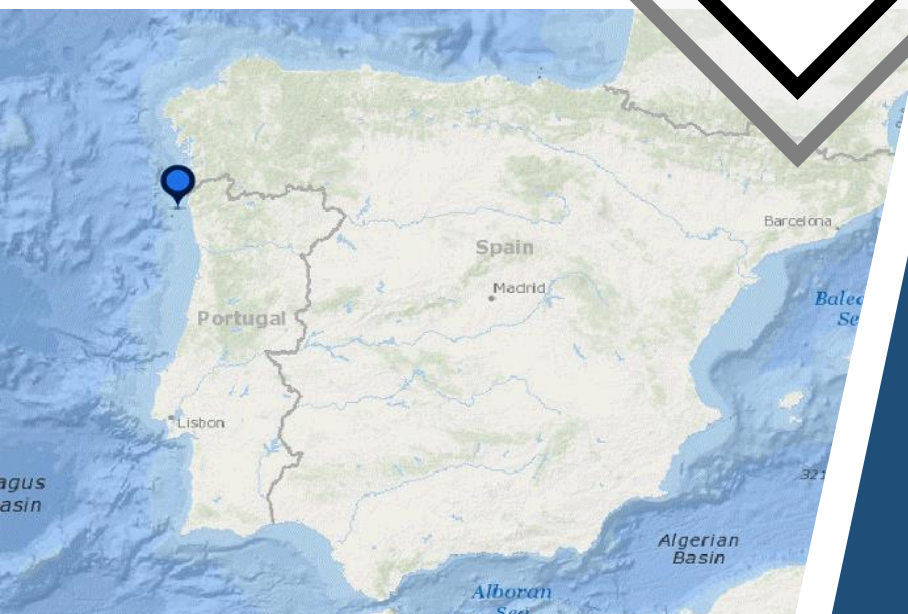




**Addressing conflicts between  
fisheries and offshore wind  
energy industry – Case-study  
of the WindFloat Atlantic  
project in Portugal**

Francisca Braga  
June 2020



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Title: Addressing conflicts between fisheries and offshore wind energy industry – Case-study of the WindFloat Atlantic project in Portugal

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**Synopsis:** There are numerous activities at sea what can lead to conflicts between the different users that share the same space. This project examines the specific conflict between the fisheries and the wind energy sectors in Portugal with the WindFloat Atlantic project that has implemented in 2019. It also explores potential solutions to solve or minimize the conflicts between the sectors.

Full report: 52 pages

**Disclaimer from Head of Studies and Head of Study Boards**

COVID19 and the consequences of the lock-down of society and the university since March 13, 2020 have had influence on which activities that have been possible to stage and carry out as part of the project work. More specifically, this means that activities have been limited to online activities, and that activities such as Lab activities; surveying activities; on-site ethnographic studies and on-site involvement activities have not been possible.

When assessing this project, please bear this in mind.

*The main challenges that during the time of lock-down that I experienced that influence my thesis process was the fact that the libraries including the university library was close so some books, that do not exist in online format, were not available to consult. Even if the university library in May made an effort to send some scans of books if necessary.*

*Besides this, the flights were cancelled, and the borders were closed so it was not possible to go on Easter to my home country, Portugal, where is the case study of my thesis. I had planned to visit the installations of the wind farm and interview the community.*

*To overcome these obstacles, I made the interviews in online platforms with the different stakeholders and people that can add a valuable insight in my project and did my research and literature review with articles and books accessible online.*

*It was also not possible to participate in some conferences that were in the calendar regarding to my thesis topic, however one of them (ICES ASC 2020) was postponed so I hope to be able to attend that conference in the future.*

*This period also serves as reflection and self-examination for the next professional steps after the master and the main objectives for the personal and professional life.*

## Executive summary

In this investigation project the scope of the problem will be the relationship between the fisheries communities and the wind offshores park in the specific case of Portugal with the WindFloat Atlantic project. The focus of the study is to investigate how the sectors of wind farms and fisheries management were included in the planning process, and the role of stakeholders in this process.

The questions that this thesis is trying to answer in the report is: How could the WindFloat Atlantic project, in Portugal, have been addressed to avoid or minimize the existing conflict between the fisheries and the wind energy industry sector?

To answer this main research question some sub-research questions were formulated.

- How has the conflict been managed in other similar situations around the world?
- What was the role of the different stakeholders during the process?
- Could institutional change theories provide a direction to solve or minimize the conflicts?

The theoretical framework and the methods to answer the main research question is the institutional change theory and the methodology used was interviews and the literature review. The main result and conclusion from this project are the fact that there is a possibility in the future to be implemented with the coexistence in the same area for the two activities. The financial compensation should be the last resource to solve or minimize the conflicts, as this can create even more conflict and may not be fair to all the actors affected for the project.

Ideally it should be a participatory engagement of all the interested parties in the project since the beginning of the process not to happen what occurred in this case - that the fisheries sector was not consulted. Besides this is fundamental having collaboration between the sectors to reach a mutual agreement where there is not win-win situation but a decision that will be beneficial for both parties.

The institutional change will permit the necessary change of behavior by the different users of the sea to share information, awareness and cooperation between them.

This is a transversal and recent topic, but it will incorporate new information regarding this issue and revise the Marine Spatial Planning (MSP) in Portugal.

Some priorities that would be interesting for future research about this topic are the interaction between land and sea, as the land spatial planning is increasingly studied it could be interesting to share the knowledge between the different plans. For example, it would be interesting to investigate the possible use of geographic technology such as geographic information system (GIS) in the process to have a better scientific knowledge and more data on the best location in the sea for the different users of the sea and possible co-location to share with different stakeholders.

Besides, it is important to test the thesis hypothesis in ways to improve the MSP in Portugal and to solve the conflicts in the marine seas, having the chance to have a better understanding and knowledge of which solutions would work better in real time in Portugal.

## Abstract

The sea is an important resource that has to be valued and preserved, trying to protect the ocean is one of the global challenges that the world is facing right now. In the last decades, plans have been developed for the marine areas to manage the different activities and users of the sea. One of these strategies is the Marine Spatial Planning (MSP) that has been used worldwide. However, in some cases the MSP do not minimize and solve the conflicts that exist between different marine sector, such as the wind farm offshore companies and the fisheries communities.


The focus of this paper is to investigate how the sectors of wind farms and fisheries management were included in the planning process of a case-study in Portugal with the WindFloat Atlantic project and the role of stakeholders (i.e. coastal communities) in this procedure. In October of 2019 it was implemented in the north of Portugal, near to the coastal city of Viana do Castelo the first turbine of three from the WindFloat Atlantic project, being the world second floating wind park.

Nonetheless, even as this project was implemented there were some conflicts between the fisheries community and the wind energy sector, as there was no decision-making consultation of different stakeholders, especially the fisheries sector. The solution for solving the conflict was the financial compensation given to the fisheries sector. In this paper, solutions implemented in other countries will be analyzed to understand how they could be beneficial in the future for similar cases in Portugal, in order to avoid the shortcomings of this case.

This case-study will be further studied and analyzed, based on the institutional change theory, using literature review and semi-structured interviews as part of the methodology.

This topic is important to analyze and further study in order to periodically revise the marine spatial plan, as this should be a continuous and interactive process, incorporating new information and helping solve conflicts between the users of the sea.

**Key words:** marine spatial planning, conflicts, management, windfarm offshore, fisheries, Portugal



*"All progress takes place outside the comfort zone."*

- Michael John Bobak

## Acknowledgments

It seems yesterday that I came to Aalborg to pursue my academic dreams. After 2 years I am so close to finishing another study cycle and this thesis is the proof of that!! But of course, this hard work is not just mine, as there are many people that helped me on the way, and this is the special moment to appreciate all their support and friendship.

Firstly, to my amazing supervisor Paulina Ramirez-Monsalve for being always there for me with suggestions, improvements and since the beginning willing to share her knowledge with me. It was a pleasure working with you and it was much easier writing a thesis with your support. I hope this will be the beginning of other adventures together in the MSP and in our friendship.

A special word of gratitude to all the interviewees for my thesis, their insights, time and beliefs were truly a valuable addition to the thesis. Thank you for giving me the opportunity to better understand the MSP in Portugal and my case-study.

To all my crazy friends, that I met along this journey in Aalborg. To the colleagues of the university, that soon become friends, to the “Portuguese gang” in Aalborg for always making me feel at home, even far away and to be able to continue being the girl from Braga with my accent and particular expressions and for always being there for me since the beginning. To my friends at Wetsus, even for a shorter period of time in my internship we became close and I hope to see you again soon!! And to my scouts friends that since the first day made me feel like one of them (even if I am not able to speak Danish :p) and helped me share the Danish lifestyle and culture and were even able to teach me how to sail, as BP always dreamed, all the scouts are brothers and I found that on the other side of Europe.

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## 1. Introduction

The sea is an important resource that has to be valued and preserved. Trying to protect the ocean is one of the global challenges that the world is facing right now. It is likely that in the near future a shift will occur in the economic activities at sea as a consequence of the climate change, especially acidification, increasing of temperature and the rise of the sea level that will alter the marine ecosystems. In the last decades, plans have been developed for the marine areas to manage the different activities and users of the sea. The reason behind this is that in the past years it was possible to observe an increased activity at sea leading to competition between different sectoral interests, for example fisheries, maritime transportation, energy and tourism.

One of these strategies is the Marine Spatial Planning (MSP), which has emerged as an instrument used around the world for marine governance and management and to improve decision-making processes across borders and divisions to make sure that human activities at the oceans are taking place in a safe, sustainable and effective way (Frazão Santos *et al.*, 2014a). This tool can be defined as a “public process of analyzing and allocating the spatial and temporal distribution of human activities in [coastal and] marine areas to achieve ecological, economic and social objectives that are usually specified through a political process” (Ehler and Douvère, 2009).

The MSP involves different steps starting with the collection of the necessary data, the consultation of the different stakeholders and interested groups in the project and the participatory developments of a plan (Frazão Santos *et al.*, 2014a).

In 2014, the European Union adopted the directive for the Marine Spatial Planning (2014/89/EU). 2016 was the deadline for transposition by the member-states and the designation of knowledgeable specialists in this case and 2021 will be the deadline for the establishment of marine spatial plans (Commission, 2020).

There are some benefits in using MSP as a strategy for a better marine management, for example, it will increase cross-border collaboration between different countries, expand networking regarding different areas such as energy and transportation but also protected areas, it will reduce conflicts between different sectors and encourage the investment in the marine sector and finally it will protect the environment (Commission, 2020). Even though in theory this seems relatively important and easy to achieve, in practice it is being perceived as a challenge, especially in areas with multiple interests and users as it will be described later. Some pressures can be generating because of the developments of some economic activities in the marine area and that can lead two specific types of conflicts. The first one, is the damage to the ecosystem and finally the installation of incompatible activities in the same space (DGRM, 2018).

The MSP used the ecosystem- based management approach (EBM), focusing on the ecosystem and the human activities affecting the sea. Following this approach, the goal is to maintain good environmental status in the oceans. The sustainability concept is also mentioned on MSP, as one of the main objectives of MSP is “to balance sectoral interests and achieve sustainable use of marine resources in lie with the EU Sustainable Development Strategy” (Commission of the European Community, 2008). Nevertheless, it is essential to understand how effectively the MSP addressed the theme of sustainability.

According to (Frazão Santos *et al.*, 2018) there could be two ways to focus on sustainability in the MSP. Firstly, the called hard sustainability where the MSP centers actually in the ecosystem conservation as the main purpose of the process, prioritizing the achievement of good environment status. On the other hand, there is an “integrated-use MSP” that some countries such as Portugal, Germany and Norway use. This use of MSP is based on what is called soft sustainability, in this case the ecosystem conservation is just one sector of the MSP, the other pillars are fisheries, energy, tourism, sea security and navigation. The main goal of this approach is to foster economic growth associated to the marine sectors in a sustainable way, being blue growth and economy the priority of this direction. (Frazão Santos *et al.*, 2018)

Nowadays nearly 40% of the ocean is affected by human activities, so it is important bearing this in mind in the planning process to focus on the biophysical, the institutions and human dimensions for a better understanding of the given ecosystem and to strike the right balance. So, the development and study of the MSP is becoming crucial. The picture below shows the MSP processes in 2018 all over the world.



Figure 1: MSP processes in 2018 (Direcção geral dos recursos naturais, 2018)

As it was mentioned before, there are different stakeholders involved in the MSP process, for example fisheries communities, nature and conservation groups, mineral extraction companies and wind and wave energy. Having the involvement of different actors at various level of the MSP is considered a public process where different stakeholders can express their interest and opinion in the planning strategy.

However, from previous projects and research it is possible to understand the conflicts between these stakeholders that the MSP cannot solve. From a political perspective, the fisheries communities are not seen as a driving force in the MSP, being frequently in competition with the offshore wind energy (Trouillet, 2019). As an example mentioned (Jay *et al.*, 2012) the powerful German offshore wind companies successfully lobbied the ministry to have favorable changes in the marine plans, even though the marine planning agency initially resisted (Jay *et al.*, 2012).

In this investigated project the scope of the problem will be the relation between the fisheries communities and the wind offshores park in the specific case of Portugal with the WindFloat

Atlantic project. The focus of the study is to investigate how the sectors of wind farms and fisheries management were included in the planning process and the role of the stakeholders (i.e. coastal communities) in this process. Conflicts of interest between offshore wind mills and fisheries have been recognized (Cunha-e-Sá, Lopes and Saldanha, 2017). As it was possible to understand, there are contrasts that can still be discussed regarding the conflicts and the marine plans and the analysis of the problem is something that is currently being debated in the marine field, especially in the case of Portugal.

The structure of the report will consist of an introduction, a description of the marine planning process in Portugal, the state of art chapter in terms of having a better understanding of the sectors that are in conflict, a conflict description and the identification of the solutions implemented in other countries that could be useful for the case the Portugal. All this information was based on the literature review and interviews. In addition, a section of the theoretical framework used in this project will be presented, the methodology used according to the theories and a section with results and further discussion and finally the main conclusions and further research on the topic.

## 2. Maritime Planning in Portugal

Portugal is one of the world's largest maritime nations (Frazão Santos *et al.*, 2014b), therefore, playing an essential role in the implementation of EU maritime policies and decision-making processes.

There are crucial developments in the Portuguese case of maritime planning since two National Ocean Strategies (NOS) have been established and approved - the NOS 2006-2016 and the NOS 2013-2020. In addition, the EU Marine Strategy Framework Directive (Directive 2008/56/EC) was transposed into a national law in 2014 and the Portuguese government started a MSP process in 2010 for their marine jurisdiction (Figure 2).

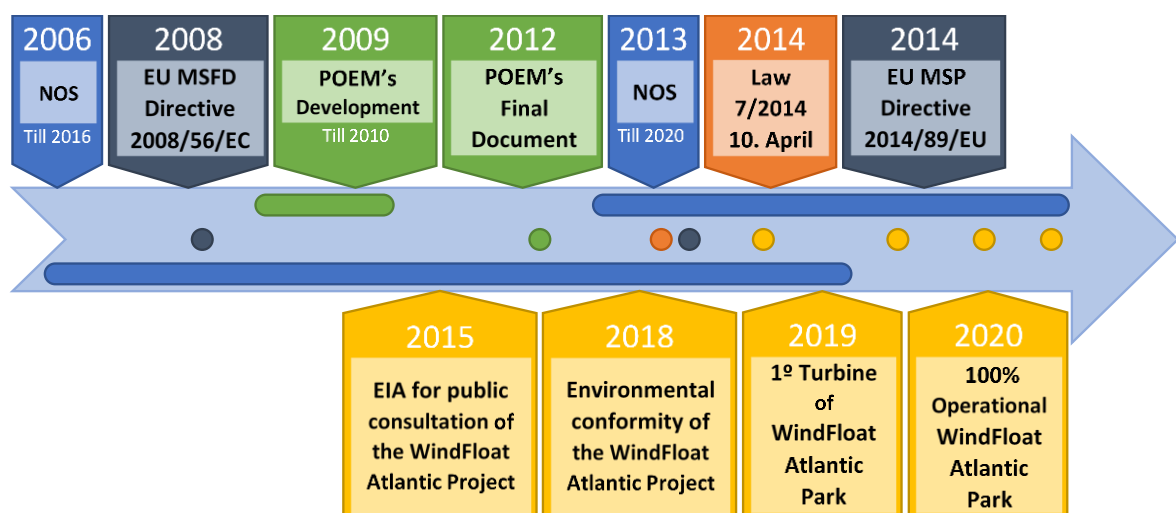


Figure 2: Marine Strategies and case-study in Portugal

In the picture 2 it is possible to understand and have a better perspective about the timeframe of the development of marine strategies in Portugal and the concrete case that will be studied and described later about implementation of a wind floating park in the north of Portugal.

In 2008 the Portuguese government confirmed the need to advance with a marine spatial plan. This initiative was called “Plano de Ordenamento do Espaço Marítimo” (POEM), which means plan of the marine area. This plan was considered to investigate the existing and future activities or uses in the marine areas of Portugal according to some goals such as the development of new activities to medium/long term, to define sustainability indicators and to monitoring programs. After public consultation and improvements in the proposal on late 2012, the final documents were published. However, this documents were not seen as a guideline/instrument for planning and manage the seas but as an extensive case study (Frazão Santos *et al.*, 2014b).

After the POEM process, the Portuguese government developed suggestions for MSP principles following the EU Directive 2014/89/EU. According to the Portuguese Law No.17/2014 from 10 of April, the main aim of MSP in Portugal is to “foster economic exploitation of marine resources and ecosystem services, [while] ensuring compatibility and sustainability of different maritime uses/activities, accounting for intergenerational responsibility in the spatial use of national maritime space and aiming at job creation” (‘Lei n.º17/2014. Lei de Bases da Política de Ordenamento e Gestão do Espaço Marítimo Nacional (LBOGEM)’, 2014). This law required an implementation decree-law, Decree-Law n.38/2015, 12 of March, that also transposed the EU MSP and MSFD, establishing a framework for MSP (Becker-Weinberg, 2015).

The new plan for the marine spatial planning in Portugal (PSOEM- Plano de situação do ordenamento do espaço marítimo) was approved at the end of 2019, including the Portuguese mainland, Madeira and the subdivision of the extended continental platform. The plan to include the Azores Islands, however, is still being developed [April 2020].

As it is possible to realize from the law, the concerns regarding the environment are addressed, but are not the main objective.

In this research project, it is important to understand the “sustainability” concepts outlined before examining how Portugal uses the MSP. The main focus of Portugal and especially the EU is the coexistence of different marine activities at the sea and the cooperation between them, using soft sustainability as the main driving force, not focusing only in the achievement of a good environmental status with the marine conservation.

As it was mentioned previously, Portugal adopts a soft sustainability approach regarding the use of MSP principles, in the way that involves different activities under its jurisdiction.

## 2.1 Offshore wind energy and fisheries in Portugal

Offshore wind energy is mostly utilized in the North Sea, Baltic Sea and Eastern Atlantic. This renewable energy is the fastest growing sector of the blue growth in Europe, with potential for creating job opportunities, technological development and to be environmentally friendly (European MSP Platform, 2018).

However, decisions related to offshore wind farm can have an impact and consequences in other sectors, especially for the fact that the lifespan of wind farms is around 25-30 years. So there are conflicts with other marine sectors, as it was mentioned before, the fisheries, but also, for example, the navigation, with impacts on the safety of sea navigation (European MSP Platform, 2018). Therefore, large areas at sea will become accessible for this type of energy and will restricts other users of the sea.

It is expected over the next years an increase in offshore wind farms and in their development maturity, with the increase of floating offshore wind farms, as is the case of the WindFloat Atlantic Project implemented in Portugal. It is essential having a better understanding of this to assess the potential effects and impacts in the marine sector and in the activities of the other operators of the sea.

Fishing is one of the marine sectors with more tradition and cultural heritage that go back hundreds of years. Commercial fisheries represent a significant economic sector for coastal countries, regions and communities, as the case of Portugal. This sector is also becoming more industrialized, with new techniques to grow the overall catch while reducing bycatch (European MSP Platform, 2018).

The fishing vessels need to steer in unpredictable ways, as they need to use their time efficiently as time and fuel are expensive. Fishing traffic is frequently forbidden in the areas of offshore wind farms, creating an impact on fishing but also on navigation. On the other hand, the areas of offshore wind farms can contribute to preserve fish stocks where fish can feed without being captured (European MSP Platform, 2018).

In addition, it is also important to consider the impact on small fisheries that do not have the economic means to switch to improved techniques and fishing methods and sometimes are not involved in the decision-making processes of a project, being a weaker stakeholder.

In the future, it is expected a shift similar to other industries, with fewer fishermen entering for the profession and a reduction in the size of the fleet. Maybe, in the next years it will be possible to observe new conflicts or opportunities between the marine culture and the offshore wind farms with the decline of the fishing industry.

Fishing is a major economic activity in Portugal with history and tradition in the Portuguese culture and heritage. Some new technologies have been helping this sector become more industrialized and safer. In the area of North Portugal, specifically in Viana do Castelo, there are still families depending on fisheries. Usually, the fishing technique is quite simple in this area to catch species as the sea bream, sea bass and some other typical species from the sea in the north of Portugal (Pesca, 2020).

According to one of the members of the fishing sector, one of the interviewees from Vianapesca Association, the fishing in this area and also more generally in Portugal is still artisanal, but already turned to the industry. In the north of Europe, the boats use more the dragging net, while in Portugal the most common is using gillnets for some fish species such as hake, sea bass and brill. These species are considered noble fish, because their meat is more white than the usual fishes (Fisheries Association, 2020).

Besides the gillnets for this type of fish, in the north of Portugal is also common using to catch octopus a shelter trap shaped like a small clay pot with a height that can vary between 21 and 32 centimeters in length and between 10 and 13 centimeters in diameter that is called fishing clay pot.

However, since Portugal entered the European Community that the boats are becoming more sophisticated and with better equipment than in comparison with the old times of fishing in Portugal (Fisheries Association, 2020).



## 2.2 What happened with the WindFloat Atlantic project and the fisheries communities?

Portugal has always been a country interested in renewable energies, however, it was not until 2019 that it implemented offshore wind turbines as a source for renewable energy.



Figure 3: Example of offshore Wind Turbine (Feed, 2020)

In October of 2019, it was implemented in the north of Portugal, near to the coastal city of Viana do Castelo the first turbine of three from the WindFloat Atlantic project, the world second floating wind park. Currently, the second turbine has been placed already, the objective for when the park is 100% operational is to produce 25 MW of electricity, covering 60,000 houses (EDP Portugal, 2020). The picture below shows the location of the park in more detail.



Figure 4: Case study of the Portugal - WindFloat Atlantic project (Braga, 2020)



Findings point however, that this project was not consensual between the fisheries community and the offshore company. As it was possible to realize from previous research, some Portuguese newspaper inform that there was an agreement between Windplus and the fisherman association of Vianapesca to compensate the fisheries communities for the damage caused by the installation of the wind turbines (Notícias, 2018; Reis, 2018; Expresso, 2019; O Minho, 2019). Windplus is the organization responsible for the project of the offshore wind turbines in Portugal and Vianapesca is the fishermen organization in the area. However, this financial compensation was not given to all fishermen in the area but just to the ones that belong to the fishery association (O Minho, 2019). It was also reported by Portuguese media that the financial compensation was just given to the major ships not taking into consideration the local boats (O Minho, 2019). In addition to this, it was mentioned that the location of the wind farms parks was contested in the period of open public discussion by the fisheries communities and the municipality of Viana do Castelo. The municipality and the community argued that the wind turbines will affect the work of 14 vessels, on which more than 140 families depend (Reis, 2018; Expresso, 2019). The fisheries association, Vianapesca, said that the wind farms affected the work of 18 boats (Fisheries Association, 2020).

The conflict between fisheries and wind energy companies, as a Portuguese member of the European Parliament said to a Portuguese newspaper, it is evident that there is a direct conflict between the interests of the fisheries communities and the energy companies. It was not taking into consideration the fishing activities in the area of energy exploration and the needs reported to the European Parliament (Notícias, 2018).

The financial compensation was a way of dealing with a problem that it will harm the fishery communities for at least 25 years, the time that the project will be in exploration. This was recognized by the Portuguese government and the wind energy companies.

Besides the financial compensation mentioned above, the communities will also receive more money for not being able to work next to the submarine cable that will connect the turbine to the main land for 17 km (Pires, 2019).

The project of the Eolic central offshore WindFloat Atlantic was subject to environmental impact assessment (EIA) because it covers a reserve ecological national area. The report of the EIA and the non-technical report were open to public consultation for 20 days, between 1 of September to 18 of September from 2015. Afterwards the procedure for verifying the environmental conformity of the execution project was open to public consultation during 15 days between 23 of July and 10 of August from 2018.

These documents mentioned before are accessible to the public, however they were not publicized, so the participation rate was almost zero. After the last public consultation, the municipality and captaincies of the area were contacted for advice but, as a representative from the fisheries association Vianapesca mentioned, the fisheries organizations were never taken into consideration in this part of the project.<sup>1</sup>

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<sup>1</sup> Email communication with a representative of the fisheries association - Vianapesca on 17 of February of 2020

Subsequently, the project was approved and there were meetings with different associations of the district, the companies responsible for the project and the fisheries organizations. Some of these reunions were promoted by the municipality, others by the sea minister. Nonetheless, there are no minutes of these meetings even though they were formal gatherings.<sup>2</sup>

It was challenging to find more online documentation (i.e. minutes of the meetings) and for this reason some contacts with municipal authorities were made in order to better understand the situation. Up to this point (March 2020), no answer has been obtained from the authorities.

After the meetings, a solution for this problem was to hire the fisherman to work in the area with the wind energy companies.

In addition, the Portuguese government implemented a platform denominated “Portal Participa” to facilitate the access of citizens and organizations to the public consultation processes and to encourage an informed participation, so theoretically now with this platform the faults in this case will not happen if there is similar project to be approved.

However, analyzing these solutions critically, it is possible to conclude that some issues were not taken into consideration. The solutions found of financial compensation and to hire the fishermen was not reflected in the cultural and social aspects, just focusing on the economics of sustainable development. The fishermen lose their identity when change their job. So, some other solutions could be found to overcome these issues as it will be described later.

From literature review and research, it is possible to realize that there are different actors involved in this specific problem in Portugal. The main players are the government, especially the Minister of the Sea, the wind energy companies working in this project and the fisheries association “Vianapesca”. Besides these main influence groups, another participant is the municipality of Viana do Castelo, considering the fact that the project is in their area and the small fisheries also have an important role in the case-study as it was possible to realize for some previous statement. These actors mentioned will be essential for the next chapter on the theoretical framework.

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<sup>2</sup> Email communication with a representative of the fisheries association - Vianapesca on 17 of February of 2020

## 2.3 Research Question

Having this background information in mind, it is possible to formulate a research question and sub-research questions that will be the exploration guide of this project and that will be answered throughout this thesis with the help of the theoretical framework and the methods used.

The question to explore is: How could the WindFloat Atlantic project, in Portugal, have been addressed to avoid or minimize the existing conflict between the fisheries and the wind energy industry sector?

To help answer this main research question some sub-research questions were formulated:

- How has the conflict been managed in other similar situations around the world?
- What was the role of the different stakeholders during the process?
- Could institutional change theories provide a direction to solve or minimize the conflicts?

To answer these sub-research questions some different methods will be used and further explained in the methodology section. The sub-research questions will be answered based on a combination of interviews and literature review.

This topic is important to analyze and to further the study on the periodical revision of the marine spatial plan, as this plan should be a continuous and interactive process to incorporate new information and help solve the conflict among the users of sea.

The investigated thesis will contribute to the MSP literature and to the marine field in order to help implement future cases of decision-making and to find solutions for possible conflicts that can escalate from diverse marine actors that share the same area.

## 3. Conflicts between fisheries and offshore energy and ways to address them: a literature review

This section will examine the different type of conflicts that can arise between offshore wind energy industry and the fisheries sector, especially the small-scale fisheries. Literature documents how these cases have been addressed. It is the intention of this section to present some solutions implemented in similar cases around the world to minimize the disagreements. It was possible to look at cases in the EU but also in the United States and lessons learned that could be applied in the case of Portugal.

### 3.1 Conflict description

Conflicts between the offshore wind energy companies and the fishing communities are predominantly related to the accidental damage of the wind turbine structure, but also to the displacement of the fishery (usually this is a major problem for small scale fisheries that do not have the equipment to go fishing further offshore) and the accompanying losses of income for the fishermen. These different types of conflicts can be permanent, temporary or just seasonal (European MSP Platform, 2018).

As an example some countries in European Union, as the case of Belgium, the non-maintenance vessels need to stay at least 5000 meters away from the wind turbines. In the Netherlands it is possible for the vessels to move but not to fish (European MSP Platform, 2018)

Some types of conflicts, as it was mentioned before, are accidental damages including to subsea cables since snagging fishing gear is a serious threat to the fishermen because it can cause the vessel to tip over or to capsize. Disturbance of species is also another problem as the construction and operation of the offshore wind farms can disturb the commercial fishing, leading to displacement or reduction of the fish resources in that area. As an illustration, fish roe can be harmfully affected throughout the construction of a turbine because of the turbidity and sedimentation. Furthermore, there are the ecological and economic consequences of spatial exclusion. The spatial exclusion can lead to the reduction or loss of access to traditional fishing grounds. In addition, the obstruction or changes in the navigations routes can lead to an increase in the steaming times and as consequence of increasing the operations cost threatens their livelihoods, especially for the small fisheries (European MSP Platform, 2018).

On the other hand, for the offshore wind farms companies, the cost can be higher than expected if the coexistence with the fishing communities is a requisite to develop the project. Lastly, the social-cultural conflicts masks a deeper issue as frequently the offshore wind farms are perceived as threatening and restricting the fishermen and their families but also the traditional and heritage way of living (European MSP Platform, 2018).

As it was outlined before, these conflicts between offshore wind energy companies and the fisheries are not new and have been manifested in different parts of the world, especially in the areas that are more beneficial for the wind turbines. One of the problems faced in some cases is that the social pillar of sustainability is regularly forgotten (Morf *et al.*, 2019). This means that in the MSP and in the decision-making processes regarding to users of the sea, the economic and environmental pillars are considered the essential ones. The environmental pillar is taking into account the marine protected areas and is also finding ways of being more environmentally friendly, using offshore wind turbines as a form of clean and renewable energy instead, for example, fisheries that are frequently seen as dreadful for environment, not protecting the species. On the other hand, the economic factor that is also considered, takes into account the sector that can create more job opportunities and more financial prospects (Morf *et al.*, 2019).

However, the social pillar is excluding from the decision-making process for the fact that there is no social cohesion between the different stakeholders and the cultural, traditions and heritage is not included in the development of the project. One of the reasons for this is the fact that it is really difficult to measure these values with the existing tools to investigate during the MSP or in a detailed plan, as it is to devise forms of compensation. Traditionally, these values are associated to the fishermen and coastal communities that are consider the weaker stakeholder in the decision-making processes (Morf *et al.*, 2019).

The conflicts between these two sectors usually overlap with other and depends also on the social cultural reputation of the fisheries in their communities (European MSP Platform, 2018).

Commonly, this type of conflicts is explicit in a project, as it is perceived in the case-study of this thesis. It is also depending on the geographical characteristics of the project, the type and intensity of the fisheries in the area and the technology that the offshore wind energy will be applied.

Besides understanding how the MSP is implemented in Portugal, regarding to the Portuguese legislation, it is also essential to analyze how the case was managed and the role of the different stakeholders during the process of the WindFloat Atlantic project. In the beginning of this process, the main idea was that the principal stakeholders were basically the regulators (the government side), the industry sector (the wind energy companies) and the fisheries sector. However, as it was possible to realize from the interview with the member of fishing sector there were also other entities that were fundamental in the whole process.

According to the member of fisheries association, that has been interview for this project, besides the actors mentioned before, the municipality of Viana was also contacted to have an opinion during this process, because the project was implemented in the city of Viana do Castelo and the regulations of the municipality therefore need to be consulted as it was mentioned in the introduction chapter (Fisheries Association, 2020). After this positive opinion from the municipality, the DGRM gave the license to the company to start the project. Nevertheless, the municipality of Viana gave the favorable opinion for the project under the condition not to disturb, damage and affect the fishing sector.

So these were the main actors during the conflicts and even with the positive opinion of the municipality of Viana for the project, the municipality helped the fisheries sector, when it was understandable that they did not have a say in the conversation and it was their ally in this conflict, trying to fight for their rights as a sector (Fisheries Association, 2020)

As it is possible to observe the conflict lasted for 5 years and just finished in July/August of 2019, when the problem was reported by the media to the general public. A solution to solve the conflict was a financial compensation of 1 million euros for the fisheries sector for the 16 boats that were affected. Nonetheless, the fishing association did an economic impact study which concluded that the losses were about 5 million.

### 3.2 Addressing the conflicts

The literature that include and describe some solutions for similar cases of conflicts was revised and based on this study the solutions could be categorized in two as it was possible to observe from the table 1. The solutions are divided into solutions to prevent the conflicts and solutions to deal with the existing conflict.

These solutions will be further analyzed as possible options that Portugal could have used in the case of the WindFloat Atlantic project and in future projects in order to mitigate the conflicts.

Table 1: Solutions to mitigate the conflicts

Strategic solutions planned to prevent the conflicts
<ul style="list-style-type: none"> <li>• Participatory process early in the project, involving all the actors</li> <li>• Social services to help identify early trade-off</li> <li>• Integrated assessment of the ecosystem in the area of the project</li> <li>• Empowerment to the weaker sectors</li> <li>• Public consultation being less formal, having more space to creativity, new collaborative and interactive approach</li> <li>• Structures of governance need to be stronger creating a high-level policy</li> <li>• More scientific data and knowledge should be available</li> <li>• Creating an Alliance</li> </ul>
Solutions to deal with the current conflict, trying to minimize as much as possible
<ul style="list-style-type: none"> <li>• Financial compensations</li> <li>• Transparency in the process</li> <li>• Participatory development of a strategic plan with evaluation and revision</li> <li>• Co-management practices with a co-location of the two activities</li> <li>• Design migration corridors for the species</li> <li>• Allow fish vessels to transit in the offshore wind farms areas</li> </ul>

### Strategies to prevent the conflict

All of these solutions presented below can be, in general, divided into three distinct groups as strategic solutions to prevent conflicts in the initial phase, solutions that deal with current conflicts and more localized solutions for specific projects in order to mitigate the conflicts that exist. As some examples of solutions for each category, some projects in France, Scotland, The Netherlands and the USA will be presented. In this sub-section the solutions to prevent conflict will be analyzed.

As an example, in the European Union, Germany, one of the countries with more offshore wind turbines, had conflicts between the users of the sea where the offshore wind energy was established sought to influence and interfere in the planning to restrict the offshore turbines in priority areas. According to Aschenbrenner and Winder (2019), the result was that the offshore wind industry successfully lobbied the government. So some solutions that could be implemented in these cases are participatory process early in the project, involving all the interests stakeholders since the beginning, social services to help identify early trade-off between the different actors and an integrated assessment of the ecosystem in the area affected by the project (Aschenbrenner and Winder, 2019).

A previous experience also in Germany reported that some solutions include empowering the weaker sectors as the fishermen, especially for the small fisheries, to allow the fisheries and marine culture within the space of the wind farms, financial compensation to the fisheries affected for the wind turbines. In addition, it is important to set up an upper threshold for wind farms and the need for the public consultation to be less formal, with extra collaborative

approach, added creativity and inclusion of the different actors, new interactive forms of participation. Lastly, stronger structures of governance need to be established (Jay *et al.*, 2012).

Besides the North Sea, another area that the offshore wind energy is most utilized in is the Baltic Sea (Tafon, Howarth and Griggs, 2019) where a proposed offshore wind energy project in Estonia was established. Solutions implemented for MSP allow to solve conflicts by stakeholder consultation and transparency between all the different actors and the regulators, in a way to implement effective communication and having the correct attitude, not to criticize or humiliate others or approaching the project as if it was a “war”. In addition, the participatory development of a strategic plan and implementation should be done in the future after the evaluation of the project and, if necessary, lead to the revision with the new perceptions for the project (Tafon, Howarth and Griggs, 2019).

Another case is the country in Europe that has more offshore wind farms (2018), the United Kingdom (European MSP Platform, 2018). A paper mentions the current environmental concern that the UK has regarding the wind energy and the fisheries industry. As it is possible to examine also in this case, the regulators are more on the side of the developers than on side of the fisheries in trying to solve the conflicts, as there is, as well as in the of Estonia, negative characterizations from the different actors to each other. To combat these deficiencies a rational and equitable system of management should be implemented including an early and better consultation process with all the parties interested and involved in the project. Finally, more scientific data and knowledge should be available concerning the marine environment for a better understanding of the study area and the surroundings at the sea (Gray, Haggett and Bell, 2005).

According to (Tafon, 2019), another tension happened in Poland but in this case more specifically with small-fisheries that, as it was remarked before, are regularly seen as the weaker stakeholders and do not have a word in the decision-making process. In this situation, the answers to minimize the conflict is to implement co-management practices between the offshore wind company and the fisheries and a better cooperation and understanding of the different actors as a way for a better consultation in the decision-making process, as mentioned by other literature articles referenced before (Tafon, 2019).

As stated in more general terms (Tafon, Saunders and Gilek, 2019), a way to solve these conflicts at the sea is to have an ethic-political commitment for the empowerment of the weaker sector, as is the case of fishing communities, hence, highlighting the power dynamics in diverse MSP contexts for a better engagement of the actors in the consultation step (Tafon, Saunders and Gilek, 2019).

More recently, according to (Campos Iglesias, Alejandro;Khali,Aya ;Quesada da Silva, 2020), there should be an effort to combine the different activities such as renewable energy, navigation and aquaculture in the same ocean area, using marine plans as a framework for the initiatives at sea, having access to scientific data and accurate information, therefore, providing more security and transparency in the process, keeping the stakeholders and citizens informed and engaged in the results (Campos Iglesias, Alejandro;Khali,Aya ;Quesada da Silva, 2020).

Even outside Europe the conflicts also arise between these stakeholders, as is the case of the United States. In the Northeast of the country a permeant, quite innovative, solution for this

problem was found, creating an Alliance between the fisheries and the offshore wind industry. This alliance has the objective of increasing the knowledge and collaboration between the two types of industry, helping in this way reduce the conflicts that exist. In addition, more scientific knowledge to use in decision-making processes will also help. If these measure are not sufficient, then the financial compensation for damage or loss in the sector should apply, but as mentioned before, just as a last resource (Dalton, 2019).

All these solutions can be, in general, divided into three distinct groups as: strategic solutions to prevent conflicts in the initial phase, solutions to deal with current conflicts and more localized solutions for specific projects in order to mitigate the conflicts that exist. As some examples of solutions for each category, some projects in France, Scotland and The Netherlands will be presented below.

For the preventive phase, some strategic solutions could be implemented such as using high-level policy to ensure that all the impacts are reflected, consider the potential impacts both on social and economic aspects that the offshore wind farms projects can have in the fishing activity and encourage them to coexist in the same space. Another solution is to recognize the special status of the fishing communities in the MSP process, as it can be difficult to include the fisheries in the decision-making process while doing a MSP, but it is essential to understand their activity and make efforts to advance with more “fishery friendly” results. In addition, it is also possible to create a database map on the fisheries activity and socio-economic analysis for the users of the sea, improving the knowledge that can be used in the MSP. Furthermore, it is important to choose carefully the offshore wind farms locations, making sure that the conflicts are minimized, start presenting to the different stakeholder in the phase of consultation, different locations and scenario mapping to understand the effects and impacts of the turbines. With these results it is possible to expect more transparency and trust between the sectors during the decision-making process. Finally, it is important to create a liaison group for MSP in the beginning of the project, as the example of the United States shows, with the Alliance group involving different stakeholders and also regulators and use the MSP plan to favor coexistence and synergies between offshore wind farms and fisheries (European MSP Platform, 2018).

### Strategies to mitigate conflict

In the sub-section above, it was possible to examine some of the solutions to prevent a conflict from occurring between the fisheries sector and the wind energy industry. In this part, some solutions will be presented in order to minimize an existing conflict. Examples of these solutions are co-management practices and financial compensations.

Mitigation solutions means that the conflicts already exist but it is important to solve or minimize it. As an example, it is possible to allow some types of fishing in the area of the offshore wind farms under certain conditions, as already happens in Scotland with success when the interaction for a co-location of these two activities also include access to the same pool of human resources, infrastructure and technical resources and facilities. Support fishing communities by designating migration corridors, as in these blue corridors is prohibited by the construction of offshore wind turbines, but the fishing vessels can navigate and fish there. Especially for the purpose of ensuring a safe migration of some specific species as it happened in the Polish MSP that included these blue corridors in the plan. Additionally, a solution is allowing fishing vessels to transit into the offshore wind farms locations, helping the fishers to



access important fishing grounds, making, for example, accessible corridors between the turbines to allow the fishing vessels to pass even in bad weather conditions but safely. Another option is aligning construction phases of the turbines with fisheries seasons, but for that it is necessary having close cooperation and exchange of information between the two sectors. Identifying trade-off, mitigation or compensations measures supports collaborative arrangements between the two stakeholders. The same goes for using an approach based on coordinated research and monitoring strategies to identify opportunities for enhancement and recovery of the fishing stocks, improving the information base using diverse techniques such as GIS, geospatial technology, socio-economic analysis and research on the diverse topics related to the marine sector. Finally, it is paramount taking into consideration technical solutions to lower the risk of conflicts and to produce guidance notes and licensing manuals to be developed by the marine authorities in order to establish all the necessary requirements (European MSP Platform, 2018).

Besides these measures, it is also fundamental to analyze all the legal, policy and governance frameworks, organize workshops with the stakeholders and interested bodies and to have more transparent ongoing inclusive engagement instrument in the decision-making process (Morf *et al.*, 2019).

There are different steps of participation in the process to help minimize the conflicts as consultation, deliberation, collaboration, decision-making and process responsibility.

Initially the consultation engagement is the most common way of participation, where the different stakeholders have a word to say in the process, but the final decision is still taken by the authorities. The deliberation is more an interactive step between the actors to find opportunities obtainable for mutual knowledge, however, the authorities still have the full burden of the decisions taken. The collaboration is also a cooperating step where the stakeholders can have the right to define activities or decisions during the process, it can be formal or informal depending on the resource available and their contributions (Morf *et al.*, 2019).

The decision-making is another form of participation where the process is still in the hands of the marine authorities, but there could be a veto right for the different stakeholders, giving more power to the actors. Lastly, the process responsibility suggests that the process control has been delegated to the participants, at least partially. The authorities have the total responsibility for the process in legal reason but the stakeholders are the leaders of the process (Morf *et al.*, 2019).

## 4. Institutional change theory as a theoretical framework of analysis.

While exploring the different conflicts that happened between the offshore wind energy companies and the fishermen around the world it was also possible to understand the theoretical framework used to explore the different situations. This understanding on how different authors have researched the issue was useful and essential for deciding on the approach taken in this thesis.

Basically, the approach taken for different authors was more focused on power and political theories in the MSP perspective. In this section, as it was mentioned before, some perspectives regarding different theories used in the marine sector will be presented, namely the theory chosen for this thesis and the explanation on how to apply the theory to the specific case in Portugal. In addition, a brief description of the theory will also be presented.

The investigation carried out on the diverse cases and on MSP allowed the realization that power is behind any decision, so some theories are based on planning and power, especially the empowerment of the weaker stakeholders as a way to a more valuable participation and engagement (Gray, Haggett and Bell, 2005; Tafon, 2019; Tafon, Saunders and Gilek, 2019). Others publications mention the fact that MSP is definitely a political plan, using post-structuralist discourse theory, political economy and neoliberal theory (Morf *et al.*, 2019; Tafon, Howarth and Griggs, 2019).

In the cases of Germany, besides the participation and power theory it was used a political ecology approach as the view of the MSP was a post political process (Jay *et al.*, 2012; Aschenbrenner and Winder, 2019).

According to (Tafon, 2018) there is a positivist epistemology and also a rationalist evidence-based approach that lead the study of MSP (Tafon, 2018).

Even with all this information as background knowledge about the theories based on power and neoliberal approach, the path taken was in the institutional theories. This could be explained by the fact that all the theories mentioned above were more focused on the MSP and different perspectives. In this case, the focus of the project is to investigate if institutional change theories could offer a path to solve or at least minimize the conflicts at sea. This was already presented before as a sub-research question.

### 4.1 Institutions and Scott's pillars

According to (Scott, 2001) institutions can be defined as “social structures (norms, rules, routines) that enable/constrain/control/support the behavior (of individuals or organizations)” (Scott, 2001). Institutions can be understood in terms of the three pillars that will be described later in this section.

The institutions support the behavior of organizations and individuals, as it is also important to outline that organizations are not the same as institutions as the last ones are manifested in organizations (Scott, 2001).

These social structures are framed by three essential pillars of regulative, normative and cultural components that jointly with activities and resources provide meaning, stability and order to the social life.

The first pillar relates to laws, rules reinforced by sanctions and monitoring. It determines how we must behave. Secondly, the normative pillar defines how we ought to behave as it is based in values, norms, expectations and preferable goals to aim. In this case, the individuals acquire a feeling of internal reward acting according to the norms and values. As a society, in this pillar the other actors expect you to perform in a certain way. Lastly, the cultural-cognitive pillar states how usually the individuals behave, according to shared conceptions of the reality and the frames through which meaning is made (Scott, 2001).

Institutions are essential for economy and the environment as it influences the choices in all levels in one society, guiding the individuals in their choices regarding their needs and capacities, making a difference in their perceptions, values and preferences. The institutions are so “natural” and raise in the society and we do not notice that they actually exist (Vatn, 2005).

#### 4.2 Institutions stability and change

According to (Scott, 2001) the institutions are social structures that have accomplished an extraordinary degree of resilience.

In addition, they are transmitted by diverse types of carriers and operate at multiple levels such as personal relationships, like family to worldwide system. Even if it connects with stability as mentioned before, institutions are subject to a constant change in the process, both incremental and discontinuous (Scott, 2001).

This institutional analysis explains how ideas and concepts about organizational strategies become standard in some well-structured fields. As it was remarked earlier, the stability is a concept always connected to the institutions, so for this reason the institutions are reasonably resilient to change, usually they are transmitted across the different generation and it tends to be maintained and produced as the original concept. So, this persistence is linked to the idea of path dependency.

This concept of path dependency can be assumed as the path that is decided to be taken, more steps will be taken along in the same direction, the current solution can lead to a limited amount of options in the future and the final concept is the fact that the individuals end up with a single solution as a consequence of the route that was taken (Scott, 2001).

The institutions persist because it is difficult and challenging to change them, it takes effort to modify what is been already applied, sometimes for a long time. However, it is possible to revert this, the institutions can change, even rules, norms and meaning are conserved by the human behavior and this can be adapted. Institutions experience change at incremental and revolutionary levels, as it was mentioned before. Some external factors can be responsible for a change as wars or economic crisis or the change can occur inside the institution and be a more gradual procedure.

### 4.3 Institutional change theory

The theory applied in this thesis, trying to help comprehend the investigated project is institutional change theory. The institutional change is categorized as a social science theory, that helps to understand how to handle issues, that are embraced in the social context.

In the last few years it is becoming increasingly important the social dimension and to connect the social science with the natural and engineering science, to have a broader knowledge (ICES-International Council for the Exploration of the Sea, 2019). There is a system of traditions, values and individuals that is necessary to take into consideration in the analysis of problem as it will be further explained in the project. So, the institutional change theory will also help in this approach of studying the human connection.

The institutional change theory serves as an explanation for better understanding the organizational structure and behavior of the society with the role of rules and the effect of history and culture heritage (Scott, 2003). It can shape the nature of change transversely in diverse circumstances and levels (Coccia, 2019).

The institutional change emphasis on the resilient characteristics of the social structure reflects the methods by which structure, including rules, schemes, norms, routines, become recognized as guidelines for social behavior.

The model of institutional change has the main objective to solve problems and conflicts, as for example it is possible to see from the case-study in Portugal. This model will help solving the conflicts in the marine sectors between the different users of the sea (Scott, 2001).

One case related to the marine sector was approached by (Weber de Morais, Schlüter and Verweij, 2015) regarding to the marine protected areas seen as institutions, being the ones that define the behaviors of the users of the sea. In this case, the model of institutional change occurs when an area that was unprotected is declared a marine protect area. This process will execute new rules and even possibly restrictions to certain activities, as for example fishing. One positive feedback mechanism from this example that was possible to observe is the peer pressure with coordination effects and adaptive expectations, where the actors tend to adjust actions with their own expectations about how others will react. As a comparison of the thesis incorporated in the project and the theory framework it is also possible to understand that the conflicts in the marine sector happen because of peer pressure (Weber de Morais, Schlüter and Verweij, 2015).

Nevertheless, there are factors that are not beneficial for the success of institutional change, as if change is not properly implemented and is not supported by the actors. A change to be fully executed needs the support of the different individuals and organizations. For the success of the change it is important to fit well in the context that has been applied, the stakeholder's agreement, the benefits emphasized and there needs to be powerful resources.

### 4.4 Institutional change theory applied in this project

The collected evidence (section 3) points to a potential need for change in the institutions and even maybe build institutions for addressing conflicts between the fishers and the offshore energy sector and the engagement of the different stakeholders as users of the sea.

There is a need for a change in the institutions in the marine sector not to occur the same situation as is the case in Portugal with the WindFloat Atlantic project. This change also means finding new ways to solve conflicts that could happen in the future or at least minimize them and change the behavior of the different sectors.

For this thesis and trying to address the conflicts of the fisheries and the wind energy sector the institutions can be understood as social structures that frame the process of addressing conflicts in the MSP process and projects, specifically in the case of the conflicts between fisheries and the energy industry. Besides the institutions is also important to refer the change of behavior that needs to be changed. This change of behavior is the concrete change for a better participation and collaboration between the stakeholders. This will be further explained in this project, in the analysis chapter, how it was possible to reach to these conceptualizations and conclusions from the interviews and the literature review.

As it was explained before the institutional change theory it is used in the marine sector and more specifically in this type of cases where it is essential a change in behavior of the actors, such as the fisheries and the offshore wind industry, to improve the collaboration and cooperation between the sectors. Lastly, this approach will help understand the dynamics of the different stakeholder's and how the cooperation and conflict between them are crucial to the management and balance of the sea.

One reason that can cause conflicts and motivate different choices and behaviors is the misalignment of these pillars, as it occurred in the case of Portugal with the WindFloat Atlantic project. If the pillars are aligned, the strength of their combined forces is overwhelming and that will help minimize the conflicts, have a better understanding of the different stakeholders and reach solutions that are accepted by all the parties in the marine sector.

Relating these three pillars to the institution of being social structures that surround the process of managed conflicts in the MSP processes and projects, focusing on the conflicts between the fisheries and the wind energy sector, it is possible to understand this process of managing conflicts in terms of the regulative, normative and cultural-cognitive. To sum up, it is possible to realize that the pillars are present in the MSP and in the conflicts between the users of the sea.

In the following paragraphs it is possible to understand better how the Scott's pillars are connected to this project.

Regulative: According to the MSP and different plans and frameworks, especially belonging to the European Union, a large number of rules and laws are defined in the marine sector. In this pillar the focus is how the actors and the users of the sea should behave according to the law in these cases. The MSP and the Portuguese legislation that focus on maritime issues, theoretically, give some guidelines for solving conflicts. However, in the case of Portugal, there is a more strategic approach depending on the projects ('Lei n.º17/2014. Lei de Bases da Política de Ordenamento e Gestão do Espaço Marítimo Nacional (LBOGEM)', 2014; Academic, 2020c).

Normative: Besides the regulative pillar, there are as well norms that should be followed for a better marine environment. In this case, it is crucial to understand how the users of the sea are solving or at least trying to minimize the conflicts and how they behave in accordance to what is expected from them. From the newspapers referenced in the beginning of the project and

from the interviews, it was possible to realize how the actors behaved in the whole process. There was no cooperation or a better collaboration for a mutual agreement in the location of the wind farms (Fisheries Association, 2020; Member of Wind Energy Company, 2020). This will be further explained in the analysis section.

Cultural-cognitive: In this last pillar, the objective is trying to understand how the beliefs and traditions frame the way that different individuals behave according to a topic. Usually this influence is really intrinsic in the individuals and the organizations. For example, in this case, it was not well seen by the other actors (Fisheries Association, 2020), as they felt they should have been consulted before the licenses was granted. Finally, as it was mentioned before, some of the conflicts mask a deeper problematic, having social-cultural conflicts, the different stakeholders are used to knowing how the other sector will behave, as it was mentioned in the normative pillar above, and shared conceptions of the reality where frequently the offshore wind energy companies are the stronger actors compared to the fisheries sector. In this case the institutional approach serves to address the cultural aspects in the involved sectors, as it can increase the efficiency in their management (de la Torre-Castro and Lindström, 2010).

The institutional change as (Cashmore and Wejs, 2014) mentioned “never starts because it never stops”, so it is definitely a continuous process for the inclusion of different factors that usually are not taken into account for a better understating of the problems (Cashmore and Wejs, 2014). Besides, it is important to realize that the institutional change will not just happen because of new laws or regulations but also for new contexts that were not seen before and other questions that can arise from different conflicts or even cooperation between different actors as it happen in the case of the WindFloat Atlantic project where it is fundamental finding new solutions and understanding the dynamic behind the conflict to change the behavior of the institutions for a more cooperative and collaborative approach between the different stakeholders and organizations.

## 5. Methodology

The research design is the strategy used for researchers to answer the research question with the help of the theoretical framework and the methods.

Methodology shapes the collection of, but also the use of, certain data generation and analysis methods to answer the research question of the thesis.

The methods used for this thesis were literature review and interviews with diverse interested people in different fields in the specific case of the WindFloat Atlantic project and that can give a useful and valuable insight for this case-study.

The methodology used in this research project is a qualitative approach. Usually, the qualitative methods seek to comprehend the research problem from the perspectives of the different stakeholders that are involve in the issue, obtaining valuable information regarding opinions, social contexts and behavior of the different actors (Farr, 2008).

This type of approach provides a better recognition of the “human” side of the problem as the relationship between the different individuals. In addition, it is also effective in identifying social norms and socioeconomic status that sometimes are invisible in the general research (Farr, 2008).

The literature review was analyzed in order to understand the knowledge behind the MSP and to get an insight into the conflicts with the different users of the sea. In addition, it was also investigated the theoretical framework used in other studies, different solutions for similar cases implemented in other countries around the world and if these resolutions are also a possibility to be executed in this case and future ones that can occur in Portugal.

The methodology applied was based in the previous knowledge from the theory framework of institutional change, where the interviews are the best option to analyze and understand the social context of this conflict and the literature review to study previous articles and similar situation that happen in Portugal, as it was mentioned before.

One of the methods used for this thesis was semi-structured interviews. Initially the approach followed was to interview different stakeholders that could have an important word to say in this process and to understand their different points of view. People were interviewed in the academic field to help understand the lack of scientific knowledge and data in the marine sector, the different actors such as the fisheries industry and the developers sector trying to understand the way that they solve the conflict and solutions for the future and an environmental organization focus on the marine sector to comprehend the environmental issues in the MSP and their perspectives. After this, a snowball approach was done in order to interview other essentials actors that could add valuable insight to the thesis and that were “hidden” in first place to the author, as for example different stakeholders in the planning process of the WindFloat Atlantic project.

The interviews were conducted online and recorded by either phone or laptop voicer record applications the interviews were conducted in Portuguese in the case of the interviewers being from Portuguese nationality and the translation to English was made by the author. The other interview was made in English. All the interviewees were asked permission to record and use their insights as part of the data analyzed for this research project.

However, there were some actors involved in the process that did not answer, so in this project the perspective and the view point of the municipality is missing, as well as that of the DGRM (Direcção Geral de Recursos Naturais, Segurança e Serviços Marítimos) that is the responsible for emitting the licenses to the wind energy company for the project. Besides, it was also not possible to contact the wind energy company responsible for the project. However, the viewpoint of the wind energy industry was discussing with the WavEC-Offshore Renewables as being an association to help promote the renewable energy in the sea.

In the table below there is a summary of the different fields interviewed and the date that the interviews were made. For protection of data, the names of the interviewees were kept anonymous.

Table 2: Summary of the interviews

Date	Interviewed	Field
4/4/2020	Member of Fisheries Association	Fisheries Association
24/4/2020	Researcher	Academia
20/4/2020	Member of SCIAENA	Non-Governmental Organization
22/4/2020	Researcher	Academia
28/4/2020	Member of Wind Energy Company	Wind Energy Sector
7/5/2020	Researcher	Academia
8/5/2020	Member of APA/WWF	Non-Governmental Organization

Initially, the interviews were made for the categorization of the conflict and to understand different perspectives from the different stakeholders and interested parties. Besides, the academia staff was also interviewed to collect their perspectives on the topic from the academic point of view. After having this better understanding and analyzing the results, a last interview with the academic field was done in order to double-check the solutions that were investigated in the literature review and that were pointed out in some interviews. This last interview was the snowball approach from a previous interview where it was possible to realize that this professor had been responsible from a European project that work with a matrix of conflicts in the marine areas.

For the analysis of the interviews and how they complement the work of this thesis, a grounded theory was the research tool used to understand and better conceptualize the interviews. As the grounded theory serves to gather data and allow to discover emerging patterns in data, in the specific case of the thesis the interviews. It could be understood as the generation of theories from the data available (Walsh *et al.*, 2015) or it could even offer a framework for future research in the topic (Creswell and Poth, 2018).

As for the qualitative method for research design, the theory is grounded on the data available, the connections, contacts and social processes of people (Creswell and Poth, 2018). In this case with the interviews it is possible to analyze processes to figure different patterns that are common to all as it happens during this thesis process the collection of data was also from the interviews where it was possible to compare data assembled from the different participants, gathering different information and trying to fill the gaps in the theory process and elaborate finally how it is managed.

Besides, for the methodology part, the grounded theory was also used to explain how the individuals were experiencing the case-study in Portugal and the whole process of trying to identify steps to help answer to the research question.



## 6. Analysis

In this section the interviews and the literature review will be analyzed in further detail for a better understanding of the different perspectives of the insights from the interviewees. These insights will be considered from the point of view of institutional change theory, especially bearing in mind the three pillars described in the theoretical framework section. Besides this analysis, a complementary examination will be made in order to answer the main research question and the sub research questions presented in the beginning of the thesis.

Initially, as it was mentioned before, there is a need for change in behavior of the main actors of the conflict, changing for a better collaboration and cooperation between them. So, it is important to understand which are the institutions that currently enforce that behavior to further suggest ways on what to change in the pillars and how to reach that.

### 6.1 Description of the current institution

It is essential to understand and describe the present institution as a social structure described in the theoretical framework chapter that lead to the conflict within the perception of the regulative, normative and cultural-cognitive pillars. After this analysis it is then possible to suggest ways and directions for a better approach to minimize the conflicts between the users of the sea. This way of presenting and analyzing the results was inspired by some classrooms exercises regarding to institutional change (Ramirez, 2003).

#### Regulative pillar

As it was outlined before, the regulative pillar is the one directly associated with the laws, legislations and rules (Scott, 2001). So, in this specific case, it is the rules and legislation regarding how stakeholders should address conflicts that emerge in the MSP process, and how actors behave according to the laws.

In this pillar, it is crucial to have a description of the current institution in how there are European and Portuguese rules, laws that address the conflicts in the MSP process, more specific the case of fisheries and the wind energy sector. According to the MSP directive and the Portuguese law about MSP in Portugal it addresses the conflicts between the different users of the sea, in the way that is important to have a good management of the different activities and ensuring all the policies, guaranteeing the appropriate weighting of the public and private interests ('Lei n.º17/2014. Lei de Bases da Política de Ordenamento e Gestão do Espaço Marítimo Nacional (LBOGEM)', 2014).

The present situation regarding to the regulative pillar, tells that there is a general agreement that the MSP in Portugal, and generally in other European countries, is more focused on the job opportunities and economy driven. It is much more linked to blue growth and trying to find space for new economic activities. From the point of view of the renewable energy, the MSP could be more economic driven in Portugal since there are few protected marine areas, which would explain why other activities and sectors have a more preponderance in the MSP (Member of Wind Energy Company, 2020).

The MSP in Portugal being more drive into the economy, could be linked and connected to the institutions as social structures that will emerge promote more conflicts as a consequence of new and economic activities at the sea.

In addition to understanding the direction and the main focus on MSP in Portugal and addressing the conflicts in the MSP processes and projects, it is also important trying to figure out if the conflicts are predicted in the plans and if there are solutions to minimize or solve them before they happen according to the law.

As the member of the fisheries association also agreed, the MSP do not take into consideration the conflicts so, eventually, there is also a need according to the law to behave depending on each project as it was mentioned in the regulative pillar in section 4. As an example, while this case was still being solved there were already new areas for other projects to be implemented. It becomes important to understand the interests of all the users. In addition, the way that the MSP in Portugal is structured is not beneficial for the fisheries sector, as the government wanted to implement the wind turbines in all areas, that were allocated for fishing. The government's way of thinking is more focused on blue growth than in preserving the services (Fisheries Association, 2020).

The MSP, the sea problems and conflicts are still quite a recent topic, so our legislation is also quite new and it is therefore natural that the questions will arise and they will be needing improvement and adaptation to cover a more appropriate way of solving conflicts between the different users of the sea (Member of Wind Energy Company, 2020). Therefore, also the institutions as social structures will be modified and changed as part of the process of improvement.

One of the reasons that the regulators could argue for giving the TUPEM (título de utilização do espaço marítimo) to the wind energy company is because there is no fishing license associated to an area, as it will be further debated in the discussion section. There are regional boundaries but these are not coordinated for determined locations to fish. It is therefore not possible to realize if the wind energy company was aware of this issue and if they thought that they did not need to negotiate these issues with the fishermen, because they were not the authority that generated the locations.

### Normative pillar

Regarding to the normative pillar, this pillar is based in values, norms and expectations. The individuals expect a certain performance as belonging to a society (Scott, 2001). In here, it is explored how the users of the sea are solving or at least trying to minimize the conflicts and how they behave in accordance to what is expected from them.

The present situation in the case of Portugal represents how some social norms are a mechanism of defense between each of the actors of the process, adapting their reactions to how the others will react, a game of anticipation.

According to Academic (2020b), from the regulator point of view there is always a hierarchical posture, from top to bottom. The private sector has a posture of having perks because they are the ones with capital while the traditional fishing which is seen as a weak sector, usually adopts a complaint posture (Academic, 2020b).

Regarding the process of consultation, it is interesting to understand in terms of normative pillars as the main stakeholders that participated in the engagement. However, there were also actors that could be consulted for an interesting insight of the process, as for example, the non-

governmental organization for conservation and environmental preservation of the marine species as (Member of SCIAENA- NGO, 2020) mention. The way to proceed in this cases and processes, usually, is that the stakeholder is just consulted if the public participation obliged it and, in most cases, the public participation is even done without anyone knowing it as kind of secret. There is still a tendency not to be a genuine and constructive basis for public consultation. The first time that the NGO's for the marine environment heard about this project was through Vianapesca and then, later, shortly afterwards also at the initiative of Vianapesca, the question was raised in the consultative councils of the south western waters. And together they expressed their joint opinion on the WindFloat Atlantic project and sent it to the European Commission. In this case, the European Commission would never comment as it is a conflict that has to resulted locally but it is registered for future processes (Member of SCIAENA- NGO, 2020). In their joint opinion communicated that they agree with the wind turbines structures in the sea as a source for renewable energy and for achieving the targets for 2030 regarding the sustainable development goals. Nevertheless, it is important to consult all the interested parties before the project is approved and not having the wind farms in locations that already have an activity.

As it is possible to realize from the literature review, especially from the newspaper mentioned in the introduction chapter, the conflict between the fisheries sector and the wind energy industry started because of the way that the case was addressed. This was also mentioned from the member of Vianapesca association, that all the process started in 2014, when the fishing sector was contacted for the first meeting with the wind energy company. Initially, the main idea was that the wind energy company wanted to share knowledge with them and together study the best location for the project. Between 2015 and 2016 there were some meetings between the two main actors as the main topic in their agenda was the permanent location of the wind farm. But the wind energy company had already the license from the Portuguese government in November of 2015. VianaPesca just found out one year later and it was around that time that the actual conflict started (Fisheries Association, 2020).

Even if the location was not beneficial for the fisheries sector for being in a fishing area, the wind energy company already had the license, as it was referred above, and with funds from the European Union it was not possible to change the location. So it is possible to understand that there is an issue regarding how the different stakeholders behave in consideration to the other one.

#### Cultural-cognitive pillar

As the last pillar, the cultural-cognitive pillar refers to how the actors will behave usually according to their beliefs and shared conceptions of the reality and the world (Scott, 2001). In here, evidence is collected on the intrinsic frames that guide the behavior of the involved actors when addressing conflicts.

As it is possible to observe, the attitude towards the conflict between the sectors results in a unilateral agreement. In the present situation, it is possible to perceive the lack of cooperation and collaboration between the sectors for finding a location that fits both of the interested parties (Fisheries Association, 2020). Finally, there is a close mindset in the different organizations to not share the knowledge and being able to reach a common and mutual agreement for the benefit of the two actors (Fisheries Association, 2020; Member of Wind

Energy Company, 2020). However, it is crucial to remark that there is always a necessity to find the right balance in the consultation process and that both stakeholders need to make sacrifices in order to achieve an agreement regarding the use of the sea.

#### Positive feedbacks that support the institution to persist

There are some positive feedback mechanisms that support the current institution<sup>3</sup> to persist, helping the present situation to continue. These mechanisms are reluctance to change, adaptive expectations and power asymmetries (Weber de Moraes, Schlüter and Verweij, 2015)

These positive feedback mechanisms are also evidenced in the case of the conflict in the WindFloat Atlantic project.

Initially, reluctance to change because the actors, especially the fisheries sector, are a close organization that do not see with good eyes the new uses of economic activities in their space. In addition, the fishing sector is a traditional sector that usually are not used to sharing their maritime space, as firstly they were the only economic activity in the sea.

Adaptive expectations because the actors in this case tend to adapt their actions about how the others will react, for example as the fisheries were not heard in the beginning of the consultation process, because probably the wind energy company already thought that they will not agree so did not wanted to consult them. As it was mentioned in the normative pillar as the actors tend to react according to the actions of the other stakeholders.

Finally, power asymmetries where the stronger actors such as the regulators and but also the ones that have more capital and money impose (wind energy companies) the rules and actions to the weaker actors such as the fishermen.

## 6.2 Suggestion for the future

It should be brought into the context that, despite the fact that the maritime space compared with most of the northern European countries is quite bigger, there is much less maritime activity in Portugal. So, in this case there is a need to create a matrix of conflicts to minimize the conflicts and separate the activities. This context is not applied in Portugal as the approach in Portugal is a more strategic method, because the level of maritime activity is not so intense as in the North European countries, so the matrix of conflicts it not the main focus of the Portuguese legislation, as it goes unnoticed in the plans and in the processes, but there is part of the work behind the MSP (Academic, 2020c).

For suggestion on what to change in the present situation there are some possible *mechanisms* or *conditions* that would stimulate a disruption of the institution's stability and consequently lead to change in the current institutions (Weber de Moraes, Schlüter and Verweij, 2015), hoping for a future with less conflicts between the users of the sea. The main conditions are incremental changes, perceiving a problem (being this problem the conflict between the sectors) and trying to change the institutions, reconstruct them. In order to mobilize the resources to work together for a better result, it is important to develop resources such as legislation but also workshops to allow people to better understand the maritime issues and being able to cooperate more and

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<sup>3</sup> The social structures that frame the process of addressing conflicts in the MSP

having an open-process in the future regarding to maritime areas. Lastly, it is paramount to find the right power balance between all the actors.

Focusing on the institutional change as a direction to change the behavior of the individuals and organizations for a mutual understanding and agreement is consequently a way to minimize the conflicts. It is fundamental to study further what will cause the changes in this situation. The changes in this situation are gradual changes instead of abrupt changes that can also cause a shift in the institution's values and behavior.

It is common that the institutions will change gradually over time, slow and subtle changes can affect the human behavior and shape fundamental results as a gradual transformation. This gradual change can also have consequential causes on the results more than abrupt and sudden change. In some cases, the power of one organization relative to another one may be so excessive that the dominant sector is able to design institutions that correspond to their inclinations and preferences (Mahoney and Thelen, 2009), as it can happen in the maritime conflicts between the users of the sea.

A way to change the current Institutions<sup>4</sup> could be to be re-organize ideas and share with the different stakeholders, explore ideas from other similar cases as it will be further analyzed in this thesis with the solutions implemented in other countries that also have to deal with conflicts in the marine sector.

In this section some suggestions to be implemented for the future will be outlined as the same way before, being divided into the three pillars for institutional change.

#### Regulative pillar

As it was presented before the main problem is that, theoretically, the wind energy company had the law on their side but in practice the fishermen also needed to be consulted in a more careful way to avoid the problems that followed according to the Portuguese law in how to deal with potential conflicts. The wind energy company neglected this issue, but this project has been the first one in Portuguese seas, so it is also a lesson for what to do in the future related to this type of situations and find ways to improve.

There is a necessity to operationalize better the rules and the Portuguese legislation regarding to the maritime issues. As the Aarhus Convention mentions, the transparency in the government offers the general public the opportunity to be informed and participated. In Portugal, as it happens in some other countries, as for example in Netherlands, there is a need to be more clear, open and transparent. It is not possible or at least it is a difficult job to get to know and have public information such as where, when and who was involved in the process and that should not happen has the key issue of stakeholder participation is to be transparent, open to review (Academic, 2020a).

A suggestion that could be implemented in the future on the regulators side, as the members of Vianapesca referred, what the government could have done in order to minimize the conflict was to contact their association before giving the license to the wind company. In every project the government and the sea minister needed to call the associations before implementing the

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<sup>4</sup> The social structures that frame the process of addressing conflicts in the MSP

project. In this case, the institution should have framed a better management of the conflicts and better understanding of the sea issues. As they already had a similar case, they were contact in 2003 for a project. For example, a way to solve this problem in the future could be having a team of 4 or 5 people as mentioned from the member of Vianapesca, from various regions of Portugal, in the sea ministry, that are directly connected to the government and that are able to report directly the problems that happen in real life and also help the government take decisions in the fishing problems. This is crucial because what happens is that the people in the ministry do not know anything about fishing and how it works in reality and if in practice the solutions will be effective or not (Fisheries Association, 2020). This solution mentioned before for creating a team that is connected to the government but knows the real-life issues can be implemented in a similar way as an Alliance, mentioned previously for a similar case in the USA, for a better engagement and better understanding of the reality.

Other solutions are more strategic and coincide with some solutions presented before as a participatory process early in the project, involving all the interested parts since the beginning resulting in a more open, clear and trustful agreement between the parties. Empowerment to the weaker sectors as it was mentioned before according to (Member of SCIAENA- NGO, 2020), in this way changing the behavior that is needed for a better collaboration between the sectors.

As it was mentioned before there is a need to change the behavior of the different actors, especially in this case the regulators, the private sector and the fisheries sector. Besides, obviously in the licensing process there must be *a prior* consultation, when the regulator says that to be part of the consultation process making to all the partners and interested stakeholders. A previous social impact study aims to understand who are the actors influenced by the project and recognize their position regarding to the project before the licensing is given for a new activity (Academic, 2020b).

Finally, a proposal for the regulators is that the legislation needs to be more flexible, as it is quite tight, and be able to change, improve and review the MSP more frequently so that there is not so many obstacles to the introduction of new uses. Five years (time for review) seems a long time to fit in the new activities and economy that can arise (Member of Wind Energy Company, 2020). As it was explained before the institutions and the MSP are continuously changing as new activities appear, for example so this revision has to be considered an interactive process.

There is also the need to critically evaluate the results and plans, have a critical eye to see if the results follow the principles that are supposed to follow, the ability to change the plan themselves when there is no accord between the sectors and also be able to change the legislation, making it more adaptive and flexible (Academic, 2020c).

#### Normative pillar

In the case of the WindFloat Atlantic project, there was a series of unnecessary conflicts and problems that could have been avoided if there was stakeholder engagement and all the interested parts could have been able to participate in the whole process since the beginning. The fishermen felt they were underestimated and not taken into consideration as they did not contribute to the process from the start.

A solution that could be implemented, but is still quite recent and needs further study, is the coexistence of the two sectors in the same area (Academic, 2020a), so that in this case the

fishermen are able to fish in the wind farm location. This solution needed to be initially implemented as a mutual agreement between the different parts interested and consulted during the process.

As it was analyzed previously, some solutions that could work and be implemented in other countries can also be used in Portugal to solve the conflicts or minimize them in the future, but some of them do not work in the case of Portugal. For example, one alternative in other countries is the colocation, coexistence or co-management practice in the same area for the fishing sector and the offshore wind farm, but in the case of Portugal this solution would not work for now. According to the member of Vianapesca that was interviewed, it will never be permitted to fish inside the limitation, because no one will assume the responsibility before the insurance companies if some accident happens. The insurance companies will never pay if an accident occurs close to the turbines (Fisheries Association, 2020).

On the other hand, some other interviewees found this coexistence solution a better solution than the financial compensation, for example. Even if the problem with the insurances would appear, it is important to talk to the insurances companies and explain the situation, trying the coexistence whenever possible and only if it is not possible, then have a conversion with an integration of jobs in the new reality. But important for the coexistence solutions is to have an intermediate part to design the solutions that need to be designed in every project (Member of SCIAENA- NGO, 2020).

According to (Academic, 2020c) the ideal solution is also to have a coexistence of the two sectors in the same area, promoting that and a change in the regulatory part by the insurers to take the risk of damages and possible accidents into consideration. It is essential to change people's behavior but in this case it is also fundamental to clearly adapt the laws and regulations for this possible case of coexistence. Consequently, there is a development of the activities and there are no limitations to the use, having advantages of sharing the space, promoting something that will be good for the society and for the sectors as well. If this solution of coexistence is not possible to be taken into account then the financial compensation of trying to find another role that the fishermen may have in the area, as giving them a job opportunity connected to their knowledge and what they like to do (Academic, 2020c).

As (Member of Wind Energy Company, 2020) mentioned, for example, insurance companies are insuring many parks in the United Kingdom, which has more parks than in Portugal, and there are places they allow this co-allocation of uses or at least in a security area. During the construction phase they have an area that must be fulfilled, but after the installation of the project, that area can be used or is reduced so that it can be used for other purposes. The coexistence could be a solution, but the sectors have to gain confidence, because these large areas exclude the navigation to try to avoid problems as these projects are very new and very expensive. These measures may be implemented in the future, but the promoters need to get used to working at sea and in Portugal there is still little experience in these issues. These measures are interesting but they need to come in the initial discussion phase of the project and not later (Member of Wind Energy Company, 2020).

There are limitations to this solutions of multi-use in the same area that need to be taken into consideration when evaluating a project, sometimes as it happens in some countries like

Belgium and The Netherlands, the wind farm locations are built outside the exclusive economic zone so therefore it is expensive and really intensive labor to go further into the high sea for some boats so there are some technical issues linked to this as well the insurance problem that needs to be solve, as it was mentioned before (Academic, 2020a).

There is a clear signal from the legislator and regulators to promote multi-use in the same area. However, in practice, when the situation plan, the allocation plan and the operations mechanisms for the maritime space are observed it is possible to realize that this concern does not exist. This happened because the allocation plan was mainly developed for private individuals and their logic is not exactly the logic of multi-use but more to reserve the space for their activity (Academic, 2020b).

There are some alternatives for the coexistence that have structures attached to the wind turbines to fish some specific species such as the mussels and oysters. Nevertheless, there is still a need to improve these structures as this is a new way of fishing connected to the wind farms (Member of SCIAENA- NGO, 2020). These structures could be an interesting option even if the fisheries sector needs to adapt to this new way of living and work, instead of the usual fishing techniques, this would be aquaculture.

Added to this suggestion, another way to solve the conflict could be having a trial period supported by the wind energy industry, helping the fishermen in terms of diesel, or a trial period where the fishing sector can navigate in the area. There are immense strategies to reach a dialogue between all the actors, understanding that they will have losses but negotiate is the keyword and process to have gains and reach a mutual agreement (Academic, 2020b).

Another solution that arises from the interview with (Member of APA/WWF- NGO, 2020) was doing a diagnostic analysis, for example of the potential for areas for renewable energy (waves or offshore) and analyzing as well the potentialities for the receptivity of communities to this type of project. Then when doing a cross-check, it is possible to have a vision of the areas suitable for the new activities that will not have conflicts with other stakeholders. This is also a political issue that needs to be worked in the future (Member of APA/WWF- NGO, 2020).

Definitely there are also other improvements that could be implemented in the future, as it was mentioned before, communication and collaboration plays a fundamental role in solving the conflicts. It will make the difference not only in Portugal, but also in other countries with similar cases, communicating the information better, which is a solution directly associated with collaboration and being able to listen to each other and their different points of view.

This point is also commonly agreed by other interviewees as (Member of Wind Energy Company, 2020) mentioned there is a need to improve the part of the public consultation and how to advise people, as it is a question of informing people into a more environmentally aware society, connected to the changes in the mindset of the individuals. Especially when it comes to sea and maritime issues there is not so much awareness for this topic.



### Cultural-cognitive pillar

One of main common points in some interviews was the fact that there is a lack of consultation, communication and information between the different sectors, the general public and with the government, as it was mentioned in the normative pillar, a way to behave according to the others action.

There is something that should change and this is also a cultural issue, as in other countries this culture of information exists in a more institutionalized way. Having this WindFloat Atlantic project in mind, it is possible to understand that it is better for a project to be presented to the interested actors, discussed by the various sectors of society and with transparency. Consequentially, the people will feel more genuinely involved, represented and the projects can move forward without any serious problems and with the societal validation. However, the perception in these cases, in Portugal, is that the sectors do not think of the problems that can occur when the society is not consulted. A decent, wide-ranging, genuine consultation with stakeholders and society in general must be promoted, and from there onwards, the project will be supported with technical and scientific knowledge, as listening to stakeholders is essential for projects to be viable (Member of SCIAENA- NGO, 2020).

It is fundamental having communication and collaboration between the various users of the sea as it can make the difference to solve problems. If there is more ability and better communication, the actors are able to perceive the positions of the other side and expose their side better so they will establish the capacity to collaborate (Academic, 2020c). This is a cycle that of course is not perfect and it is not possible to have ideal situations, where everyone agrees in the beginning but it is essential to find the balance between the different ideas presented. Finding solutions that at least make it acceptable for both of sectors.

The dialogue is one of the most important solutions for an earlier participatory process. Solving conflicts is a fundamental part in these cases, where dialogue will transform the communities and the sectors, implying changing the people and the institutions. Being able to have a dialogue between the different stakeholders will allow a better understanding of the problem and find ways to solve more efficiently and with more transparency.

The cultural-cognitive side of the issue determines that there is the need to raise people's awareness for the sea and maritime economy and to inform the general citizens on this issue, improving the public consultation (Member of Wind Energy Company, 2020).

This issue of the lack of transparency and communication is quite interesting to analyze as it goes to the point and direction of institutional change, as there is an essential need to change the behavior of people in being able to communicate better, listen carefully to different opinions for a better equilibrium between the different activities at sea. It is necessary to build or rebuild different institutions that will be able to give and inform the individuals and consequently the organization to share knowledge and be able to communicate with different sectors that use the same space or at least want to.

The organizations are the people that belong to them so if there is a way to help the organizations solve the problems and the conflicts, the first goal is to understand the people that belong to the organizations (Member of APA/WWF- NGO, 2020). The institutional change goes even further in the aspect of helping and support overcoming social conflicts.

One of these solutions was implemented in the case of the WindFloat Atlantic project under the form of a financial compensation, but as some interviewees mentioned this should have been the last case, as there is other options that should have been tried before (Academic, 2020a; Member of SCIAENA- NGO, 2020). As it was possible to realize from how the process was managed there was a lack of transparency in the process that is also fundamental not just to prevent the conflicts but also to address them in a clear and open-minded approach to solve them in the best way. This goes directly to the need to acknowledge people for public participation and for a better stakeholder engagement as it was outlined above.

Also creating a space for creativity and to inform the society to be more active in public participation and make them understand that there is space for sharing and collaborate with the others for the final solutions that will please all the interested actors. Another issue is also to share more scientific knowledge and invest in scientific data regarding the sea as this is still a recent topic but there is a need to do more research in the maritime issues. Besides, it is important to be able to produce information, fast, reliable and clear to put Portugal as a maritime and sustainable country (Member of SCIAENA- NGO, 2020).

Another improvement is the ability to produce information, fast, reliable as there is still a lack of planning in detail the areas and the ways to assess conflicts. As it was mentioned before, there is still a deficiency for scientific knowledge regarding the sea comparing to the land issues. As a starting point mapping possible areas to develop new activities, cross-check data, check areas of possible conflicts would be a way to prevent conflicts and improve the MSP in Portugal (Member of SCIAENA- NGO, 2020).

It is important to underline that this is management of people not of resources. The management that people make of these resources, therefore the social dimension, is fundamental in these cases of conflicts. All of this will influence what people see and how people react to the different conflicts and situations, this is deeper than it seems and it is not just focused on the environment or on the maritime issues (Academic, 2020c). It is important to understand that this may not convince the stakeholders and the communities but involves them in the process since the beginning (Member of APA/WWF- NGO, 2020). All of this is connecting to the belief system, values and traditions of each individual that will form the different stakeholders.

This will connect to the previous point of what it will cause the changes. In the literature review was possible to observe that some conflicts mask a deeper problem, a social conflict between the sectors that have a preconception of a negative characterization of each other. This case is also not an exception as there is a need to change as it was mentioned above. Usually there is a feeling of selfishness of not sharing spaces and typically the wind energy company are in a much more powerful situation (Academic, 2020a; Member of SCIAENA- NGO, 2020). Consequently, this will lead to weaker engagement participation and not a transparent process and therefore it will not be an agreement between the different interested parties in the project.

This social-cultural conflict has been debated various times between these different stakeholders. The conflict of the WindFloat Atlantic project also masks a deeper problem as a social conflict because the wind company has the title and thinks they have more rights than the fisheries sector. The industry does not listen to the associations. The fishing association could

have helped with their knowledge, but they preferred not to do that. They preferred having first the license and then saying that the area belonged to them. The turbines could be there just one year but the area still belonged to them for the rest of time that they have the license (Fisheries Association, 2020).

On the other hand, the promoters of renewable energy complain that the environmental impacts of fishing are much greater than those of renewable energy, because they spoil the funds and fish everything without paying attention to stocks and replacement and the renewable energy promotes themselves. There is a “war sector” with both sides defending the sector against the other sector (Member of Wind Energy Company, 2020).

Besides this deep social conflict that happens between the stakeholders there is also a personification of the problem, saying “they” instead of “us”, but this can be solved in the decision-making process where all the interested parties participate so there is no longer “they” but a “us”, reaching a mutual agreement (Member of APA/WWF- NGO, 2020).

As it is possible to conclude from this analysis of part of the interviews but also of the solutions found in similar cases in the literature review, it is essential having a change of behavior and a need to be more open and transparent in the maritime issues. Even if the case-study of this project was not developed in the most correct way, it gave space to learn from the mistakes and to improve for the next issues that could come in the marine areas.

The way to tackle these issues in Portugal and other in countries with comparable issues and problems in the maritime space is quite similar so some solutions implemented in other conflicts cases could be adapted and implemented in Portugal for future projects regarding the wind energy farms and the fisheries sector.

Regarding the study of these conflicts and the aim to minimize them, it is important to understand that the institutional results that could come out from the different changes can reflect a common goal of the different sectors to reach an agreement favorable for all of them. In these cases, it is important to have compromises between the actors and to have a dynamic institutional change component to be built on the agreement. However, it is essential to refer that the change are vulnerable and can be always shift to improve (Mahoney and Thelen, 2009).

As it was mentioned before, these changes are gradual because they deal with the human behavior and the mindset of people that can take generations to change and usually the people are reluctant and resist changing their ideas, they prefer continue what they are used to do. In the case of the WindFloat Atlantic project and other future project at sea that are the changes to be implemented for a better participation and engagement. However, these measures take time especially the fishing sector could struggle to change for a different approach as for example the coexistence of the two sectors in the same area or co-allocation of the uses.

The gradual changes of shifting the behavior and the mind-set of people and educate them for a better understanding and participation will lead to not having these negative feelings and social conflicts between the different sectors.

## 7. Discussion

In this section some emerging topics that arose during this investigation will be debated and also the approach of soft or hard sustainability mentioned at the beginning of this thesis and how planning the maritime areas will bring more benefits to the sea and to the users in the future.

Initially, as it was outlined in the section above, it is interesting to investigate that the context of Portugal is quite peculiar and special in the marine circumstances because the country has a major area of sea, however, there are not a lot of marine activities. What has been seen in other countries, especially near to the North Sea, is that the countries need to collaborate for the space and share the knowledge between them, where there is a minor marine area but more competition between the users of the sea for that areas. So, the approach in these countries such as United Kingdom, Belgium and The Netherlands, is focusing on solving more conflicts and for a better cooperation between the stakeholders. While in the case of Portugal, as this is a recent topic, this is not the approach that the government follows for a need to minimize the conflicts as in the past there were no problems and critical issues to solve between the different users of the sea.

Theoretically, in the case of Portugal, even if the approach is of a soft, weak sustainability there was always a balance between the economic and environment and protected topics. As according to (Academic, 2020c) some documents include the preservation of nature and sectors, as for example in the case of POEM where the nature conservation is considered one of the sectors, as there is a search for the sustainable development in the sea. One reason for this results of the MSP in a more economic and blue growth approach is because the way that the MSP and the sea structure and documents are built means that the environmental part depends on individual analyses regarding the strategic environmental assessments and environmental impact assessment (Academic, 2020c). This way, open space remains for problems as those that occurred with the WindFloat Atlantic project that did not to consider the environment and marine protected areas as an essential point to take into consideration.

According to (Academic, 2020b) the potential to support blue growth and the potential for nature conservation and preservation are two complementary policies and the MSP does not exclude the need for a strong policy of protected areas. The MSP does this to optimize the objectives of these policies, but definitely in Portugal the MSP is more focused on the issues of blue growth than to support nature conservation and management policy (Academic, 2020b).

Another interesting point outlined from the perception of the MSP in Portugal, is that according to (Member of SCIAENA- NGO, 2020) some more traditional activities are sub represented (as they are not given equal importance as other users of the sea) on a par with the environmental and protected areas in the process of projects at sea and in the MSP.

Another emerging topic is the fact that the fishing grounds and the Portuguese fishing platform goes to 18 miles (maxim). Usually, the areas of fishing in Portugal is 14,15 miles as there is no fish further at sea so actually there is not so further space of the sea to fish. Because of the project, the fisheries sector lost 17 km<sup>2</sup> to fishing (the total the area of the turbines plus the underwater cable) (Fisheries Association, 2020).

Besides, an emerging topic that raised during the interviews on the way the WindFloat Atlantic project was addressed was also the influence of the fishing license given to fishermen in Portugal. According to (Member of Wind Energy Company, 2020) fishermen have a fishing license that is not associated with an area. In other words, they have simply a license to fish. However, that can create chaos in the maritime space, so the fishing sector arrange with other members of the fishing associations to delimit their space, so this way of organizing is not official but works between them. They have a “gentlemen’s agreement” and they know exactly which boats are fishing in which locations, managing in this case the maritime space for the sector. But of course, this organization is too local and traditional as they have the fishing license, but they do not own the maritime space in those specific coordinates. What happens in terms of government and legislations is that the DGRM, the authority that emits the licenses in the maritime space of Portugal, does not know this reality of what is decided inside the fishing associations, so the DGRM realize that this is a problem but they also do not have the legal means to be able to do it another way (Member of Wind Energy Company, 2020). So that could be a reason that the DGRM licensed the wind energy company for that space because there is no actual license for fishing there, even if they are aware that the fishermen fished at that location.

When the environmental impact study was performed as part of the process of the license, the wind energy company was informed, that there was a fishermen association, whom was not in agreement with the location of the project. As mentioned before, there were few meetings between these two sectors and the location remained the same until the end of the discussion process and the company already had the TUPEM (titles for private use of maritime space) and the environmental license for the area. Even if for the TUPEM was not necessary to have an environmental license, permissions can be given and the approval of the TUPEM just need the presentation of a monitoring plan.

One interesting topic to discuss, over which was possible to have a better perspective during the process of this thesis, is how the MSP can improve to minimize the conflicts existing between the communities and the industry sector of the wind energy. The conflicts were always part of the marine sector, for having different users in different marine activities that sometimes are not compatible with each other. In the past, with the incorporation of a “new actor” as the MSP, it was expected that planning and distributions of the activities in the marine areas would decrease the number of conflicts. However, as we can observe, also from this thesis, the conflicts still occur and even now with more, different and new entities than in the past, there still is an increase of offshore wind farms and new activities.

During the interviews and the literature review, it was possible to better understand how the MSP can improve to be an agent of solving or minimizing the conflicts in different situations. Firstly, as it was mentioned before, there are two types of MSP depending on the sustainability concept that underlies in the marine planning process (Frazão Santos *et al.*, 2014b). Some processes will be focused more on profit and blue growth as the case of Portugal and here it underlies the fact that the government will be more focused in maritime activities that can bring more prospects and job opportunities in the future, as it happens with the industry sector of the wind energy companies. So, in these cases, finding the perfect balance between all the activities and focusing on preserving marine goods and services could be the solution to improve the MSP.

Even if the perfect balance between the more ecosystem based approach and the integrated use of the sea seems impossible it will help for the non-existence of the conflicts in the future, especially regarding new users of the sea as wind energy sector.

The MSP could improve the way the license was passed to the wind companies for a location up to 30 years, meaning the company could use this space even if the turbines were not working (Fisheries Association, 2020). So, an idea could be not emitting licenses for such a long period of time for a private use of space at sea.

So, the best solution is having a planning process even if in an integrated approach but without forgetting the services and preserving the marine space.

Regarding this issue, another topic that could be interesting to analyzed further on in the Portuguese MSP is if it is not pertinent to have fishing areas defined in the planning process. It seems that the DGRM and the sea minister were never open to analyze in further detail this issue, as they argue that they know the areas that the fisheries sector is occupying. So this could also be a solution to improve the MSP in the future to reduce the number of conflicts as having the fishing areas defined will help by not having the same area used for others activities such as the wind farms (Fisheries Association, 2020). And it will help also other aspects regarding the fisheries sector such as the stock and the species fishing.

Fishermen are used to fishing everywhere and what they see more and more is that they are being push out of their fishing grounds so for them it is a given that things are changing. For the new activities they are looking for space so they want to expand, want to have space so we have the situation where a relevant stakeholder (the fishing sector) is already at a losing position because they are giving their things up (Academic, 2020a). So, the way to tackle and improve in the future is to have the MSP and the projects in a more open process and more transparency as it was remarked before.

From another perspective, according to (Member of APA/WWF- NGO, 2020) having conflict can be positive in this kind of cases because it means that several parts have already started to reflect on the subject, issue and already have some opinions about it so it is easier to find a common points through this common base. When there are no conflicts sometimes the stakeholders do not have an opinion, feeling a little bit lost in the topic. So occasionally it could be easier to work from the conflict (Member of APA/WWF- NGO, 2020). This is quite a different approach to the usual method of overcoming the conflicts, but it could be useful to understand and search more about it.

Having all these in mind, regarding how the WindFloat Atlantic project was managed, ways to improve the MSP in Portugal and solutions to prevent or at least minimize the conflicts at sea, it is possible to realize that there is still a long way for research in this topic. However, with this research thesis it is already possible to take some conclusions regarding to the case-study of the WindFloat Atlantic project. As an initial statement the main research question was formulated: "How could the WindFloat Atlantic project, in Portugal, have been addressed to avoid or minimize the existing conflict between the fisheries and the wind energy industry sector?". After this research it is possible to understand that in order to avoid the conflicts between the fisheries and the wind industry some solutions could have been implemented such as the coexistence or at least co-allocation of uses in the same area and a more participatory engagement in the

project. The main concern was the fact that there was not a proper consultation since the beginning, as the fisheries were not consulted for giving an opinion regarding the location. It is fundamental in these cases to have a participatory and stakeholder engagement since the beginning to reach a mutual agreement, usually this is a track that is difficult to overcome but with workshops to share knowledge and to let know the different interested actors the project that has been under study. Another aspect is educating people to be more open-minded to be able to understand that it is possible to share the sea, change the mindset of the individuals for a more collaborative approach in the projects and share information with all of the sectors, creating a better maritime space but also a better society.

Instead of being the industry sector to look for the other sector regarding to the project, to allow the government to make pressure and to be responsible for gathering all the interested parties for a meeting before living the license, consequently have a more open public consultation to the society. Besides, another issue that the regulators need to address is that there should be some work on revising the environmental impact studies. Especially for the fact that, in Portugal, the environmental impact studies are not specific to the marine environment, the legislation for the environmental impact studies is a generic legislation and is essentially aimed for land use. There are no specific guidelines for environmental impact studies for the marine environment (Academic, 2020b). So definitely that is something that should be revised in the future.

There are definitely two crucial points as it was mentioned before in the previous section, one is that the regulators realize that they need to do their role as managers of the public goods better and therefore make this requirement of consultation and participation for the activities that intend to reserve an area in the marine locations and the environmental impact studies, as it was remarked in the previous paragraph. Besides not focusing solely on the maritime issues, it should also highlight the social component. The environmental impact studies should not be limited to evaluate the impact on the environment but also on the quality of life for the communities and also the impacts on society and this is much overlooked in the environmental impacts studies in Portugal (Academic, 2020b).

All of these solutions and ways to avoid or minimize conflicts are theoretically easy to do. However, in practice this is much more difficult to implemented and only with time, effort from all of the users of the sea and the government would a more transparent process allow a better MSP and better agreement for projects in the maritime areas. Never forgetting that it is important to maintain the sustainable pillar in all the activities, as with climate change, and the sea is the first to suffer, as it possible to observe already nowadays.

## 8. Limitations

The data analyzed in this thesis has been sourced from the interviews and the literature review. The literature addressed may not be representative of the panorama that has occurred in other countries regarding solutions to combat the conflicts in the marine sector. This means that with additional resources it would have been possible to have a more complete research. In particular, due to time limitations during the project, it was not possible to conduct more interviews with different actors interested in the project.

Furthermore, using institutional change theory is one of many possible ways of investigation this issue. It does not exclude the possibility of examining the same research question with a different theoretical background and/or methodology, which may lead to different approaches and findings that the ones proposed in this research project.

## 9. Conclusions

During this investigated project, it was possible to study different approaches to the problem and how the WindFloat Atlantic project was managed and to understand better the thematic and the deeper issues beyond the MSP. The maritime issues are still a recent topic that needs further research.

This thesis has investigated how the WindFloat Atlantic project could have been addressed in a more effective way to avoid conflicts between the users of the sea, in this specific case the wind energy industry and the fisheries sector. To this end the following research question was asked:

How could the WindFloat Atlantic project, in Portugal, have been addressed to avoid or minimize the existing conflict between the fisheries and the wind energy industry sector?

To help answer to this main research question some sub-research questions were proposed:

- How has the conflict been managed in other similar situations around the world?
- What was the role of the different stakeholders during the process?
- Could institutional change theories provide a direction to solve or minimize the conflicts?

It was possible to realize the different role of the stakeholders that participated in the process such as the regulators, the industry sector, the fisheries but also the municipality of Viana do Castelo where the project is located.

All over the world there are similar cases as the WindFloat Atlantic project of a conflict between the fisheries and the wind energy company. Mainly, all the solutions presented for the cases around Europe and the USA could be implemented in the future for cases in Portugal like the WindFloat Atlantic project, but it should be executed since the beginning to try to solve the conflict in this case.

The solution that was more addressed in this thesis as possibilities for the future was the coexistence in the same area of the two activities. Nevertheless, this still needs to be further studied and specially to have the insurances companies as a stakeholder to be prudent if there is some accident in the location of the project. The financial compensation should be the last



resource for solving or minimizing the conflicts, as this can create even more conflict and may be unfair to all the actors affected by the project.

Ideally, it should be a participatory engagement of all the interested parties in the project since the beginning of the process to avoid what occurred in this case, where the fisheries were not consulted. Besides, it is fundamental having collaboration between the sectors to reach a mutual agreement where there is no win-win situation but a decision that will be beneficial for both parties.

These solutions take time to be defined and to be completely implemented in the Portuguese legislation and in the mind-set of the actors. That is why the institutional change should be the direction to follow to solve the conflicts in the maritime areas.

The institutional change will permit the change of behavior necessary in the different users of the sea for sharing information, awareness and cooperation between them. What was possible to collect through the analysis of the project is possible to realize that the institutions, as social structures that surround the process of addressing the conflicts in the MSP process and projects, should change to become more flexible in terms of legislation, being periodically revised and a more interactive process and with higher participation.

Thinking that the users of the sea need to take part and take care of the oceans, more specific change to these institutions is necessary or even to build new ones with the purposes mentioned previously. It is important to change the behavior of the actors, in this case the fishers and the wind energy industry.

The change of behavior that this research project is aiming for is the change to the mind-set of the general public, the citizens must be more open and interested in public participations, understanding that their voice will be heard in the projects and proposals. But also, more specific to the stakeholders that are the focus of this thesis, to be more collaborative with each other, reaching a point where the different perceptions are understood and acknowledged by each of the actors, leading to a mutual agreement and winning points for both of the sectors.

All these changes will make possible to change the social structure for a better and more inclusive MSP but also a better use of the oceans and the seas.

Finally, there is also a need for more scientific knowledge regarding these maritime issues and a legislation more flexible and specific for the sea, considering that nowadays the environmental impact studies are more generic and directed to land use than focusing on the sea as well.

This is a transversal and recent topic, but it will allow to incorporate new information regarding this issue and revise the MSP in Portugal.

## 10. Recommendations for future research

There are some limitations to this project, regarding time limitations and scope. The conflicts analyzed were just between fisheries communities and the offshores wind farms corporations. In future research on the marine sector, it would be possible to consider some other emerging conflicts from different stakeholder, such as the impact on tourism and on navigation. Another limitation is the fact that the thesis was focused on the specific case of the WindFloat Atlantic project in Portugal, and even if it was possible to investigate different solutions applied in other countries around the world, a comparison was not made regarding their MSP and how that influences the way to deal with the conflicts between the users of the sea. Concerning this last aspect, it would maybe be interesting to focus on the case of Germany as a completely different approach to the new activities at sea, where the areas to build and construct wind farms in the future are already assigned. In this approach it will be possible understanding how to figure out if this is a way to deal in Portugal, having the specific areas allocated to these new activities.

Another aspect that could be interesting to analyze in future research about this topic, would be the interaction between the land and the sea, as in the land the spatial plan is being more studied and it could be fascinating to share the knowledge between the different plans.

For a future research steps to continue, the following work could be interesting as well as to reach out to the stakeholders involved in the process of the WindFloat Atlantic project that did not give their opinion and perception about the process in these thesis, as was the case of the government, the municipality and the wind energy company. This will be useful to understand and better understand their point of view in these topic and ways that they can collaborate in the future for a better use of the marine areas.

In addition, another suggestion for future research is to use geographic technology such as GIS in the process to have a better scientific knowledge and data about the best location at sea for the different users and possible co-location to be shared by different stakeholders. Finally, another recommendation to approach this theme is to incorporate in the MSP ways to solve the conflicts already as guidelines and licensing manuals for the governments.

Finally, besides all of this suggestions, it is important to test the thesis hypothesis in ways to improve the MSP in Portugal and to solve the conflicts at sea, having the chance to have a better understanding and knowledge of which would work better in the contact with real life time in Portugal.

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