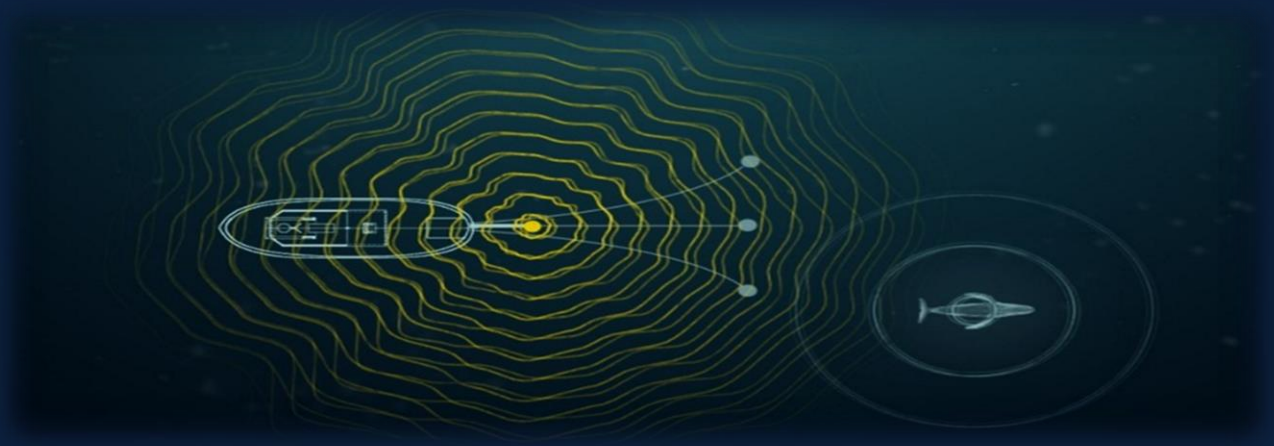
REDUCE THE NOISE!

EUROPEAN COUNTRIES' FAILURE TO ADDRESS MARINE NOISE POLLUTION



ocean care

IFAW
International Fund for Animal Welfare

SEAS AT RISK

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REDUCE THE NOISE!
European countries fail to a large extent to address marine noise pollution.

I. Introduction

Adopted on June 17 2008, the Marine Strategy Framework Directive (Marine Directive) set out to protect the marine environment across Europe. The European Commission also produced a set of detailed criteria and methodological standards to help Member States implement the Marine Directive. These were revised in 2017, leading to the new Commission Decision on Good Environmental Status[1]. The Marine Directive aims to achieve Good Environmental Status in EU marine waters by 2020[2], where Good Environmental Status is defined as "The environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive[3]".

In an effort to safeguard a coherent, consistent and all-encompassing approach, and paying tribute to both the political and scientific community, the implementation of the Directive is based on establishing common approaches, pooling resources through information exchange and applying best practice measures[4]. Annex 1 of the Directive outlines 11 qualitative descriptors that delineate what a thriving and unpolluted marine environment should resemble and by which Good Environmental Status shall be determined.

In addition, the Directive calls on Member States to "identify the measures which need to be taken in order to achieve or maintain good environmental status [...] in their marine waters[5]." Such Programmes of Measures have been gradually submitted to the European Commission by the Member States since 2015 and were made available via the European Environment Agency's reporting portal.[6] As Member States have submitted their Programmes of Measures, the implementation of the Marine Directive is entering a crucial stage.

The goal of this analysis is to assess and discuss the measures proposed by Member States to achieve the Good Environmental Status of Descriptor 11 which is concerned with the introduction of energy, including underwater noise, into the marine environment[7]. According to the Directive, Good Environmental Status for this descriptor is achieved when the "Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment[8]."

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[1] Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1495097018132&uri=CELEX:32017D0848

[2] Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (MSFD). Available at: http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm

[3] Article 3, MSFD.

[4] European Commission , webpage on "Our Oceans, Seas and Coasts – Implementation of the Marine Strategy Framework Directive" at: http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/index_en.htm

[5] . Art 13(1), MSFD.

[6] Accessible here https://cdr.eionet.europa.eu/

[7] European Commission , webpage on "Descriptor 11: Underwater Noise"http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-11/index_en.htm

[8] Annex I, MSFD.

In July 2018, the European Commission published a report assessing the Member State's Programmes of Measures[9] which concludes that 'achieving good environmental status by 2020 across all European marine regions remains unlikely' given weaknesses in the Programmes of Measures, and gaps in coordination between countries.

From our research, it is clear that the objective of achieving Good Environmental Status for Descriptor 11 by 2020 will not be reached by the majority of, if not all, Member States.

This is in line with our own assessment of the measures to address underwater noise proposed by a selected number of Member States. From our research, it is clear that the objective of achieving Good Environmental Status for Descriptor 11 by 2020 will not be reached by the majority of, if not all, Member States[10]. Consequently, we outline specific lines of argument and recommendations which will progress D11's achievement.

II. Knowledge gaps are no excuse not to take action

Many Member States continue to link their absence of clear measures addressing underwater noise pollution to the claim that not enough is yet known to fully understand this environmental issue, including that "there is a significant lack of knowledge and data that would enable reliable understanding of the impact of underwater noise at individual or population level[11]." Making this claim 10 years after the adoption of the Marine Directive, which itself was the result of extensive discussions and the provision of evidence that culminated in the decision to make human-made noise one of the 11 descriptors, is surprising as well as unfortunate.

Article 3 of the Directive defines pollution as "the direct or indirect introduction into the marine environment, as a result of human activity, of substances or energy, including human-induced marine underwater noise, which results or is likely to result in deleterious effects such as harm to living resources and marine ecosystems, including loss of biodiversity.[12]" Therefore, as per the Directive, underwater noise is a pollutant that endangers marine life and degrades the marine environment and should be considered as such.

To date, no fewer than around 30 species of marine mammals, 66 species of fish, and 36 species of invertebrates (a total of approximately 130 species) have been shown to be impacted by anthropogenic underwater noise[13]. Ecological services performed by invertebrates, such as water filtration, mixing sediment layers, and bio-irrigation, which are key to nutrient cycling on the seabed,

[9] European Commission, Report assessing Member States' programmes of measures under the Marine Strategy Framework Directive, SWD(2018) 393 final, July 2018, Brussels. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:562:FIN&qid=1533034580736

[10] Our in-depth analysis has looked at the measures proposed by Croatia, Cyprus, Estonia, Finland, Germany, Ireland, Lithuania, Malta, The Netherlands, Romania, Spain, Sweden and the United Kingdom but these conclusions can be drawn for all Member States based on the Commission's own assessment report (cf footnote 9). To prepare our assessment, we used the information officially reported by these 13 Member States to the European Commission through the EEA reporting portal (see footnote 6)

[11] Malta PoMs, pg. 124-125.

[12] Article 3, MSFD

[13] Weilgart, L. 2018. The impact of ocean noise pollution on fish and invertebrates. Report for OceanCare, Switzerland. 34 pp. Available at: https://www.oceancare.org/wp-content/uploads/2017/10/OceanNoise_FishInvertebrates_May2018.pdf

have also been shown to be negatively affected by noise. It has also been demonstrated that quieting underwater noise will reduce these negative impacts almost immediately. Thus, to claim that more knowledge or data are needed before taking remedial action is scientifically invalid and misplaced.

Additionally, the European Union's approach to mitigating environmental harm is based on precaution, namely that remedial action not be delayed due to a lack of complete scientific certainty. As early as February 2000, the European Commission recognised the importance of the precautionary principle in providing a rapid response in "the face of a possible danger to human, animal or plant health, or to protect the environment [particularly in cases] where scientific data do not permit a complete evaluation of the risk[14]." In case of risk to the environment, a "higher level of protection through preventative decision-taking" is in order[15].

The marine environment is not a controlled laboratory and as such, it is very challenging to provide similar indications that underwater noise is causing negative impacts on marine populations and ecosystems completely independently of other stressors, pollutants, or even natural oceanographic variation. This is especially the case for long-lived species such as dolphins or whales, which are difficult to study, and where any documented population decline will likely come too late for preventative action. Not demonstrating total scientific certainty in environmental consequences should not result in inaction.

Not demonstrating total scientific certainty in environmental consequences should not result in inaction.

The European Commission clearly states in its evaluation report of Member States Programmes of Measures that "direct measures" are needed to reduce pressures, in particular those that "have been inadequately covered" by Member States to date, such as the "generation of underwater noise". In particular, measures should be taken that "regulate or guide those activities that impact on the marine environment". Member States are therefore encouraged by the Commission to tackle the issue, while concurrently studying and monitoring it, before the impacts become more difficult to manage and mitigate.

III. What are Member States (not) doing to reduce underwater noise?

The Commission evaluation report assessed how Member States address ambient (continuous) noise, e.g. from commercial shipping, in their Programmes of Measures. The conclusions drawn are worrying. On the one hand, some countries have failed to take any measures related to shipping altogether, despite it being one of the most harmful noise-generating activities at sea. Other countries addressed it only indirectly through awareness-raising campaigns and research efforts[16].

In 2009, the International Maritime Organization (IMO) recognised the need to take action and that uncertainty regarding the effects of underwater noise should not preclude efforts towards developing quieting technologies for commercial ships. This led to the IMO developing Guidelines for the Reduction of Underwater Noise from Commercial Shipping which were adopted in 2014.

[14] Summary of COM 2000 1 Final, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Al32042
[15] Ibid, COM 2000.
[16] Commission staff working document, accompanying the report from the Commission to the European Parliament and the Council, assessing MS programme of measures under the MSFD. Available here: https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1533037246895&uri=SWD:2018:393:FIN

However, EU Member States have not taken any specific measures to encourage implementation of these guidelines.

Sharing the Commission's concerns, our own analysis, presented in more detail in Annex 1, shows that Member States have not adequately addressed the relationship between speed reduction and noise levels (as well as greenhouse gas emissions reductions) and, as a consequence, have not designed general noise-reducing shipping and port operation strategies. Furthermore, it remains unclear how Member States intend to address such issues within a wider European context and how inter-country synergies can be created.

Furthermore, it remains unclear how Member States intend to address such issues within a wider European context and how inter-country synergies can be created.

Our review also reveals that European legislative tools aimed at preventing pollution from human activities, namely Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs), have only received limited attention in the marine Programmes of Measures. Member States still have different interpretations of how to apply these tools. It is unclear if, or to what extent, EIAs or SEAs are conducted for noise-producing projects, even in the case of seismic surveying, which is one of the main sources of loud impulsive noises in EU waters and systematically conducted for oil and gas project developments.

Another important omission exposed by our analysis is that Member States have not referred to decisions and resolutions on underwater noise adopted through regional and multilateral environmental agreements. Specifically, parties to the Convention on Migratory Species (CMS) adopted Resolution 12.14 on the adverse impacts of anthropogenic noise on cetaceans and other migratory species in October 2017, which then led to the development of the CMS Family Guidelines on Environmental Impact Assessment for Marine Noise-Generating Activities[17]. None of the Member States reviewed referred to these important guidelines or committed to applying them to EIAs, despite having proactively endorsed them.

It is our view and interpretation of existing legislation and commitments under regional and multilateral agreements that properly conducted EIAs and SEAs are to be undertaken prior to starting any impulsive noise activity in EU waters. Neither species nor habitat conservation objectives could be met otherwise, given the potential impacts and risks such activities pose.

Finally, we are concerned that Member States have largely failed to apply time-area closures for, in particular, impulsive noise-generating activities. Time-area closures are one of the most effective conservation measures to prevent marine species from negative underwater noise impacts and risks to the marine environment as a whole.

[17] CMS Family Guidelines: https://www.cms.int/sites/default/files/document/cms_cop12_res.12.14_marine-noise_e.pdf

IV. A reminder for Member States on "what can be done immediately"

In terms of *ambient noise*, examples of noise quieting initiatives which could be coordinated among Member States, include:

a) incentive programmes for quieter ships, e.g., by reducing port fees as has been carried out by the Port of Vancouver, Canada;
b) slow steaming for the majority of ships where slower speeds are substantially quieter;
c) identifying the noisiest vessels on which to prioritise quieting;
d) better maintenance;
e) alternative shipping routes;
f) optimising propeller performance for quieting, etc.

It has been shown that slowing ships down is an important component of operational measures which will reduce underwater noise. Therefore, there is a need for short-term operational measures as well as design and engineering solutions for commercial shipping, if IMO targets for reductions in greenhouse gas emissions and the EU objective of Good Environmental Status for anthropogenic noise activities are to be met. In addition to such measures reducing greenhouse gas emissions and combatting climate change, there is the added economic benefit of cost savings from lower fuel consumption.

As it is easier to build new ships that are quieter than to quieten existing vessels through retrofitting, operational measures should be enacted as soon as possible. Given the life spans of ships are about 30 years, progress will be delayed until older, noisier ships are taken out of operation but such shouldn't act as a deterrent to enacting immediate change. Operational measures, such as speed reductions, can be adopted by both older and new vessels.

For instance, the Port of Vancouver showed that when large commercial and government vessels voluntarily slowed down to 11 knots "over an approximate 16 nautical mile distance[18]" with the aim of reducing the interference of shipping noise on the foraging of highly endangered Southern Resident Killer Whales, measured noise levels decreased substantially.

Another example of simple noise-reducing measures that can be undertaken is the use of shore-based power instead of generators or engines. Through these measures, ports and harbours become quieter and invasive species may be less attracted to settling on hulls, also reducing bio-fouling[19], which in turn, reduces noise and fuel consumption. whilst underway.

In terms of *impulsive noise*, noise-quieting measures that show promise include:

a) The many new technologies that can reduce noise from pile driving during the construction of wind farms, such as BLUE piling, or the use of alternative foundations such as suction caissons or gravity-based foundations;

b) For seismic surveys, prototypes for airgun alternatives, such as Marine Vibroseis, exist and should be further developed. Regulators insisting on these alternatives would accelerate their development considerably. Duplicate surveys should be avoided and data shared wherever possible. Operators should be required to use the lowest possible source level and to demonstrate that they have indeed done this.

[18] ECHO Haro Strait slowdown trial summary.pdf; file available at: https://www.portvancouver.com/environment/water-land-wildlife/echo-program/vessel-slowdown-trial-in-haro-strait/
[19] See references cited in Weilgart 2018

c) Member States shall apply the CMS EIA Guidelines prior to permitting impulsive noise activities;

d) Noise exclusion zones as well as noise buffer zones around sensitive habitats, should be proactively considered, and have yet to receive appropriate consideration.

Furthermore, developing a noise registry is an important measure to ensure the adequate tracking of noise-related activities at sea, including *inter alia* pile driving, seismic surveys and controlled explosions from naval operations. Compiling a list of past, present and future impulsive noise-generating activities through a registry, that is shared amongst stakeholders, will help establish noise budgets and limits in respective regions.

This is an area where the four Regional Sea Conventions (OSPAR, HELCOM, Black Sea Commission and UNEP/MAP) have a real opportunity to establish coordinated work streams, as is strongly encouraged by the Marine Directive. Progress in establishing regional registries is currently, however, at very different stages across these four regions, not least because of their differing interpretations as to what the tool's objective is, i.e. solely to monitor noise or to also be used as a management tool.

V. Recommendations

Currently, as the analysis in the Annex demonstrates, there is no reason to believe that Member States will successfully achieve a Good Environmental Status in their waters by 2020 with regards to anthropogenic noise activities. This conclusion is in reference to both impulsive and continuous noise sources. It is our opinion that there are no current justifications not to implement more measures to reduce anthropogenic noise levels in EU waters.

We therefore urge Member States to significantly improve their Marine Programme of Measures by at least addressing the following aspects:

- acknowledging the negative impact of underwater noise on marine mammals, fish, invertebrates, and ecosystem function in general;
- applying the precautionary principle and taking immediate action to mitigate the pressure of underwater noise pollution, through, *inter alia*, quieting measures;
- promoting and applying the IMO Guidelines for ship quieting, as well as setting normative, action-forcing standards for reducing the noise generated by various vessel classes (as has been done for several decades for aviation noise), including addressing the IMO recommendation to identify the noisiest vessels that would most benefit from quieting technologies alongside improvements in fuel efficiency;
- coordinating and applying appropriate quieting technologies, imposing speed reductions, as well as setting incentive programmes (e.g. reducing port fees) for quieter ships and encouraging a European-wide port policy strategy assuring emission and noise reduction;
- identifying and setting noise exclusion zones and alternative shipping routes, including the designation of noise buffer zones around sensitive habitat;
- requiring robust, comprehensive and transparent Environmental Impact Assessments (EIA) prior to considering permitting of applications for noise-generating activities;
- transposing the CMS Family EIA Guidelines into domestic legislation;

- compiling a list of past, present and future impulsive noise-generating activities through a registry and sharing data amongst stakeholders for the ultimate purpose of establishing noise budgets and limits for a region;
- requiring Best Available Technologies for both pile driving and seismic surveys. Regulators and governments should require or at least encourage the development of quieter airgun alternatives, such as Marine Vibroseis;
- facilitating the exchange of information on best practices across the European Union.

We strongly urge the European Commission to promote these recommendations among Member States and to have them reflected within future work streams, including within the EU-level working group on noise (TG Noise)[20], and the individual Programmes of Measures by Member States, to ensure their improvement.

[20] The Technical Group on Underwater Noise (TG Noise) was set up under the Working Group on Good Environmental Status to further develop Descriptor 11 and to provide guidance to Member States. In 2012, TG Noise provided initial guidance that clarified the purpose, use and limitation of the two indicators (for impulsive and continuous noise). In 2013 TG Noise produced a Monitoring Guidance for Underwater Noise in European Seas. TG Noise is currently working on advice for developing threshold values for both impulsive and continuous noise. Although it is currently beyond the mandate of TG Noise, the Group could, alongside monitoring, link its work more closely with organisations that develop and implement noise reduction measures.

Annex – Analysis of the measures of selected countries to address underwater noise under the Marine Directive

The following evaluation is based on the information reported by Croatia, Cyprus, Estonia, Finland, Germany, Ireland, Lithuania, Malta, the Netherlands, Romania, Spain, Sweden and the United Kingdom to the European Commission from 2015 onwards forming their Programmes of Measures under the Marine Directive. The selection of these 13 countries has been determined by the availability of the information in languages understood by the experts involved in this analysis.

1. Data availability and status of knowledge

The inventory of the measures proposed by Member States to address underwater noise has highlighted the continued claim that further research is required to fill knowledge gaps regarding the (negative) impact of noise on marine life. While further research is surely beneficial, a number of countries fail to acknowledge the value of current findings and neglect to apply a precautionary approach to underwater noise.

Despite the calls for future research, a number of countries (namely Germany and the Netherlands) acknowledge the general negative impact of noise on marine life.

Germany, for instance, explicitly mentions not only the dangers of impulsive noise on marine mammals but also on fish and invertebrates[21]. Likewise, although the Netherlands recognises that "more knowledge is required about certain aspects of underwater noise before evaluable environmental targets can be defined," the country nevertheless maintains that given the findings and stage of scientific inquiry, certain environmental objectives can already be formulated, particularly in regard to "individual cases such as pile driving and seismic research[22]." With this approach, the Netherlands aims to prevent the "harmful effects of these specific activities on populations or on the ecosystem and then particularly on marine fauna[23]."Despite the progressive approach taken by the Netherlands, the extracted text does not allow for any conclusions on how environmental targets will be met[24].

Other countries have addressed the matter of 'knowledge gaps' as follows:

Croatia maintains,

> "All Member States and all documents of professional and expert groups agree that there is a significant lack of knowledge and data that would enable reliable understanding of the impact of underwater noise at individual or population level, the risks and the significance of the underwater noise input for the environment, as well as the determination of appropriate measures to mitigate and/or avoid the established harmful effect. Therefore, in the coming period numerous scientific, technical and administrative activities aimed at overcoming these gaps will take place and it is very important that the Republic of Croatia participates in these activities and benefits from the knowledge and experience gained by Member States with higher professional and scientific potentials[25]."

[21] German PoM, pg. 40.
[22] Dutch PoM Summary, pg. 84.
[23] Dutch PoM Summary, pg. 84.
[24] See full Dutch PoM report for further details on the matter: http://cdr.eionet.europa.eu/nl/eu/msfd_pom/msfd4text/envvukqja/Mariene_Strategie_voor_het_Nederlandse_deel_van_de_Noordzee_2012-2020__deel_3__4885.pdf
[25] Ibid, pg. 124-125.

Malta contends,

> "At a European level, research and management developments in the field of underwater noise remain challenged by high levels of uncertainty including its impact on marine life. Further knowledge is required with respect to the current ambient noise levels in marine regions, trends of such levels, distribution of marine biota that may be adversely affected by noise and the corresponding noise levels that may cause detrimental effects…Malta's current data scenario with respect to underwater noise is very limited, both in terms of levels of such pressure in Maltese waters and its impacts on marine biota. This scenario limits the extent to which management regimes can be elaborated to address this pressure on the marine environment[26]."

The United Kingdom further states,

> "For impulsive sound there is evidence for the noise levels that can cause physical harm to some species, notably marine mammals and some fish species, but less understanding of the physical effects to other species. There is also less certainty about the negative behavioural effects of noise. The behavioural effects of noise have been studied in some species, but are context dependent, leading to greater variability and lower levels of certainty. It should be noted that behavioural effects have the potential for impact at a population level[27]." "On the basis of present and estimated future levels of activity, the conclusion by experts is that activity levels are not currently anticipated to pose a significant threat to marine noise sensitive species at the population level. However, because of the high level of uncertainty about the effects of noise it has not been possible to recommend specific targets for either impulsive sounds or ambient sounds which we believe to be equivalent to GES[28]."

The British viewpoint is particularly worrisome. While the Joint Nature Conservation Committee (JNCC), Natural England and the Countryside Council for Wales have good practice guidelines and protocols in place for specific noise-generating activities (pile driving, seismic surveys and use of explosives) to reduce the risk of injury and disturbance to cetaceans, there is no solid evidence that these guidelines are actually effective at protecting marine life. Even with more comprehensive measures than those included in the JNCC guidelines, the risk reduction achieved is often very small[29]. Increasingly, recent studies show fish and invertebrates, along with ecosystem services, being affected by human-caused noise. Thus, there is almost no scientific basis for the United Kingdom to claim that "…activity levels are not currently anticipated to pose a significant threat to marine noise-sensitive species…".

Ireland contends,

> "At present, our knowledge of the current status of underwater noise and the data that underpins it remains poor. The single GES target for Descriptor 11 is dependent on the establishment of a noise register in support of a better understanding of the levels and risks associated with the underwater noise pressure. It is anticipated that threshold levels that distinguish between benign sound and harmful noise levels will eventually be determined as more information becomes available through the register[30]".

[26] Malta PoMs, pg. 253.
[27] Ibid., pg. 149-150.
[28] United Kingdom, PoMs, pg. 150.
[29] Leaper, R., Calderan, S. and Cooke, J. 2015. A Simulation Framework to Evaluate the Efficiency of Using Visual Observers to Reduce the Risk of Injury from Loud Sound Sources. Aquatic Mammals 41(4), 375-387, DOI 10.1578/AM.41.4.2015.375
[30] Ibid, pg. 17.

2. Noise registry

For D11.1, most Member States and/or regions intend to establish or have established a noise register of impulsive noise sources (over a certain intensity level) with the aim of eventually regulating it, i.e. potentially placing a regional cap on noise from a planning perspective rather than simply documenting the noise that has occurred in the past. Our overall understanding regarding the noise registry is that the scope of such a registry has been interpreted differently by Member States. In particular, it is not clear to what extent future planned sound generating activities will be included in order to allow the registry to be used as a planning tool rather than just an assessment of pressure that has occurred from sound sources.

Germany, although an exception, is an illustrative case. Its register will include both continuous ("long lasting noise entries") noise, such as sonar, and impulsive noise. The registry will, moreover, encompass position, time, duration, sound source and, if available, predicted and measured sound levels, as well as a standardised reporting mechanism[31].

Despite not providing sufficient information on the noise registry, perhaps due to language obstacles, other countries have also addressed the noise registry.

Croatia maintains,

> "Prepare a subordinate regulation (ordinance, etc.), which would define the content and form of the register, as well as regulate the obligation and method of implementation (institutions).
> Adopt a legal obligation to report any underwater activity (e.g. concession to explore and/or exploit oil and/or gas, building permits for projects that include works under water, etc.).
> Establishment of a register for temporal and spatial distribution of impulsive anthropogenic noise sources and continuous data input in the same.[32]"

Ireland asserts,

> "Establishment of a register of impulsive noise to determine the current level and trends in impulsive noise in the Irish Marine Assessment Area[33]."

Estonia vows,

> To create "a registry of impulsive sounds[34]", setting the implementation period between 2016 and 2020.

Malta reiterates,

> "There is limited knowledge on occurrence, intensity and impacts of underwater noise generating activities. This gap is partly addressed through the implementation of the MSFD monitoring programme, so far consisting of the compilation of a register of impulsive noise-generating events in terms of spatial distribution, temporal extent and levels[35]."

Romania endorses

> A "noise impulsive register for Romanian littoral of the Black Sea[36]."

[31] German PoM, pg. 127.
[32] Ibid, pg. 120.
[33] Irish PoM report, pg. 4.
[34] Estonia PoM summary, pg. 2.
[35] PoMs Malta, pg. 256.
[36] Ibid, pg. 18.

Our evaluation has also considered the usage and implementation of the noise registry as developed via Regional Seas Conventions, particularly the ones adopted in support of contracting parties to OSPAR and HELCOM. Based on the information made available in English or German, it appears that the use and implementation of such regional registries is at different stages across regions and Member States. Although a brief evaluation of the ICES Registry indicates that a number of contracting parties to OSPAR and HELCOM have yet to submit data on noise related to impact pile driving, sonar or acoustic deterrents, seismic arrays, explosions and generic noise[37], it seems that the North-East Atlantic and Baltic Sea-centred Registry has progressed further than its counterparts in the Mediterranean and, especially, the Black Sea regions.

Thus, a number of Member States, particularly in the Mediterranean and Black Sea region, have not yet set up a noise registry, nor have efforts progressed beyond it serving as a monitoring tool, although it would be essential to use such a tool for management purposes.

3. Legislative tools – SEAs and EIAs

Strategic Environmental Assessments (SEA) and Environmental Impact Assessments (EIA) are important tools in predicting and assessing the environmental impact and risk of an activity. Both legislative tools should provide for an analysis of the spatial and temporal extent of impacts on the whole marine ecosystem from noise-producing projects. Included in good SEAs or EIAs are a thorough analysis of alternatives to the proposed action and their risks, a quantitative analysis of cumulative and synergistic impacts, and the degree of uncertainty in the data and analysis. Despite welcoming the reference to SEAs and EIAs in the Member States' Programmes of Measures, it is still somewhat unclear how they will be applied and to what extent they will be required of noise-related projects.

In September 2015, the Report "Environmental Impact Assessments and Seismic Surveys" by ClientEarth, commissioned by OceanCare and NRDC, was released wherein it was concluded that, *inter alia*, EIAs should be undertaken prior to seismic surveys. The legal requirement to undertake an EIA prior to possible permission of a seismic survey is still disputed by some Member States. However, even if some try to argue that the EIA Directive is not clear in that respect, it seems to be obvious that no other instrument than a properly undertaken EIA prior to seismic surveys can also guarantee fulfilment of the legal obligations under other EU legislative acts, such as the EU's Species and Habitats Directive.

This baseline and interpretation is also reflected within statements provided by the EU Commission in response to questions raised by Members of the EU Parliament.

In 2018, Marisa Maria from the European United Left/Nordic Green Left (GUE/NGL) European Parliamentary Group inquired whether the decisions by the Portuguese Environment Agency to exempt oil prospection in Aljezur from an EIA is in accordance with EU law. In response, European Commissioner Karmenu Vella, on behalf of the European Commission, recalls the distinction established between projects listed in Annex I (extracting), for which an EIA is compulsory, and Annex II (prospections), in which case an EIA is at the discretion of Member States. However, the Commission further asserts, "the power of appreciation of the Member States is limited by Article 2 of the directive which requires the carrying out of an EIA when the projects are likely to have significant effects on the environment.[38]"

[37] ICES Registry (OSPAR and HELCOM): http://underwaternoise.ices.dk/accessions.aspx
[38] European Commission, Parliamentary question , E-002952/2018. Available at: http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2018-002952&language=EN

In January 2018, Sion Simon from the Group of the Progressive Alliance of Socialists and Democrats (S&D) in the European Parliament inquired about the Commission's view on the practice of seismic testing in the Atlantic Ocean. For one, the Commission noted, "the revised Environmental Impact Assessment Directive recognises that 'with a view to ensuring a high level of protection of the marine environment, especially species and habitats, environmental impact assessment and screening procedures for projects in the marine environment should take into account the characteristics of those projects with particular regard to the technologies used (for example seismic surveys using active sonars)", for another, it noted, "[t]he pressures and impacts of such human activities on the marine environment need also to be considered by Member States in their marine strategies under the Marine Strategy Directive, which aims to achieve 'good environmental status' by 2020. In particular, physical loss or disturbance to the seabed, changes of hydrographical conditions and underwater noise generated by such activities need to be considered by Member States when developing their marine strategies in line with the criteria defined by Commission Decision 2017/848/EU[39]".

The case of Malta is a telling example. **Malta** contends,

> "Consideration of mitigation measures in response to identified significant impacts from generation of underwater noise is also called for under the Environmental Impact Assessment (EIA) Directive (2011/92/EU). Whilst the Directive distinguishes between projects requiring a mandatory EIA, and others for which the decision is left for Member States to take following a screening procedures; for both classes noise is defined as one of the nuisances to be considered[40]."

In its PoM summary report, Germany explicitly makes reference to EIAs and recognises the significance of such assessments in reducing the impact of various noise sources on the marine environment. Germany notes that noise reduction efforts are integrated into approval processes. One such example is the use of vibrations instead of pile driving (ramming method) in noise-related construction methods[41]. Since 2008, the German government has implemented mandatory limits for noise emissions during pile driving for installation efforts of offshore wind turbines, offshore sub- and converter stations[42].

The PoM submitted by the United Kingdom does not explicitly address the use of SEAs and EIAs as related to noise-generating activities. Rather, the country places these tools in the wider context of 'environmental protection'. As such, the UK sees the use of EIAs in "the assessment of the environmental effects of projects which are likely to have a significant effect on the environment", and further notes that such assessments "for projects which are likely to have significant effects on the environment should be granted only after an assessment of the likely significant environmental effects of those projects has been carried out[43]." The UK moreover sees SEAs as a tool "that seeks to provide a high level of protection of the environment by integrating environmental considerations into the process of preparing certain plans and programmes which are likely to have significant effects on the environment[44]".

Other countries have not provided sufficient information in English or German on the matter to allow for a similar analysis. Cyprus will continue "ongoing implementation of SEA and EIA procedures in as

[39] Commission response, inquiry number E-000077/2018. Available at: http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2018-000077&language=EN
[40] PoMs Malta, pg. 255.
[41] German PoM, pg. 41.
[42] Ibid, pg. 42.
[43] UK, PoM report, pg. 18-19.
[44] Ibid, pg. 18-19.

many kinds of developments as possible according to the provisions of the relevant legislation[45]". Ireland states: "The main marine planning/licensing measures that will make a positive contribution towards the achievement of GES include the foreshore consent process (territorial waters) and the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) Directives and associated national regulations as set out in Ireland's Planning and Development Acts and Regulations[46]". Nevertheless, how some Member States view the applicability of EIAs regarding noise activities remains somewhat unclear and hard to deduce.

Finally, it needs to be noted that all EU Member States, Members to the Convention on Migratory Species (CMS) and the EU itself have voted in favour of the adoption of Resolution 12.14 which commits Parties to undertake proper EIAs prior to noise generating activities and to make use of the CMS Family EIA Guidelines.

4. Guidance from existing processes

A number of Member States have also included a brief section on how existing mechanisms and guidance from existing processes have been integrated into their PoMs, potentially continuing to impact their work in the future.

For example, **Lithuania** mentions two international mechanisms that are relevant. The first is the Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life approved by Resolution MEPC.1/Circ.833 of the Marine Environment Protection Committee of the International Maritime Organisation (IMO)[47], while the second is the Convention on the Protection of the Marine Environment of the Baltic Sea Area (HELCOM). As part of HELCOM, Lithuania also makes mention of the Helsinki Commission for the implementation of the Ecosystem-based approach (HELCOM GEAR), whose main purpose is to foster region-wide cooperation[48]."

The United Kingdom has likewise made reference to a number of existing processes. These are as follows:

- "The noise registry is currently being developed and coordinated by the Joint Nature Conservation Committee (JNCC) on behalf of Defra and the Devolved Administrations. These data will then be used in future research to assess levels and patterns of noise in order to determine whether these could potentially compromise the achievement of GES[49].

- "Noise risk assessments are a standard component of the impact assessment processes for many noise-generating activities occurring in our seas. Marine Scotland has produced guidance on EPS legislation and JNCC has produced statutory nature conservation agency guidelines for minimising the risk of injury to marine mammals from seismic activities, piling and explosive use. **The application of these guidelines is frequently set as a licence condition.**[50]."

- "The UK co-chairs and actively participates in both the EU Technical Group on Noise…and the OSPAR group tasked with coordinating a noise registry at a regional sea level….Since underwater

[45] Cyprus PoM English Summary, pg. 27.
[46] Irish PoM report, pg. 7.
[47] Ibid., pg. 38.
[48] Ibid., pg. 80.
[49] Ibdid., pg. 150.
[50] UK Marine PoM report, pg. 152.

> sound can cross international boundaries, any mitigation measures against the impacts of noise-generating activities may reduce transboundary effects. The OSPAR noise registry will enable the possibility to manage at a regional sea level.[51]."

Moreover, **Malta** has made reference to the following processes:

> "In the absence of data and methods that may support appropriate evaluation of underwater noise impacts on marine biota, existing action mainly consists of mitigation measures for the reduction of potential risks to cetacean groups. This action is based on the application of the ACCOBAMS Guidelines to address the impact of Anthropogenic Noise on Cetaceans in the ACCOBAMS area. The Continental Shelf Department which regulates exploration and production licenses issued under the Petroleum (Production) Act (Cap. 156), the Continental Shelf Act (Cap. 535) and related subsidiary legislation require licensed operators to follow the ACCOBAMS guidelines (or equivalent) to address the potential impact of anthropogenic noise on cetaceans during the acquisition of seismic data using air guns[52]."

Malta's PoMs further read,

> "...guidelines include the United Kingdom's Joint Nature Conservation Committee (JNCC) guidelines for minimizing the risk of injury and disturbance to marine mammals from seismic surveys[53]."

Spain has noted the importance of the Oslo and Paris Convention for the protection of the marine environment of the North-East Atlantic (OSPAR Convention) and the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention), indicating that both Conventions play a crucial role in coordinating the implementation of the marine strategies in the convention area[54]. Sweden has taken a similar approach and has likewise accentuated the importance of Regional Seas Conventions such as OSPAR and HELCOM, and has moreover contended that their efforts "entail collaboration with our neighbouring countries on measures in the shared marine environment, through the regional marine conventions OSPAR and HELCOM and on the EU level as well as through bilateral collaborations[55]", highlighting the importance of the Intersessional Correspondence group on the Marine Strategy Framework Directive.

As mentioned above, notably absent from the Member States' references to existing mechanisms are the CMS Family Guidelines to undertake Environmental Impact Assessments prior to noise-generating activities. We recognise that the timing of the adoption of these Guidelines might have overlapped with the submission of the PoMs. Nevertheless, the process of developing these Guidelines has been ongoing for several months and the majority of EU Member States and the Commission have been consulted to review draft versions of those Guidelines and therefore have been fully aware of the upcoming decision. In addition, ACCOBAMS[56] Resolution 6.17 "Anthropogenic Noise" (in 2016) already welcomed the process to develop the CMS Family Guidelines, as well as urging countries and the Scientific Committee to contribute to this process. Moreover, ASCOBANS[57] Resolution 8.11, adopted at the 8th Meeting of the Parties to ASCOBANS in 2016, likewise already takes note and "welcomes the progress on the 'CMS Family Guidelines on

[51] Ibid., pg. 153.
[52] PoMs Malta, pg. 254.
[53] PoMs Malta, pg. 254.
[54] Spain PoM Summary report, pg. 17-18.
[55] Spain PoM Summary report, pg. 17-18.
[56] List of EU Member States party to ACCOBAMS: Bulgaria, Croatia, Cyprus, France, Greece, Italy, Malta, Portugal, Romania, Slovenia and Spain.
[57] List of EU Member States party to ASCOBANS: Belgium, Denmark, Finland, France, Germany, Lithuania, Netherlands, Poland, Sweden and the United Kingdom.
List of EU Member States non-party range states to ASCOBANS: Estonia, Ireland, Latvia, Portugal and Spain.

Environmental Impact Assessment for Marine Noise-generating Activities". The initiative of CMS did thus not come as a surprise and begs the question of whether timing was really the issue.

Finally, a few countries continue to reference the Joint Nature Conservation Committee (JNCC) as an authority on underwater noise. This is mainly because JNCC was one of the first organisations to adopt any guidelines for seismic surveys. However, these guidelines have remained largely unchanged over recent decades and rely on measures that have not been demonstrated to be effective. In contrast, the more recent and up-to-date CMS Guidelines present a standardised approach that has received wide-spread support by many countries, both from members of the European Union and the wider international community.

5. The Technical Group on Underwater Noise (TG NOISE)

The Technical Group on Underwater Noise - a subgroup of the WG GES to further develop D11 and to compile recommendations - has focused its activities on developing advice on monitoring schemes for the two indicators: D11.1 for short duration, loud, low and mid-frequency impulsive noise (as caused by seismic surveys, marine piling, sonars, explosions); and D11.2 for long-lasting, low frequency continuous noise (mainly caused by commercial shipping and impulse sources at long range in some regions).

TG Noise is also working on Biological Impact Indicators. For instance, for impulsive noise, risk-based indicators could be based on the percentage of time and percentage of the population that is exposed at a certain noise level. This can be calculated for, for instance, herring during their spawning season in their spawning area, with the risk being determined by the overlap between the species distribution and the noise. With the establishment of an impact indicator, TG Noise could put various options before Member States to establish thresholds.

To reduce noise pressure and address the known impacts, there is a need for noise thresholds and targets to be set and enforced under the Marine Directive. To this end, the Commission could guide TG Noise with more specific instructions and, in particular, timelines for when TG Noise needs to deliver advice on thresholds and targets. To make more concrete gains, for Indicator D11.2, a possible target could be a reduction in source levels of the global commercial shipping fleet through application of the IMO guidelines which identify measures to reduce underwater noise alongside increases in fuel efficiency. For both indicators, relative noise risk could be described in terms of a certain percentage of time a population of concern is exposed to noise levels above a certain level over a certain percentage of the area, and the impact indicator would quantify the expected risk reduction achieved if the target were met.

TG Noise has mainly concerned itself with the details for monitoring noise for both indicators and providing advice to Member States for such monitoring. The next steps are to provide guidance on thresholds and targets that can lead directly to measures to address noise, e.g., coming up with quieting solutions. TG Noise could link its work more closely with organisations that are involved in developing and implementing noise reductions. Monitoring noise trends, especially for D11.2 (shipping noise), is complicated and can take decades. Any actions to address noise through the design of new ships will also have a time delay.

Therefore, for any remedial action to be effective, an ongoing effort to quiet ships is needed alongside monitoring. It thus makes sense to take actions to quiet the noise while, concurrently, monitoring it. Noise levels are increasing in many areas along with greater industrialisation (seismic surveys, construction of windfarms and other structures, etc.), shipping, and military exercises

occurring in EU waters. Even with limited information on how low the noise pressure needs to be to achieve GES, there are simple steps that can be taken to ensure that noise pressures are reduced.

6. Concluding Remarks

This assessment has demonstrated that Member States continue to use the claim that not enough is yet known to fully understand the problem of underwater noise as a pretext for inaction. Tangible proof for such a conclusion is well-reflected in the statements provided above. It is rather unfortunate that countries continue to assert such claims 10 years after Member States agreed to adopt a descriptor that specifically deals with the problems associated with underwater noise.

At the heart of the European Union's approach to conservation is the precautionary principle. The European Commission attested as much in February 2000 when it recognised the importance of the precautionary principle in providing a rapid response in "the face of a possible danger to human, animal or plant health, or to protect the environment… [particularly in cases] where scientific data do not permit a complete evaluation of the risk[58]."

Despite shipping being one of the most harmful noise-generating activities at sea, some countries have altogether neglected to take any measures relating to shipping and, in many cases, states have not appropriately considered the IMO's Guidelines for the Reduction of Underwater Noise from Commercial Shipping. It has furthermore become evident that Member States have not designed general noise-reducing shipping and port operation strategies, and it remains unclear how countries intend to address such issues within a broader European context.

Of particular concern is also the lack of reference to guidelines adopted within the framework of multilateral agreements, particularly the CMS Family Guidelines on Environmental Impact Assessment for Marine Noise-Generative Activities, the missed opportunity of applying time-area closures, and the differences of interpretation as regards the EIA obligations arising from European law.

Member States have expressed their intent on establishing a noise registry, a sentiment that is reflected in the statements included in this report (see II. Noise registry). Yet our overall analysis indicates that it is unclear what type of noise activity will be included in the registry and, equally important, at what stage in the process the activity will be registered, whether before or after the fact, which is of consequence in how useful the registry will be for effective management.

In closing, our analysis only allows for a pessimistic view on Member States' ability to reach Good Environmental Status for Descriptor 11 by 2020.

However, we have made recommendations for simple actions that could be taken that would greatly help progress this issue.

[58] Summary of COM 2000 1 Final, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Al32042