

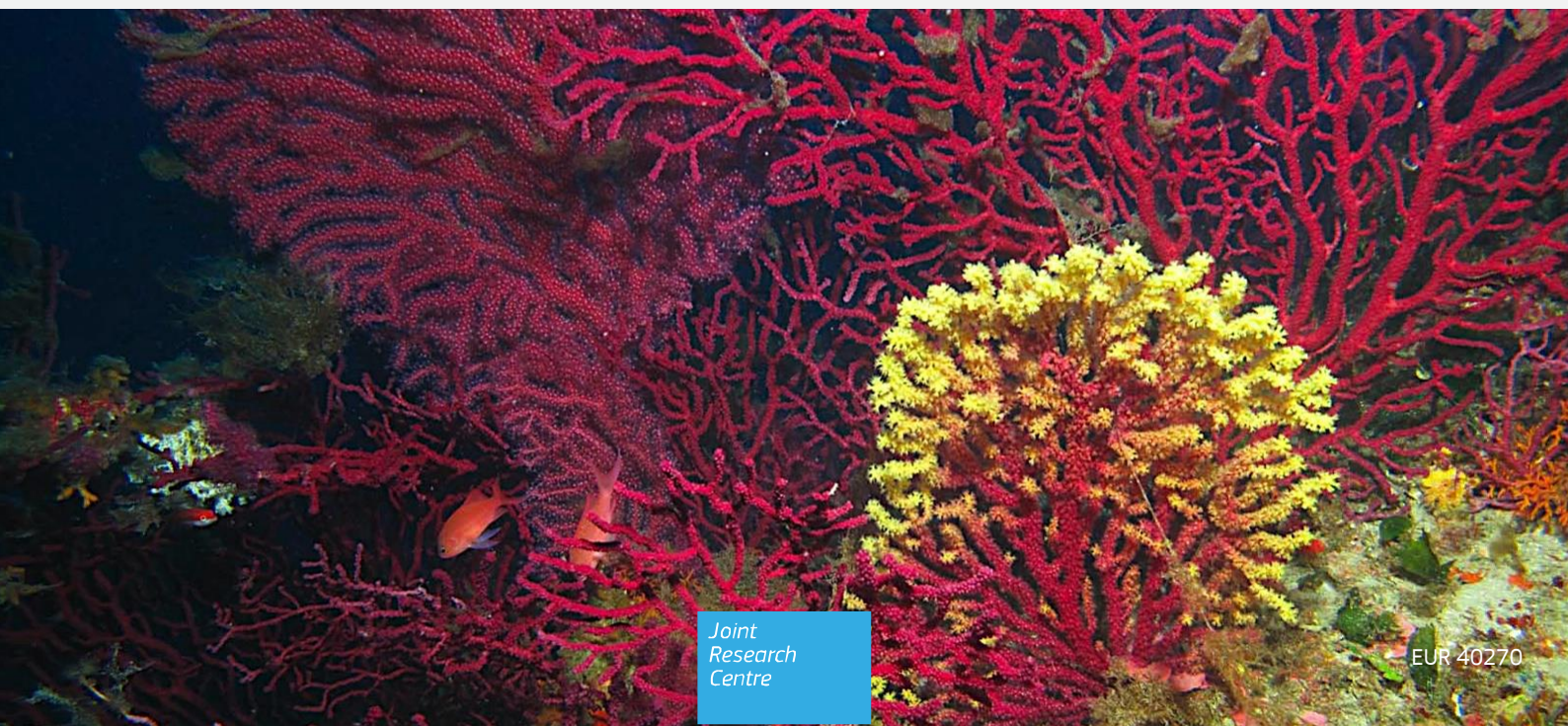


Targets under the Marine Strategy Framework Directive

A compilation of information, analysis results, discussions and resulting recommendations on targets under the MSFD

Palma, M., Louropoulou, E., Alonso Aller, E., Cardoso, A.C., Carravieri, A., Druon, J.-N., Macias Moy, D., Magliozzi, C., Martini, E., Palialexis, A., Mendes, C., Pantazi, M., Piroddi, C., Ruiz-Orejón, L.F., Tornero Alvarez, M.V., Vasilakopoulos, P., Zupan, M., Hanke, G.

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Abstract

The Marine Strategy Framework Directive (MSFD) aims to achieve Good Environmental Status (GES) in European marine waters. Environmental targets are essential for implementing the MSFD, and their effectiveness relies on them being specific, measurable, achievable, realistic, and time-bound. This study analyses the targets set by Member States (MS) across MSFD Descriptors and marine regions to inform the upcoming review of the MSFD.

An analysis of MS reports on targets (Art.10) from the second MSFD reporting cycle was conducted, focusing on the specificity and measurability of targets. Targets were categorised into Level I (“non-specific targets” covering several Descriptors) and Level II (Descriptor-specific targets), which were further classified into four categories based on their text descriptions and purpose (“pressure reduction targets”, “targets linked to thresholds values”, “targets linked to trends”, “targets linked to measures”). Within each of these categories, “quantitative targets” were identified based on their descriptions.

The analysis showed that 90% of Level I targets and 71% of Level II targets lack measurable goals. Level II targets for Descriptors D5 and D9 showed the highest proportion of “quantitative targets” (89% and 85%, respectively). The Northeast Atlantic region led in both number and specificity of targets, while other regions, such as the Black and Mediterranean Seas, lagged in setting quantitative targets. The results are presented as percentages due to the varying number of targets reported by each MS, which made it challenging to establish a direct correlation with the total number of targets.

The study highlights the need for improvement in target setting and reporting under the MSFD, particularly in terms of quantification, harmonisation, and specificity.

Authors

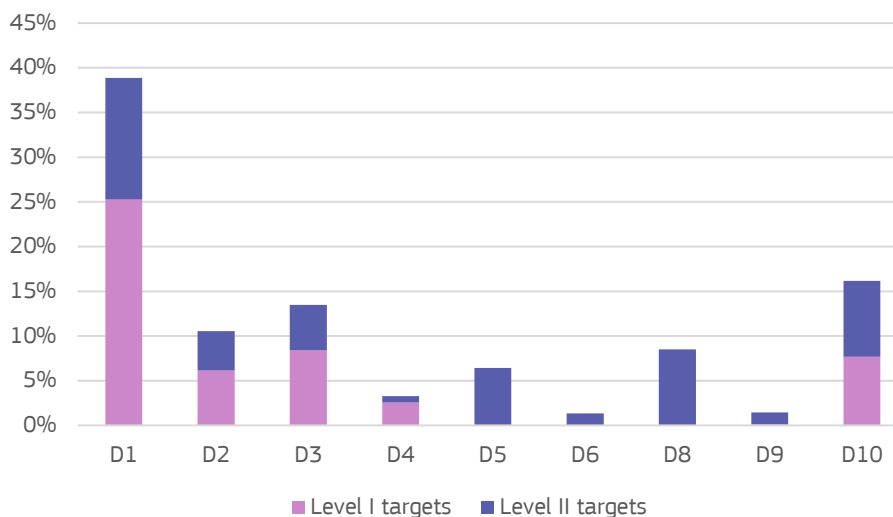
Palma M., Louropoulou, E., Alonso Aller E., Cardoso A.C., Carravieri A., Druon J.-N., Macias Moy D., Magliozzi C., Martini E., Palialexis A., Mendes C., Pantazi M., Piroddi C., Ruiz-Orejón L.F., Tornero Alvarez M. V., Vasilakopoulos P., Zupan M., Hanke G.

Executive summary

An analysis of MS reports on targets (Art.10) on Descriptors D1, D2, D3, D4, D5, D6, D8, D9, D10, from the second MSFD reporting cycle was conducted, focusing on the specificity and measurability of targets. Targets were categorised into Level I (“non-specific targets” covering several Descriptors) and Level II (Descriptor-specific targets), which were further classified into four categories based on their text descriptions and purpose (“pressure reduction targets”, “targets linked to thresholds values”, “targets linked to trends”, “targets linked to measures”). Within each of these categories, “quantitative targets” were identified based on their descriptions.

The analysis showed that 90% of Level I targets (“non-specific targets” covering several Descriptors) and 71% of Level II targets (“specific targets” for single Descriptor and its criteria) lack measurable goals. Results of the Level I analysis for Descriptors D1 and D10 showed connection with Descriptors D2, D3, D4 (Figure 1). Descriptors contribution to Level I targets ranges between 0% (D5, D6, D8) to 65% (D1) (Figure 1).

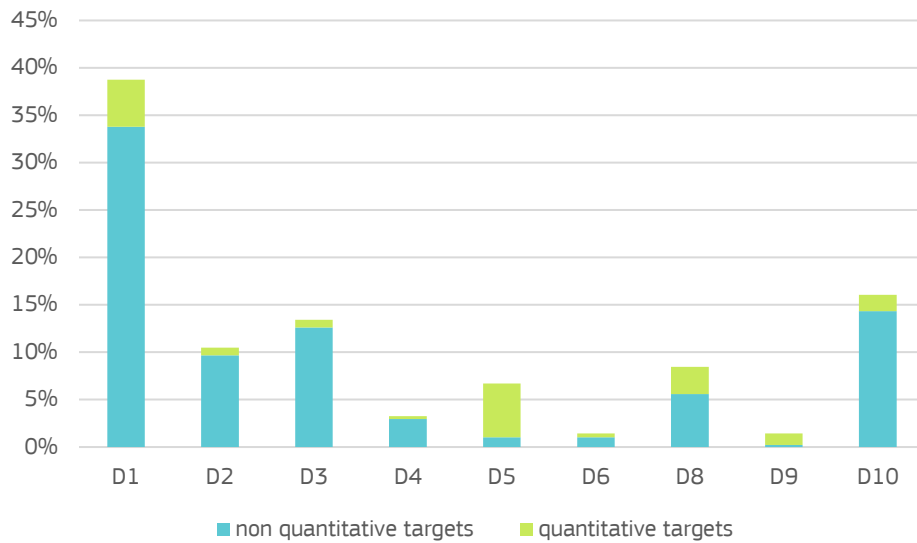
Figure 1. Relative percentage of Level I and Level II targets across Descriptors.



Source: this report

Most “Quantitative targets” belonged to the Level II class (Figure 2). In particular, 85% of D5 targets are quantitative (all Level II), while for D9, one single Level I target and 86% of the Level II targets are quantitative (Figure 2). The relative contribution of “quantitative targets” in Level I was lower for D8 (34%) and D6 (29%) . For D1, 13% of the targets are quantitative (10% of Level I targets and 19% of the Level II targets). D2 “quantitative targets” represented only 8% of total targets, all under the Level II class. 6% of Level I and Level II targets for D3 are quantitative, whereas an average of 9% of D4 targets are quantitative, all under the Level I class targets (12%). For D10, “quantitative targets” represent 11% of total targets, comprising 4% of the Level I and 18% of the Level II targets (Figure 3).

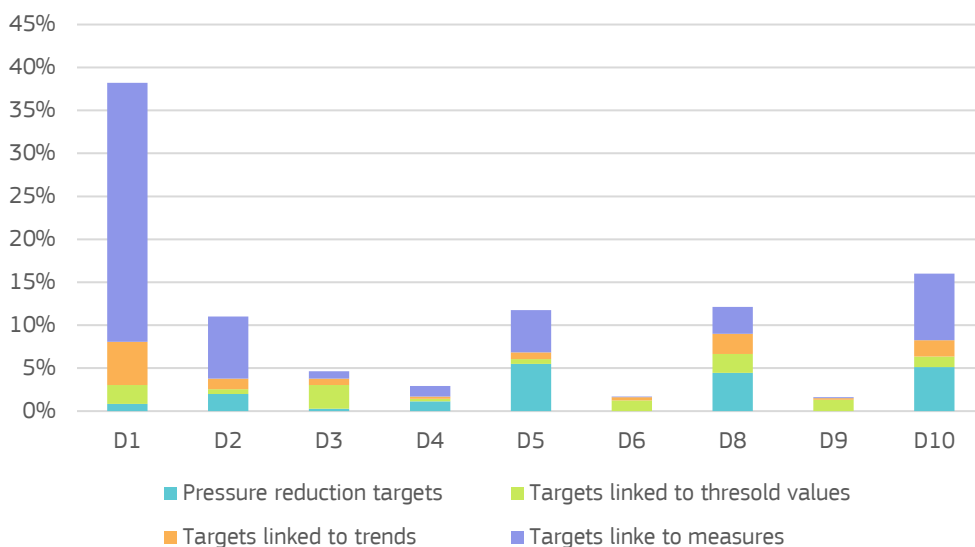
Figure 2. Relative percentage of unique “non-quantitative targets” and “quantitative targets” across Descriptors.



Source: this report

The category “targets linked to measures” is the most represented, with 55% of targets in this category, of which 30% are for D1 (Figure 3). “Pressure reduction targets” represent 19% of targets, whereas 13% and 12% of the targets are “targets linked to trends” and “targets linked to threshold values”, respectively. A further analysis of “targets linked to measures” enabled the identification of 3 subcategories, including “targets linked to monitoring and assessment” (64%), “targets linked to knowledge gaps” (26%), and “targets linked to awareness raising” (10%) (Annex 1). These target subcategories encompass a broad range of topics which are not strictly related to the concept of “measures to achieve GES” as per Art. 13, such as monitoring, assessment, and awareness related measures.

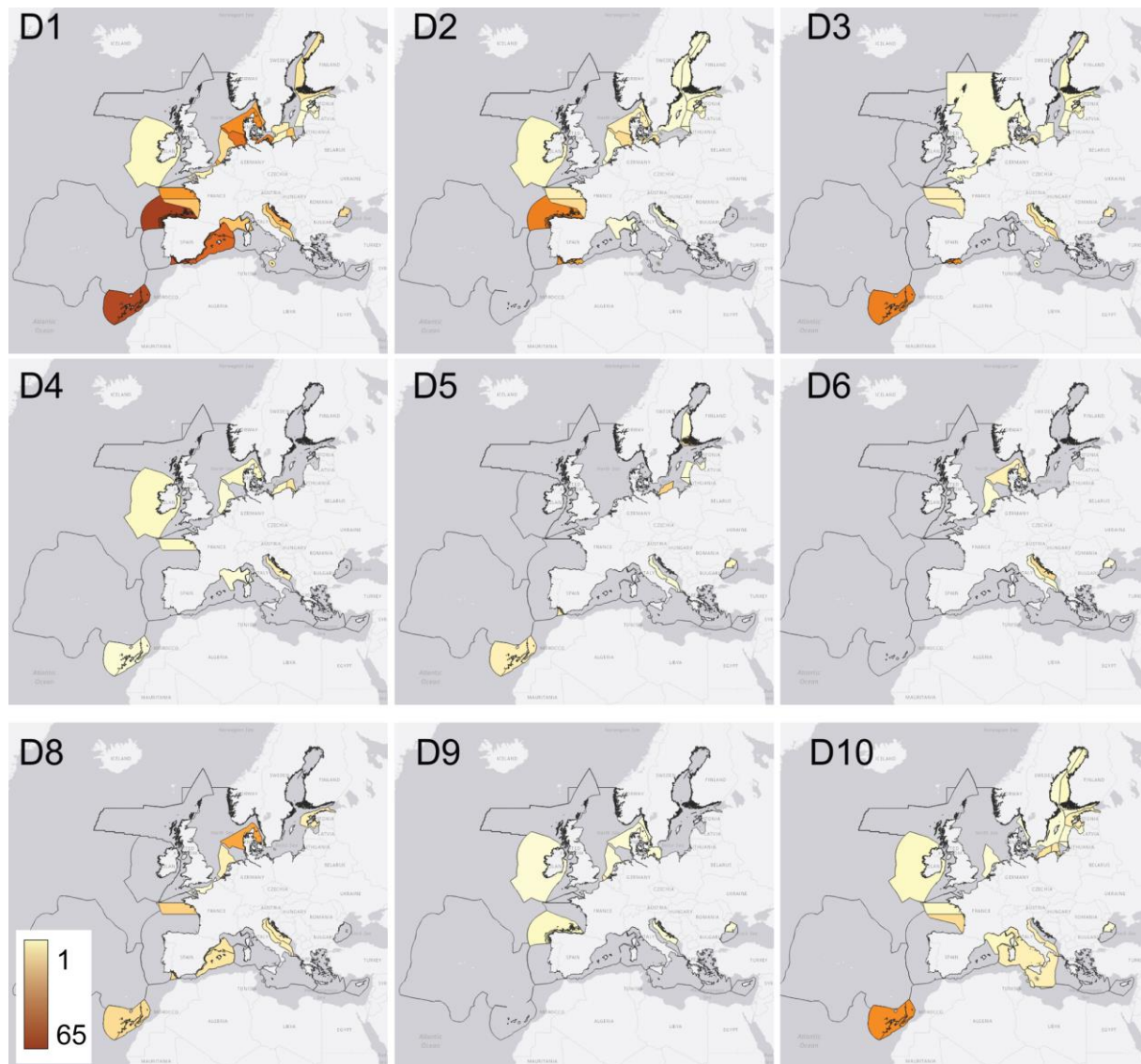
Figure 3. Relative percentage of target categories across Descriptors.



Source: this report

The Northeast Atlantic region led in both the number and specificity of targets, while other regions, such as the Black and Mediterranean Seas, lagged in setting “quantitative targets”.

Figure 4. Cumulative number of targets per Descriptor by Marine Reporting Unit across MSFD marine regions.



Source: this report

The highest number of targets are reported for the Northeast Atlantic subregions, specifically the Bay of Biscay-Iberian Shelf (ABI) and the Greater North Sea (ANS), with 216 and 160 targets, respectively, (Figure 4).

In contrast, the marine subregions of the Ionian Sea and Central Mediterranean Sea (MIC) and the Eastern Mediterranean (MAL) in the Mediterranean Sea show the lowest number of targets, with 11 targets across four MRUs and five targets within a single MRU, respectively (Figure 4).

Despite the smaller absolute amount of “quantitative targets” reported, the Black Sea (BLK) is the marine region with the greater relative percentage of “quantitative targets” (83%). In comparison, the Western Mediterranean Sea (NWE) and the ABI have significantly lower frequencies of ‘quantitative targets’ (8% and 9%, respectively). However, when considering only Level II targets, i.e.

single-descriptor targets, the values for BLK are confirmed, and the “quantitative targets” frequencies increase to 24% for NWE, and 18% for ABI (Figure 4).

Targets for Descriptor D10 are applied to 40 different MRUs across all subregions, except for the Eastern Mediterranean (MAL). In contrast, targets for D1 cover all European subregions, with a total of 27 MRUs (Figure 4).

“Pressure reduction targets” are mostly used in the ABI with 50 targets across five MRUs, and in the BAL with 34 targets across 21 MRUs. These targets cover Descriptors D1, D5, D8, and D10 in the ABI, and D2, D3, D5, and D10 in the BAL.

“Targets linked to trends” are primarily used in the Mediterranean Sea (D1, D8), specifically in the MAD and the NWE subregions, where they account for 46% of all the targets reported for the Mediterranean Sea. However, they are not used in the MAL subregion. A lower proportion of “targets linked to trends” are found in the NEA region, specifically in the ABI (10%) and the BAL region (29%).

“Targets linked to threshold values” are the most common in the ANS, where 39 targets are used across four MRUs covering all the Descriptors except for D5. The category shows the highest relative percentage in the BLK with 71% of the reported targets.

“Targets linked to measures” are most prevalent in the Macaronesia (AMA) and the NWE, representing 81% and 70% of targets in these subregions, respectively. In contrast, “pressure reduction targets” are reported across all marine subregions, with varying frequencies, ranging from 11% in the MIC to 46% in the MWE and BAL subregions.

1 Introduction

Targets are operative tools for the implementation of the Marine Strategy Framework Directive (MSFD) and are based on indicators of environmental condition, allowing for the measurement of progress towards achieving Good Environmental Status (GES, Article 9). Member States (MS) are required to define targets (Article 10) based on the results of the assessment of their marine waters (Article 8). According to Directive 2008/56/EC, targets should be based on the pressures defined in Table 2 of Annex III (Directive 2008/56/EC) and the characteristics listed in Annex IV (Directive 2008/56/EC) (Box 1 and Annex 2). In addition, targets should be specific, measurable, achievable, realistic, and time-bound (SWD(2020) 62 final) (Box 2). Targets are key elements of the MSFD that must be clearly defined to promote harmonisation and effective implementation of the Directive.

Over the last few years, the European Commission Joint Research Centre (JRC) has conducted several scientific analyses aimed to evaluate the consistency and comparability of the MSFD implementation among MS and marine regions and, highlighting gaps and limitations in the implementation of Articles 8, 9 and 10 assessments, and identifying areas for improvement.

In 2021, MS reports on Articles 8, 9 and 10 were analysed for each descriptor: Descriptors D1 (Biodiversity, Magliozzi et al., 2021; Palialexis and Boschetti, 2021), D2 (Non-indigenous species, Tsiamis et al., 2021), D3 (Commercially exploited fish and shellfish, Vasilakopoulos et al., 2021), D4 (Food webs, Boschetti et al., 2021a), D6 (Seabed integrity, Boschetti et al., 2021b), D8 (Contaminants, Tornero et al., 2021a), D9 (Contaminants in seafood, Tornero et al., 2021b), D10 (Marine litter, Ruiz-Orejón et al., 2021), and D11 (Energy, including underwater noise, Vighi et al., 2021). These reports highlighted differences in definition, number, and use of targets across MS and marine regions, pointing to a lack of quantitative and targets specific to single Descriptors and their criteria. Even in cases where MS have declared adequacy, the evaluation of MS reports highlighted that there are still many gaps in the understanding of targets e.g., targets are so general that they cannot be linked to specific monitoring (non-specific).

Later, the analysis of MS monitoring reports (Article 11) revealed that monitoring is not yet adequate to track progress towards the proposed targets for all descriptors and for a significant number of MS (Tornero et al., 2022). A recent analysis of MS reports on measures (Article 13) highlights a significant challenge in directly linking the effectiveness of implemented measures to the achievement of targets due to the lack of measurable indicators (Louropoulou et al., 2025). Furthermore, the absence of measurable metrics in the e-reports limits the assessment of the progress and outcomes of the measures, and whether they are effectively contributing to achieving these targets.

The scope of this report is to provide, for the first time, a detailed analysis of the reported Article 10 targets across Descriptors and MSFD marine regions. This analysis refers to the second MSFD monitoring cycle (2012–2018) and aims to support the implementation of the MSFD.

Box 1. MSFD Article 10 - Directive 2008/56/EC

On the basis of the initial assessment made pursuant to Article 8(1), Member States shall, in respect of each marine region or subregion, establish a comprehensive set of environmental targets and associated indicators for their marine waters so as to guide progress towards achieving good environmental status in the marine environment, taking into account the indicative lists of pressures and impacts set out in Table 2 of Annex III, and of characteristics set out in Annex IV (Annex document 1)

When devising those targets and indicators, Member States shall take into account the continuing application of relevant existing environmental targets laid down at national, Community or international level in respect of the same waters, ensuring that these targets are mutually compatible and that relevant transboundary impacts and transboundary features are also taken into account, to the extent possible.

Member States shall notify the Commission of the environmental targets within three months of their establishment.

Box 2. SWD(2020) 62 final

Page 12: Good environmental status (GES) is the core concept that has to be achieved by Member States in implementing the MSFD. All operational provisions of the Directive are in one way or another linked to GES, which is the central objective allowing the measurement of progress and success in its implementation:

- a. It is needed as the benchmark against which to assess current environmental status (Article 8, particularly Article 8(1)(a) and 8(1)(b));
- b. The assessment under Article 8 determines whether and what environmental targets are needed under Article 10 in order to achieve GES;
- c. These targets, in turn, determine what measures are needed under Article 13 to achieve and/or maintain GES;

Page 21: Articles 9 and 10 have distinct roles in the MSFD implementation process, each with different legal obligations which are not interchangeable. The main purpose of Article 9 is to determine the specific environmental objectives of the Directive (i.e., what is GES) in sufficient (and where possible quantifiable) detail to be able to know whether they have been achieved or not for the different Descriptors and in accordance with the overall definition in Article 3(5).

The main purpose of Article 10 is to establish a set of environmental targets to guide progress towards achieving these objectives (GES). This indicates that Article 10 provides a declaration of intent to take action, compared with the objective-led role of Article 9.

For example, setting an environmental target for the maximum allowable input of nutrients to the sea in order to lead to nutrient levels in the sea which do not give eutrophication effects (Descriptor 5).

This 'declaration' is then delivered through the Programmes of Measures (Article 13) as the 'measures shall be devised on the basis of the initial assessment ... and by reference to the environmental targets' (Article 13(1)). To continue the example above, nutrient input reduction targets could be achieved through various possible measures, such as controls on the use of fertilisers in agriculture or the use of phosphates in detergents, and by improving urban wastewater treatment.

Targets thus provide an operational tool, used in conjunction with the programme of measures, for the management of human activities and their pressures and for actions which should lead to improvements in the environmental status of marine waters and ultimately to GES. Targets are not meant to be used to provide a more refined determination of GES, as was often the case in the first reporting of environmental targets in 2012.

Page 60: The MSFD leaves considerable flexibility for Member States in setting environmental targets; however, in order to make them fully operational in relation to their specified role in the Directive, targets need to be specific, measurable, achievable, realistic and time-bound (SMART) (SWD(2014) 49).

2 Methods

Data on Art. 10 targets referring to the second MSFD monitoring cycle (2012-2018) was downloaded on 1st March 2023 for each MSFD Descriptor from the Wise Marine web portal¹. Data are grouped by Descriptor, ranging from D2 to D11. For Descriptor D1, data are further categorised into separate files based on species groups, specifically: D1 Birds, D1 Mammals, D1 Reptiles, D1 Fish, D1 Cephalopods, and D1 Pelagic habitats. For each Descriptor, the analysis was carried out in two steps:

- Step 1: removal of duplicates (i.e. targets reported multiple times across downloaded files).
- Step 2: classification of targets into:
 - Level I and Level II classes. Level I encompasses the analysis of “non-specific targets”, i.e., targets reported for more than one Descriptor (e.g., D1, D2C1, D6). Level II class corresponds to “specific targets”, i.e., those related to a single Descriptor and its Criteria (e.g., D1, D1C1, D1.4).
 - Four categories describing the purpose and type of targets, including “pressure reduction targets”, “targets linked to thresholds values”, “targets linked to trends”, and “targets linked to measures” (Figure 1).

In class Level I, we considered that:

- A MS can use the same “target code” but a different “description”. For example, the target code “A.2.2” used by ES has four different “descriptions” according to the marine regions.
- Different MS can use the same “target code” but with different “descriptions”. For example, HR and BE used the target code “Target 4” with different descriptions.
- MS can use the same target (“target code” and “target description”) across Descriptors. For example, FI reported the target code “LUONTO5” for both D1 and D2.

Level I analysis was conducted on datasets downloaded from Wise Marine web portal for Descriptors D1 Biodiversity and D10 Marine litter. Therefore, the analysis was limited to non-specific targets that cover D1 and D10, and overlap with other descriptor’s targets. For these two Descriptors, no targets were reported by CY, IE, and RO. DE used only “non-specific targets”, and as a result, only used in class Level I.

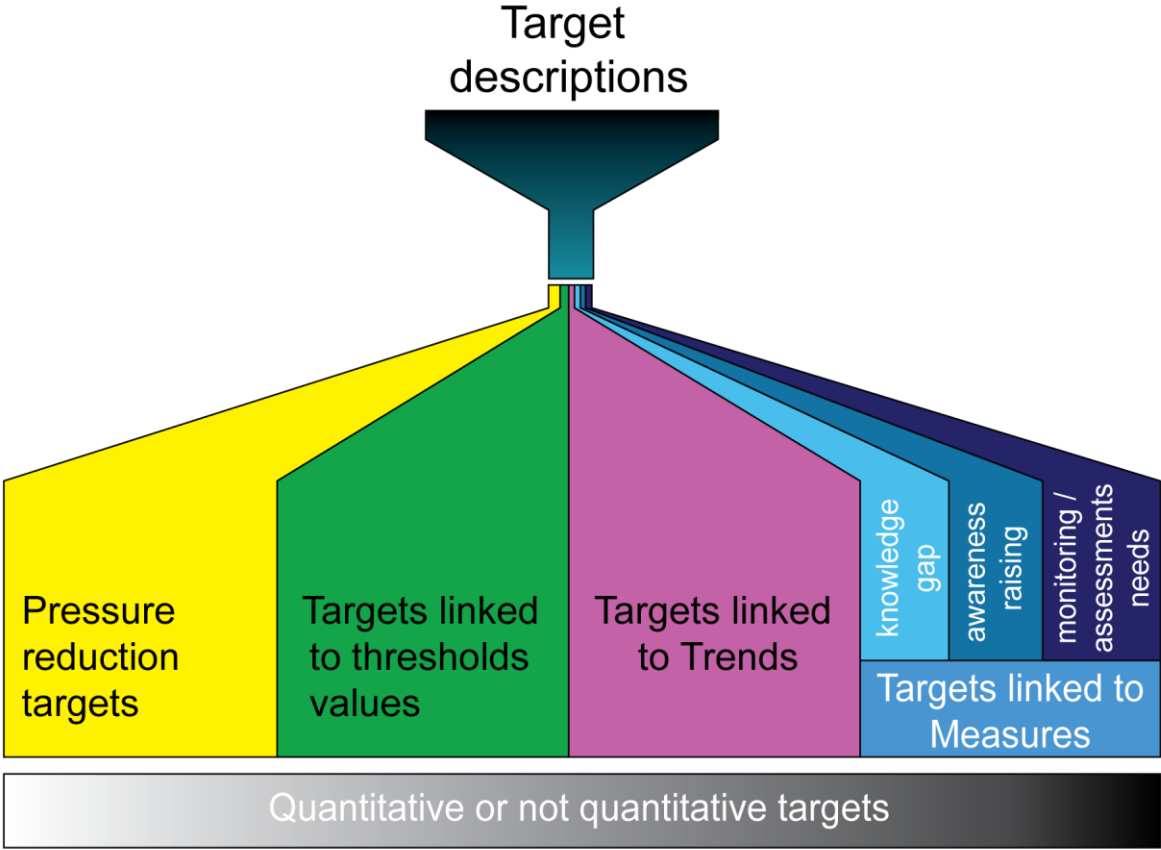
Level I and Level II targets were classified into the four categories (Figure 1) after evaluation of the free-text target descriptions. Each target was assigned to one or more categories, due to overlapping characteristics in their descriptions. The very complex and diverse nature of targets does not allow for strict classification into just one category.

¹ <https://water.europa.eu/marine/assessment-module/national-descriptors-assessments/reports-per-descriptor>

The category “targets linked to measures” consists of three subcategories: knowledge gap, awareness raising, and monitoring/assessments needs. These categories are not strictly bound to attributes given in the reporting schemas but are intended to offer a general understanding of each target’s intended function. They also reflect how MS perceive and implement these targets, rather than serving as a strict or definitive classification.

Across all categories, “quantitative targets” were identified through the interpretation of target descriptions (Figure 5). “Quantitative targets” were estimated as percentage among all the other categories and their count was reported compared to the total number of targets analysed. Because of the multiple classification of targets under different categories, “quantitative targets” at category level were reported as percentage values. When target text descriptions included a mix of qualitative statements and text not directly relevant to either qualitative or quantitative assessment, these were considered as “non-quantitative targets”.

Figure 5. Schema summarising target categories.



Source: this report.

2.1 Pressure reduction targets

“Pressure reduction targets” are related to the reduction of anthropogenic pressures causing a negative effect on the marine environment. For example:

- Reduce cetacean bycatch mortality by 2024 by 10% for *Delphinus delphis*, *Tursiops truncatus* and *Balaenoptera acutorostrata* (D1, PT).

- Introductions of new non-indigenous species from ship ballast water/sediment and ship hulls will decrease during 2018-2024 from the current level (D2, FI).
- Contaminants concentrations in the environment do not show an increased trend. The percentage of environmental samples which exceed the values proposed as limits for good ecological status to be reduced (<25%) (D8, RO).

2.2 Targets linked to threshold values

“Targets linked to threshold values” refer to specific threshold values for GES determination. For example:

- Reduction of the number of litter items per 100m beach (D10, RO).
- The 90th percentile of chlorophyll-a concentration (calculated from March to October, averaged over 6 years) is less than 15 µg/l (D5, BE).
- Increasing of the proportion of the individuals with mean length at first sexual maturity stage. The ratio individuals/population >30% (D3, RO).
- Winter DIN concentrations are less than 22.5 µmoles/l (D5, BE).
- The extent of loss of each habitat type, resulting from anthropogenic pressures, does not exceed 5% of the natural extent of the habitat type in the marine unit (D6, RO).
- The levels of pollutants (including PAHs, dioxins and heavy metals) in fish and fishery products from the North Sea do not exceed the maximum levels set in the EU Regulation 1881/2006 (D9, NL).

“Targets linked to thresholds“ do not establish a specific timeframe within which the MS declares its intention to achieve the target. These targets are associated with a specific parameter or index value, whereas ideally, they should encompass a set of parameters and/or indices that describe the status of MSFD Elements or Features at the criterion level. Therefore, despite “Targets linked to threshold” being quantitative, this category is often overly specific and does not adequately support the GES determination at criterion level.

2.3 Targets linked to trends

“Targets linked to trends” consider the temporal variation of a monitored MSFD Element or Feature towards a desired condition without indicating a stable state that could be used to set a threshold value (SWD(2020) 62 final). For example:

- The values of the measured biological effects are stable or show a declining trend (D9, SI).
- Reduce or not increase quantities of marine litter caused by fishing (given by weight per unit area) on the continental shelf compared to the reference levels set in 2012 (D8, ES).
- Posidonia oceanica meadow: a) The area of distribution of P. oceanica meadow is not decreasing. b) Ecological quality of P. oceanica meadow is not decreasing (D6, HR).
- The 5-year running mean species density is not above the long-term mean annual population size for 5 consecutive years for minimally two of the scavenging seabird species (D1, BE).

- Not increasing the level of nutrients and organic matter in the environment in order to maintain or increase the share of diatoms in relation to the share of Dinoflagellates in the phytoplankton structure (D4, PL).
- Amount of plastics in marine environment decreases by at least 30 % from the 2015 level (D10, FI).

The use of “targets linked to trends” is often associated with a lack of time series data or explicit indication of the underpinning ecological processes, which limits the possibility of establishing a link with the achievement of GES.

2.4 Targets linked to measures

“Targets linked to measures” refer to specific or generic measures or actions that contribute to achieving GES. The following sub-categories were defined to address a specific need:

- “Targets linked to knowledge gaps” which address gaps in the scientific knowledge of ecological processes,
- “Targets linked to awareness raising” which promote public participation to raise support to the MSFD implementation,
- “Targets linked to monitoring and assessments needs” which aim to close knowledge gaps in monitoring and assessment.

For example:

- Number and frequency of clean-ups or removal of marine litter show an increasing trend (D10, MT).
- Guarantee the potential of the marine environment for birds: food, rest, reproduction, movement (D1, ES).
- Increase knowledge of food webs, with a view to developing new indicators to properly assess and define their GES (D1, ES).
- Knowledge gaps on biological effects due to contamination are reduced (D8, IT).
- Develop and implement appropriate methodology, to obtain information, to allow the evaluation of the BEA until 2024 (D3, PT).

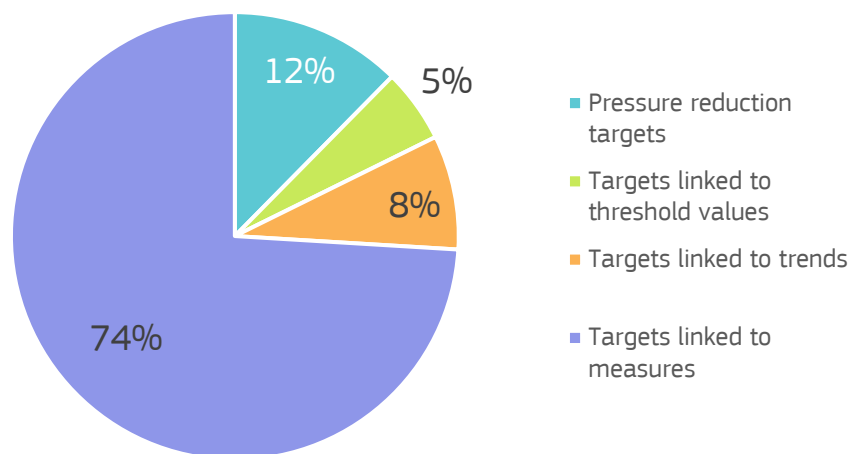
3 Results

The number of targets and their type varied among Descriptors and MS. A total of 9 277 targets were reported by MS of which 6 114 were duplicates and, therefore, removed from the analysis. MS reported 78% of Level I targets (Section 4.1, Annex 4), and the remaining 22% of Level II targets (Section 4.2).

3.1 Level I class targets

Most targets are identified under category “linked to measures” (74%) (Figure 6). Among these, “targets linked to monitoring and assessment” (64%) are the most common sub-category, followed by “targets linked to knowledge gaps” (26%) and “targets linked to awareness raising” (10%).

Figure 6. Relative percentage of identified categories for Level I targets.

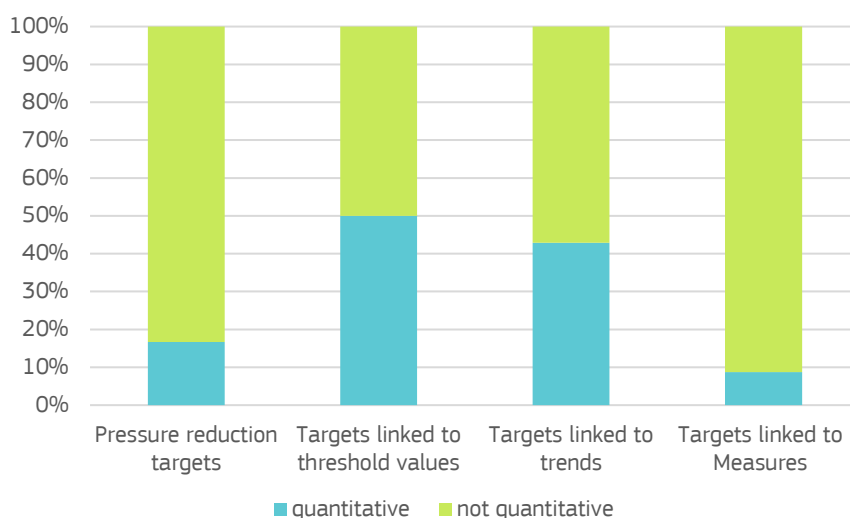


Source: this report

The analysis showed that 90% of targets are “non-quantitative”, i.e., they did not have clear numerical goals. “Quantitative targets” are identified for the categories “linked to threshold values” (50%) (e.g., linked to limits on pollutants concentration), “linked to trends” (43%) and “pressure reduction targets” (17%) (Figure 7). The “targets linked to measures” category show the fewest quantitative targets (9%) but are the most reported targets overall (251) (Figure 7). For targets “linked to awareness raising” and “linked to knowledge gaps” no “quantitative targets” are identified, while only one out of 65 targets is quantitative for “targets linked to monitoring and assessment”.

More detailed results of the Level I targets analysis for D1 and D10 are reported in Annex 4 of this report.

Figure 7. Ratio between “quantitative targets” and “non-quantitative targets” across categories (Level I targets).



Source: this report

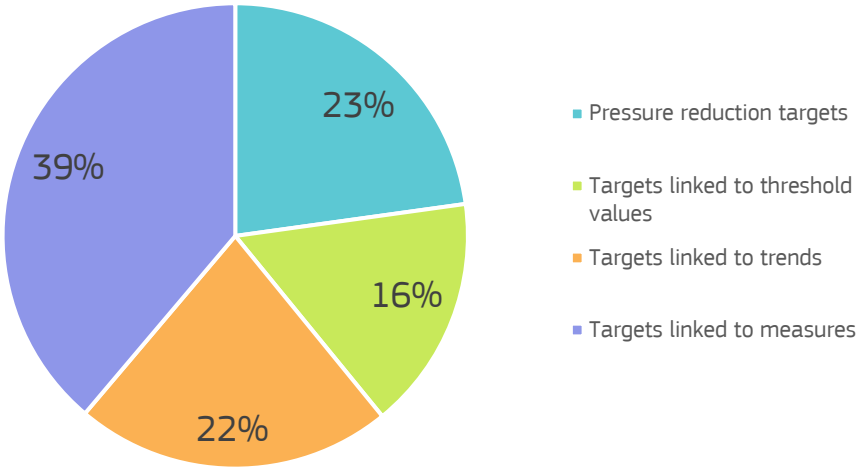
3.2 Level II class targets

Most Level II targets identified are under the category "targets linked to measures" (39%) (Figure 8). Among these, the subcategory "targets linked to awareness raising" represent 56%, while "targets linked to monitoring and assessment needs" accounted for 42%, followed by "targets linked to knowledge gaps" (2%).

The “non-quantitative targets” account for the majority (71%) of Level II targets. “Quantitative targets” are predominantly represented for Descriptors D5 (89%) and D9 (85%). In contrast, Descriptors D3 and D4 have the lowest representation of “quantitative targets”, with 0% and 6%, respectively. The Black Sea region has the highest relative percentage of “quantitative targets” (83%, 20 out of 24 targets analysed). The Northeast Atlantic region follows, with 54 % of targets in the subregion ACS (15 targets out of 28).

The results of this analysis show that pressure-related Descriptors (e.g., D2, D3, D5, D8, D9, D10) have a higher frequency of “quantitative targets”, averaging 41% (with a minimum of 18% for D10, and a maximum of 89% for D5). In contrast, state-related Descriptors (D1, D4, D6) have an average of 15% “quantitative targets”, ranging from 0% for D4 to a maximum of 31% for D6.

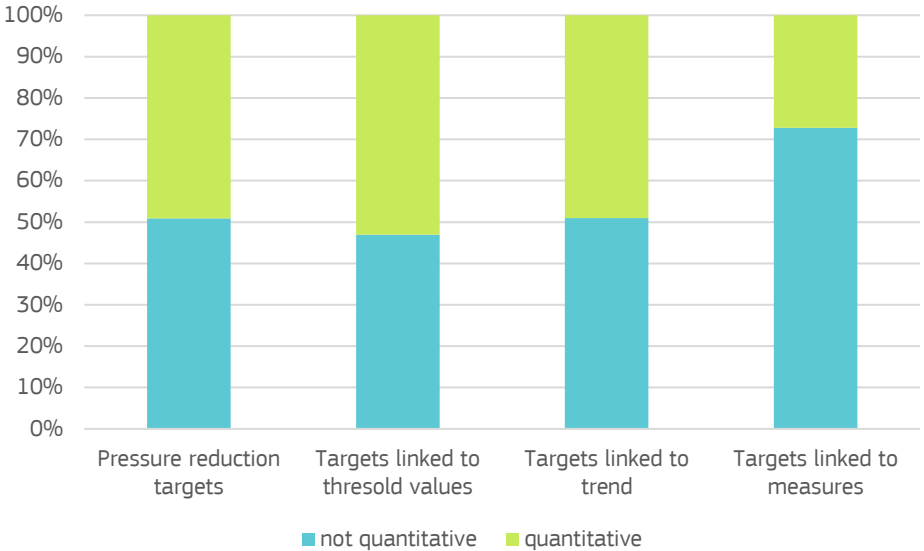
Figure 8 . Relative percentage of identified categories for Level II targets.



Source: this report

Among the targets “linked to threshold values”, 53% are quantitative. The “pressure reduction targets” and “targets linked to trends”, the percentage of “quantitative targets” decreases to 49%. The lowest frequency of quantitative targets is found in “targets linked to measures”, with 27% (Figure 9).

Figure 9. Ratio between specific “quantitative targets” and “non-quantitative targets” across categories (Level II targets).

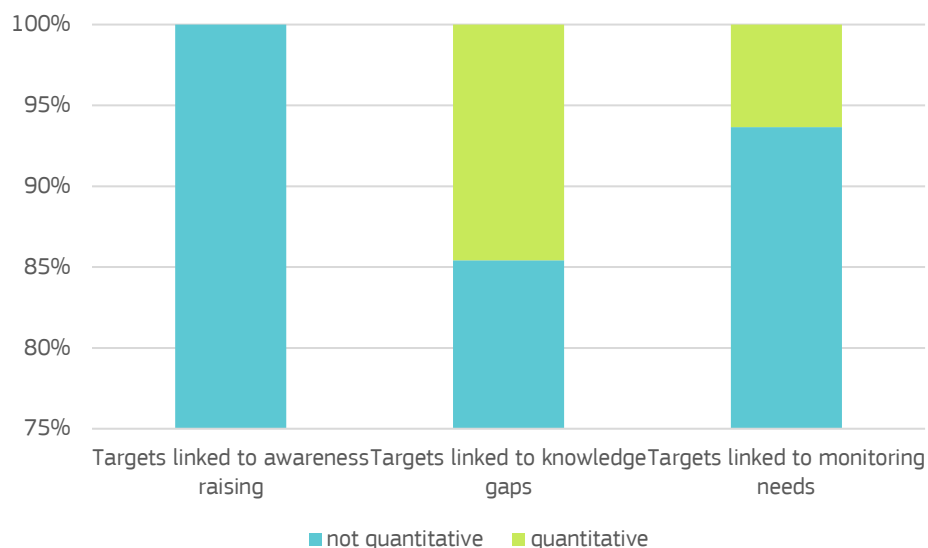


Source: this report

Within the category "targets linked to measures", the sub-categories "linked to knowledge gaps" and "linked to monitoring and assessment" account for 15% and 6% of “quantitative targets”,

respectively. Notably, “no quantitative targets” are identified under the sub-category “linked to awareness raising” (Figure 10).

Figure 10. Ratio between quantitative and non-quantitative for specific targets across the “targets linked to measures” sub-categories (Level II targets).



Source: this report

Romania (RO) is the MS that reported the most “quantitative targets”, with 20 targets covering all Descriptors except D4, for which no MS reported any “quantitative targets”. In contrast, SE does not report any “quantitative targets” (Table 1).

92% of targets for D9 and 89% of targets for D5 are quantitative. Lower percentages of “quantitative targets” are reported for D6 (46%) and D8 (35%), followed by D2, D1, D10 and D3 with 21%, 20%, 118% and 6%, respectively (Table 1).

Table 1. Number of “quantitative targets” for each Descriptor across MS (Level II). “Relative %” refers to the contribution of the category over the total number of targets per Descriptor.

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1	7		2		1			7		1			1			4	4			20%
D2			1			1		1	1				1			1	3			21%
D3																	3			6%
D4																				0%
D5	4	1	1		5	6	6	3	7	1	1	1			8	4	5		3	89%
D6								2	3								1			46%
D8	9	1	1		4		1	2	3	1				1	1		1		4	35%
D9	3	1	1		1			1	1					1	1		1		1	92%
D10	1			1	6	2							1	1	1		2			18%
TOTAL	24	3	6	1	17	9	7	16	15	3	1	1	3	3	11	9	20	0	8	

Source: this report

The highest number of “quantitative targets” is reported for the subregion ANS in the Northeast Atlantic (32 targets) and the subregion MAD in the Mediterranean Sea (27 targets). In the Black Sea region, all Descriptors except D4 are reported with “quantitative targets” (Table 2). In contrast, the MAL and MIC subregions have few “quantitative targets” reported across Descriptors.

Table 2. Number of “quantitative targets” across marine regions (Level II).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1	3		2	9		4	8		1		27
D2		1	1	1	1	3	1		1		9
D3						3					3
D4											0
D5	9	7	5	4	17	5	7	1		4	59
D6		3				1	2				6
D8	3	3	1	11	1	1	7	1		1	29
D9	1	1		5	1	1	2	1			12
D10	2			2	4	2			1	4	15
TOTAL	18	15	9	32	24	20	27	3	3	9	

Source: this report

3.2.1 Pressure reduction targets

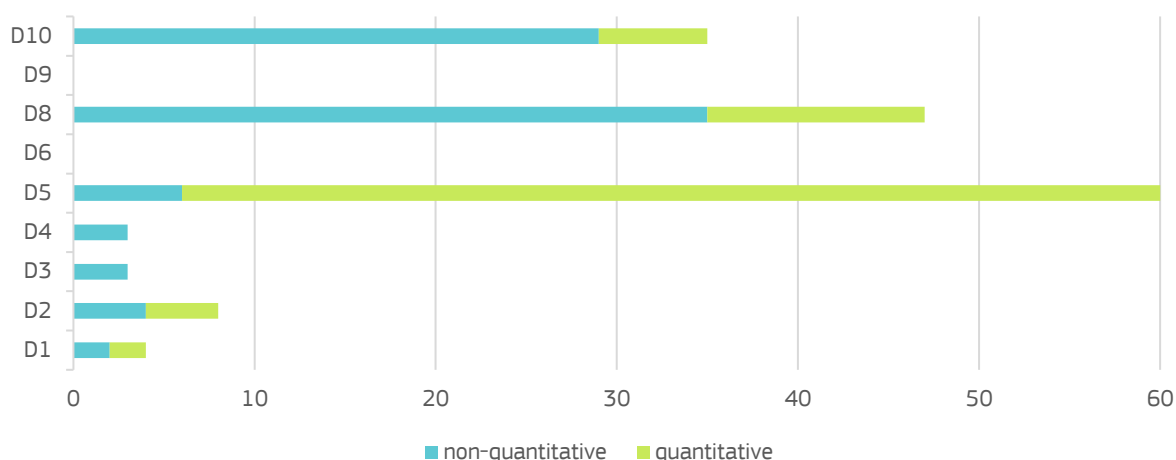
Seventeen of the 19 MS report “pressure reduction targets” across eight Descriptors (Table 3). The Descriptors with the highest relative percentage of “pressure reduction targets” are D5 (92%), D8 (57%), D10 (41%), and D4 (43%), while no “pressure reduction targets” are reported for D6 and D9 (Table 3). Under Descriptor D5, 54 out of 58 targets (92%) are classified as “quantitative targets”, demonstrating the specificity of the targets and a clear connection with the human pressures to be mitigated. In contrast, the ratio of “quantitative targets” decreases to 12 out of 47 targets (26%) for D8 and to 6 out of 35 targets (17%) for D10. No “quantitative targets” are identified for Descriptors D3 and D4, whereas 50% of the targets are quantitative for D2 and D1, although the total number of targets is limited to eight and four, respectively (Figure 11). Overall, 49% of “pressure reduction targets” are quantitative.

Table 3. Number of “pressure reduction targets” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level II).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1					1		1									2				3%
D2				1		1		1						1	2		2			19%
D3										1					1				1	6%
D4								1	2											43%
D5	4	1	1		7	6	6	4	7	1	1	1			8	3	5		4	92%
D6																				0%
D8	2		4	2	11		16	2	1	2				2	3		1		1	57%
D9																				0%
D10	3		2	1	8	2	8	1		1	1			1	1	2	2		2	41%
TOTAL	9	1	7	4	27	9	31	9	10	5	2	1	0	4	15	7	10	0	8	

Source: this report

Figure 11. Count of unique “quantitative targets” and “non-quantitative targets” under the category “pressure reduction targets” (Level II).



Source: this report

At the regional scale, “pressure reduction” targets are distributed across all marine regions (Table 4). All subregions of the Northeast Atlantic region are covered by “pressure reduction targets”, with a total of 94 targets. Targets for Descriptors D5, D8, and D10 are present in most subregions, except the Mediterranean MAL and MIC subregions. The Baltic and Black Sea regions have 34 and 10 “pressure reduction” targets, respectively (Table 4).

Table 4. Number of “pressure reduction targets” across marine regions (Level II).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1	2		2								4
D2				1	4	2	1				8
D3					1		2				3
D4		2					1				3
D5	9	7	5	4	17	5	9	1		5	58
D6											0
D8	22	1	5	9	5	1	5			6	47
D9											0
D10	17		2	6	7	2	4		1	6	35
TOTAL	50	10	14	20	34	10	22	1	1	17	

Source: this report

3.2.2 Targets linked to threshold values

All targets for D6 and D9 are categorised as “targets linked to threshold values” with 17 and 14 targets for D6 and D9, respectively (Table 5). BE is the MS reporting the greatest number of targets “linked to threshold values” under D1, D3, D8, D9 and D10, while no targets for the category are identified for LT, FI and SE. Targets “linked to threshold values” for D3 are the most abundant (29), but only 10% of them are classified as “quantitative targets”. For D8, D9 and D5, “quantitative targets” are more frequent representing 96%, 85% and 83% of ‘targets “linked to threshold values”, respectively (Figure 12). Overall, “quantitative targets” represent 53% of targets in this category (61 out of 115).

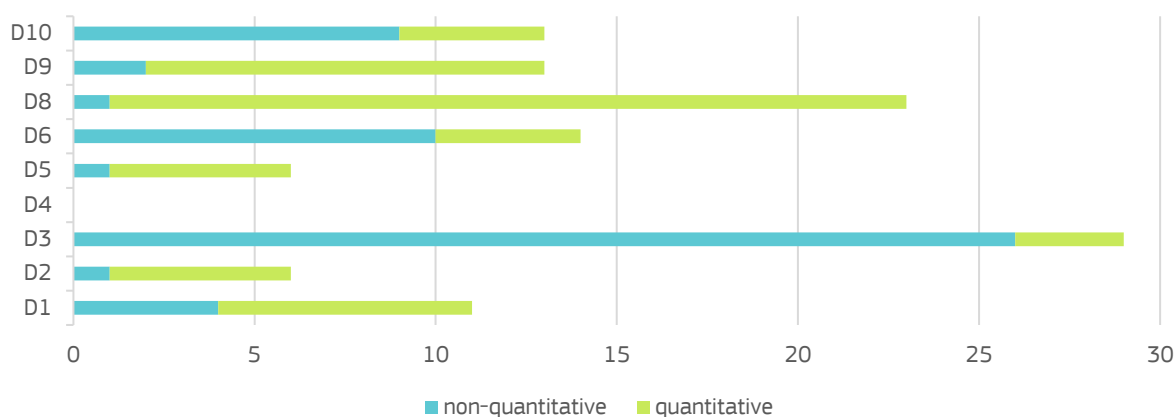
Table 5. Number of “targets linked to threshold values” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level II).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1	2		3					1								1	4			8%
D2			1					1	1				1			1	2			16%
D3	4	1	2	1			1		4					1	4	8	3			58%
D4																				0%
D5								1	1								4			10%
D6			3					6	4	1				1			2			100%
D8	9	1	2				1	2	3	1				1	1				3	29%
D9	3	1	1		2			1	1					1	1	1	1		1	100%
D10	3		1		2							1		1	2	1	1			14%
TOTAL	21	3	13	1	4	0	2	12	14	2	0	1	1	5	8	12	17	0	4	

Source: this report

At regional scale, all European marine subregions are represented by targets under this category. The ANS subregion is the most covered by this target class (39 targets) within the NEA region, while the MAD is the subregion most covered by targets in this class in the MED (18 targets) (Table 6).

Figure 12. Count of unique “quantitative targets” and “non-quantitative targets” under the category “targets linked to threshold values” (Level II).



Source: this report

Table 6. Number of specific “targets linked to threshold values” across marine regions (Level II targets).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1			1	5		4	1				11
D2		1	1	1		2	1		1		6
D3	9	4		7	5	3		1			29
D4											0
D5		1				4	1				6
D6		4		4		2	7				13
D8	1	3		12	1		6	1			23
D9	3	1		5	1	1	2	1			13
D10	2		2	5	4	1				1	12
TOTAL	15	14	4	39	11	17	18	3	1	1	

Source: this report

3.2.3 Targets linked to trends

The "targets linked to trends" category has a higher relative percentage for Descriptors D6 and D8 (31%) compared to other Descriptors. Croatia (HR) reported most of the targets in this category, with 23 out of 33 targets, and provided targets for all Descriptors except D2. In contrast, no targets of this category are identified for CY, FR, LT, LV, and SE. Most of these targets fall under Descriptors D1 (30 targets), D8 (26), and D10 (18), which correspond to 23%, 31%, and 14% of all reported targets per Descriptor, respectively (Table 7).

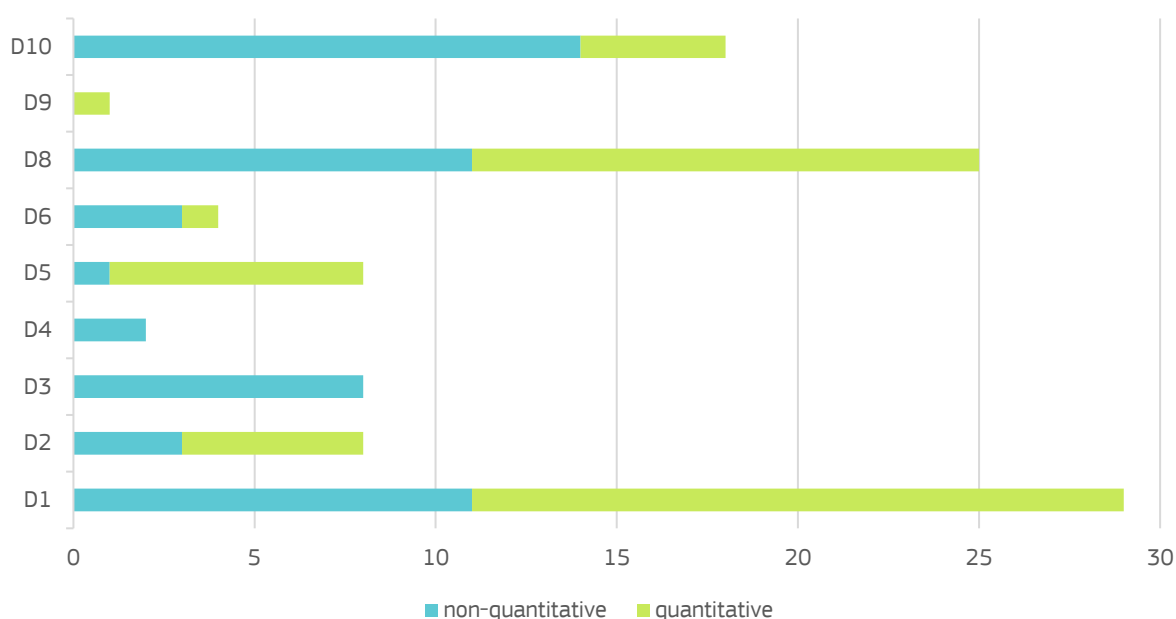
Most targets of this category for Descriptors D1, D2, D5, and D8 are quantitative, whereas no "quantitative targets" are identified for Descriptors D3 and D4. Overall, "quantitative targets" in this category account for 49% of the total, with 26 out of 53 targets reported being quantitative (Figure 13).

Table 7. Number of specific "targets linked to trends" across MS. "Relative %" refers to the contribution of the category over the total number of targets per Descriptor (Level II targets).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1	6		1					7		1			2		2	9	2			22%
D2			2						2				1		1	1	1			19%
D3	1							2							4	1				15%
D4								2												29%
D5								2							5				1	13%
D6								4												31%
D8	5		1	1	7			3	2	1				1	1		1		3	31%
D9								1												8%
D10	3		1	1	3	2		2		2				1	3					21%
TOTAL	15	0	5	2	10	3	0	23	4	4	0	0	3	2	16	11	4	0	4	

Source: this report

Figure 13. Count of unique "quantitative targets" and "non-quantitative targets" under the category "targets linked to trends" (Level II analysis).



Source: this report

At the regional scale, all Descriptors except D2 are represented in the MAD subregion, which counts 31 "targets linked to trends". Targets for Descriptors D1 and D8 are reported across all marine regions (NEA, BAL, BLK, and MED), with 32 and 31 targets reported, respectively. In contrast, the MAL subregion in the Mediterranean has no targets in this category (Table 8).

Table 8. Number of specific "targets linked to trends" across marine regions (Level II targets).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1	3		6	7	2	2	8		2		32
D2		2	1	2	1	1			1		8
D3	1			1	4		2				8
D4							2				2
D5					5		3				8
D6							4				4
D8	5	2	3	7	2	1	7			4	31
D9							1				1
D10	3			5	7		4		2	4	25
TOTAL	12	4	10	22	22	4	31	0	5	8	

Source: this report

3.2.4 Targets linked to measures

The "targets linked to measures" are predominantly used for Descriptors D1 (102 targets, 77% of reported targets for the Descriptor), D2 (27 targets, 63%), D5 (49 targets, 78%), and D10 (44 targets, 53%) (Table 9). PT, ES, and FR show the highest number of "targets linked to measures", which are mostly used for Descriptors D1 and D10.

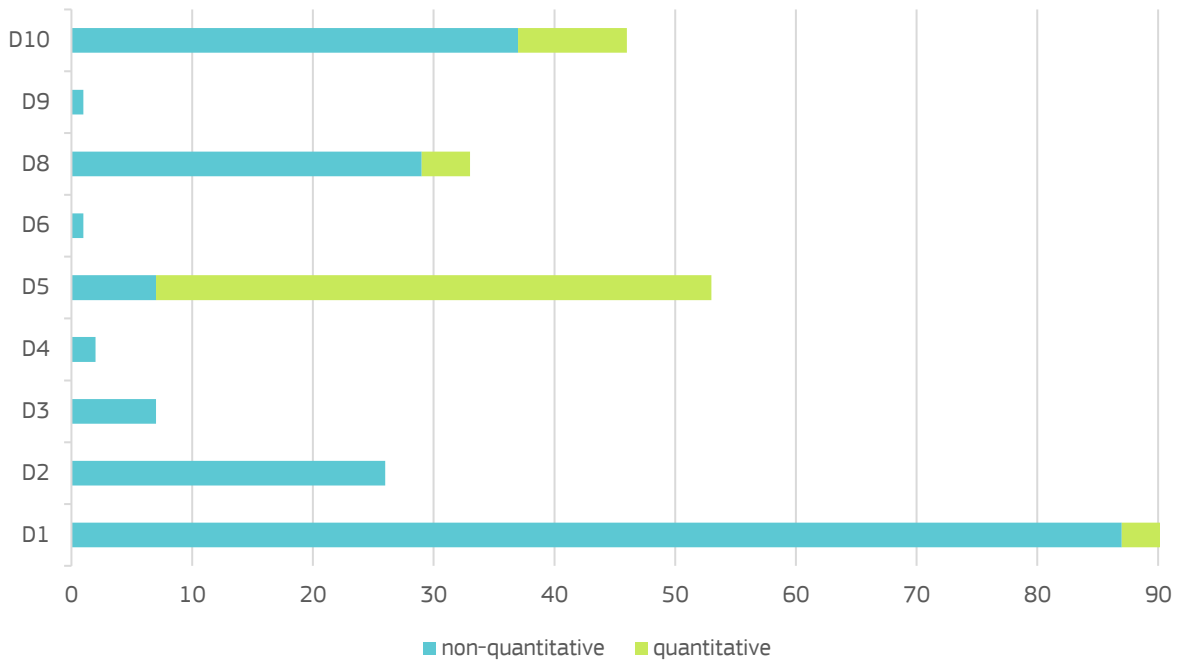
The vast majority of the "targets linked to measures" are non-quantitative, with 197 out of 271 targets falling into this category (72 %). This is particularly evident for Descriptors D1, D8, and D10, for which "quantitative targets" represent 15%, 12%, and 20% of targets, respectively. No "quantitative targets" are identified for Descriptors D2, D3, D6, and D9 within this category. In contrast, Descriptor D5 stands out as the only one with a large majority of "quantitative targets" in this category, with 46 out of 52 targets (88%) being quantitative (Figure 14).

Table 9. Number of specific "targets linked to measures" across MS. "Relative %" refers to the contribution of the subcategory over the total number of targets per Descriptor (Level II targets).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1	6		11		10		25	4	2	1			3	2	8	20	2		8	77%
D2	1				1		9		1	3	1				2	7			2	63%
D3	2						1									4			1	16%
D4			2																	29%
D5	4	1	2		7	6	8		4	1	1	1			5	4	5			78%
D6			1																3	31%
D8	2		6	1	7		7	2							1	2	4			39%
D9																1			1	15%
D10			4	1	17	2	3	3	1	1			1		2	9				53%
TOTAL	15	1	26	2	45	10	53	9	8	6	2	1	4	4	19	49	7	0	15	

Source: this report

Figure 14. Count of unique “quantitative targets” and “non-quantitative targets” under the category “targets linked to measures” (Level II targets).



Source: this report

This target category is more frequently represented in the Northeast Atlantic, which accounts for 78% of the targets in this category. The ABI and AMA subregions have 77 and 56 targets in this category, respectively. Targets for Descriptor D1 are the most frequent, with 101 targets, followed by Descriptors D5 and D10, with 52 and 46 targets, respectively. In contrast, in the Black Sea region, “targets linked to measures” are limited to Descriptors D1 and D5, representing a relatively small percentage of the total contribution to the category (3%) (Table 10).

Table 10. Number of specific “targets linked to measures” across marine regions (Level II targets).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1	28	2	23	22	8	2	13		3	3	101
D2	12	1	6	1	3		4			1	26
D3	1		4	2							7
D4				2							2
D5	11	4	6	5	14	5	4	1		4	52
D6				1							1
D8	13		8	9	3		3			4	33
D9	1										1
D10	11	1	9	4	9		6		2	12	46
TOTAL	78	8	56	47	39	7	30	1	5	26	

Source: this report

3.2.4.1 Targets linked to monitoring and assessment needs

Portugal (PT) utilises this subclass for all Descriptors (25 targets) except for Descriptors D4 and D6. In contrast, 10 out of 19 MS do not use this subclass, suggesting that monitoring programmes are already in place for these Descriptors (Table 11). D6 is the only Descriptor not represented in this subclass.

Table 11. Number of specific “targets linked to monitoring and assessment” across MS. “Relative %” refers to the contribution of the subcategory over the total number of targets per Descriptor (Level II targets).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1			1				1							1		1			2	4%
D2					1					3						5				20%
D3	2						1									4				14%
D4			2											1						38%
D5					4		1									1				10%
D6																				0%
D8	1		4		4			1						1		4			1	19%
D9																1				8%
D10			1					3		1						9			1	18%
TOTAL	3	0	8	0	9	0	3	4	0	4	0	0	0	3	0	25	0	0	4	

Source: this report

At the regional scale, no targets of this category are reported in the Black Sea and the Baltic Sea is covered with only one such target for Descriptor D10. In the Northeast Atlantic region, the ACS subregion has no targets for this subclass, similar to the MAL in the Mediterranean Sea (Table 12). The AMA subregion in the Northeast Atlantic shows the highest number of targets, with 26 targets.

Table 12. Number of specific “targets linked to monitoring and assessment needs” across marine regions (Level II targets).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE	
D1	1		1	2			2				6
D2	2		5				3			1	11
D3	1		4	2							7
D4				3							3
D5	3		2							1	6
D6											0
D8	4		6	6			2			3	21
D9	1										1
D10	1		8	1	1		5		1	1	18
TOTAL	13	0	26	14	1	0	12	0	1	6	

Source: this report

3.2.4.2 Targets linked to knowledge gaps

Portugal (PT) and Spain (ES) report on this target subclass: PT with 17 targets and ES with 12 targets for Descriptors D1, D2 D5, D8, D9 and D10 (Table 13). Descriptors D8 and D10 show the highest number of targets for the subcategory with 20 and 15 targets, respectively. No targets are reported for D3, D4 and D6 (Table 13).

Table 13. Number of specific “targets linked to knowledge gaps” across MS. “Relative %” refers to the contribution of the subcategory over the total number of targets per Descriptor (Level II targets).

Descriptor	BE	CY	DK	EE	ES	FI	FR	HR	IE	IT	LT	LV	MT	NL	PL	PT	RO	SE	SI	Relative %
D1			2											2		5				6%
D2					1			1		1						2				11%
D3																				0%
D4																				0%
D5					6		1													11%
D6																				0%
D8	1		3		4			2		1						3			1	17%
D9																1				8%
D10			1		1	1				1						6				12%
TOTAL	1	0	6	0	12	1	1	3	0	3	0	0	0	2	0	17	0	0	1	

Source: this report

The class is poorly represented at regional scale in the ANS, MIC, and BAL subregions. No such targets are used in the BLK, MAL and ACS regions (Table 14).

Table 14. Number of specific “targets linked to knowledge gaps” across marine regions (Level II targets).

Descriptor	North East Atlantic (NEA)				Baltic Sea (BAL)	Black Sea (BLK)	Mediterranean Sea (MED)				TOTAL	
	ABI	ACS	AMA	ANS	BAL	BLK	MAD	MAL	MIC	MWE		
D1	1		4	4								9
D2	1		3				2				1	7
D3												0
D4												0
D5	4		2								3	9
D6												0
D8	3		6	4			4				3	20
D9	1											1
D10	2		6	1	2		1		1		2	15
TOTAL	12	0	21	9	2	0	7	0	1	9		

Source: this report

3.2.4.3 Targets linked to awareness raising

Two targets are reported by PL for D10 in this subcategory. More targets “linked to awareness raising” are classified as Level I class targets.

4 Conclusions

The analysis of the targets reported by the Member States under Article 10 of the MSFD in the second cycle of implementation, across all Descriptors and EU marine regions, shows that there is space of improvement in targets setting.

The study reveals:

- Dominance of “non-quantitative” targets:
 - 90% of Level I targets (non-specific targets covering several Descriptors) are “non-quantitative”.
 - 71% of Level II targets (Descriptor-specific targets) have some Descriptor or Criteria specificity but are still largely “non-quantitative”.
- Descriptors with highest proportion of “quantitative targets”:
 - Descriptor D5: 89% “quantitative targets”.
 - Descriptor D9: 85% “quantitative targets”.
 - Indicates a strong focus on measurable goals for these Descriptors.
- Association of “quantitative targets” with target categories:
 - For “targets linked to threshold values”, 53% are “quantitative targets”.
 - For “Pressure reduction targets” and “targets linked to trends”, 49% are “quantitative targets”.
 - “Targets linked to measures”:
 - For Level I targets, 9% are quantitative.
 - For Level II targets, 27% are quantitative.

Regional variations are evident in target-setting practices:

- The Northeast Atlantic leads in both the number and specificity of targets, while the Black Sea and Mediterranean regions fall behind in adopting “quantitative targets”.
- “Pressure reduction targets” are primarily associated with the Bay of Biscay-Iberian Shelf (ABI) and the Baltic Sea (BAL) regions, covering Descriptors D1, D5, D8, and D10.
- “Targets linked to threshold values” are predominantly used in the Greater North Sea (ANS) subregion, covering all Descriptors except D5.
- “Targets linked to trends” are most prevalent in the Mediterranean Sea, particularly in the Mediterranean Atlantic (MAD) and Ionian Sea and Central Mediterranean Sea (MIC) subregions.
- “Targets linked to measures” are most common in the Macaronesia (AMA) and Western Mediterranean Sea (NWE) subregions.

Following the SMART approach in SWD (SWD(2020) 62 final), it is recommended to focus on i) reducing the total number of targets, ii) prioritising quantitative targets, especially when they are linked to measures, and iii) promoting the definition of specific targets at Descriptor- and Criteria-level (Level II targets) to be adopted at regional and subregional scale.

The study highlights the need for improvement in target setting and reporting under the MSFD, particularly in terms of quantification, harmonisation, and specificity.

References

Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

European Commission. 2023. MSFD guidance: reporting on the 2024 update of Articles 8, 9 and 10. (MSFD Guidance Document 20; version 20240514). Brussels

Louropoulou, E., Alonso Aller, E., Cardoso, A.C., Carravieri, A., Druon, J., Magliozzi, C., Martini, E., Mendes, C., Palma, M., Piroddi, C., Ruiz-Orejón, L.F., Zupan, M. and Hanke, G., Programmes of Measures under the Marine Strategy Framework Directive to achieve or maintain Good Environmental Status, Publications Office of the European Union, Luxembourg, 2025, [doi:10.2760/7769294](https://doi.org/10.2760/7769294), JRC139180.

Boschetti, S., Palialexis, A. and Connor, D., Marine Strategy Framework Directive – Review and analysis of EU Member States’ 2018 reports – Descriptor 6: Sea-floor integrity and Descriptor 1: Benthic habitats, EUR 30716 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-38014-6, doi:10.2760/355956, JRC125288.

Boschetti, S., Piroddi, C., Druon, J. and Palialexis, A., Marine Strategy Framework Directive – Review and analysis of Member States’ 2018 reports – Descriptor 4: Food webs, EUR 30652 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-32461-4, doi:10.2760/990099, JRC124263.

Dos Santos Fernandes De Araujo, R. and Boschetti, S., Marine Strategy Framework Directive Review and analysis of EU Member States’ 2018 reports - Descriptor 5: Eutrophication, EUR 30677 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-36246-3, doi:10.2760/180642, JRC124915.

Friedland, R., Boschetti, S. and Stips, A., Marine Strategy Framework Directive – Review and analysis of EU Member States’ 2018 reports – Descriptor 7 – permanent alteration of hydrographical conditions does not adversely affect marine ecosystems, EUR 30670 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-35957-9, doi:10.2760/74271, JRC124879.

Magliozzi, C., Druon, J., Boschetti, S. and Palialexis, A., Marine Strategy Framework Directive - Review and analysis of EU Member States’ 2018 reports - Descriptor 1: Pelagic habitats, EUR 30662 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-34199-4, doi:10.2760/09511, JRC124271.

Palialexis, A. and Boschetti, S., Marine Strategy Framework Directive - Review and analysis of Member States’ 2018 reports Descriptor 1: Species biological diversity, EUR 30664 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-34256-4, doi:10.2760/27700, JRC124085.

Ruiz Orejon Sanchez Pastor, L., Tornero Alvarez, M.V., Boschetti, S. and Hanke, G., Marine Strategy Framework Directive - Review and analysis of EU Member States’ 2018 reports - Descriptor 10: Marine litter, EUR 30665 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-34263-2, doi:10.2760/238367, JRC124701.

SWD(2020) 62 final: COMMISSION STAFF WORKING DOCUMENT Background document for the Marine Strategy Framework Directive on the determination of good environmental status and its links to assessments and the setting of environmental targets Accompanying the Report from the

Commission to the European Parliament and the Council on the implementation of the Marine Strategy Framework Directive (Directive 2008/56/EC)

Tornero Alvarez, M.V., Boschetti, S. and Hanke, G., Marine Strategy Framework Directive - Review and analysis of EU Member States' 2018 reports - Descriptor 8: Contaminants in the environment - Descriptor 9: Contaminants in seafood, EUR 30659 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-34085-0, doi:10.2760/621757, JRC124588.

Tornero V., Palma M., Boschetti S.T., Cardoso A.C., Druon J.-N., Kotta M., Louropoulou E., Magliozzi C., Palialexis A., Piroddi C., Ruiz-Orejón L.F., Vasilakopoulos P., Vighi M., Hanke G. Review and analysis of EU Member States' 2020 reports: Monitoring programmes (MSFD Article 11), EUR (), Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-55778-4, doi:10.2760/8457, JRC129363.

Tsiamis, K., Boschetti, S., Palialexis, A., Somma, F. and De Jesus Cardoso, A., Marine Strategy Framework Directive – Review and analysis of EU Member States' 2018 reports – Descriptor 2: Non-Indigenous Species, EUR 30520 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-27700-2, doi:10.2760/7897, JRC123179.

Vasilakopoulos, P., Konrad, C., Palialexis, A. and Boschetti, S., Marine Strategy Framework Directive - Review and analysis of EU Member States' 2018 reports - Descriptor 3: Commercial species, EUR 30660 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-34175-8, doi:10.2760/40557, JRC124746.

Vighi, M., Boschetti, S. and Hanke, G., Marine Strategy Framework Directive - Review and analysis of EU Member States' 2018 reports - Descriptor 11: Underwater Noise and Energy, EUR 30676 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-36186-2, doi:10.2760/20326, JRC124922.

List of abbreviations and definitions

ABI	Bay of Biscay-Iberian Shelf
ACS	Celtic Seas
AMA	Macaronesia
ANS	Greater North Sea
BAL	Baltic Sea
BLK	Black Sea
GES	Good Environmental Status
MAD	Adriatic Sea
MAL	Eastern Mediterranean
MED	Mediterranean Sea
MIC	Ionian Sea and Central Mediterranean Sea
MRU	Marine Reporting Unit
MS	Member States
MSFD	Marine Strategy Framework Directive
MWE	Western Mediterranean Sea
NEA	North-East Atlantic
SWD	Staff Working Document

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Annexes

Annex 1. Original results of the consultation related to quantitative targets contribution across categories

Number of specific targets (level II) classified as quantitative and not quantitative for each category. These results were further processed to develop the classification and analysis presented in the report (Table 15a).

Table 15a. Original results of the consultation related to quantitative targets contribution across categories.

	Quantitative	Not quantitative
Targets for pressure reduction	79	75
Targets linked to threshold values	61	91
Targets linked to trends	51	106
Targets linked to measures:	75	80
-Targets linked to knowledge gaps	7	147
-Targets linked to monitoring and assessments needs	4	147
-Targets linked to awareness raising	0	151

Source: this report

Annex 2. Reference to Annexes III (Directive 2008/56/EC) - Pressures and impacts

Physical loss:

- Smothering (e.g., by man-made structures, disposal of dredge spoil),
- Sealing (e.g., by permanent constructions).

Physical damage:

- Changes in siltation (e.g., by outfalls, increased run-off, dredging/disposal of dredge spoil),
- Abrasion (e.g., impact on the seabed of commercial fishing, boating, anchoring),
- Selective extraction (e.g., exploration and exploitation of living and non-living resources on seabed and subsoil).

Other physical disturbance:

- Underwater noise (e.g., from shipping, underwater acoustic equipment),
- Marine litter.

Interference with hydrological processes

- Significant changes in thermal regime (e.g., by outfalls from power stations),
- Significant changes in salinity regime (e.g., by constructions impeding water movements, water abstraction).

Contamination by hazardous substances:

- Introduction of synthetic compounds (e.g., priority substances under Directive 2000/60/EC which are relevant for the marine environment such as pesticides, antifoulants, pharmaceuticals, resulting, for example, from losses from diffuse sources, pollution by ships, atmospheric deposition and biologically active substances),
- Introduction of non-synthetic substances and compounds (e.g., heavy metals, hydrocarbons, resulting, for example, from pollution by ships and oil, gas and mineral exploration and exploitation, atmospheric deposition, riverine inputs),
- Introduction of radio-nuclides.

Systematic and/or intentional release of substances:

- Introduction of other substances, whether solid, liquid or gas, in marine waters, resulting from their systematic and/or intentional release into the marine environment, as permitted in accordance with other Community legislation and/or international conventions.

Nutrient and organic matter enrichment:

- Inputs of fertilisers and other nitrogen — and phosphorus-rich substances (e.g., from point and diffuse sources, including agriculture, aquaculture, atmospheric deposition),
- Inputs of organic matter (e.g., sewers, mariculture, riverine inputs).

Biological disturbance:

- Introduction of microbial pathogens,
- Introduction of non-indigenous species and translocations,
- Selective extraction of species, including incidental non-target catches (e.g., by commercial and

Annex 3. Reference to Annex IV (Directive 2008/56/EC) - Indicative list of characteristics to be taken into account for setting environmental targets

(1) Adequate coverage of the elements characterising marine waters under the sovereignty or jurisdiction of Member States within a marine region or subregion.

(2) Need to set (a) targets establishing desired conditions based on the definition of good environmental status; (b) measurable targets and associated indicators that allow for monitoring and assessment; and (c) operational targets relating to concrete implementation measures to support their achievement.

- (3) Specification of environmental status to be achieved or maintained and formulation of that status in terms of measurable properties of the elements characterising the marine waters of a Member State within a marine region or subregion.
- (4) Consistency of the set of targets; absence of conflicts between them.
- (5) Specification of the resources needed for the achievement of targets.
- (6) Formulation of targets, including possible interim targets, with a timescale for their achievement.
- (7) Specification of indicators intended to monitor progress and guide management decisions with a view to achieving targets.
- (8) Where appropriate, specification of reference points (target and limit reference points). (9) Due consideration of social and economic concerns in the setting of targets.
- (10) Examination of the set of environmental targets, associated indicators and limit and target reference points developed in light of the environmental objectives laid down in Article 1, in order to assess whether the achievement of the targets would lead the marine waters falling under the sovereignty or jurisdiction of Member States within a marine region to a status matching them.
- (11) Compatibility of targets with objectives to which the Community and its Member States have committed themselves under relevant international and regional agreements, making use of those that are most relevant for the marine region or subregion concerned with a view to achieving the environmental objectives laid down in Article 1.
- (12) When the set of targets and indicators has been assembled, they should be examined together relative to the environmental objectives laid down in Article 1 to assess whether the achievement of the targets would lead the marine environment to a status matching them.

Annex 4. Target descriptions selected as good practice examples based on the analysed targets.

Descriptor source	MS	Target description translation
D1	ES	Control and reduce the impacts of introduced predator populations (e.g., cats and rats) on seabird colonies. <ul style="list-style-type: none"> • Number of actions to eradicate predators in the affected colonies. • Trends in predator impacts on the main islands over 10 years, and on the 25% of medium priority seabird colonies over 20 years. • Number/percentage of seabird colonies free from introduced predators. TARGET 2012: c. 3.8
D1, D1C1	BE	The mortality rate of harbour porpoises as a result of incidental bycatches is lower than the level at which the species is endangered, so that the viability of the species is guaranteed in the long term.

D1, D1C1	HR	<p>Incidental bycatch does not significantly increase (> 1%) the natural mortality (D1C1).</p> <p>The number of nesting bird species is stable or increasing (D1C2).</p> <p>Chicks mortality due to predation of rats, cats and seagulls does not increase significantly (> 1%) the natural mortality (D1C3).</p> <p>There is no statistically significant reduction of the distribution area of monitored species (D1C4).</p> <p>Availability of prey (small pelagic fish and cephalopods) in the birds feeding area is sufficient (D1C5).</p>
D1, D1C2	IT	<p>The coastal fish populations show an improvement assessed on the basis of the demographic characteristics of the populations of the coastal fish species that compose them, with reference to the conditions of the MPAs.</p>
D1, D1C6, D5, D5C2	BE	<p>The 90th percentile of chlorophyll a concentration (calculated from March to October, averaged over 6 years) is less than 15 µg/l.</p>
D1, D4/D1, D5, D6/D1	DE	<p>Operational environmental objective for the overarching environmental objective 'Oceans without impact from anthropogenic eutrophication'. Nutrient inputs via the rivers must be further reduced. Reduction targets have been set out in the programmes of measures in the WFD management plans. In the period 2012–2014, agriculture (71% of nitrogen inputs and 44% of phosphorus inputs) was the main source of nutrient inputs via surface waters, followed by point sources (e.g. sewage treatment plants) (21% of nitrogen inputs and 35% of phosphorus inputs) (source: Fuchs et al. 2016, UBA 2017). Nutrient inputs from urban areas and atmospheric deposition to inland surface waters played a subordinate role. The nutrient inputs of surface waters draining into the North Sea with the Substance Input Model MoRe have decreased by 18% (78,050 tonnes) for nitrogen and 11% (2,070 tonnes) for phosphorus compared to the assessment periods 2012–2014 and 2006–2011 (Fuchs et al. 2016, UBA 2017). Comparing the assessment periods 2012–2014 and 1983–1987, nutrient inputs decreased by 56% (450,638 tonnes) for nitrogen and 74% (49,624 tonnes) for phosphorus (source: MoRe). OSPAR's objective of reducing nutrient inputs into marine waters by 50% (compared to 1985) has thus been achieved.</p>
D1.1, D1.2, D1.4, D1C6, D4/D1, D6C5, D8C1, D8C2, D8C3, D9C1	SE	<p>B.1 The supply of hazardous substances from human activities shall be reduced until it does not cause levels of hazardous substances which prevent the attainment of good environmental status.</p> <p>B.1 Input of hazardous substances from human activities shall decrease until it does not cause concentrations of hazardous substances that prevent good environmental status to be achieved</p>

D1.1, D1.2, D1.4, D1C6, D4/D1, D6C5, D8C1, D8C2, D8C3, D9C1	SE	B.1. The supply of hazardous substances from human activities shall be reduced until it does not cause levels of hazardous substances that prevent good environmental status from being achieved. B.1 Input of hazardous substances from human activities shall decrease until it does not cause concentrations of hazardous substances that prevent good environmental status to be achieved
D1.1, D2C2, D2C3	FI	Abundance of raccoon dog and American mink decreases in waterbird breeding areas and are eradicated from selected MPAs.
D1C1	PT	Reduce cetacean bycatch mortality by 2024 by 10% for <i>Delphinus delphis</i> , <i>Tursiops truncatus</i> and <i>Balaenoptera acutorostrata</i> . (Modification of the 2012 target, Cont.18)
D1C1	DK	Incidental by-catch of harbour porpoise is reduced as much as possible, and as a minimum to a level below 1.7% of the total population.
D1C1, D1C2	MT	Number of incidentally caught specimens, as verified through official data collection processes and analysis of stranded specimens, shows a declining trend.
D1C2	RO	The spawning stock abundance trend should not decrease comparing to last assessment (2006-2011).
D1C3	RO	The age of the first maturity stage does not decrease below 30% for: <i>Squalus acanthias</i> <i>Merlangus merlangius euxinus</i>
D2	FI	Introductions of new non-indigenous species from ship ballast water/sediment and ship hulls will decrease during 2018-2024 from the current level.
D2C2	RO	Average biomass of <i>Mnemiopsis leidyi</i> does not exceed the threshold value.
D2C2	HR	a) To establish regular monitoring in areas of particular risk (ports, harbours, farms), in order to obtain information on the occurrence of new NIS (invasive) species, and to acquire new knowledge (biology, ecology) on NIS (particularly invasive species) and not just for the Adriatic Sea and the Mediterranean, globally. To establish monitoring and evaluation of the effectiveness of existing measures in relation to the input of NIS (invasive species) as a result of anthropogenic activities in the light of increasing knowledge about these species by means of the proposed interim targets, taking such

		<p>measures even further, if it is necessary.</p> <p>b) Developing action plans for the management of key high-risk species.</p> <p>c) Reducing the risks of introduction associated with international shipping, one of the key pathways of NIS introduction, through the implementation of the Convention on Ballast Water Management (BWC).</p> <p>d) Reducing the risk of introduction and spread from other key pathways and implementing action plans to control the spread of the high-risk species.</p> <p>e) Reduce the number of some NIS by commercial fishery.</p>
D3C2	RO	<p>Spawning stock biomass of relevant species to increase as follows:</p> <ol style="list-style-type: none"> 1. <i>Sprattus sprattus</i>, SSB\leq60000tonne 2. <i>Psetta maetica</i>, SSB\leq2000tonne
D4/D1, D4C1	PL	<p>Reduction of the nutrients and organic matter load to the sea, and reduction of the level of exploitation of species listed in the Habitats Directive and Birds Directive to a level that guarantees natural diversity of trophic guilds</p>
D5	LT	<p>To reduce the release of nutrients that promote eutrophication into the environment of the Curonian Lagoon and the Baltic Sea.</p>
D5, D5C8	PL	<p>Maintaining the decreasing trend of nitrogen and phosphorus input in order to achieve the improvement of the macrozoobenthos communities in the sea.</p>
D5C2	SI	<p>In the water column, a state is maintained where there is no excessive flowering of phytoplankton and the composition of the phytoplankton society is characteristic of an anthropogenic relatively unencumbered environment. The existing good condition in relation to chlorophyll concentrations is maintained. Chlorophyll concentrations in the surface layer of seawater shall not exceed the good status limit established by intercalibration at mediterranean sea region level: 1,5 μg/L.</p>
D5C2	IT	<p>For coastal marine water bodies belonging to Macrotypes I and II (Ministerial Decree 260/2010): the trend is decreasing of the geometric mean + standard error, calculated on an annual basis over a period of 6 years, of concentration of chlorophyll 'a', linked to the reduction of inputs of nutrients of anthropogenic origin. For coastal marine water bodies belonging to Macrotypes III (Ministerial Decree 260/2010): there is no increase in the geometric average + standard error, calculated on an annual basis over a period of 6 years, of the concentration of chlorophyll 'a' derived from anthropogenic inputs of nutrients.</p>

D5C3	RO	At least 50% of <i>Noctiluca scintillans</i> biomass values do not exceed the threshold values: -cold season - 70mg/m ³ -warm season - 240mg/m ³
D5C6	HR	a) Abundance of opportunistic macroalgae is not increasing. b) Opportunistic macroalgae coverage declines.
D6C2	IE	The spatial extent and distribution of physical disturbance pressures on the seabed is at a level that ensures that the structure and functions of the ecosystems, and benthic ecosystems, in particular, are not adversely affected
D6C4	RO	The extent of loss of each habitat type, resulting from anthropogenic pressures, does not exceed 5% of the natural extent of the habitat type in the marine unit.
D6C5	HR	<i>Posidonia oceanica</i> : a) The area of distribution of <i>P. oceanica</i> meadow is not decreasing. b) Ecological quality of <i>P. oceanica</i> meadow is not decreasing.
D8	ES	Identify and address the main sources of pollutants in the marine environment in order to maintain decreasing or stable temporal trends in the levels of pollutants in sediments and in biota, as well as in the biological levels of response to pollution in indicator organisms • No./percentage of pollution sources identified for which regulation or reduction actions are carried out. • Levels and trends of pollutants in sediments. • Levels and trends of contaminants in biota. • Biological levels and trends of biological responses. OBJECTIVES 2012: B.2.1. B.2.2 B.2.3
D8	FR	marine inputs of sediment contaminants above regulatory thresholds related to dredging and disposal activities.
D8C1	RO	Contaminants concentrations in environment do not show an increased trend. The percentage of environmental samples which exceed the values proposed as limits for good ecological status to be reduced (<25%)

D8C1	SI	Maintaining good status where this has already been achieved and improving status where status is poor, in terms of pollutant concentrations in water, sediment and organisms. Concentrations of pollutants are in accordance with the prescribed limit values within the framework of Directive 60/2000 / EC and the Directive on environmental standards in the field of water policy (Directive 2000/60 / EC, Directive 2008/105 / EC) or the Regulation on the status of surface waters. L. RS, No. 14/2009, 98/2010, 96/2013; 24/2016).
D8C1	HR	Maintain current status in water bodies where GES is established in relation to the concentrations of contaminants in relevant matrices. Develop and implement measures to achieve GES in water bodies where GES hasn't been achieved. Achieve and maintain contaminant concentration levels in line with set environmental quality standards or otherwise in line with undisturbed environment. The levels of concentrations of non-synthetic substances that are naturally present in the environment should be in line with their background concentrations, with no deterioration trends. The levels of synthetic substances should be in line with the detection limits of the analytical methods for their determination.
D8C1	IT	The concentrations of contaminants for which higher values have been reported are reduced by 2020 the required standards of environmental quality.
D8C1, D8C2	NL	Offshore: Meeting the OSPAR Environmental Assessment Criteria and/or Background Assessment Criteria where determined. Where these standards have not yet been formulated, the aim is a downward trend in the concentrations of polluting substances or their pollution effects.
D9	ES	For legislated pollutants, for any species intended for human consumption, do not exceed the maximum permitted levels (CMP) established by community legislation or other relevant regulations for the protection of public health.
D9	PL	Concentrations of contaminants or groups of pollutants listed in the Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs measured in certain matrices do not exceed the acceptable levels defining the threshold values set out in this Regulation. Concentrations other contaminants or groups of substances than those listed the Regulations on the contamination in foodstuffs, which may cause the effects of pollution in the region and which are recognized at the regional level as significant in the area of

		environmental assessment, they do not exceed the threshold values defined regionally or at the national level.
D9	CY	Target 6: The marine environment of Cyprus is considered to be in good environmental status by the year 2020 if contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards. Quantitative target, calculated from 1 indicator. This target and its indicator correspond to Descriptor 9 and relevant criteria and indicators.
D9, D9C1	BE	The level of pollutants in edible tissues (muscle, liver, hom, meat or other soft parts, as appropriate) of fishery products (including fish, crustaceans, molluscs, echinoderms, seaweeds and other marine plants) caught or harvested in nature (excluding fish from mariculture) is not higher than for the pollutants listed in Regulation (EC) No 1881/2006, the maximum levels laid down in that Regulation, which constitute the threshold values for the application of this Decision.
D9, D9C1	BE	All measured contaminants in fish and shellfish for human consumption have concentrations below regulatory levels (Commission Regulation 1881/2006 and Directive 2006/113/EC).
D9C1	RO	Contaminants concentrations (percentile 75th) in seafood do not exceed regulated levels.
D9C1	NL	The levels of pollutants (including PAHs, dioxins and heavy metals) in fish and fishery products from the North Sea do not exceed the maximum levels set in the EU Regulation 1881/2006.
D9C1	SI	Maintaining good status in such a way that the levels of pollutant concentrations in fish and seafood do not exceed certain limit values provided by law. Upgrade the monitoring of concentrations of pollutants in marine organisms caught in marine waters, within the competence of the Republic of Slovenia.
D9C1	IE	Levels of contaminants in fish* and shellfish caught or harvested in Irish seas for human consumption complies with maximum limits listed in EU Regulation 1881/2006 (as amended). * Excludes finfish aquaculture.
D9C1	HR	a) Maintain the current levels of detected contaminants. b) Not to exceed the current number of contaminants that has surpassed maximum regulatory levels.

D9C1	DK	Emissions of contaminants generally do not lead to exceeding of the maximum residue levels applicable in the food legislation for seafood.
D10	EE	Target 26 - reducing the input of litter (macro- and micro-sized litter, including lost fishing gear) 30% compared to baseline year (2017) within the six year assessment period.
D10	FI	Amount of plastics in marine environment decreases by at least 30 % from the 2015 level.
D10C1, D10C3	NL	In the longer term, work towards quantitative (regional) targets for beach waste (30% reduction) and plastic in stomachs of fulmar (10% of birds; OSPAR EcoQO). In conjunction with the EU process for the Circular Economy and in careful coordination with neighbouring countries agree how such goals can be achieved.

Annex 5. Detailed results at category level for non-specific targets (Level II analysis)

Since the Level II analysis for non-specific targets covering multiple Descriptors, was carried out on the Descriptor D1 and D10 targets, other linked Descriptors, such as D2 and D4, are included in the results.

Non-specific target: pressure reduction targets category

"Pressure reduction targets" are linked to Descriptors D1, D2, D4, and D10.

D4 has the highest relative contribution (36%), while D1 has the lowest (2%) (Table 16a). The highest absolute number of targets are recorded for D2 (13 targets) and D10 (20 targets) (Table 16a).

Among the reporting MS, DE has the highest number of targets: 10 for D2, 6 for D10, and 1 for D1 (Table 16a).

The number of "Quantitative targets" is limited: one out of 11 for D2, one out of 20 for D10, and three out of nine for D4. Only D1 has more "quantitative targets" than "non-quantitative targets" (3 out of 5) (Figure 15a).

These targets covered a range of pressures, including contaminants in seafood, sewage (nutrients and pollutants), marine litter, invasive species, extraction/introduction of substrates, and fishery. For example:

- The supply of hazardous substances from human activities shall be reduced until it does not cause levels of hazardous substances which prevent the attainment of good environmental status (D4, SE).

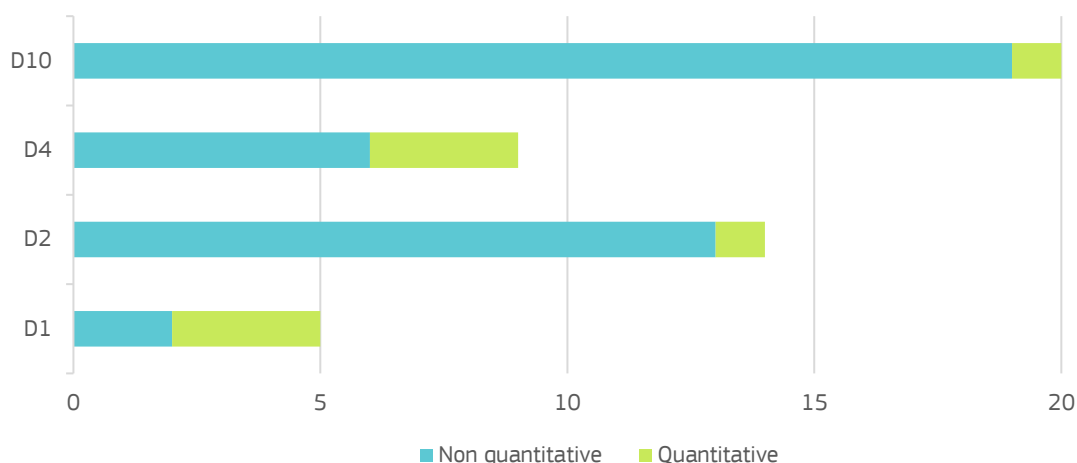
- Reduce the input and presence of waste in marine waters (littoral waste, macro waste, micro particles) (D10, FR).
- C.N.2. Minimize the possibilities of introduction or secondary expansion of non-native species, directly attending to human-made translocation pathways and vectors (D2, ES).
- Anthropogenic activities have not negatively impacted marine habitats and species (D1, LV).

Table 16a. Number of “pressure reduction targets” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level I targets).

Descriptor	BE	DE	DK	EE	ES	FI	FR	HR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1		1			1						1					2		2%
D2		10			2		1											22%
D4							2							7				36%
D10		6		1	9		1						1		1	1		27%
TOTAL	0	17	0	1	12	0	4	0	0	0	1	0	1	7	1	3	0	

Source: this report

Figure 15a. Count of unique “quantitative targets” and “non-quantitative targets” under the category “pressure reduction targets” (Level I targets).



Source: this report

In the BAL region, 17 targets are reported for D1, D2, D4, and D10. The NEA region had 24 targets across ABI, AMA, and ANS. In the MED region, targets are reported only in the MWE: two for D2, one for D4, and four for D10. No targets are reported for the BLK region. Targets for D10 are reported across all NEA subregions (Table 17).

Table 17a. Number of “pressure reduction targets” across marine regions (Level I targets).

Descriptor	North East Atlantic (NEA)			Baltic Sea (BAL)	Mediterranean Sea (MED)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	
D1		1	3	1				5

D2	2		5	5											2		15
D4	1				7										1		9
D10	5	2	5	4											6		22
TOTAL	8	3	13	17	0	0									9		51

Source: this report

Non-specific targets- targets linked to threshold values category

This category includes 18 targets, reported by 10 MS (BE, DE, DK, ES, FI, FR, MT, NL, SE, SI), covering Descriptors D1 (12 targets), D4 (three targets), D9 (one target), and D10 (two targets). ES reports 1 target for each of the Descriptors D1, D4, and D10, while SI and FR each reported one target for D4. The single target reported under D9 represent the 100% for “Level I analysis” under the Descriptor (Table 18a).

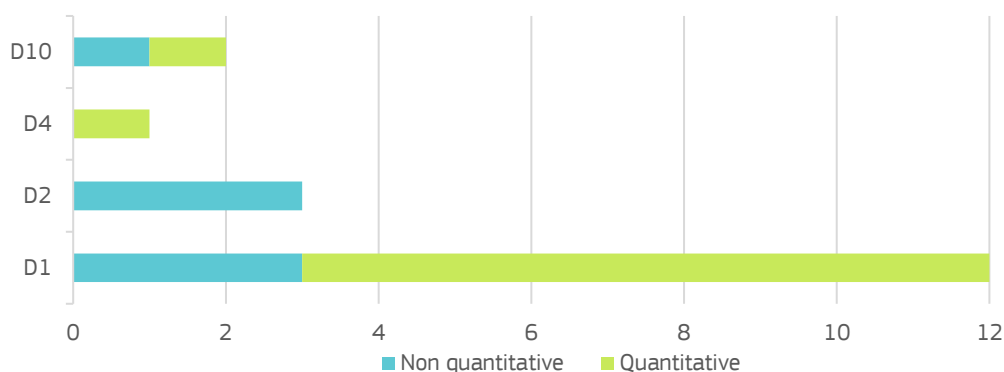
Table 18a. Number of “pressure reduction targets” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level I).

Descriptor	BE	DE	DK	EE	ES	FI	FR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1	1	4	1		1	1					1				3		5%
D4					1		1									1	12%
D9															1		100%
D10					1							1					3%
TOTAL	1	4	1	0	3	1	1	0	0	0	1	1	0	0	4	1	

Source: this report

Sixty-three percent (11 out of 18) of the targets in this category are quantitative. For D1, this increased to 75% (nine out of 12). All three targets for D2 are quantitative. The single target for D4 is non-quantitative. For D10, the ratio reach 50% (one quantitative out of two) (Figure 16a).

Figure 16a. Count of unique “quantitative targets” and “non-quantitative targets” under the category “Linked to Threshold values” (Level I targets)



Source: this report

The Northeast Atlantic region show the most targets in this category (15), with nine in the ANS subregion. The MED region has three targets, and the BAL region has two. No targets are identified for the BLK region (Table 19a).

Table 19a. Number of “targets linked to threshold values” across marine regions (Level I targets).

	North East Atlantic (NEA)			Baltic Sea (BAL)	Mediterranean Sea (MED)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	
D1		1	8	2		1		12
D4	1	1			1			3
D9			1					1
D10	2	1	1				1	5
TOTAL	3	3	10	2	1	1	1	21

Source: this report

These targets addressed various aspects, including nutrient concentrations, chlorophyll-a levels, contaminants in the environment, fishing stock safety, effects of electromagnetic fields, marine protected area coverage, and litter reduction. For example:

- The 90th percentile of chlorophyll a concentration (calculated from March to October, averaged over 6 years) is less than 15 µg/l (D1, BE).
- Achieving good and preventing deterioration according to indicator 4.3.1. (trends in the abundance of functionally important selected groups / species: mesozooplankton biomass) (D4, SI).
- B.1. The supply of hazardous substances from human activities shall be reduced until it does not cause levels of hazardous substances that prevent good environmental status from being achieved. B.1 Input of hazardous substances from human activities shall decrease until it does not cause concentrations of hazardous substances that prevent good environmental status to be achieved (D9, SE).
- Achieve or maintain values and characteristics defined as GES for all descriptors of GES in the Strait and Sea of Alboran (D10, ES).

Non-specific target - targets linked to trends category

"Targets linked to trends" are identified for Descriptors D1, D2, D4, D9, and D10. D1 presents the most targets (24), with DE reporting the highest number among MS (19 targets, 12 of which are reported under D1) (Table 20a).

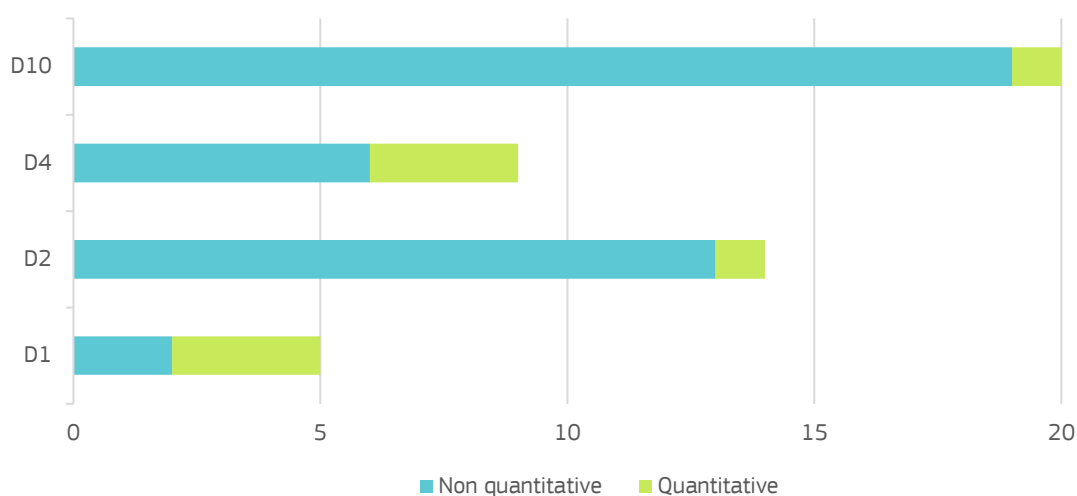
The percentage of “quantitative targets” is 46% for D1 and 33% for D10 (one out of three). All fivetargets for D2 are “non-quantitative targets”. The single target for D9 is quantitative, while the target for D4 is non-quantitative (Figure 17a).

Table 20a. Number of “Targets linked to trends” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level I targets).

Descriptor	BE	DE	DK	EE	ES	FI	FR	HR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1		12			4	2		1	1			1		2		1		10%
D2		5																8%
D4							1											4%
D9																1		100%
D10		2											1					4%
TOTAL	0	19	0	0	4	2	1	1	1	0	0	1	1	2	0	2	0	

Source: this report

Figure 17a. Count of unique “quantitative targets” and “non-quantitative targets” under the category “Linked to trends” (Level I targets).



Source: this report

Across marine regions, all subregions has at least one target, except for AMA in the NEA and the BLK (Table 21a).

Table 21a. Number of “Targets linked to trends” across Marine Regions (Level I targets).

Descriptor	North East Atlantic (NEA)			Baltic Sea (BAL)	Mediterranean Sea (MED)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	
D1	4		9	8	2	1	2	26
D2			3	2				5
D4	1							1
D9			1					1
D10			2	1				3
TOTAL	7	0	15	11	2	1	2	36

Source: this report

These targets considered various trends, including population trends of key species, trends in protected habitat range, reduction trends in pollutants, and trends in illegal fishing. For example:

- Maintain or recover the natural balance of populations of key species for the ecosystem (D1, ES).
- The Landings per Unit Effort for commercially exploited species in Maltese waters show increasing trends towards/above the long-term historical average (D1, MT).
- Hazardous waste proven to be present in marine organisms (in particular, microplastics) are approaching zero in the long term (D10, DE).
- Maintain a zero level of sampling on oceanic micro-nekton (in particular Krill, and myctophids or lantern fish, etc.) (D4, FR).

Non-specific target - targets linked to measures category

This category is used for Descriptors D1, D2, D3, D4, and D10. Most targets are for D1 (217 targets, 88%), followed by D2 (50 targets, 82%) and D10 (36 targets, 48%). Targets for D3 and D4 are less common, with two for D3 and 11 for D4 (Table 22a).

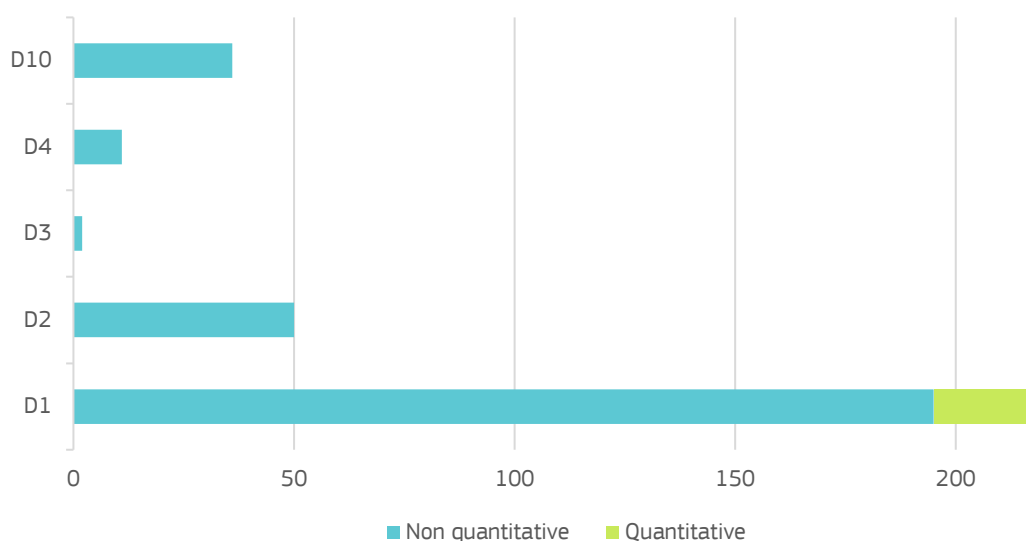
Only 8% of the targets in this category are quantitative (22 out of 251). Only the targets for D1, 22 out of 217 targets are quantitative (Figure 18a). DE reported more “quantitative targets” (15) than any other MS.

Table 22a. Number of “targets linked to measures” across MS. “Relative %” refers to the contribution of the category over the total number of targets per Descriptor (Level I targets).

Descriptor	BE	DE	DK	EE	ES	FI	FR	HR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1	2	57	3	1	107	13	10		3	2	1	1	2	4	3	8		88%
D2		6		1	40	1	1									1		82%
D3					1													1%
D4					1								1		5		4	44%
D10		6		2	26	1									1			48%
TOTAL	2	69	3	4	175	15	12	0	3	2	1	1	3	4	9	9	4	

Source: this report

Figure 18a. Count of unique “quantitative targets” and “non-quantitative targets” under the category “Linked to measures” (Level I targets).



Source: this report

Targets for D1, D2, and D10 cover the NEA and BAL regions. In the MED region, only one target is reported in the MIC subregion, but a total of 76 and seven for the MWE (D1, D2, D3, D10) and MAD (D1, D4), respectively (Table 23a).

Table 23a. Number of non-specific “targets linked to measures” across marine regions (Level I targets).

Descriptor	North East Atlantic (NEA)			Baltic Sea (BAL)	Black Sea (BLK)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	

D1	74	44	51	42	3	1	49	264
D2	27	15	4	5			11	62
D3							2	2
D4		6	1		4			11
D10	12	8	3	6			14	43
TOTAL	113	73	59	53	7	1	76	382

Source: this report

Germany (DE) reported more “quantitative targets” (15) than any other Member State (MS). Across Member States, quantitative targets were only reported for Descriptor 1 (D1), with 22 targets reported by six Member States (BE, DE, FI, IT, MT, and SE). “Quantitative targets” are mostly reported in the ANS subregion of the Northeast Atlantic region (14 targets) and the BAL region (five targets). In the MED subregions, targets for D1 are reported for MAD (two targets), and targets for D10 are reported for MIC (one target). No targets are reported for the BLK region.

Non-specific target - linked to monitoring and assessments needs subcategory

These targets are mainly used by ES for Descriptors D1 (27 targets), D2 (18 targets), D10 (16 targets), and D4 (one target) (Table 24a). Only one quantitative target out of 84 is reported for this subcategory.

Table 24a. Number of “linked to monitoring and assessment needs” targets across MS. “Relative %” refers to the contribution of the subcategory over the total number of targets per Descriptor (Level I targets).

Descriptor	BE	DE	DK	EE	ES	FI	FR	HR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1	1				27	1			1				1		1			13%
D2					18													30%
D4					1								1		5		4	44%
D10		6			16	1												31%
	1	6	0	0	62	2	0	0	1	0	0	0	2	0	6	0	4	

Source: this report

Most targets (97 out of 107) are distributed across the Northeast Atlantic subregion and in the Mediterranean Sea (MWE) and provided by ES (Table 25a).

Table 25a. Number of targets “linked to monitoring and assessment needs” across marine regions (Level I targets).

Descriptor	North East Atlantic (NEA)			Baltic Sea (BAL)	Black Sea (BLK)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	
D1	17	14	2	1	1		11	46
D2	11	7					6	24
D4		6	1		4			11
D10	6	3	3	4			10	26
TOTAL	34	30	6	5	5	0	27	

Source: this report

Non-specific target - knowledge gaps and further research needs subcategory

Only ES and PT reported targets in this subcategory. ES covered D1 (18 targets), D2 (six targets), and D10 (11 targets), while PT only covered D4 (Table 26a). These targets comprise the Northeast Atlantic subregions ABI and AMA, and the MWE subregion in the Mediterranean Sea (Table 27a). No “quantitative targets” were identified out of the 26 reported for this subcategory.

Table 26a. Number of targets “linked to knowledge gaps and further research needs” across MS. “Relative %” refers to the contribution of the subcategory over the total number of targets per Descriptor (Level I targets).

Descriptor	BE	DE	DK	EE	ES	FI	FR	HR	IT	LT	LV	MT	NL	PL	PT	SE	SI	Relative %
D1					18													11%
D2					6													7%
D4															3			13%
D10					11													14%
TOTAL	0	0	0	0	35	0	0	0	0	0	0	0	0	0	3	0	0	

Source: this report

Table 27a. Number of targets “linked to knowledge gaps and further research needs” across marine regions (Level I targets).

Descriptor	North East Atlantic (NEA)			Baltic Sea (BAL)	Black Sea (BLK)			TOTAL
	ABI	AMA	ANS	BAL	MAD	MIC	MWE	
D1	13	9					7	29
D2	4	2						6
D4		3						3
D10	4	4					6	14
TOTAL	21	18	0	0	0	0	13	

Source: this report

Non-specific targets- awareness raising subcategory

ES is the only MS reporting targets in this class: D1 (7 targets), D2 (six targets), D3 (one target), and D10 (six targets), across the ABI, AMA, and MWE regions. No “quantitative targets” are identified out of the 26 reported.

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