Coastal and Maritime Tourism sectors and the implementation of the MSP Directive

Information to stakeholders and planners

Coastal and maritime tourism represents over one third of EU's maritime economy, generating €183 billion in gross value added and employing almost 3.2 million people. The sector has also been identified as one of the five areas for the sustainable growth of Europe's blue economy. However, it is confronted with new realities and challenges. The intensification of related sectors and the emergence of new activities that redefine the use of marine space create issues of access to space, safety and environmental sustainability.

With the entry into force of the Directive for Maritime Spatial Planning in September 2014, the tourism industry will be increasingly involved in MSP. Most touristic or recreational activities depend on a high quality environment, therefore benefits will arise from long-term and integrated planning of the seas and coastal waters.

On the 27th of November 2014, the European Commission organised a conference on Maritime Spatial Planning (MSP) and Tourism in Venice. The sectors represented were Boating, Cruise, Underwater Cultural Heritage, Surf, and Recreational fisheries. This event was the fourth of a series of stakeholder conferences assessing the benefits and challenges of MSP for specific maritime sectors and activities.

This information document is partly based on the conclusions drawn from the conference's presentations and discussions. Its aim is to inform the industry, national authorities and NGOs about the specific characteristics, challenges and benefits of the implementation of the new MSP Directive[1] for the tourism sector.

Content:

1 - The first part will present Maritime Spatial Planning (MSP) and the objectives of the new EU Directive.

2- The second part will present the characteristics of the tourism sector in the context of MSP, the impact on the environment and the potential conflicts and synergies with other uses.

3- The third part will present the benefits and challenges of MSP related to the sector.

[1] Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning

1. Maritime Spatial Planning

Maritime Spatial Planning (MSP) is a transparent and comprehensive process based on stakeholder involvement whose aim is to analyse and plan when and where human activities take place at sea to support sustainable development and growth in the maritime sector, applying an ecosystem-based approach. It is a cross-sectoral tool that takes into account all maritime uses and the environment. During maritime planning, all relevant stakeholders should be given the opportunity to be involved.

Marine ecosystems and human activities evolve constantly. Therefore, MSP must be a continuous process. It has to adapt to the availability of new (scientific) information or to changes in the initial assessment of an area and of the different uses patterns.

The Maritime Spatial Planning Directive

In July 2014, the European Parliament and the Council of the European Union adopted a new Directive (2014/89) establishing a framework for MSP. The Directive requires Member States, through their maritime spatial plans, to aim to contribute to the sustainable development of a number of sectors linked to the legal bases (environment, fisheries, maritime transport and energy). Member States may pursue other objectives (e.g. tourism and dredging). This ensures that all activities are equally covered and that all stakeholders' interests are considered.

Member States are required to transpose the Directive in their national legislation and designate the relevant authorities by 18 September 2016. The implementation of MSP in Member States' marine waters must be achieved by 31 March 2021.

The Directive does not impose planning details or management objectives which should be decided by Member States. However, it requires the implementation of MSP in all Member States' marine waters, as well as cross-border cooperation. This will be achieved through the establishment of common minimum requirements and a mandatory time frame.

The minimum requirements for the Member States include:

1. Involve stakeholders;

2. Develop cross-border cooperation;

3. Apply an ecosystem-based approach;

4. Use the best available data and share information;

5. Take into account land-sea interaction;

6. Promote the co-existence of activities;

7. Review the plans at least every 10 years.

2- Coastal and Maritime Tourism

The coastal and maritime regions of Europe are a major tourist destination, with five Member States among the world's top ten destinations for holidaymakers. In 2014, 584 million visitors arrived in Europe (EU-28) representing 51% of the international market share[2]. Between 2013 and 2014, the number of tourists increased by 5% and the receipts by 3.4% representing $509 billion[3].

Tourism is an important activity in the EU which contributes to employment and economic growth, as well as to the development of rural, peripheral or less-developed areas. Coastal and maritime tourism represents over one third of the maritime economy and has been identified as a special sector for potential sustainable growth under the *Blue Growth Strategy*. In order to help the sustainable growth of the sector, a communication on "*A European strategy for more growth and jobs in coastal and maritime tourism"* was issued in 2014 identifying 14 priority actions to be undertaken by the EU. These include the stimulation of performance and competitiveness of the sector, the promotion of skills and innovation, the sustainability of the sector, and the maximisation of available EU funding.

Coastal and maritime tourism heavily depends on the quality of the environment as well as on a good coexistence of the different uses of the maritime space. Maritime spatial planning is therefore an important leverage for the growth and sustainability of the sector.

Definition of tourism: it is important to note that no distinction has been made between tourism and recreational activities as both are inherently linked and tourists often take part in recreational activities. Tourism has been defined by UNWTO as: *"[…] a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes"*[4]. On the contrary, recreational activities are non-work related activities undertaken by residents, for leisure[5].

The following section will present the characteristics of different touristic activities, their potential conflicts and synergies with other uses and the environment to be taken into account when implementing maritime spatial planning.

2.1 The cruise industry

The cruise industry is a major component of the coastal and maritime tourism sector. It accounts for 1.6% of the jobs in the tourism sector (also including cruise building)[6]. Since 2008, the European cruise industry's direct turnover increased by 14% generating € 16.2 billion and employing 340,000

[2] UNWTO Tourism Highlights 2014 edition

[3] Ibid

[4] UNWTO, Understanding Tourism: Basic Glossary

[5] MMO (2014) The provision of guidance for marine licensing staff to support the implementation of marine planning policies for socio-economics, tourism and seascape

[6] Based on World Travel and Tourism Council study on Economic Impact 2014, http://www.wttc.org/-/media/files/reports/economic%20impact%20research/regional%20reports/european_union2014.pdf

people[7]. The sector contributes to the coastal economy of 250 port cities with 31.2 million passengers[8] having disembarked to visit and discover the beauty, cultural wealth and great diversity of European coasts.

The cruise industry is mainly composed of large enterprises from the boating and tourism sector. Most of these companies are associated within Cruise Europe and globally within the Cruise Lines International Association (CLIA). Ports are also big players for the cruise sector who also have associations such as Medcruise for instance.

Legal framework

The cruise industry is subject to compliance with the International Maritime Organization[9] (IMO) regulations for safety and environmental considerations among others. The International Convention for the Safety of Life at Sea (SOLAS) provides construction, equipment and operational standards to the industry to ensure safety at sea regarding e.g. life saving operations, fire protection or ship stability[10]. The International Convention for the Prevention of Pollution from Ships (MARPOL) has been established to prevent marine pollution and regulates garbage and sewage disposals as well as air, oil and chemical pollution from ships to limit ship's environmental impact on the marine environment[11].

Coexistence and competition with other uses

The cruise market is very dynamic due to its seasonality and marketing targets. This unpredictability raises conflicts between the cruise industry and other sectors regarding sea access, space utilisation and threats for navigation.

Ports

The intensification of cruise activities raises two main issues for ports which are the pressure on infrastructures and increased traffic congestion.

Itinerary planning is done on an annual basis with cruise ships rarely offering the same itinerary more than one or two years consecutively. Different characteristics will be taken into consideration during itinerary planning when choosing a "homeport" or a "port of call". The designation of homeport is very attractive since it is estimated that cruise passengers spend 6 to 7 time more money in homeports than in ports of call[12]. The most important criteria when choosing a homeport

[7] CLIA (2014) Contribution of Cruise Tourism to the Economies of Europe 2014 Edition
[8] Ibid
[9] http://www.imo.org/fr/OurWork/Pages/Home.aspx
[10] IMO, International Convention for the Safety of Life at Sea (SOLAS), 1974
[11] IMO, International Convention for the Prevention of Pollution from Ships (MARPOL), 1973
[12] M. B. Lekakou et al. (2010) Which homeport in Europe: The cruise industry's selection criteria

are the presence of an international airport nearby, safety, port's efficiency, port's depth and the presence of adequate infrastructures for embarkation and disembarkation[13].

The cruise industry is also characterised by highly seasonal and weekly variations. Cruise ships operate all year round in European waters with high and low seasons. Typical cruise itineraries are composed of 7 days including 4 or 5 stops[14] in different countries. Itineraries are generally planned to start and finish on weekends creating peak traffic in homeports.

This mobility pushes ports to compete amongst each other to attract cruise operators hence increasing the risks related to cruise infrastructure investment.

Navigation

Safety of navigation is crucial to the industry and will also influence chosen destinations and itineraries[15].

Due consideration must be given for existing shipping lines and anchorage areas regulated by the International Maritime Organization. In particular, these must be respected when developing offshore infrastructures such as wind farms increase safety hazards for the cruise sector[16] but for navigation in general. Wind farms may also disturb radar signals and increase navigation risks in its vicinity[17].

Cruises and the marine environment

The environmental impacts of cruise ships include:

- habitat loss from the development of coastal infrastructures, dredging and anchoring;
- degradation of water quality through sewage and grey water discharges and dumping of ashes from waste incineration, ballast water;
- introduction of invasive species;
- ship strikes with marine mammals;
- noise pollution;
- air pollution[18]
- disturbance of spawning and nursery fish habitats

The industry has greatly improved its practice and reduced its environmental impact over the years. However, further technological and legal developments will be necessary in order to ensure the sustainability of cruises[19].

[13] Ibid
[14] J-P Rodrigue et T. Notteboom (2013) The geography of cruises: Itineraries, not destinations
[15] MSP & Tourism conference (2014) R. Ashdown presentation
[16] MSP & Tourism conference (2014) R. Ashdown presentation
[17] Ibid
[18] MSP & Tourism conference (2014) D. Johnson presentation
[19] MSP & Tourism conference (2014) D. Johnson presentation

Particularly sensitive sea areas (PSSAs): in order to protect areas of high ecological or biological diversity vulnerable to shipping or cruise impacts, countries may designate particularly sensitive sea areas. After approval by the IMO, countries may implement PSSAs with particular management measures such as areas to be avoided, compulsory pilotage or discharge prohibition to protect the marine environment[20].

2.2 Recreational boating and marinas

Recreational boating is practiced by 36 million Europeans, with 6 million boats[21], in 4 500 European marinas offering 1,75 million berths for recreational boaters[22].

The boating industry consists mainly of small and medium-sized enterprises[23] with 3,000 companies employing over 66,000 people. It supports many European economies through manufacturing industries, building and maintenance of coastal infrastructures and the provision of associated services (e.g. trade, repair and maintenance). The sector is represented by the European Boating Industry[24].

Recreational boating tends to be a seasonal activity with peaks happening in summer, weekends and on public holidays[25]. Sporting events also have a high attractive potential for tourism and will result in a punctual higher density of boats[26]. Important features required for boating are water quality and marine biodiversity, as well as access to marinas, boat ramps, proper moorings and the space to navigate safely[27].

Coexistence and competition with other uses

The challenge for the boating industry is to secure adequate space for the development of marinas and access to the waterfront[28] and for safe navigation even during peak seasons. Therefore,

[20] IMO, Particularly Sensitive Sea Areas

[21] mainly of small size with 80% of the fleet measuring less than 8 meters long

[22] ICOMIA STATISTICS BOOK 2010 and http://www.europeanboatingindustry.eu/facts-and-figures

[23] 97% are SMEs

[24] Facts & Figures (2015) The European Boating Industry. Available at: http://www.europeanboatingindustry.eu/index.php?option=com_content&view=article&id=4&Itemid=119 Accessed at July 24, 2015

[25] C. B. Smallwood and L.E. Beckley (2009) Benchmarking recreational boating pressure in the Rottnest island reserve, Western Australia

[26] C. B. Smallwood and L.E. Beckley (2009) Benchmarking recreational boating pressure in the Rottnest island reserve, Western Australia

[27] The Dutch Ministry of Infrastructure and the Environment and The Dutch ministry of Economic Affairs (2014) Draft Policy Document on the North Sea 2016-2021

[28] Ibid.

conflicts between recreational boating and other uses are linked to overcrowding, space restriction and safety hazards[29].

Other mobile uses of the sea space

Boating may compete with other recreational activities (e.g. swimming) or with different type of boating (e.g. sailboats, motorized vessels, personal water crafts, etc.)[30]. It may also compete with other mobile uses such as aggregate extraction in periods of high affluence (e.g. races). However, codes of conducts, proper planning and good communication between users can minimise these conflicts[31].

Permanent structures or forbidden zones

Other potential conflicts are related to areas where boating may not occur due to the presence of infrastructures (e.g. aquaculture farms, oil and gas platforms, or more recently, the development of offshore wind farms)[32]. The increasing number of offshore infrastructures has created safety concerns when boaters have been displaced in heavily used areas (e.g. shipping lanes)[33]. Collisions risks and the loss of important transit routes have also been identified as possible impacts resulting from the development of offshore wind farms[34].

Potential conflicts may appear if sailing boats operate close to wind farms since they disrupt wind patterns. It is estimated that the effect of a wind farm on wind flow is the strongest at 500m behind the wind farm[35]. Effects will however be quickly reduced with the distance and will only cause up to 1-2% disturbance at 10-15km from the wind farm[36]. Presently, regulations regarding recreational boating within the wind farms are not uniform across Europe. In countries allowing recreational boating in wind farms, tracking devices (i.e. Automatic Identification System) may be required for safety reasons[37].

Another impact resulting from the construction of offshore infrastructures is the modification of the seascape and the loss of its scenic qualities. Recreational boaters may perceive areas being developed as less aesthetic and choose to practice their activity elsewhere.

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[29] C. B. Smallwood and L.E. Beckley (2009) Benchmarking recreational boating pressure in the Rottnest island reserve, Western Australia

[30] MMO (2014) The provision of guidance for marine licensing staff to support the implementation of marine planning policies for socio-economics, tourism and seascape

[31] Ibid

[32] Darcy L; Gray, Rosaline Canessa, Rick Rollins, C. Peter Keller, Philip Dearden (2010) Incorporating Recreational Users into Marine Protected Area Planning: A Study of Recreational Boating in British Columbia, Canada; Environmental Management Vol. 46 pp. 167-180

[33] The Dutch Ministry of Infrastructure and the Environment and The Dutch ministry of Economic Affairs (2014) Draft Policy Document on the North Sea 2016-2021

[34] Marine Scotland (2011) Economic Assessment of Short Term Options for Offshore Wind Energy in Scottish Territorial Waters : Costs and Benefits to Other Marine Users and Interests

[35] MMO (2014) Social Impacts and Interactions Between Marine Sectors

[36] Ibid

[37] MSP & Tourism conference (2014) Piero Formenti presentation

Other conflicts with permanent structures may also occur between recreational boating and cables and pipelines relating to anchoring damages.

Competition for coastal space and coastal infrastructures may also exist with other uses (e.g. fisheries and aquaculture[38]) but synergies can be created through shared infrastructures[39].

Recreational boating and the marine environment

The impact of recreational boating on the environment is limited. However each boat still acts as a single, small point source of pollution or disturbance. Areas attracting a large number of recreational boaters may therefore be threatened by damage to the seabed by anchors, littering, increase turbidity and erosion of coastal areas, introduction of invasive species and noise pollution[40]. Contamination of the marine environment may also be created by antifouling paint and sewage discharges the latter potentially contributing to local eutrophication issues[41].

Synergies and management

In order to limit negative impacts on the marine environment, direct or indirect management measures may be taken such as:

- zoning plans introducing spatial and/or temporal restrictions;
- mooring buoys to reduce the impact associated with anchoring;
- speed restrictions or no wake zones to limit coastal erosion and turbidity;
- signage.[42]

Measures to ensure compliance (e.g. with patrols) and awareness campaigns may also help to improve boater's behaviour.

In addition, **s**ynergies may exist between MPAs and recreational boating. If the impacts on the marine environment are mitigated through adequate management measures, MPAs may provide recreational boaters with a quality environment and can restrict their access to other conflicting uses.

2.3 Underwater Cultural Heritage

"*Underwater cultural heritage encompasses all traces of human existence that lie or have lain underwater and have a cultural or historical character*" (UNESCO)[43]. It includes wrecks, ruins,

[38] B. S. Halperna et al. (2008) Managing for cumulative impacts in ecosystem-based management through ocean zoning. Ocean & Coastal Management, Vol. 51, No. 3, pp. 203-211.

[39] MSP & Tourism conference (2014) David Adams McGlip presentation

[40] P. Balaguer et al. (2011) Spatial analysis of recreational boating as a first step for marine spatial planning in Mallorce (Balearic Islands, Spain). Ocean & Coastal Management, V.54, No.3, pp.241-249.

[41] MMO (2013) Compilation of information on tourism relevant to marine planning in the South Inshore and Offshore marine plan areas

[42] C. B. Smallwood and L.E. Beckley (2009) Benchmarking recreational boating pressure in the Rottnest island reserve, Western Australia

submerged landscapes. In addition to UNESCO, the International Committee on the Underwater Cultural Heritage (ICUCH) promotes international cooperation and management of Underwater Cultural Heritage (UCH). The stakeholders on site who maintain the preservation, accessibility and repository of UCH include accredited museums, universities and research centres, local record offices and national monument archives[44]. In some cases, SMEs can be included (e.g. scuba diving site excursions).

In situ conservation of archaeological remains tends to be preferred since the authenticity and context of underwater cultural heritage (UCH) [45] may be diluted when taken out of its environment[46].

Legal framework

The protection of underwater cultural heritage has been translated into international, regional and national legislations. At the international level, the World Heritage Convention (1972) underlines the necessity of integrating the protection of heritage into comprehensive planning programs[47]. Also, the Law of the Sea (UNCLOS, 1982) requires contracting parties to preserve and ensure the safeguard of archaeological and historical objects in their national waters (up to 24nm) but also, in the Area (seabed beyond national jurisdiction)[48]. Another legal instrument is the UNESCO Convention on the protection of the Underwater Cultural Heritage (2001). The convention seeks to improve international collaboration and conservation practices. It sets common principles such as the preservation *in situ* of cultural heritage when possible and prohibits the commercial exploitation of cultural heritage[49].

At the European level, the Valetta convention (1992) on the protection of archaeological heritage establishes specific requirements for the protection of maritime heritage having a historical or archaeological value. The convention requires national legislations to make provision for the creation of inventories, archaeological reserves and the mandatory reporting of new archaeological discoveries[50]. The importance of cultural heritage in the construction of a common European identity has also been recognized through the Faro Convention on the value of cultural heritage for society (2005)[51]. This convention addresses cultural heritage in a more comprehensive way. It strengthens the connections between heritage and societies by promoting the social and economical

[43] UNESCO, Underwater Cultural Heritage

[44] T.J. Maarleveld, U. Guerin & B; Egger, eds. (2013). Manual for Activities directed at Underwater Cultural Heritage. Guidelines to the Annex of the UNESCO 2001 Convention, UNESCO.

[45] UNESCO (2013) Manual for activities directed at Underwater Cultural Heritage. Guidelines to the Annex of the UNESCO 2001 Convention

[46] H.D. Smith & A.D. Couper (2013) The management of the underwater cultural heritage. Journal of Cultural Heritage, Vol. 4, pp. 25-33

[47] UNESCO (1972) Convention concerning the protection of the world cultural and natural heritage

[48] United Nations Convention on the Law of the Sea (1982) Articles 149 & 303

[49] UNESCO (2009-2014) Underwater Cultural Heritage, About the Convention on the Protection of the Underwater Cultural Heritage

[50] Council of Europe (1992) European Convention on the Protection of the Archaeological Heritage (Revised)

[51] Council of Europe, Action for a changing society, Framework Convention on the Value of Cultural Heritage for Society

value of heritage, the importance of access and exposure to cultural heritage and by recognizing the role of all citizens and the civil society through "shared responsibility"[52].

Coexistence and competition with other uses

Threats to the preservation of UCH can come from natural processes or be human induced.

Natural threats include:

- events disturbing the seabed (e.g. earthquakes, storms, coastal erosion, etc.);
- physical threats (e.g. currents);
- biological threats (e.g. bacteria, fungi and wood-borers);
- chemical threats (e.g. corrosion)[53].

Technological developments have increased our capacity to access UCH and potentially threaten its integrity. The main threats from human activities come from:

- coastal and offshore infrastructure developments such as ports, coastal defence works, cables and pipelines, offshore wind farms and oil and gas platforms.

- other activities disturbing the seabed such as trawling, dredging or anchoring may also pose a threat to cultural heritage[54].

Synergies and management measures

Synergies can be found with other uses such as tourism and MPAs[55]. Synergies with the tourism sector include the development of local museums, exhibitions on Europe's maritime history and diving opportunities.

The presence of UCH also protects the marine environment from other uses disturbing the seabed (e.g. trawling). Furthermore, archaeological artefacts may have created habitat for marine species and serves as artificial reefs[56].

Synergies can also be found with other uses for data sharing. For example, archaeologist could use samples taken by another sector even if they were not acquired for archaeological purposes[57].

Much of the UCH sites are yet to be discovered and a level of uncertainty remains regarding the potential location of archaeological artefacts. In order to reduce the risks of damaging undiscovered

[52] Ibid
[53] Ibid
[54] MMO (2014) South Inshore and South Offshore Marine Plan Areas: South Plans Analytical Report (SPAR)
[55] I. Kalvane (2013) Maritime Spatial Planning as Tool for Underwater Cultural Heritage Management in the Baltic Sea. Report of the workhop part of the PartiSEApate project
[56] T. Maarleveld (2012) A vision for Marine Archaeology : What outcomes for the historic environment should web e seeking within MSP ? Seminar on MSP and the historic environment in connection with the European Maritime Dat
[57] UNESCO (2013) Manual for activities directed at Underwater Cultural Heritage. Guidelines to the Annex of the UNESCO 2001 Convention

sites, increased seabed surveying with an archaeological component could be undertaken[58]. Another solution is to develop specific surveying requirements to be applied in areas with potentially historic remains prior to project development[59].

Maritime spatial planning can be used as a tool for protection and management of UCH sites. This can be done through the creation of designated protection zones, special management measures and increased data availability and knowledge.

2.4 Whale watching

Between 1998 and 2008, whale watching has grown at an annual rate of 7.1% in Europe representing 97 600 000$ in 2008[60]. Whale watching can take multiple forms and includes the viewing of all marine mammals (e.g. whales, dolphins and porpoises)[61].

The whale watching industry is dependent on the preservation of marine mammals and their habitat. Whale watching may be a seasonal or annual activity depending on the area, the climate and on the presence of migrating and/or resident species. Resident species stay all year in the same region but may use different sea areas for feeding, resting, socializing, etc. This will be influenced by the physical characteristics of the area, the spatial distribution of the food supply and the predation risks[62]. Migrating species will spend different time in breeding grounds, feeding grounds and migratory corridors. In both cases, coastal areas tend to represent important feeding, breeding, nursing and resting grounds, which is when species are more vulnerable to disturbance[63].

Other factors influencing the location of whale watching activities are:

- appropriate infrastructures such as ports or marinas;
- navigational constraints related to regulations or limits related to currents and bathymetry;
- distance from the port for time and cost reasons;
- prioritisation of iconic species;
- number of whale watching boat operators. [64] [65]

[58] F. Lüth (2012) Exclusion or Coexistance : How should we represent the historic environment in Marine Spatial Plans ?, Seminar on MSP and the historic environment in connection with the European Maritime Day

[59] Ibid

[60] Statistics for 22 European countries including Norway. IFAW (2008) Whale watching worldwide

[61] David W. Johnston (2014) Vigilance, resilience and failures of science and management. In: James Higham et al. (eds.) Whale-watching. pp. 275-29

[62] Ibid

[63] B. Garroda et al. (2004) An analysis of whalewatching codes of conduct. Annals of Tourism Research, Vol. 31, No. 2, pp. 334-352.

[64] D. W. Johnston (2014) Vigilance, resilience and failures of science and management. In: James Higham et al. (eds.) Whale-watching. pp. 275-29

[65] C. Chio et al. (2014) Insight from agent-based modelling to stimulate whale-watching tours. In: James Higham et al. (eds.) Whale-watching. pp. 293-306.

Coexistence and competition with other uses

Two types of conflicts can be distinguished between whale watching and other uses. The first type is related to activities having a negative impact on the marine environment affecting marine mammals. The second one is linked to spatial conflicts between whale watching tour operators and other uses.

Uses having an impact on marine mammals include:

- fishing (e.g. by-catch, entanglement with ghost nets, competition for food resource, etc.)[66];
- shipping (e.g. through ship strikes; and noise and water pollution);[67] [68]
- offshore oil exploitations (e.g. oil spills risks, noise pollution during seismic surveys and barrier to migration)[69];
- offshore wind farms (e.g. barrier to migration and noise pollution during the construction phase)[70];
- Coastal developments such as aquaculture and port development potentially affecting important feeding, breeding or nursery habitats. [71] [72]

Other potential conflicts are related to areas where whale watching may not occur due to the presence of offshore fix infrastructures such as aquaculture farms, oil and gas platforms or offshore wind farms. Conflicts may also arise if new infrastructures act as a barrier between whale watchers' starting point and the main marine mammals viewing areas.

Whale watching and the marine environment

Whale watching itself may interfere with marine mammals' behaviour[73] as well as with their acoustic communication[74]. Depending on the intensity and distribution of whale watching activities, marine mammals may develop behavioural changes affecting their feeding, resting or travelling patterns[75]. This can lead to a decrease in the number of marine mammal or in population displacement.

[66] Camilah Antunes Zappes, Camilla Ventura da Silva, Mônicq Pontalti, Mônica Lauriano Danielski, Ana Paula Madeira Di Beneditto (2013) The conflict between the southern right whale and coastal fisheries on the southern coast of Brazil. Marine Policy, Vol. 38 pp. 428-437

[67] W.W.L. Au & M. Green (2000) Acoustic interaction of humpback whales and whale-watching boats. Marine Environmental Research, Vol. 49, pp. 469-481

[68] Ruth H. Thurstan, Julie P. Hawkins, Luiza Neves, Callum M; Roberts (2012) Are marine reserves and non-consumptive activities compatible, A global analysis of marine reserve regulations. Marine Policy, Vol. 36, pp. 1096-1104

[69] M.A. Zacharias & E.J. Gregr (2005) Sensitivity and vulnerability in marine environments: An approach to identifying vulnerable marine areas. Conservqtion Biology, Vol 19, Issue 1, pp 86-97

[70] Helen Bailey, Bridget Senior, Dave Simmons, Jan Rusin, Paul M; Thompson (2010) Assessing underwater noise levels during pile-driving at an offshore windfarm and its potential effects on marine mammals. Marine Pollution Bulletin, vol. 60

[71] S. J. Allen (2014) From exploitation to adoration. In: James Higham et al. (eds.) Whale-watching. pp. 31-47.

[72] R. Williams (2014) Threats facing cetacean populations. In: James Higham et al. (eds.) Whale-watching. pp. 19-30.

[73] K.A. Stamation, D.B. Croft, P.D. Shqughnessy K.A. Wqples & S.V. Briggs (2010) Behqviorql responses of humpback whales (Megaptera novaeangliae) to whale-watching vessels. Marine mammal Science Vol. 26 Issue 1, pp. 98-122

[74] W.W.L. Au & M. Green (2000) Acoustic interaction of humpback whales and whale-watching boats. Marine Environmental Research, Vol. 49, pp. 469-481

[75] Fredrik Christiansen, Marianne Rasmussen & David Lusseau (2013) Whale Watching disrupts feeding activities of minke whales on a feeding ground. Marine Ecology Progress Series Vol.478 pp. 239-251

Concerns regarding the use of high-speed boats have also been raised regarding possible strikes with marine mammals and the increased underwater noise produced[76].

Synergies and management measures

In order to reduce the impact of whale watching activities, certain measures may be established regulating how, when and where whale watching activities take place.

These include:

- minimum distance between whale watching vessels and marine mammals;
- maximum number of vessels in the same area;
- direction from which a vessel can approach marine mammals;
- speed restrictions. [77]
- the increase of fish populations through hatcheries and/or habitat restoration;
- the identification of areas to be avoided or areas with speed reductions;
- the creation of protected areas[78];
- the implementation of sound threshold (e.g. 100 dB)[79];
- the creation of incentives to replace the noisiest ships operating in whale habitats. [80]

Other measures may be established to protect marine mammals at certain period of their life cycle. These will vary for resident or migratory species. In areas with high intensity of whale watching activities, temporal closure of important feeding, breeding or nursery areas may be necessary to ensure the sustainability of the activity and reduce the pressure on the marine mammals when they are the most vulnerable to disturbance[81]. Furthermore, the Habitat Directive[82] establishes a legal obligation to protect certain marine mammals[83] by requiring the inclusion of their important habitats in MPAs.

When managed properly, whale watching activities and conservation can be compatible. Synergies include the protection of marine mammals from other uses by restricting the access to incompatible uses or implementing management measures to mitigate the impacts[84]. Whale watching can also represent a source of revenue for the MPA and help finance the management and operations of the

[76] E.C.M. Parsons (2014) The socioeconomic, educational and legal aspects of whale-watching. In: James Higham et al. (eds.) Whale-watching. pp. 263-274.

[77] D. Lundquist (2014) Management of dusky dolphin tourism at bKaikoura, New Zealand. In: James Higham et al. (eds.) Whale-watching. pp. 337-351.

[78] L.S. Weilgart (2007) The impacts of anthropogenic ocean noise on cetaceans and implications for management. Canadian Journal of Zoology Vol.85, Issue 11, pp. 1091-1116

[79] C. Erbe (2013) International Regulation of underwater noise. Acoustics Australia Vol. 41 Issue 1 pp. 12-19

[80] MSP & Tourism conference (2014) Rob Williams presentation

[81] B. Garroda and D.A. Fennellb (2004) An analysis of whale watching codes of conduct. Annals of Tourism Research, V.31, No2, pp.334-352.

[82] Directive 92/43/EEC of the Council of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

[83] Species protected by the Annex II of the Habitat Directive include: grey seal, mediterranean monk seal, baltic ringed seal, common seal, harbour porpoise and the common bottlenose dolphin.

[84] K.A. Stamation, D.B. Croft, P.D. Shqughnessy K.A. Wqples & S.V. Briggs (2010) Behqviorql responses of humpback whales (Megaptera novaeangliae) to whale-watching vessels. Marine mammal Science Vol. 26 Issue 1, pp. 98-122

organisation. Synergies can also be created with other recreational activities for the development of coastal infrastructure such as marinas or, with the scientific community by providing access to their boat for research purposes. Synergies can also be developed between aquaculture farms and whale watching activities. For example, successful partnerships have been developed between salmon farming and whale watching operators in Scotland with salmon farms representing a fix attraction for whale watching operators and an additional attraction to visit[85].

2.5 Opportunities for new or marginal activities

2.5.1 Surfing

Surfing's popularity is growing worldwide. In Europe, increased interest in surfing can be observed through the "learn-to-surf industry" which has grown by over 400% in the past 8 years in the UK[86].

Suitable areas for surfing are characterized by regular surfing waves and good water quality. Different parameters of the seabed bathymetry and oceanic processes must be taken into account when identifying suitable surfing waves. These include waves' height; peel angle; breaking intensity; section length[87].

Other factors influencing the identification of suitable surfing areas are beach access and the availability of parking space at proximity.

Coexistence and competition with other uses

Uses or activities that may conflict with surfing are activities affecting the quality of waves, degrading the water quality, or representing a threat for surfers' safety. Therefore, any activity altering seabed bathymetry and oceanographic processes may represent a threat to surfing activities.

This includes:

- hard engineering infrastructures for coastal defence (e.g. shoreline armouring[88] or groynes);
- offshore developments (e.g. offshore wind farms);
- sediment transport or removal (e.g. beach nourishment or dredging);
- coastal infrastructures including boat ramps, ports and marinas[89].

Surfing areas may also be threatened by oil and gas developments and the associated oil spill risks or by dredging activities because of the creation of turbidity plumes influencing the overall water

[85] F. Nimmo et al. (2011) Does fish farming impact on tourism in Scotland ? Aquaculture research, Vol. 42, p. 132-141.
[86] E.J. Rendle et L.D. Rodwell (2013) Artificial surf reefs: A preliminary assessment of the potential to enhance a coastal economy, Marine Policy, Vol. 45, P. 349–358.
[87] B.E. Scarfe et al. (2007) Research-based surfing literature for coastal management and the science of surfing—a review. Journal of Coastal Research, Vol. 25(3), p. 539-557.
[88] MSP & Tourism conference (2014) Luis Brites Pereira presentation
[89] B.E Scarfe et al. (2009) Sustainable management of surfing breaks: case studies and recommendations. Journal of Coastal Research, Vol. 25, Issue 3, p. 684 – 703.

quality locally. Conflicts between other recreational activities (e.g. boaters) and surfers regarding safety issues may also arise if they share the same area[90].

The surfing community has often been marginalized in coastal planning. This has resulted in public demonstrations when projects, possibly affecting the surfing characteristics of an area, were agreed upon. In other cases, projects have been undertaken without prior consultation with the surfing community and have resulted in the destruction or degradation of surfing waves[91]. The maritime spatial planning directive relies on stakeholder participation and requires the consultation of all relevant stakeholders. This will allow the surfing community to have a voice in the process and to reduce negative impacts from other uses.

Synergies with other uses

Synergies between coastal and marine infrastructures and surfing may be possible when developing new projects. Artificial modifications may be beneficial for surfing activities by increasing the quality of waves or even, by creating new surfing waves if properly designed[92]. Other synergies may be created between surfing and MPAs. Protected areas may limit the impact of other uses on wave resources benefiting the surfing community and ensure good water quality[93].

World surfing reserves - Ericeira, Portugal

Coastal and marine areas worldwide are experiencing increasing developments threatening surfing activities. In order to raise awareness on the importance to protect important surfing areas and their environment, the *Save the Waves* organisation, in partnership with local communities, has developed a process to establish world surfing reserves. 7 World Surfing Reserves have been established up to date with only one being in Europe.

Criteria used to establish surfing reserves include environmental characteristics of the area (including biodiversity hotspots, the presence of endangered species or provision of important ecosystem services), the importance of surf in local culture and the existing capacity and support of the local community for the implementation of a surfing reserve.

In 2011, Ericeira was designated as a world surfing reserve, providing an international recognition of its unique surfing properties and environmental quality. The surfing reserve covers 8km of the Portuguese coastline and is part of a MPA (Natura 2000 area). The Mafra Municipal Council of the area has fully participated into the implementation of the project and has recognised the importance of preserving the integrity of the site for surfing activities.

Source: MSP & Tourism conference (2014) L.B. Pereira ; World Surfing Reserves

[90] Ibid
[91] Ibid.
[92] B.E Scarfe et al. (2009) Sustainable management of surfing breaks: case studies and recommendations. Journal of Coastal Research, Vol. 25, Issue 3, p. 684 – 703.
[93] S.A. Martin & I. Assenov (2014) Investigqting the importqnce of Surf Resource Sustainability Indicators: Stakeholder perspectives for Surf Tourism Planning and Development. Tourism Planning and Development Vol. 11, Issue 2 pp. 127-148

2.5.2 Scuba diving

In 2009, Europe counted approximately 3.5 million scuba divers[94]. Diving tourism has grown exponentially at international level and represents a great tourism potential for local communities. Divers tend to have a high purchasing power and it is estimated that each year, 800 000 Europeans divers make one diving trip with an average of 10 nights representing 1.4 billion euros annually[95].

The main factors influencing the selection of a diving site are:

- good underwater visibility;
- good water quality;
- the presence of rich marine biodiversity;
- the presence of emblematic species;
- accessibility of the site.[96]

A variety of sites can be considered as interesting for diving purposes. Even though coral reefs and shipwrecks seem to be some of the preferred features, kelp forests, seagrass beds, underwater caves, and habitat hosting endangered or rare species are also highly valued by divers[97]. The availability of a parking area close to the beach or the port (less than 100m) is an important factor because of the weight of diving material[98].

Coexistence and competition with other uses

Conflicts between scuba diving and other uses are due to the degradation of water quality or water visibility and a limited access to space. For example, diving will not take place in the vicinity of trawling, dredging or sediment dumping activities due to the creation of sediment plumes increasing turbidity and decreasing underwater visibility[99]. Limited space amongst divers or/and with other users (such as whale watching) may cause future conflicts[100]. Other uses such as offshore wind farms and oil and gas platforms are incompatible with diving and will restrict their access to space. Diving is also restricted in or at proximity of heavy traffic routes for safety reasons[101].

Diving and the marine environment

Diving is usually seen as a form of ecotourism. However, certain diving practices and the intensity of use of a diving site may be incompatible with the preservation of the marine environment. Divers may negatively impact the marine environment when they enter into contact with the seabed or

[94] http://www.nauticaltourism.eu/upload/documents/Comment%20devenir%20membre%20ang%2002-05.pdf
[95] ibid.
[96] L. Mundet et L. Ribera (2000) Characteristics of divers at a Spanish resort. Tourism Management, Vol.22, pp. 501-510.
[97] K. Dimmock (2009) Finding comfort in adventure: experience of recreational SCUBA divers. Leisure Studies, Vol. 28, No. 3, pp.279-295.
[98] Ibid
[99] MMO (2014) The provision of guidance for marine licensing staff to support the implementation of marine planning policies for socio-economics, tourism and seascape
[100] Julia Bentz, Antonio Rodriguez, Philip Dearden, Helena Calado & Fernando Lopes (2015) Crowding in marine environments: Divers and Whale watchers in the Azores. Oceqn & Coqstql Management Vol. 109 pp. 77-85
[101] MMO (2014) Modelling Marine Recreation Potential in England- Annex A to D

uproot corals[102]. Divers' presence may also disturb marine species. In extreme cases, the high intensity of use in popular diving sites may lead to the delocalization of some marine species[103]. Divers may use boats for sites further offshore and their anchoring may damage the seabed and benthic habitats.

Damages are not spread evenly during diving trips. Most impacts occur at the beginning, while divers get used to their new environment[104]. Other elements increasing the risks of negatives impacts are linked to the characteristics of the site (e.g. topography, waves, currents), the presence of fragile species and the awareness of diver's to their impact on the marine environment[105]. Damages also tend to be inversely proportional to divers' experience since some impacts (e.g. contact with the seabed) may be caused due to a lack of buoyancy control by beginners[106].

Synergies and management measures

Divers' negative impacts on the marine environment can be reduced through the creation of guidelines and code of conducts.

Other measures include:
- the installation of mooring buoys close to diving sites to limit anchoring damages[107].
- the designation of different diving sites according to the divers' experience and the vulnerability of the ecosystem.
- the utilisation of artificial reefs for recreational purposes to distance divers from fragile or threatened ecosystems[108]. This option should be carefully put in place as by altering natural habitats, artificial reefs may profoundly modify marine ecosystems.

Synergies may exist between scuba diving and MPAs if managed properly. Research has showed that MPAs have a strong attractive potential on divers' site selection since they are perceived as areas with high marine biodiversity and good water quality[109]. Scuba diving activities may also help finance marine parks. However, in order to be compatible, diver's negative impact on marine ecosystems must be limited. Similar synergies can be created between underwater cultural heritage and scuba diving. Many divers seek to visit sites with historically significant shipwrecks and artefacts. These sites offer a unique window on historical events in addition to having a high aesthetic appeal and

[102] A. Di Franco et al. (2009) Scuba diver behaviour and its effect on the biota of a Mediterranean marine protected area. Environmental Conservation, Vol. 36, No. 1, pp. 32-40.
[103] L.C. Dickens et al. (2011) Quantifying relative diver effects in underwater visual census. Plos One, Vol.6, No.4, pp. 1-8.
[104] A. Di Franco et al. (2009) Scuba diver behaviour and its effect on the biota of a Mediterranean marine protected area. Environmental Conservation, Vol. 36, No. 1, pp. 32-40.
[105] Ibid
[106] B. Thapa et al. (2005) Moderator and mediator effects of scuba diving specialization on marine-based environmental knowledge- behaviour contingency. Journal of Environmental Education, Vol. 37, No. 1, pp.53-67.
[107] J. Edney (2006) Impacts of recreational scuba diving on shipwrecks in Australia and the Pacific: A review. Micronesian Journal of the Humanities and Social Sciences, Vol. 5, No. 1/2, pp. 201-233.
[108] K. C. Hillmer-Pegram (2013) Understanding the resilience of dive tourism to complex changes. Tourism Geographies: An International Journal of Tourism Space, Place and Environment, pp. 1-17.
[109] N. Roncin et al. (2008) Uses of ecosystem services provided by MPAs: How much do they impact the local economy? A southern Europe perspective. Journal for Nature Conservation, Vol. 16, No. 4, pp. 256-270.

attracting abundant marine life[110]. Synergies with diving include increased awareness and recognition of the cultural and social significance of UCH. Scuba diving activities may also finance the protection of UCH sites.

The Nordic Blue Parks project

The Nordic Blue Parks project were developed in the Baltic Sea by Sweden, Finland, Norway and Denmark. The aim of the project was to combine both natural and cultural heritage, and recreation through the creation of underwater trails and park sites.

The Baltic Sea offering excellent conditions for the preservation of shipwrecks and opportunities for its enhancement, the project enabled to improve two existing trails and create three new ones. The trails were selected by identifying areas with high natural and cultural values. Special attention was given to the vulnerability and the potential threats and pressures to the site.

The project raises awareness of the public on the cultural and natural wealth of the Baltic Sea and the importance of its conservation.

Source: MSP & Tourism conference (2014) J. Ekebom et al. ; Metsähallitus

Divers can also contribute to research and monitoring programs through volunteer data collection projects. This has been tested to overcome resource limitations (e.g. financing, or for the monitoring/assessment of large areas)[111]. However concerns regarding the quality of data gathered by volunteers have been expressed. Measures may be taken to increase their quality: data review, quality control procedures and training. For long term monitoring, the establishment of processes to create data flow from recreational divers to scientists or managers is necessary[112]. It has also been recognized that the reliability of data gathered by volunteers is inversely correlated with the difficulty of the tasks[113]. This suggests that divers could provide reliable basic information about the state of the marine environment (e.g. litter or destructed habitats) and of emblematic species (e.g. the Mediterranean red corals or marine mammals). Additional benefits in involving volunteers are related to the increase awareness of divers to conservation issues and education.

[110] J. Edney (2006) Impacts of recreational scuba diving on shipwrecks in Australia and the Pacific: A review. Micronesian Journal of the Humanities and Social Sciences, Vol. 5, No. 1/2, pp. 201-233.

[111] Z. Hammerton, et al. (2012) Scuba diving and marine conservation: collaboration at two Australian subtropical destinations. Tourism in Marine Environments, Vol. 8, No. 1-2, pp. 77-90.

[112] B. Lorenzo et al. (2011) Involvement of recreational scuba divers in emblematic species monitoring: the case of Mediterranean red coral (Corallium rubrum). Journal for Nature Conservation, Vol. 19, No. 5, pp. 312-318.

[113] Ibid

2.5.4 Recreational fisheries and pesca tourism

Recreational fisheries can be defined as fishing not undertaken for predominately subsistence purposes[114]. Recreational fishers do not sell their catch[115]. However it is an important activity that has often been underestimated in terms of economic value and environmental impact.

FAO defines three types of recreational fisheries:

- Amateur fishing is the unorganized group of hobby fishermen.
- Sport fishermen are organized in associations and compete on catch size and amount.
- Tourism fishing can be understood as a third party organizing trips for tourists, for example by commercial fishermen (pesca tourism) or by recreational fishermen on leisure charters boats.[116]

More than 9.5 million Europeans practice recreational fisheries in EU waters[117] supporting many industries (e.g. boat building) and many coastal communities. Recreational fisheries can take multiple forms including angling, spare fishing, etc. The dominant recreational fishing type is angling, representing a 8-10 billion EUR industry[118].

Recreational fishing usually takes place in the coastal area within 3-4 km of the coast and until depth of +- 30m; however, this may vary depending on the boat type and the targeted species[119]. Recreational fisheries tend to be a highly seasonal activity strongly influenced by climate as well as by the spatial-temporal distribution of targeted species.

The main characteristics influencing the choice of a fishing site are: fishing quality, costs, port facilities, boat ramps or access to shore, environmental quality, interaction between fisherman and regulation[120]. Also, the spatial distribution of fish species may vary on a seasonal and/or daily basis in function of their life cycle and feeding habits (e.g. squid spear fishing takes place at sunset when species come close to shore for feeding[121]). Recreational fishermen are also influenced by spatial closures such as MPA's. [122]

[114] M.G. Pawson, H. Glenn & G. Padda (2008) The definition of marine recreational fishing in Europe. Marine Policy, Vol. 32? Pp. 336-350
[115] Ibid
[116] FAO (2007) Recreational fisheries in the Mediterranean countries: A review of existing legal framework. Available at/ ftp://ftp.fao.org/docrep/fao/010/a1500e/a1500e01.pdf
[117] This number is however a significant underestimation since numbers were not available for: Belgium, Cyprus, Estonia, Latvia, Lithuania, Malta, Poland, Portugal, Slovakia or Slovenia. M.G. Pawsonl et al., Sport fisheries (or marine recreational fisheries) in the EU (2011) EU contract FISH/2004/011 for the European Commission Directorate-General for Fisheries.
[118] European Anglers Alliance
[119] B. Morales-Nin et al. (2005) The recreational fishery off Majorca Island (western Mediterranean): some implications for coastal resource management. ICES Journal of Marine Science: Journal du Conseil, Vol. 62, No. 4, pp. 727-739.
[120] L. M. Hunt (2005) Recreational fishing site choice models: Insights and future opportunities. Human dimension of wildlife: An international journal, Vol. 10, No. 3, pp. 153-172.
[121] Ibid
[122] FAO (2007) Recreational fisheries in the Mediterranean countries: A review of existing legal framework. Available at/ ftp://ftp.fao.org/docrep/fao/010/a1500e/a1500e01.pdf

Coexistence and competition with other uses

The main conflicts between recreational fisheries and other uses are linked to the access to space and to impacts on fish stocks.

Offshore infrastructures such as LNG terminals, oil and gas platforms and wind farms may create spatial conflicts with recreational fisheries since no other activities are allowed within a 500m radius of the infrastructures for safety reasons[123]. Conflicts will be more important when such infrastructures are constructed close to the coast.

The other main conflicting use is the creation of no-take MPAs where all fisheries activities are banned. The creation of MPAs may displace recreational fisheries activities in surrounding areas increasing local fishing pressure[124].

Conflicts between commercial fisheries and recreational fisheries may also appear if they take place in the same location or target the same species[125]. Species targeted by recreational species may also represent bycatch of commercial fisheries (e.g. trawlers)[126]. Tension between the two activities may be exacerbated if management measures restricting commercial fisheries activities do not apply to recreational fishing. Furthermore, all activities threatening the integrity of important spawning or nursery habitats of targeted species also represent conflicting uses (e.g. dredging[127]).

Recreational fisheries and the marine environment

Recreational fisheries itself may also adversely impact the marine environment and the preservation of healthy fish stocks especially because they do not tend to be taken into account in the calculation of commercial fishing quotas (See Table 1).

Impacts may happen where high intensity of recreational fisheries activities takes place[128]. Traditionally, recreational fisheries' catches and fishing mortality externalities have not been taken into consideration in stock assessments. Their impact may however be significant and account for more than the commercial fisheries sector for certain species[129]. For example, the International Council for the Exploration of the Sea (ICES) has recently estimated that recreational fisheries was accountable for one quarter of the total sea bass fishery removals and fishing mortality without being including in official assessments[130]. Important factors determining the severity of recreational

[123] United Nations Convention on the Law of the Sea (1982) Article 60

[124] T. P Lynch (2014) A decadal time-series of recreational fishing effort collected during and after implementation of a multiple use marine park shows inter-annual but low spatial variability. Fisheries Research, Vol. 151, pp. 85-90.

[125] A. Ruiz-Frau (2013) Spatially explicit economic assessment of cultural ecosystem services: Non- extractive recreational uses of the coastal environment related to marine biodiversity. Marine Policy, Vol. 38, pp. 90-98.

[126] A. Sean Pascoe et al. (2014) Economic value of recreational fishing in Moreton Bay and the potential impact of the marine park rezoning. Tourism Management, Vol. 41, pp. 53-63.

[127] MMO (2014) The provision of guidance for marine licensing staff to support the implementation of marine planning policies for socio-economics, tourism and seascape

[128] Ford, J. and Gilmour, P. (2013) The state of recreational fishing in Victoria: a review of ecological sustainability and management options

[129] ICES (2014) Report of the Working Group on Recreational Fisheries Surveys

[130] Ibid.

fisheries impacts are linked to fishing techniques, rates and survival of discards fish, the intensity of the activity and the consistency of the fishing pressure[131]. By targeting specific species, recreational fisheries may affect the whole food web by removing high trophic level species. In addition recreational fisheries mostly take place in coastal areas, which often represent important nursing grounds (e.g. lagoons, estuaries, sea grass meadows, etc.).

Other negative impacts related to the activity are littering, trampling and damages to the seabed by anchors[132].

Table 1: Environmental impact of recreational fisheries

Threat	**Direct impacts**	**Indirect impacts**
Retention of target species	Population depletions	Trophic and ecosystem changes
Discards and bycatch	Death or injury of discards	Population depletions
Boat strikes	Death or injury of marine mammals or bird	Population depletions
Bait collection	Population depletions	Trophic and ecological changes
Trophic effects of catch	Change abundance of organisms higher and lower on the food chain	Wider ecosystem shifts
Lost fishing gear	Entanglement with wildlife	Population depletion
Physical impacts on biota	Direct loss of seagrass and benthic habitat	Change to ecosystem and fisheries productivity
Discards of bait	Localised eutrophication	Potential benefits for introduced species
Air/Water/Beach pollution	Oil/fuel leaks, carbon emissions, garbage, loss of lead sinkers, beach erosion	Population and ecosystem impacts

Source: Ford, J. and Gilmour, P. (2013)

Synergies and management measures

Management measures regulating how, when and where recreational fisheries can occur may be implemented to ensure sustainable practices. Measures will vary depending on the places and the issues to be addressed. Common measures include regulation on minimum fish size, limited number of catches, spatial-temporal closures during spawning seasons and catch and release policies. Other measures may regulate certain gear types or promote the utilisation of biodegradable hooks and lines. Also, the size and shape of hooks may have different impacts with bigger hooks resulting in

[131] Ford, J. and Gilmour, P. (2013) The state of recreational fishing in Victoria: a review of ecological sustainability and management options

[132] Ibid

less undersized catches and circle hooks limiting mortality in catch and release practices for certain types of fish. [133]

Important synergies exist between recreational fisheries and MPAs. When successful, MPAs allows for an increase in the number and the size of fish within the protected areas[134]. Fishing outside the protected area may also be improved through spill-over effects.

Synergies with other uses may also be developed for shared infrastructures and between recreational fisheries and underwater cultural heritage. Shipwrecks may act as artificial reefs and create areas with high density of fish representing attractive fishing grounds[135].

Fisheries are part of the history of many coastal cities and have contributed to the development of local identities and culture. Traditional fishing communities represent attractive destinations for tourism, which may support the local community by:

- increasing the demand for local fish consumption;
- participating to special events such as festivals;
- participating to activities such as recreational fishing. [136]

3- Benefits of MSP for the tourism sector

Maritime spatial planning is an important tool to support the growth of the tourism sector.

It will consider the characteristics of the various activities at sea, their cumulative impacts on the marine environment, their synergies. A temporal dimension must therefore be included in the MSP process regarding touristic activities to accurately reflect the current and potential future situation, and to promote the coexistence of uses. Special attention to land-sea interactions must also be considered as most touristic activities take place in the coastal area or depend on coastal infrastructures (e.g. marinas).

Stakeholder participation

Directive 2014/89/EU requires that Member States ensure stakeholder involvement by implementing public participation mechanisms and by consulting relevant stakeholders early in the MSP planning process (Article 9). This will ensure that more marginal activities in the tourism sector are included in the process.

[133] Ford, J. and Gilmour, P. (2013) The state of recreational fishing in Victoria: a review of ecological sustainability and management options

[134] J. Alos et R. Arlinghaus (2013) Impact of partial marine protected areas on coastal fish communities exploited by recreational anglers. Fisheries Research, Vol. 137, pp. 88-96.

[135] S.J. Walker & T.A. Schlacher (2014) Limited habitat and conservation value of a young artificial reef. Biodiversity and Conservation, Vol. 23, Issue 2, pp. 433-447

[136] Erlend Moksness, Jakob Gjosaeter, Guillaume Lagaillarde, Eirik Mikkelsen, Esben Molqnd Olsen, Hakan T. Sandersen & Jon Helge Volstad (2011) Effects of Fishing Tourism in a Coastal Municipality: a Case study from Risor, Norway. Ecology and Society Vol. 16 Issue 3 pp. 11-24

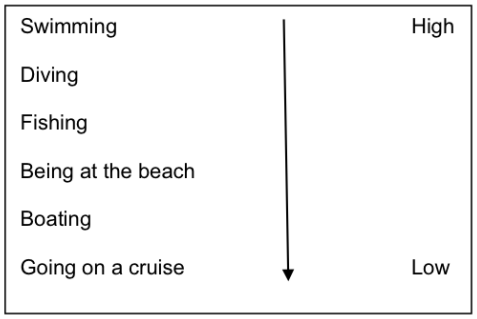
The maritime space supports a diverse range of activities, each having different needs and sometimes, conflicting interests. Early stakeholder involvement can however reduce conflicts between different uses by identifying important areas and characteristics for each activity and allowing for the identification of possible mitigation measures or less conflictual development areas. Activities are not distributed evenly in time and space. This may allow for certain flexibility when addressing conflicts between mobile activities. Early communication is the key to increase compatibility and coexistence between marine uses. MSP can act as a transparent tool for stakeholder participation resulting in greater satisfaction among participants and more innovative, lasting solutions.

The tourism sector is very diverse and most activities are highly fragmented. This has caused the integration of tourism and recreational data/information to be challenging when developing MSP. Stakeholders represent an important source of information and can provide important inputs to the planning project reducing knowledge gaps.

Protection of the marine environment

Historically, maritime activities have been developed on a sectoral basis with little consideration for other uses or the cumulative impact of all activities on the marine environment. This has led to the deterioration of water quality and the loss of marine biodiversity in multiple regions across EU waters. With the projected growth of most maritime activities and the arrival of new players such as offshore aquaculture and wind farms supported by EU Blue Growth agenda, it is more important than ever to apply a holistic view to the management of European seas. Coastal and maritime tourism depend on the preservation of the marine environment and will benefit from a more integrated approach (see figure 1).

Figure 1: Degree of dependence of marine recreational activities on water quality (linked to eutrophication)



Source: Tore Söderqvist et al. (2012) Marine tourism and recreation in Sweden, A study for the economic and social analysis of the initial assessment of the MSFD. Report produced for the Swedish Agency for Marine and Water Management.

MSP has a role to play in identifying and protecting the most significant and vulnerable areas. For example, in the Spatial Plan of the German European Economic Zone, the development of offshore

wind farms has been prohibited in Natura 2000 protected areas[137]. Using an ecosystem-based approach, MSP can also facilitate the development of coherent networks of MPAs to maximize their benefits.

Better integration of land-sea interactions

Accessibility to the coastline is a prerequisite for the development of coastal and maritime tourism, which is also highly dependent on the presence of coastal infrastructures such as marinas or parking space. Coherence between terrestrial and maritime planning is thus required.

Near shore touristic activities may also be affected by more offshore uses whether related to the degradation of water quality by other uses or the modification of the seascape brought by new activities. The visual impact of offshore infrastructures will vary in function of:

- the distance from the shore;
- the visibility (mainly linked to atmospheric conditions);
- the height of the infrastructure;
- the elevation of the viewer[138].

Another factor potentially affecting the acceptability of offshore infrastructure projects is related to the type of the adjacent coastline with stronger opposition in more natural coastal area than in more urbanized ones[139]. The identification of suitable locations for the development of maritime uses must therefore take into account its potential impact on other activities in the coastal area.

[137] Bundesamt für Seeschifffahrt und Hydrographie, Spatial Plan for the German Exclusive Economic Zone in the North Sea- Text section, unofficial translation

[138] MMO (2014) Seascape Assessment for the South Marine Plan Areas: Technical Report. A report produced for the Marine Management Organisation, pp 88. Project No: 1037.

[139] S. A. Jay (2008) At the margins of planning: offshore wind farms in the United Kingdom. Ashgate Publishing, Ltd.