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A PIVOTAL TIME TO DISCOVER AND IMPLEMENT UNDERWATER NOISE POLLUTION

Jana Rodica

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*Jana Rodica**

1. INTRODUCTION

Land-based pollution and activities continue to be major threats to marine ecosystems. As we know some 80 % per cent of pollution entering the oceans comes from land. However, today it has been ascertained that there is a new threat - ocean noise which is growing from commercial and industrial sources. Several marine conservation groups, non-governmental and international organizations, biologist and other scholars are currently investigating these impacts on marine life and trying to find possibilities in identifying existing international and regional law for the regulation of activities producing underwater noise. It is important to mention that in the recent years international bodies have called for further research of this issue, including monitoring and multilateral action.

The problem of noise has received awareness within the framework of regimes which are dealing with the conservation of marine mammals. There is likelihood that noise pollution will have significant and widespread impact on the immediate and perhaps the global marine environment. Normally when we are referring to marine sound we refer to a marine sound that is occurring naturally in the marine environment such as moving of waves, wind, rain and earthquakes. However, this natural sound which has occurred for thousand of years has been interfered through human activities. Sound is transported as waves through water, air, or any other elastic material by the motion or vibration of fluid particles.¹

Most of marine animals have adapted to these natural sounds by developing suitable systems of communication. Another important characteristic of sound is that it can travel through the

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¹ W. J. Richardson et al, 'Marine Mammals and Noise', Academic Press Inc., San Diego, CA, 1995, p. 544.

water very quickly and can therefore travel great distances from its source.² Fish and other species can adapt successfully to different man introduced sounds. However, introduction of sound can produce different known and unknown effects on them. According to some biologist a low level of sound can be audible to animals without causing any harmful effect. The problem occurs when sound develops high level of frequencies and can provoke detrimental impact on marine life. For better understanding of this phenomenon it is important to introduce that marine sound diverges in:

- frequency (the rate of oscillation or vibration of particle measured in hertz (hZ) or cycles per second,
- wavelength (the distance the wave travels in one cycle of vibration),
- amplitude (the distance a vibrating particle is displaced from the other particles
- generally measured in decibels (Db).³

Generally speaking, according to some scholars high frequency sound can be fatal for certain species; such as whales and dolphins. Furthermore, intense and very loud sound can provoke stress and damage to many organs particularly hearing organs. The consequences for the marine mammals could range from disturbing to devastating. The prospects of economic development brought by offshore structures and windmills, while economically welcomed in many ways, could prove in the future to be immensely destructive for fragile marine species, if not subjected to rigorous control. Even though, little is known about marine sound pollution, a recent analysis has shown that catch reductions in locations where sound pollution occurs, catch rates have drastically been reduced as far as 18 nautical miles from the sound polluted area.⁴

2. ACOUSTIC POLLUTION FROM OFFSHORE WINDMILLS

² Hawkins: 'Underwater Sound and Fish Behaviour', in T.J. Picher(ed.), *The Behaviour of Teleost fishes*, Croom Helm, London, 1986, p. 114-151

³ H. M. Ditinga, A. G. Oude Elferink, 'Acoustic Pollution in the Oceans: The Search or Legal Standards', *Ocean Development and International Law*, No. 31, 2000, p. 152-153

⁴ Harm, p. 156.

In an era dominated by concern over climate change and uncertain oil supplies, the growth of wind energy production is not surprising. Not surprisingly, the European Union has made a strong commitment to the development of renewable energy sources. With increasing demands for “green” energy spurring the development of offshore wind power, it will become crucial to discover further question related with acoustic pollution emanating from offshore windmills. Today, offshore wind energy is commonly used for the production of electricity. They are several offshore wind farms scattered around Europe. The bulk of them are located in European countries of northern Europe, due to geographical, morphological and social reasons.⁵ The European Union first offshore wind farm began its operation in Denmark in 1991. As of mid-2004 11 offshore wind power projects had been implemented in the EU in Denmark, the Netherlands, Sweden, and the United Kingdom.⁶ More projects are planned in Italy, France and Germany. Frequently, public opposition to inland wind developments is focused around concerns for wildlife species; especially in relation to birds and the possibility of avian collisions with turbines.

Recently, in Slovenia, there were some ideas to build offshore and inshore windmills. As the former seems more feasible; the latter is related with a problem that most wind farms around the globe encounter; that wind does not blow continuously but in certain time periods. Therefore, the offshore windmills should be placed in a sea region where the wind is constantly blowing. The second drawback is that wind farms also need a lot of space to be built. In some European states particularly in heavily urbanized regions, offshore wind farms in offshore coastal areas are being considered as viable alternatives to land based wind farms.

In several European countries large offshore wind farms have already been built. Related to offshore windmills the impact they can have on the environment is still in the phase of research. Some scholars indicate concern for impacts to small cetaceans and other marine species as a reason for not supporting building of offshore structures; yet nobody considered the impact of sound pollution emanating from wind turbines located in the sea water. For an ordinary person a wind turbine used for producing electrical energy is not difficult to

⁵ N. Nikolaos, A thesis submitted for the degree of Master in Science, University of Strathclyde, September 2004, p. 5 – 8

⁶ J. Firestone, W. Kempton, A. Kruger, ‘Regulating Offshore Wind Power and Aquaculture: Messages from Land and Sea’, *Cornel Journal of Law and Public Policy*, 2004 - 2005, p. 96

comprehend. According to a recent survey conducted in Slovenia, most people think that this process is very similar to water wheels that past generations used to grind their grain to produce flour. The only difference is that instead of using water to turn the water wheel wind is used to turn blades.

Where natural conditions are favourable interest in offshore windmills is increasing. At the moment, particular attention should be paid on their environmental impact. The possible impact of an offshore wind farm can be divided into two stages; during construction and during operation. According to a recent study⁷ ascertainable impacts on the environment during construction are:

- Destruction of bottom area
- Noise pollution
- Disturbances due to construction activity.

Potential impacts during operation are:

- Noise and vibrations from the turbines
- Disturbance due to maintenance operations
- Electromagnetic fields
- The physical presence of the turbines.

Recently some eminent scholars in this field as Dolman, Simmonds and Keith similarly examined both short and long-term impacts of wind farms in marine wildlife and came to analogous conclusions. According to their research short term impacts are those activities occurring during the construction and decommissioning phase of offshore windmills which includes drilling and dredging operations increased vessel traffic and cable-laying activities. Activities with long term impacts on marine wildlife are those occurring during the operation of a wind farm which consist of the actual presence of the structures themselves, noise and vibrations from the continuous operation of the turbines, the generation of electromagnetic fields from cable and increased vessel traffic⁸. Another significant research has been

⁷ J. K. Petersen and T. Malm, *AMBIO: A Journal of the Human Environment*, Volume 35, Issue 2, 2006, p. 75-80

⁸ S.J Dolman, M.P. Simmonds, and S. Keith, 'Marine wind farms and cetaceans', Report of the International Whaling Commission 2003, available at http://www.wdcs.org/submissions_bin/marinewindfarms.pdf (visited on 10.12.2010).

performed by Vella in 2002. Based on his study he assume that dolphins and some other marine species may initially avoid offshore wind farms; however after a certain period of time they accustom to noise levels and sometimes they use offshore wind sites as feeding grounds.⁹

As different scientists have established the impacts of offshore windmills on the environment are not negligible. However, the main problems rest on the non-existence of regulation related to marine sound pollution.

3. THE REGULATION OF UNDERWATER NOISE: THE INTERNATIONAL LAW DIMENSION

The Preamble of the 1982 United Nations Convention on the Law of the Sea (LOSC) recognizes that uses and problems of marine space are closely interrelated and must be considered as a whole. Furthermore, the Convention represents the first attempt to regulate all sources of marine pollution and different aspects of marine degradation within a single instrument. In the past marine protection regime focused almost exclusively on the prevention, reduction and control of marine pollution which was defined in quite narrow terms. Since its entry into force on 16 November 1994 the regime established by the Convention has gained almost universal acceptance and its provisions are widely considered to reflect customary law.

The generally accepted definition of marine protection regime was adopted in Article 1(4) of the LOSC which refers to “The introduction by man, directly or indirectly, of substances and energy into the marine environment including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.”

⁹ G. Vella., I. Rushforth, E. Mason, A. Hough, R. England, P. Styles, T.J. Holt, and P. Thorne, ‘Assessment of the effects of noise and vibration from offshore wind farms on marine wildlife’, Department of Trade and Industry (DTI), Publication URN 01/1341, 2001, available at <http://test.netgates.co.uk/nre/pdf/W1300566.pdf>, visited on 10.01.2010

According to this definition there must be first of all, an introduction whether deliberate or accidental by man, with the exclusion of all natural phenomena, even if they result in deteriorious effects. The phenomenon of marine noise pollution which consequences to a certain extend are still unknown; however what is clear is that it is introduced in the marine environment by man.

Secondly, only substances and energy may cause pollution. If these two terms (substances and energy) are interpreted widely, they can include electricity, sound, vibration, etc. However, noise can be seen in two different ways; as pollutant or as the energy aspect. Regarding rules of interpretation McNair expressly pointed out: ‘There is no part of the law of treaties which approaches with more trepidation than the question of interpretation’.¹⁰ Among scholars they are three different approaches on how to interpret a treaty. McNair in an attempt to find a synthesis of all three approaches suggests: ‘The main task of any tribunal which is called upon to construe or apply or interpret a treaty is to give effect to the expressed intention of the parties, that is their intention as expressed in the words used by them in the light of the surrounding circumstances.’ Art 31 ‘General rule of interpretation’ of the Vienna Convention on the Law of Treaties states in paragraph 1 that ‘a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of treaty in their context and in the light of its object and purpose.’ As referring to the word context; it is imperative to mention that there are many examples in international jurisprudence of references being made to the preamble of a treaty in order to illuminate a particular provision. For example in the United States Nationals in Morocco case in the Golder case in the Ambatielos case and others.¹¹ If we look to the preamble of the LOSC it refers to ‘the desire to settle...all issues relating to the law of the sea’ and to ‘the desirability of establishing through this conventiona legal order for the seas and oceans....’.

Ian Sinclair pointed out that if the object and purpose of the treaty is not clear – ‘do not reveal themselves from a careful analysis of the text; it is unlikely that the travaux preparatoires of the treaty and its conclusion will shed a pellucid light on the matter.’¹²

¹⁰ I. Sinclair, *The Vienna Convention On the Law of Treaties*, Second Edition, Manchester University Press, 1984, p. 114.

¹¹ *Ibid*, 116-118.

¹² *Ibid*, p. 116.

The definition of pollution inserted in the LOSC is based on a previous version prepared by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). Firstly, the definition which was introduced by GESAMP included only introduction of substances; however, later on the word 'energy' was inserted. The main reason for this inclusion was to introduce the awareness of thermal pollution.¹³ As we can see the term energy was introduced because thermal pollution and not because of the awareness of marine sound pollution. On the other hand, even if the Convention did not introduce the term energy because of sound pollution; the term 'energy' can include all forms of noise such as electricity vibration and heat. Art 31 (3) of the Vienna Convention states that 'there shall be taken into account, together with the context...any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation'. As an example in the Corfu Channel Case the Court held that the subsequent practice as vital element in the process of the interpretation of the treaty it stated that 'The subsequent attitude of the Parties shows it has not been their intention, by entering into special Agreement, to preclude the Court from fixing the amount of the compensation.'¹⁴

Another point that needs to be developed further is that according to the Convention not all pollution is prohibited but only pollution that has deleterious effect. This analogy has to be applied in relation to marine noise introduced by man. As the writer discussed before, much will depend on the nature of the introduced noise initiated by man; some noises are innocuous for marine species; on the other hand some are fatal.

Another important point that needs to be made is related to the "result or is likely to result". This wording adopted by the Convention is a powerful tool in interpreting the marine noise pollution. However, the value and significance of such provision will naturally depend on the future scientific research. As mentioned before up until now scientific research is sometimes inconsistent as scientific experiments are established by one isolated fact or by several but not correlated applications.

¹³ H. M. Ditinga, A. G. Oude Elferink, p. 158

¹⁴ Available on www.temple.edu/lawschool/drwiltext/docs/Corfu%20Channel%20Case.pdf, visited on 10.01.2009

Given that noise is still a merging issue State practice and scientific results will play a key role in the future in determining what is the true meaning of the world ‘energy’ and will help develop further the international law dimension.

4. APPLYING GENERAL RULES AND PRINCIPLES OF PART XII OF THE LOSC IN RELATION TO OCEAN NOISE

The LOSC comprises several provisions related to the protection of the marine environment. Part XII sets forth jurisdictional rules for the ‘protection and preservation’ of the marine environment. Yet, it does not explain the difference between these two terms. According to some eminent scholars it is largely established that the word ‘protection’ refers to an existing or eminent danger while preservation maintains the elements of sustainability and relates to the maintenance of the quality of the marine environment (including all forms of marine life) and the long-term policies to deal with marine environmental problems and to improve where necessary.¹⁵ However, more detailed rules regarding marine pollution are contained in part XII of the Convention.

After analyzing part XII of the LOSC the writer wants to point out that there is a set of obligations which States shall conform with. Firstly, According to Article 192 States are under obligation to exploit their natural resources pursuant to their environmental policies to protect and preserve the marine environment (Article 193). Even though the proposition of this general duty to protect and preserve the marine environment is unclear, it can not be denied that it is comprehensive in its capacity. The context of this general duty is specified further in Article 194. States are required to take all necessary measures to prevent, reduce and control pollution using the best practical means at their disposal and according to their capabilities. Moreover, States are encouraged to harmonize their national policies according to article 194(1) and to take all measures necessary to ensure that activities under their jurisdiction and control does not spread beyond the areas where they exercise sovereign rights. The value and significance of this provision in relation the introduction of energy in the marine environment can be twofold. Firstly, the Convention requires from states

¹⁵ S. Rosenne, A. Yankov and M.H. Nordquist, United Nations Convention on the Law of the Sea 1982, A Commentary, Volume IV, Martinus Nijhoff Publishers, 1991, p. 11-12.

prevention, reduction and control of pollution. Secondly, the general definition of pollution given by the Convention "the introduction of energy into the marine environment that results or likely to results in deleterious effects constitute pollution) requires states to take preventive action based on precautionary and anticipatory approaches which are in accordance with Chapter 17 of Agenda 21.¹⁶

Whatever terminology is used it should always be considered that the restricted knowledge and understanding of the sound pollution and the difficulty in predicting the impact of human activities on marine ecosystems. However, the precautionary approach to sound pollution appears important since it justifies the adoption of preventive measures in this regard. According to some scholars the precautionary principle has been internationally directly or impliedly applied or referred to in judicial decisions in several countries. Judge Stein¹⁷ refers to cases decided in Britain,¹⁸ and New Zealand¹⁹ and also refers to judgments of the International Court of Justice²⁰ and the European Court of Justice.²¹

Furthermore according to the Convention, States have an obligation to exercise due diligence to adopt the necessary measures to ensure that activities within their maritime zones or under their control do not cause harm to the environment and interest to other states, as well as to the environment outside national jurisdiction. The Convention gives a non-exhaustive list of the measures that must be taken into account to fulfil this obligation. According to Article 194/3 six main sources of pollution are identified namely: pollution from land-based and

¹⁶ http://www.un.org/Depts/los/consultative_process/documents/A21-Ch17.htm, visited on 12.1.2009.

¹⁷ P.L Stein, 'Are Decision-makers too Cautious with the Precautionary Principle?', *Environment and Planning Law Journal* 3, Volume 17, 2000.

¹⁸ *R. v. Secretary of State for Trade and Industry Ex parte Duddridge and Others* (Queens Bench Division), 4 October, 1994 (unreported).

¹⁹ *Greenpeace New Zealand Inc. v. Minister for Fisheries* (High Court of New Zealand, CP 492/93, 27 November 1995, unreported).

²⁰ *The Danish Bees Case* Judgment of 3.12.1998 in case no. 67/97.

²¹ *The Danube Dam Case* (Hungary v. Slovakia), ICJ, 1998, 37 ILM 162, 204, 212.

costal activities (Article 207), from sea bed mining within national jurisdiction (Article 208), from Activities in the Area (Article 209), from ocean dumping (Article 210), from ships (Article 211) and from or through the atmosphere (Article 212). Furthermore, States have to take into account all necessary measures to protect and preserve “rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” (Article 194(5)). This provision can apply also in relation to marine sound pollution; related to mammals and other marine species. Instruments need to be taken by states not only in respect of “activities” that may cause pollution, but also for “the use of technologies” under their jurisdiction and control that may result in pollution of the marine environment”.²²

Additionally, there is a strong emphasis that States have to cooperate on a global or regional basis directly or through competent international organizations in the multilateral development of international rules and standards, practices and procedure for the protection and preservation of the marine environment.²³ According to Article 123 of the Convention regional cooperation is extremely important within enclosed and semi enclosed seas as is the case in the Northern part of the Adriatic. To fully address the adverse effect of noise pollution is of paramount importance for bordering states to cooperate as the sound spreads around the seas very quickly.

States are subject to a series of procedural obligations concerning notification and information exchange (Article 198), the development of pollution contingency plans (Article 199), cooperation through scientific research (Articles 200-201), technological assistance (Article 202), monitoring (Article 204) and reporting (Article 200). These provisions are essential in relation to sound pollution as States according to Convention have a duty to cooperate with each other in good faith, to promote studies, undertake studies and programs of scientific research, to encourage the exchange of information and data acquired (even if it not stated it can be applicable in relation to sound pollution) to conduct environmental impact assessment of projects and activities which are potentially dangerous to the marine environment. After collecting all the necessary information states have to work towards the establishment of appropriate scientific criteria for the formulation and elaboration of rules,

²² M. Ditinga, A. G. Oude Elferink, p. 160.

²³ Art. 197 LOSC.

standards, recommended practices and procedures to prevent, reduce and control pollution.²⁴ According to some eminent scholars we should observe that the Convention is based on a balance of interests as they stood three decades ago and does not reflect the modern requirements of environmental protection. Therefore, it is writer's opinion that time has come to introduce marine sound pollution in the Convention.

5. THE EUROPEAN UNION

The European Union has recognized the problem of under water noise pollution in 2002 when the consultation process began on its Marine Strategy Directive.²⁵ Almost two years later the EU Parliament adopted a resolution which imposes to member states a moratorium on the use of high intensity sonar in naval operations until when it is known what harm it imposes on marine cetaceans and other marine species. The resolution also calls on the European Union and member States to set up a 'Multinational Task Force' for developing international agreements on sonar and other sources of intense ocean noise; to exclude and seek alternatives to the harmful sonar's used today; and to "restrict immediately the use of high-intensity active naval sonar's in waters falling under their jurisdiction."²⁶

As EU is only beginning to consider potential marine sound pollution emanating by sonar's there is an urgent need to strengthen, critically analyze and investigate other sources of sound pollution such as from offshore windmills. The writer tentatively suggests to establish a competent EU body in order to assess noise pollution issues in the Adriatic area and in the Mediterranean and adopt measures to protect marine species from adverse impacts of noise pollution. Additionally it is worth noting that one of the EU countries Spain, has in 2004 adopted its own legislation to provide shelter to particularly sensitive marine species affected by marine noise. In 2004 the Spanish Ministry of Defence announced its concern to marine sound pollution and passed a law which prohibits all active sonar exercises for 50 nautical

²⁴ Art. 201 LOSC.

²⁵ International found for animal welfare (IFAW), "Ocean Noise: Turn it down", Report, June 2008, p. 26.

²⁶ European Parliament Resolution on Noise pollution available on <http://www.europarl.europa.eu/sides/getDoc.do?language=EN&pubRef=-//EP//TEXT+MOTION+B6-2004-0089+0+DOC+XML+V0//EN>, visited on 19.02.2009.

miles off the coast of the Canary Islands.²⁷ Following this approach, Spain had recently purposed to adopt a similar approach in relation to off shore windmills.

The Spanish approach shall be a helpful example of the sort of measures that all EU countries are supposed to adopt. The writer also believes that EU Commission should endorse a precautionary approach to all sources of intense sound on high seas; to explore ways to limit and mitigate their use and to urge States to adopt all necessary measures in their territorial waters.

6. INTERNATIONAL MARITIME ORGANIZATION

The International Maritime Organization (IMO) is commonly regarded as the competent organization for all issues related to vessel-source pollution. The IMO has not yet adopted instruments dealing with noise pollution in a form of a convention which seems to be a possible long-term solution. However, in April 2008 the IMO has recognized the harmful effects of ships that have generated ocean noises and invited IMO governments to participate by submitting proposals on potential harmful impacts associated with vessel noise and their potential mitigation.²⁸ Moreover, IMO has included noise pollution within the definition of ‘substance’. This was recognized in 2005 when IMO drafted the Revised Guidelines for the Designation of Particularly Sensitive Sea Areas, by recognizing noise as a potential threat to the marine environment and therefore as a suitable basis for designation of PSSA.²⁹

Paragraph 2.2. Of the IMO Guidelines recognized that adverse effects and damage may occur to the marine environment and the living resources of the sea as a result of shipping activities, which are increasing due to increase in global trade. This paragraph is particularly important since it is recognized that pollution from ships which includes releases of oily mixtures, noxious liquid substances and harmful aquatic organisms includes ‘even noise.’ In the wide context of noise issue, it is vital to consider that all noise should require attention.

²⁷ <http://www.asoc.org/portals/0/pdfs/ASOC%20CCAMLR%20noise%20093005.pdf>, visited on 5.5.2011.

²⁸ MEPC 75 (2008), available on http://www.nmma.org/lib/docs/nmma/gr/policy/MEPC_57.

²⁹ I. Papanicolopulu, ‘Current Legal Developments of Underwater Noise’, *The International Journal of Marine and Coastal Law*, 2008, p. 23.

As stated before, noise can emanate from different sources and it can reach great distances over the sea in a short period of time; because of this and other characteristics of noise one of the major advances of PSSA is that its criteria relate beyond the limits of the territorial sea of each state, therefore it apply also to high seas.³⁰

The writer's opinion is that on long-term IMO can do more in adopting a Convention addressing the source of underwater noise pollution. In the intermediate-term the establishment of PSSA related to noise pollution might help to protect marine species and advance human sensivity to the impact of noise related to marine life and therefore bring the international awareness to the issue. The process must continue until a majority of States understand and accept that noise pollution is a serious public duty undertaken on behalf of the international community as a whole.

7. ACCOBAMS

Further action relating marine sound pollution has been carried out by the parties to the agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). This Agreement has been concluded on the basis of Art. IV (4) of the CMS and in entered into force in June 2001.³¹ Some Mediterranean States and some candidate countries for EU accession have ratified this Agreement; therefore briefly outlining its characteristics is worthwhile.

The primary objective of the Agreement is to “achieve and maintain a favourable conservation status for cetaceans,” by establishing a network of specially protected areas.³² In principle, each Party discharges this obligation by applying within its jurisdictional limits “the conservation, research and management measures prescribed in the Annex” to the

³⁰ According to para. 4.3 of Revised Guidelines PSSA may not be created in areas under national jurisdiction, but also may include parts of high seas.

³¹ The text of the Agreement is available at: www.oceanlaw.net/texts/accobams.htm, visited on 5.5.2011.

³² Art. II.1.

Agreement.³³ The Conservation and Management Plan Annex in turn provides in paragraph 1(d) that parties are to ‘work towards...the prevention of other significant disturbance, especially of an acoustic nature.’ Importantly, the agreement applies to all maritime waters of the Mediterranean including the Black Sea independently of their judicial status, including high seas and internal waters. It is without prejudice to the freedom of navigation and other rights and duties of states under the law of the sea.

In 2004 ACCOBAMS adopted a Resolution on undersea noise that *inter alia* recognizes ocean noise as a form of pollution composed of energy that can have adverse effect on marine life ranging from disturbance to injury and mortality. Moreover, it urges parties to ‘if appropriate avoid any use of man made noise in habitat of vulnerable species may be concentrated....within the ACCOBAMS area’ and calls for the development of a common set of guidelines on conducting activities known to produce underwater sound with the potential to cause adverse effects on cetaceans.³⁴ The importance of the Resolution lies in the fact that is not limited to specific sources of noise such as sonar noise but applies to all activities which can emanate acoustic pollution. However one of the most significant provisions of the resolution is that contained in paragraph 6 which requires from the Scientific Committee to develop a common set of guidelines on conducting activities known to produce underwater sound with the potential to cause adverse effects on cetaceans.

In 2007 ACCOBAMS adopted the ‘Guidelines to address the issue of the impact of anthropogenic noise on marine mammals in the ACCOBAMS area.’³⁵ To summarize, the sources and activities to be taken into consideration within the context of the ocean noise issue according the guidelines are:

- ship sources
- military sonar’s
- civil sonar’s
- offshore structures/demolition works
- coastal industries

³³ Ibid, Art. 2.2.

³⁴ <http://www.accobams.org./index science.htm>, visited on 05.02.2009

³⁵ ACCOBAMS-mop3/2007/Doc20, 6. August 2007, Third Meeting of the Contracting Parties, Dubrovnik, Croatia, 22-25, October 2007

- ports
- offshore wind farms
- oceanographic instruments (side-scan sonar's, current meters, acoustic thermometry experiments)
- pingers (used on fishing nets).

At the meeting a recommendation of underwater noise was also adopted. This recommendation sets out principles which shall be observed by Parties to the Agreement.³⁶

Resolution 3.10. urges Parties to act in accordance with the following principles. The most important principles set in the Resolution are:

- underwater noise shall be reduced; specific guidelines will be required to set out limits on the noise transmitted underwater, giving high priority to high-power sources and both offshore and coastal construction works
- priority should be assigned to high-quality research
- particular attention shall be given to the management of habitats that host sensitive species
- Consideration of the effect of underwater noise should be included in Environmental Impact Assessments (EIA) and in the consequent design of mitigation procedures or any activity that might introduce noise underwater.

The main drawback however rests on the fact that even though, the main principles and recommendations to the question of existence of noise pollution have been recognized widely as those emanating from military sonar's to offshore structures and have been put in place; they can not produce results unless one is willing to participate in it, enforce the rules and especially enforce sanctions against violators.

8. THE BONN CONVENTION

It is worth making a brief reference to the 1979 Bonn Convention on the Conservation of the Migratory Species of Wild Animals (CMS) which deals with the conservation and effective

³⁶ Ibid

management of migratory species and their habitats.³⁷ The Convention makes a clear distinction between migratory species in danger of extinction, which are listed in Appendix I, and migratory species with an “*unfavourable conservation status*” which are listed in Appendix II.

Especially for the North part of the Adriatic and Mediterranean as a whole Appendix II is of paramount importance as it includes dolphins. Various species of other cetaceans and sea turtles are included in Appendix I. The list of other marine species and cetaceans is expanding over the years. The Conference of the Parties to the Convention has adopted two Resolutions which address the issue of noise pollution of the seas. The first resolution was adopted in 2002³⁸ which covers sound emanating from wind turbines. There is no strong mechanism under the Resolution to ensure compliance with its provisions and the lack of enforcement rests a major problem. However, the main idea is to urge that parties to the Bonn Convention should take all necessary steps to prevent and minimize sound pollution emanating from different wind turbines. The second Resolution adopted in 2005³⁹ address human induced impacts to cetaceans and urges the organization’s Scientific and Conservation Committees to further identify priority impacts regions requiring urgent attention and to ensure compliance with other related agreements which cover the problem of marine underwater noise.

9. CONCLUSIONS

Scientific research has improved our understanding about marine sound pollution. The overall difficulty is that behaviour of sound in the marine environment is complex. This is not just so with natural ecosystems, but also with the technologies, such as sonar, which are having an impact upon key species within the marine environment.

Overall, even if important progress has been made so far in the development of scientific knowledge related to sound pollution and its incorporation in decision making processes,

³⁷ Text available at http://www.cms.int/documents/convtxt/cms_convtxt.htm, visited on 5.5.2011.

³⁸ Resolution 7.5. of 2002, Wind Turbines and Migratory Species.

³⁹ Resolution 8.22. of 2005, Adverse Human Induced (sic) Impacts on Cetaceans

there are some general problems related to enforcement mechanisms. The picture is further complicated by many results that emerge from different scientific research conducted in different states. While the regional community seems to recognize the need to enact marine sound pollution, the complex array of human emanating sound sources affecting the seas may largely depend on broader global community approach. This can include, amongst others, taking a more precautionary approach to managing marine sound pollution through a comprehensive convention or adopting a global and perhaps additional regional agreements on sound pollution. However, this is a very ambitious goal and its achievement would not be possible without obstacles and difficulties. The latter are part of the processes, and should not be regarded as obstacles, but as challenges that need to be properly acknowledged and addressed. The ACCOBAMS experience and Spanish approach in enacting sound pollution in this sense is very valuable, even if it is itself struggling to succeed and attract regional and international community.

In areas where noise may have significant harmful impacts upon the animals inhabiting the marine environment, the noise source should be stopped, or a moratorium of such activities should be implemented. Where such prohibitions are presently not possible, precautionary measures to avoid potential impacts should be codified such as warning signals, where the noise slowly increases, allowing animals to leave the area in good time.⁴⁰

In conclusion the presence of boundaries does not matter in the least for the protection and preservation of marine environment. What matters is how to secure more responsible cooperation by coastal states; this in the writer's opinion remains the greatest challenge. Hopefully, whatever the outcome, the writer's presentation and discussion of the problem can contribute to the successful outcome of the problems in the mentioned maritime area.

⁴⁰ A. Gillespie, 'The Precautionary principle in the Twenty-First Century: A Case study of Noise Pollution in the Oceans, The International Journal of Marine and Coastal Law', Martinus Nijhoff Publishers, Volume 23, No. 2, 2008, p. 83