 e T6	D3	RAM	MEMAD03-D3
Mad.3	**DATA-ATLÂNTICO** - Assegurar base de dados gerados no âmbito da DQEM	Sim	T4	Todos	RAM	MEMAD04-DV
	DQEMdata – Implementar e gerir sistema de rede de partilha de dados de monitorização	Sim	T4	Todos	DGRM/DGPM/ RAA/RAM	ME06-DT
Mad.4	**ISMOM-A** - Implementar um sistema de monitorização meteo-oceanografica (MODULAR) no oceano Atlântico	Sim	T5	Todos	RAM	MEMAD05-DV
Mad.5	**M3.MigraMarMad** - Estudar e compreender as rotas migratórias e a continuidade dos ecossistemas	Sim	T3	D1, D4	RAM	MEMAD06-D4
Mad.6	**DIVTROFICA** - Estudar as redes Tróficas (PMo)	Sim	T5	D4	RAM	MO06-III
Mad.7	**HOME.SIC** - Criar uma SIC associada aos cetáceos	Sim	T1, T2 e T3	D1	RAM	MEMAD07-D1
	AMP - Designar AMP no espaço marítimo	Sim	T1, T2 e T3	D1	DGRM/RAM	ME01-DV
Mad.8	**DELIXOMAR** - Determinar as propriedades e distribuição espacial de lixo marinho e estimar o impacte no meio marinho (PMo)	-	T5	D10	IPMA/RAM	MO09-III
Mad.9	**LIMar** - Determinar bioindicadores para o lixo marinho	Sim	T5	D10	RAM	ME04-D10
Mad.10	**VEGAS** - Avaliar a potencialidade das ilhas Selvagens como espaço de excelência para a monitorização do Lixo Marinho, e outros descritores, no Atlântico	Sim	T5	D10	RAM	MEMAD08-D10
	DQEMsat – Implementar a utilização de imagens de satélite para aquisição de conhecimento sobre o meio marinho	Sim	T3, T5	D1, D2, D3, D6, D10	DGRM/RAM	ME08-DV
Mad.11	**CAASPER** - Caraterizar o ambiente acústico submarino português e efeitos do ruído	Sim	T5	D11	DGRM/RAM	ME05-D11

1 – Tipologia de Medida: Anexo VI da DEQM (T1 a T8)

Other Measures

Like explained before, some other measures are also integrated in the PoM. Even though they are not directly aligned with Environmental Targets of the MSFD, they are however considered relevant for the maintenance and achievement of the good environmental status of the marine environment.

These other measures are subdivided Complementary Measures, related with gaps of knowledge and education and awareness, and Existing Measures, that derive from other legal instruments or international agreements.

For the Madeira subdivision were only identified the Complementary Measures listed in the following table.

Tabela C.8. Medidas complementares para a subdivisão da Madeira

Medida	Objetivo	Descritor	Coordenação	Código da Ficha
MarVal	Quantificar os recursos disponíveis e respetivo valor económico associado (atual e potencial) e, nos casos aplicáveis, cartografar.	DT	RAM	MECMAD01-DV
POOC-Porto Santo	Elaborar e publicar o POOC Porto Santo	DT	RAM	MECMAD02-DV
POOC-Madeira	Elaborar e publicar o POOC Madeira	DT	RAM	MECMAD03-DV
TOXIMAC	Identificar, monitorizar, análisar os efeitos e possíveis soluções da presença de substâncias antropogénicas contaminantes e microcontaminantes (incluindo os contaminantes emergentes) nos ecossistemas marinhos da Macaronésia	D8	RAM	MECMAD04-D8
BentosMad	Estudar, identificar e georreferenciar biocenoses marinhas dos fundos móveis	D1, D4 e D6	RAM	MECMAD05-D1
MONINTEGRID PLUS	Avaliar a integridade dos fundos marinhos e caraterizar a macrofauna bentónica	D1, D6	IPMA/RAM	ME10-DV
EduMar	Aumentar a literacia sobre o valor dos ecossistemas marinhos	D1, D3, D10	EMEPC/RAM	ME09-D0
ISED	Implementação de um sistema de estudo da dinâmica sedimentar em Porto Santo	D1, D6 e D7	RAM	MECMAD06-D6
MONACHUS	Estudo da população do lobo-marinho no arquipélago da Madeira	D1	RAM	MECMAD07-D1

References

SRA 2014. Estratégia Marinha para a subdivisão da Madeira. Diretiva Quadro Estratégia Marinha. Secretaria Regional do Ambiente e dos Recursos Naturais. Junho de 2014.

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6 ANNEX

Monitoring Program sheets

Programs of Measures sheets