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For more information, visit the project website: www.h2ocean-project.eu

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Acronyms and Abbreviations

CFP	Common Fisheries Policy
EC	European Commission
EEA	European Environment Agency
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
HAWT	Horizontal Axis Wind Turbine
kV	Kilovolts
kW	Kilowatt
O&M	Operation and maintenance
R&D	Research and Development
SAC	Special Area of Conservation
SPA	Special Protection Area
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAWT	Vertical Axis Wind Turbine
WEC	Wave Energy Converter
WP	Work Package

Glossary of Terms

Air quality assessment	A detailed study of the effect of a development on air quality.
Aquaculture	The cultivation of aquatic organisms.
Benthic	The lowest level of the ocean water column, including the sediment surface.
Central platform	One H2Ocean platform, or a combination of process platforms, supporting osmosis, electrolysis, gas compression and storage, aquaculture support services, control and monitoring equipment, tool and spares storage, life support, etc. The central platform will be connected to the energy generation unit, and they may form part of the same structure.
Common Fisheries Policy	The fisheries policy of the EU, setting quotas for the quantity and type of fish that fisherman are allowed to catch.
Demersal fish	Fish that live and feed on or near the bottom of the sea.
Environmental Impact Assessment	The process that examines the environmental consequences of a development, in advance of its construction.
Exclusion Zone	A zone established by a sanctioned body to prohibit specific activities in a specific geographical area.
Exclusive Economic Zone	The area of sea over which a state has special rights for exploration and usage of marine resources.
Finfish	Fish with fins, as opposed to shellfish
Mariculture	Aquaculture made at open sea
Marine Protected Area	Areas where specific living and sometimes non-living resources are legally protected.
Member states	Countries that are members of the EU.
Pelagic fish	Fish that live near the surface or in the water column of coastal and ocean waters.
Scoping	The process that seeks to determine, of all the potential impacts of a project, those which are likely to be significant.
Special Area of Conservation	An area of conservation designated under the EU Habitats Directive to protect rare and vulnerable species and habitats.
Special Protection Area	An area of conservation designated under the EU Birds Directive to protect rare and vulnerable birds.
Stakeholder	A person, group or organisation that is affected or can be affected by the proposed development plans.
Unit	One H2Ocean energy production unit comprising of a WEC, a VAWT and possibly some other energy generator.
Work package	A subset of the H2Ocean project grouped by the type of work involved.

Summary

The ethical dimensions of sustainable development of a multi-use platform should be made under the principles and criteria of the sustainable use of natural renewable resources and on their contribution to human and ecosystem well-being. Even though there is no explicit framework for dealing with ethical concerns, an approximation is made in this document based on FAO reports, initiatives and research articles found on the subject.

1. Introduction

Deliverable 1.2 “*Report on societal and ethical issues of exploitation*” is a result of WP1 “*Project management*”, basically consisting on the ethical aspects of fish farming, impacts of marine resources usage in coastal communities and impacts of H2OCEAN platform in transportation routes in European waters.

This deliverable is an attempt to make a systematic and critical analysis of the moral facts that guide human conduct when an exploitation such as this multiplatform is placed offshore. Thus, an analysis on the relation human-mariculture and human-wind farms is explored. Although environmental factors are mentioned, these are analysed in detail in a specific work package (WP9. *Impact Assessment*), and its corresponding deliverables that address these issues [1, 2, 3, 4].

2. The role of ethics

Ethic has been defined as a systematic and critical analysis of the social norms and values that guide both individuals and their interactions with their fellow human beings and communities, as well as with the environment.

Three basic human interests are defined [5]:

- *Welfare* includes the principle of beneficence (i.e. doing good) and nonmaleficence (i.e. avoid producing harm) and finding a positive balance among them. It implied material well-being (food, energy, etc.), as well as conservation of a productive ecosystem.
- *Freedom* or principle of autonomy (i.e. our duty to respect everyone/everything).
- *Justice* relates to distribution of the benefits (in this case fish and energy) and the ownership of a scarce resource.

For any activity that could have an impact on the society, the impact has to be defined and analysed according to the human interests above defined. Ethics have to be valued and should be of utmost importance for any activity to succeed, otherwise, in the long term this activity will face such an opposition from the society that its correct development will not occur. A benefit for the society has to be envisaged throughout the execution, and it has to be communicated with fluency to the wide community. If this benefit is not shared by the community, changes should have to be made to set out a new route plan to execute the activity that may include the societal concerns.

3. Main ethical issues in exploitation

In this section we are going to analyse the ethical issues concerning fish farm activities and wind farm activities carried out on the platform, as well as the platform interaction with transportation. It has also been considered the ethical issues concerning the different stages of the exploitation. Some of these have already been highlighted in Deliverable 9.1 *Environmental Impact Scoping Study* [1].

The three proposed sites have been preliminarily selected to avoid designated areas (protected areas or areas of local interest); the offshore location means that the H2Ocean array is unlikely to affect any coastal areas of conservation importance (Figure 1). Designations will need to be taken into consideration to ensure that no conflicts of interests will be encountered during the exploitation, and that species or habitats for which designations exist are not significantly impacted (SAC, SPA, Marine Protected Areas, etc.), especially during O&M activities closer to shore.

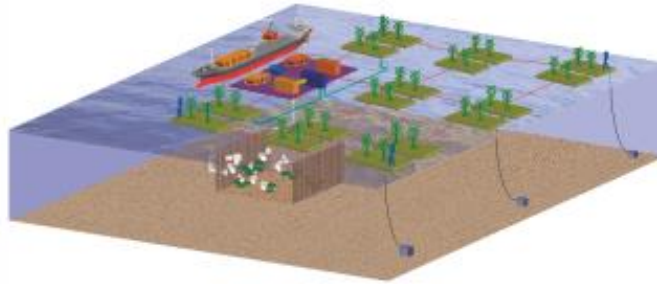


Figure 1. Conceptual image of an H2Ocean system

Regarding the environment, an assessment of the impacts to any species on the list of threatened and declining species and habitats will need to be completed if the chosen site is within a region where this applies, and any cumulative impacts on conservation areas have to be considered.

A multi-use platform could be seen as socially beneficial, aquaculture in EU waters is a prominent industry, with an estimated turnover of roughly EUR 2.9 billion [6], generating approximately 65,000 jobs. But there are also concerns regarding potential negatives aspects of it. The development of a thorough stakeholder engagement plan is necessary to ensure that any potential conflicts are addressed at an early stage. It is also important to consider security measures and deterrents that might be required on the aquaculture cages as the fish stock could be targeted by both humans and marine mammals, and on the wind farm platforms that could be used by birds as resting sites and bird collisions could occur.

3.1 Institutional framework

Any ethical analysis has to be made within the institutional framework in which a multi-use platform is integrated. A general and international instrument is the **Universal Declaration of Human Rights**, which was adopted by the UN General Assembly on 10 December 1948, whereas recognition of the equal rights of all humans, foundation of freedom, justice and peace both among the peoples of Member States themselves and among the peoples of territories under their jurisdiction [7].

A long way has been walked since 1973, when the first of the eleven consecutive conferences was held culminating in 1982 with the United Nations Convention on the Law of the Sea (UNCLOS) adoption by the Third United Nations Conference on the Law of the Sea. It establishes a comprehensive legal framework to regulate all ocean space, its uses and resources. It contains, among other things, provisions related to the territorial sea, the contiguous zone, the continental shelf, the Exclusive Economic Zone (EEZ) and the high seas. It also provides for the protection and preservation of the marine environment, for marine scientific research and for the development and transfer of marine technology. One of the most important parts of the Convention concerns the exploration for and exploitation of the resources of the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (the Area). The Convention declares the Area and its resources to be "the common heritage of mankind" [8].

The Convention was crucial for coastal development and sustainable management, but many coastal States continued to face serious challenges and sought to extract greater benefits from the fisheries within their EEZs. By the late 1980s it became clear that fisheries resources could no longer sustain such rapid and often uncontrolled exploitation and development, and thus **The Code of Conduct for Responsible Fisheries** was requested. The International Conference on Responsible Fishing, held in 1992, further requested FAO to prepare an international Code of Conduct to address new concepts which would lead to responsible, sustained fisheries. This Code is voluntary, and it sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity. The Code recognises the nutritional, economic, social, environmental and cultural importance of fisheries, and the interests of all those concerned with the fishery sector [9].

Several guidelines (**Technical guidelines on aquaculture certification and Technical guidelines for responsible fisheries**) provide advice on developing, organizing and implementing credible aquaculture certification schemes, which are viewed as potential market-based tools for minimizing negative impacts and increasing societal and consumer benefits and confidence in the process of aquaculture production and marketing [10, 11].

A policy framework for European countries has concentrated to secure a stable and abundant supply of energy [12, 13], and several recommendation on establishing a European policy framework for offshore wind power have been made. These are based on four pillars: legislation and policy measures (including specific payment mechanisms), grid reinforcement measures, environmental measures, and R&D measures [14]. Ethical and societal conflicts are not mentioned. Specific guidelines on ethical approaches regarding wind farm are extremely scarce, but there are two codes of conducts for engineers [15, 16] that could be applied.

3.2 Ethical analysis of a multi-use platform

When an ethical approach wants to be made, i.e. analysis of the moral considerations that affect any activity, its uncertainties and the risk associated, FAO proposes [5] an approach where:

- **A holistic scope** is needed; ethical issues interconnected with socio-economic factors, political decisions as well as with the ecosystem need to be understood.

- **Interaction between humans and humans-environment** has to be addressed; environmental factors and human interests (welfare, freedom and justice) will have to be preserved when decisions are taken.
- **Dialogue has to be held**, any ethical solution needs to be evaluated by those affected, through an informed, free and reasoned dialogue.

3.3 Ethical analysis of a mariculture platform

An ethical approach to aquaculture is being integrated by some aquaculture industries regarding social and environment principles, and thus six criteria for an ecological aquaculture has been set [17]: preservation of natural ecosystems form and function; trophic level efficiency; nutrient management and absence of harmful chemicals and antibiotics; avoidance of farmed fish escapes; community participation in production systems; and contribution to social welfare globally without proprietary control over the resources.

Social and economic factors

Policies promoting the sustainable development of mariculture using valuable and renewable local resources can improve the economic and social development of rural communities through enhancing employment levels, reducing emigration and facilitating improvements in infrastructure [18]. Efforts have to be made to communicate the beneficial effects for local communities of having a mariculture platform nearby. The implication of these will determine its acceptance and support towards mariculture development in the region.

The overall environmental impact of the fish farm and related mitigating devices included in the offshore H2OCEAN installation has been discussed in deliverable 9.5 *Analysis of the Reduced Environmental Impact of the Proposed Multi-trophic Integrated Aquaculture System* [3].

3.3.1 Jobs and income

When an offshore aquaculture activity is in place, the coastal area near to it is bound to have an increase in jobs offers related to it. This benefit is controversial, some jobs are going to be on the offshore platform but most of the newly created jobs are going to be in processing industries along the coast. Grow-out facilities of the aquaculture industry are hardly ever on the coast, they are usually placed in land, and thus jobs related to it are not considered to be beneficial for the coastal communities [19].

The EU announced plans in 2003 to create 10,000 more jobs, mainly in areas where commercial fishing is in decline. Voices have arisen because there is no guarantee that these fishermen will move into the aquaculture industry. And thus, efforts have to be concentrated to address this.

Jobs in the platform are going to be much specialised and skilled workers are going to be needed, thus if no specific action is taken (education programs, etc.), the personnel will probably not be from the zone. Jobs on the processing industries are thought to be widely distributed among coastal

communities that may have lost jobs from the decline of the fishing sector, but arguments arise against this statement. Intensive aquaculture production that lacks community roots and which depend on supplies and human expertise imported from distant areas does not have an income multiplier effect on the coastal area. There appears to be limited overlap of skills between local communities and those needed for mariculture, thus major cultural shifts are needed if rural people are to adjust to a culture mode of production [20].

For a coastal community to access jobs related directly or indirectly to the placement of an offshore aquaculture activity, some training has to be foreseen among the coastal community prior or in parallel to the start of the exploitation. This will ensure that the new jobs are going to be covered by the local community. However, circumstantial evidence suggests that several forms of activity can provide local opportunities for part-time seasonal employment, thereby stabilizing income among workforce groups at time of low tourist activities [18].

3.3.2 Health

Regarding the effects of aquaculture on human health, several issues have been detected as a concern. On the one hand, the human benefits of consuming omega-3 polysaturated fatty acids is now widely accepted, and thus aquaculture can secure a supply of the fish demand that is predicted to be 161 million tonnes by 2022 [17], an increase of about 18% above the average for 2010-12, with an annual growth of 1.3%; and that will not be achieved by the wild fishing industry alone (projected to increase up to 96 million tonnes). On the down side, health risk for humans can come from the consumption of farmed fish that is high on the food chain (such as tuna,...), when farmed on contaminated waters it bioaccumulates organic contaminants (including PCB's) and dioxins, also consumers' concerns arise when added chemicals and colorants to the diet of farmed fish.

3.3.3 Right of food

Fish live and feed in different zones of the ocean. Scientists divide the ocean in marine zones, each defined by specific physical characteristics. There are two main zones, the pelagic zone and the benthonic zone. Pelagic refers to the open water in which swimming and floating organisms live and the benthonic zone is the area defined as the bottom sediments and other surfaces of the ocean or a lake (Figure 2).

The availability of fish for human consumption is likewise of great concern during the last decades. A FAO report predicts an increase on fish demand of 161 million tonnes by 2022 [21], from which 96 million tonnes are expected to come from wild fish and the remaining from aquaculture. Roughly 40% of all fish directly consumed by humans worldwide in 2005 were farmed [19]. In many areas and in most of the poorest areas of the world, the main source of protein in human diet comes from pelagic fish.

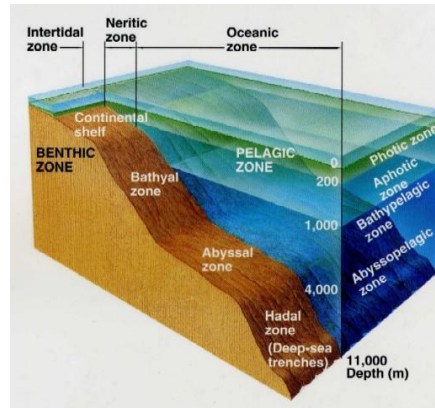


Figure 2. The ocean environment is divided into marine zones. Different groups of fishes live and feed at these different zones. <http://faculty.scf.edu/>

Fishmeal and fish oil is being used on animal production industry (also in aquaculture). The use of fish from capture fisheries to feed farm animals, mainly pelagic fish, has an impact on fish stocks. According to FAO statistics, this will not work towards a reduction on the fishing pressure.

As a solution, a multi-trophic approach is presented (Deliverable 7.3 *An operating manual for the multi-trophic aquaculture system*) [22]. The importance of a multi-trophic system is its many advantages including equity aspects, ecological resilience, minimizing environmental impacts, and economic benefits. Due to the high investment required to build and operate an offshore aquaculture farm, the industry has specialized on a market of wealthy consumers who are going to pay a higher price for fish high up on the food chain. These fishes feed on demersal fish, and thus monoculture on finfish collides with the interests and needs of world's poorest consumers (who consume fish directly for protein or consume fish that feed on pelagic species). A solution to it is a multi-trophic aquaculture system, which means that fishes from different trophic levels are farmed, thus eliminates the pressure on wild pelagic fish stocks.

On the other hand, health risks for the workers operating in the aquaculture platform have been analysed in detail in WP 8. *Logistics, Operations and Safety* [23].

3.3.4 Access and benefit of public property

Some countries do have regulations and laws regarding marine property and use, others don't. In 1982, with the UN Convention on the Law of the Sea, the 200 nautical mile exclusive economic zone (EEZ) was formally adopted [24]. In the exclusive economic zone, the coastal State has sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources - both living or non-living -, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds. This has to be considered when planning the location of the exploitation, because the local community will have to be involved in all decisions regarding the private use of a public resource (offshore water column), and thus some kind of fare agreement with the locals will have to be achieved.

Another issue that has to be taken into account is that in mariculture different parties should enjoy the right of use of the resources within socially acceptable norms, where one party does not impose harmful social, economic or environmental impacts to other parties [9].

3.3.5 Animal welfare

The species chosen for farming in the Portuguese H2OCEAN system cages is Sea Bass (*Dicentrarchus labrax* Linnaeus, 1758). This species is commonly found wild along Portuguese coasts and also farmed in land-based aquaculture facilities (D9.5 *An analysis of the reduced environmental impact of the propose multi-trophic aquaculture system*) [3].

During the different stages of the fish farm, the three ethical principles defined by The Food and Ethics Council [25] regarding animal welfare have been considered for the following stages:

- Breeding: During this stage the principle of autonomy (i.e. our duty to respect everything and everyone) is questioned regarding the environment and fish, when there is a selective breeding of species over others from the same ecosystem. This is why the farming of species from the same area where the platform is going to be placed is going to be favoured; furthermore, prevention of fish scape is going to be a high priority, so competition with wild fish will not occur. The principle of the fish autonomy could be another ethical question since the enhancement of the fish maturation by artificial methods (gonads, photoperiodic regulation, etc.) or genetically altered fish could be bridged. **These practices are not foreseen to happen in the H2OCEAN farm.**
- Feeding: During this stage the wellbeing of the producers is related to the safety of the production methods (pesticides use, antibiotics, etc.) which are discussed in length on WP8 [28]. Regarding the organism wellbeing and autonomy, there are issues regarding the stocking density, the quality and quantity for the feed received by the fish, and the exposure to diseases that have to be considered. A higher density in the cages is proven to affect the fish stress levels and have been related to disease vulnerability. Another aspect is the feeds; this should cover exactly the nutritional needs of the fish and would be received by the fish when the fish requires it. In practice, this is just the opposite way around; the fish is adapted to the feed.
- Disease/Treatment: Some fish pathogens can be contagious to people working in the aquaculture site due to contact with carcinogenic chemicals [26], this has also implications for the environment and when the fish is consumed. The use of antimicrobial agents in aquaculture is in theory for the wellbeing of the organism that is farmed, since fish exposure to disease is magnified due to the captivity, and thus these treatments would not be argued. Nevertheless, the methods applied could be stressful for the fish.

3.3.6 Communication/engagement local communities

An ethical approach encourages participation, and thus ethical solutions cannot be presented from above, but they need to be evaluated by those that are affected in an open and free discussion. Public awareness, people's participation and negotiation are central to equity issues and should be

encouraged. The wide availability of quality information and effective dialogue are parts of the solution [5]. All aquaculture projects will be improved by the involvement of local communities in the early planning stages and by consulting with them on the social and cultural aspects of the fishery; this may avoid any collision with cultural sustainability and local interests.

3.3.7 Tourism and urban development

In aquaculture some affections are detected that may have interactions with other coastal resource such as tourism and urban development interests. In an offshore aquaculture platform such as the H2OCEAN platform, set in waters from the EEZ, most affections (if not all) are going to be solved and thus there will not be a conflict of interests. The solution is mainly because the platform is out of reach of coastal view.

As stated in deliverable 9.1 *Environmental impact scoping study* [1], the distance of the H2Ocean array from shore means that tourism is unlikely to be affected, neither positively nor negatively, and so will not need to feature predominantly in the EIA. Regarding recreational activities, as stated in deliverable 9.1, the hybrid unit is designed to harvest wind and wave energy but the proposed distance of the H2Ocean array from the coast makes it unlikely that its presence will impact recreational activities such as sailing and surfing, including on the Portuguese coast where offshore water sports are popular.

It will however be imperative to consult local recreational groups such as sailing clubs and diving schools to discuss the implementation of an exclusion zone.

3.3.8 Environment

The environment impacts of a mariculture platform are discussed in length in deliverable 9.5 *“Analysis of the Reduced Environmental Impact of the Proposed Multi-trophic Integrated Aquaculture System”* [3].

The large deposition of organic matters in one of the proposed sites, characterised by intense currents, make the proposed mitigating devices based on the biological features of algae and bivalves apparently insufficient to a quantitative extraction [1].

3.4 Ethical analysis of energy production through offshore renewable sources (wave and wind)



Certain sensitive lands, such as parks, monuments and wildlife conservation areas, and ecologically sensitive marine areas are not (a priori) the most indicated sites for energy development. In some of these places, energy development is prohibited or limited by law or policy, and in others it would be highly controversial. Protection groups and many associations do not endorse locating energy facilities or transmission lines in such areas. Siting decisions must always be made extremely carefully, with impacts mitigated and operations conducted in an environmentally responsible manner.

When elaborating this deliverable, not much information was found regarding code of ethics for wind farms. Legislation and guidelines found were centered on the technical and environmental impacts of this industry, and little was found on the social impacts of it. While aquaculture practices have been performed for centuries, wind farming has been developed during the last decades; **this could explain why ethical codes and guidelines regarding wind farms are scarce compared with those on aquaculture.**

This section follows the same structure of the aquaculture analysis, and the same aspects are discussed.

3.4.1 Jobs and income

A wind farm, on average, generates approximately 1,070 jobs per 100 turbines constructed, which could benefit the regional economy. Although these would be mostly skilled jobs, education programs could be planned and designed with the local community in advance, being promoted in the designated area to cover some of the jobs that will be available in the wind farm [27].

3.4.2 Health

Large wind turbines experience turbulent winds that can produce low frequency noise (< 20Hz infrasound) which are inaudible to humans. Such infrasound can potentially cause significant sound-related hearing loss as well as more immediate health problems (headaches, increase stress levels) overtime. The possibility of a hazardous health problem on humans is of great concern. Even though long term exposure to low frequency has not been studied, it is thought that it can pose some health problems when being close to human settlements [29].

Ethically, human welfare has to be preserved and an appropriate response should be taken. In the case of the H2OCEAN platform, which places the turbines offshore, no human effect is going to be caused (Figure 3). Additionally, research on wind blades design resilient to turbulence would be less likely to generate infrasound [29].

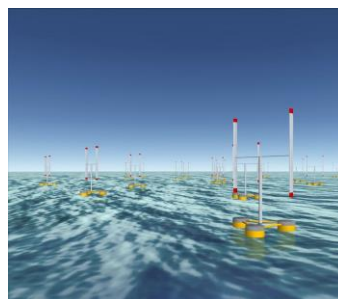


Figure 3. Wind turbine that will be used.

3.4.3 Tourism and visibility of the wind towers

An ethical solution regarding the distance at which a wind farm should be located to a coastal region dependant on tourism revenue has to be reached. Even though there is a negative visual impact when placed at a close distance, there is also a net benefit of a clean and renewable source of energy for the region. The H2OCEAN wind farm is located at a distance to which no visual impact is going to take place [29].

3.4.4 Public resources

The private use that a wind farm makes of the ocean resources (public resources), has to benefit all affected parties, and thus the local government has to be properly compensated for any private use of or harm to its public resources [31].

3.4.5 Animal Welfare

Mid-air collisions with avian species have been documented in offshore wind farms. A solution would be to construct the turbines away from known migratory patterns.

In deliverable 9.3 birds collision has been considered as an environmental impact, and solutions have been proposed (avoiding sensitive sites, avoiding installation work during scarce visibility periods, and increasing visibility of installation vessels and devices, avoiding Sodium or bright lights, red flashing lights should be preferred to continuous white lamps, proposed area for the ecology of bird populations should be assessed before the installation activities taking place) [1].

Aggregation of fish around the aquaculture cages is likely to attract seabirds hunting for food supply, and the WECs may also encourage seabirds to congregate and use the devices as a rest site (Figure 3). Consideration should be given to the possibility of seabird collision with the VAWT. It has been found that seabirds have a lower collision rate with VAWTs than HAWTs. Further research is recommended on the impacts of WECs on seabirds as it is currently largely unknown [32], in addition to a survey to inform of bird usage at the chosen site, taking into account seasonal variations in breeding, wintering and migrating (Figure 4).



Figure 4: A Floating Power Plant prototype installed off the coast of Denmark

Source: <http://www.floatingpowerplant.com/>

3.5 Impacts of H2OCEAN platform in transportation routes in European

Caution should be taken to prevent collision of marine vessels travelling the coastal waters. Some solutions have been proposed by simply adding brightly coloured or reflective material to the turbines to increase their visibility during the day, as well as lights for hours between dusk and dawn should be mandatory for all offshore turbines.

As stated in deliverable 9.1 [1], where the relation of the platform with navigation shipping is covered (ferries, commercial shipping, ports and harbours and military activity), the implementation and management of an exclusion zone around the H2Ocean array is likely to have an impact on shipping and navigation. A navigational risk assessment will need to be completed and appropriate navigation aids deployed around the site. The requirements should be informed via consultation with the relevant international and national shipping organisations. Recommendations are likewise made in this document (e.g. consult with European Maritime Safety Agency (EMSA) and relevant national shipping consultees and complete a navigational risk assessment; consult with local port authority at chosen site; consult with relevant authority for military activity to discuss the implementation of an exclusion zone).

3.6 Conclusions and Recommendations

- A multi-use platform can be a very good alternative to secure food sources and energy supply when these are done ethically. Additionally, a multi trophic aquaculture where fishes from different trophic levels are farmed eliminates the pressure on wild pelagic fish stocks and thus doesn't compete with the local pool of wild fish. It is recommended that an Ethical and Social Impact Assessment Plan should be done prior to the placement of the platform in collaboration with the local community, and thus preventing and correcting any possible collision of interests with the local communities.
- Prior to the placement of a platform, involvement of the coastal community and stakeholders has to be done from the early stages. Stakeholders and the local community will have to be involved in all decisions regarding the private use of a public resource (offshore water column), and thus some kind of fare agreement with the locals will have to be achieved.
- For a coastal community to access jobs related directly or indirectly to the placement of an offshore aquaculture activity or an offshore energy activity, some training has to be foreseen among the coastal community prior or in parallel to the start of the exploitation.
- Any activity that could pose a threat or that could have a negative impact on human health (fish feeding additives, pesticides, wind turbines noise, etc.) as well as any negative impact to the environment should be considered and addressed. Therefore guidelines of good practice should to be followed.

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