

MEDGuard project



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- Directorate-General for Merchant Shipping of Cartagena.
- Fishermen Brotherhood of Cartagena and Mazarrón.
- Students from the Training course Maritime Transport and deep sea Fishing
- Students from the Training course Hiperbaric and underwater operations.
- Technical University of Cartagena (Underwater vehicles Laboratory)
- Asociación Ambiente Europeo.

Abstract

This document is the Deliverable “D1.1 Study for the Technical Feasibility “ (7th August 2015- 6th February 2016)” of the MEDGuard project co-funded by the DGMare of the European Commission within the call “Guardians of the Sea, MARE/2014/24”. This call co-funds preparatory actions to promote the reassignment of fishing vessels and the professional re-orientation of fishermen for activities and services outside fishing. In the MEDGuard project the reassigned fishing vessel “Ciudad de Cartagena” is operated in the coast of Cartagena with the aim to identify the requirements needed to guarantee the sustainability of the reorientation of the medium size fishing fleet. This confidential document reports the work progress of the project, its financial situation during the first half of the project (7th August 2015- 6th February 2016) and the works to be performed during the next period in order to achieve the proposed objectives.

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Bibliography

- Real Decreto 1727/2007
- Orden De 14 De Octubre De 1997
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- Orden FOM/1144/2003
- Orden FOM/1076/2006
- Real Decreto 1185/2006
- UNE-EN ISO 9094-1:2003
- UNE-EN ISO 9094-2:2003
- UNE-EN ISO 15083:2003
- Real Decreto 2127/2004
- UNE-EN ISO 12217-1:2013
- Real Decreto 804/2014
- Real Decreto 457/2011
- Real Decreto 1247/1999
- SOLAS – Capítulo III
- SOLAS – Capítulo II Real Decreto 1434/1999
- Real Decreto 1837/2000

List of Abbreviations

CTN	Centro Tecnológico Naval y del Mar
HESPÉRIDES	CIFP Hespérides
IVEAEMPA	Identities, values and alternative strategies for maritime and fishing entrepreneurs
GALP	Grupo de Acción Local

1 Introduction.

The MEDGUARD Project is funded by DGMare of the European Commission within the call “Guardians of the Sea, MARE/2014/24”. This call funds preparatory actions to promote the reassignment of fishing vessels and the professional re-orientation of fishermen for activities and services outside fishing which should contribute to the sustainable management and use of marine and maritime resources.

In the MEDGuard project the reassigned fishing vessel “Ciudad de Cartagena” is operated in Cartagena coast to examine and demonstrate the feasibility and economic viability of substitute activities to fishing with the main aim of identifying the requirements needed to guarantee the sustainability of the reorientation of the medium size fishing fleet. The Project has the following specific objectives:

- ✓ To perform a series of tests in Western Mediterranean Coast using the reassigned fishing vessel “Ciudad de Cartagena”.
- ✓ To analyse the technical viability of using the acoustic systems and devices of fishing vessels for collecting lost fishing gears.
- ✓ To analyse the economic conditions and operational costs of vessels to perform maritime activities outside fishing and identify ways for future funding.
- ✓ To identify the relevant training needs of fishermen and vessel owners to perform the substitute activities.
- ✓ To provide useful data and information about costs and ways of funding to the promoters of the diversification activities, fishermen and the authorities with competences in the management of programmes related to the CFP Reform.

To achieve its objectives, the project has 5 work packages which relationships are shown in Figure 1.

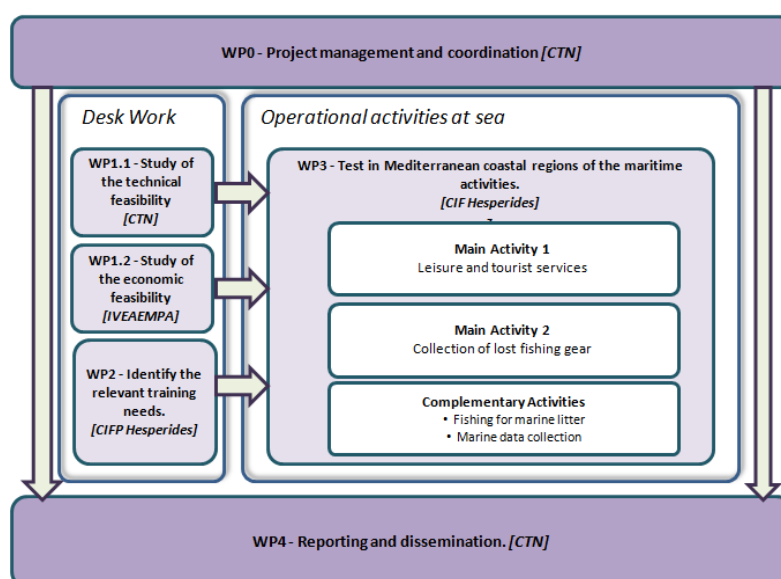


Figure 1. Work Plan Structure.

This document reports the work progress of the project and its financial situation during the first half of the project (7th August 2015- 6th February 2016). It also reports the works to be performed during the next execution period of the project to achieve the proposed objectives.

The project is developed by a consortium made up of 3 entities coordinated by CTN and it has a duration of 12 months starting on August 2015.

2 Aims and Methodology.

2.1 Aims.

The main aim in this study for technical feasibility is to analyse the technical conditions that the middle size fishing vessels should meet in order to be able to carry out activities different than fishing in a sustainable way. In order to achieve this aim, the following specific aims have been faced:

- To identify the fishing restructuring activities that can be carried out in these vessels.
- To determine the operating requirements that should meet the fishing vessels to carry out the restructuring activities.
- To analyse the applying legislation to the vessel for each one of the proposed activities.
- To identify the Works for the reassignment of the vessel to the new activity.

2.2 Methodology.

Due to the great variety of fishing vessels and fishing restructuring, this study for technical feasibility has been focused in middle size vessels carrying out a series of concrete restructuring activities.

In order to identify the activities, it has been considered, first of all , the restructuring activities established in the text “ Call For Proposals “– MARE/2014/24 that are: Leisure and Tourism Activities, marine floating litter collection, marine data monitoring collection, collection of lost fishing gear and monitoring of marine ecosystems. Afterwards, a bibliographic study has been made with the most important reports involving the restructuring actions to be taken by the Institutions in promoting the diversification of fishing. Such as the (ODPA) “Observatory for the Fishing and Aquaculture Diversification.” At the same time, and with the aim of fostering the involvement of the different actors, three entrepreneurs seminars have been made, boosted by IVEAMPA, made up by a working group focused in identifying new restructuring activities, fostering in this way the choice of those with a better business working capability. The results of these entrepreneurship seminars are given in Deliverable “D1.2. Lienzo Canvas.”

Once established the activities, there have been identified the operating requirements for each one of them, starting with the study of the features of the vessels that are designed and constructed ad-hoc for each one of the activities and its legal regulation. Mandatory requirements have been analysed, together with other extra or advisable ones for the activity to be carried out within the best operating and safety conditions.

The study of the legal regulation for the different restructuring activities proposed has been dealt by: 1) Bibliographic study for the legal mandatory requirements described in other fishing diversification efforts. 2) The analysis of the legal regulation for the ship operating and its construction. 3) Meetings with the competent Administrations, (CAPITANIA MARITIMA, etc.)

Starting with the study of the legal regulation, and with the specific features of each one of the proposed activities, those adaptations/modifications to be done in the vessels, have been identified. In Deliverable D1.4, It is shown the associated change of these modifications. This cost has been estimated by: 1) Consultation with providers. 2) Estimative formulae use and 3) the own working experience of the naval engineer team of the CTN.

The conclusions of this study helped to reassign the fishing vessel “ Ciudad de Cartagena “ to operate a series of tests, with these tests, data have been collected to analyse the feasibility for activities different than fishing from different angles such as the economics, the client, business, etc. Due to budget and timing restrictions in the framework of the project, it has not been possible to make all the recommended modifications in the current report. The modifications actually done are the mandatory to provide the vessel with the minimum operating capability needed for the carrying out of the testing campaigns and to obtain the compulsory licenses from the relevant authorities to materialize them.

3 Identification of activities different than fishing that can be performed by fishing vessels.

In the framework of this Project, it is important to distinguish between Diversification activities (or Complimentary activities) and the Reconversion activities (or Substituting activities) to be carried out by retired fishing vessels. According to Law 33/2014 2nd December, that modifies Law 3/2001, 26th March, Diversification is “The development of complimentary activities performed by professionals of the fishing field in order to reinforce the Economy of the fishing communities”. For that reason, the following concepts are considered in this report:

Reconversion or different activities than fishing, what implies a total retirement from fishing activities of the vessel to carry out other activities. These are the ones considered in the framework of this project.

Diversification activities or complimentary to be done by the fishermen as a complimentary source of income, being suitable with the fishing activity.

After the analysis of the different activities identified from the bibliographic study (section 3.1.) and the entrepreneurship seminars (section 3.2.), the activities with a better economic feasibility potential have been chosen, and the ones in which the fishermen can give an added value.

3.1 Main efforts and projects existing for the diversification of the fishing sector.

As a result of the bibliographic study done, there have been identified the projects and the diversification efforts and fishing restructuring contained in Table 1.

As can be seen, a lot of the diversification efforts of the area are related to the tourist-fishing activity, which can only be undertaken by fishing vessels with a current license, what can not be carried out by vessels that have been retired by the General Register of the fishing fleet and subsequently in the third list of the Shipping Register and Companies as can be seen in the Maritime Fishing State Law (Law 3/2001 26th March). The activity of Recreational fishing can only be made as a diversification activity, not as a restructuring activity.

NATIONAL EFFORTS	DEVELOPER	DIVERSIFICATION ACTIVITY (Complimentary)	RECONVERSION ACTIVITY (Substitutive)
Recreational fishing	Blanes Fishermen Brotherhood	Yes	No
Recreational fishing and Fishing Tourism Roses	Patrón Mayor (Fishermen Brotherhood of Catalonia)	Yes	No
Scientific fishing Tourism	Valencia City Hall	Yes	No
Training and Diversification of the fishing sector in Ayamonte	Ayamonte City Hall	No	Yes
Training and Diversification of the fishing sector.	Punta Umbría City Hall	No	Yes

NATIONAL EFFORTS	DEVELOPER	DIVERSIFICATION ACTIVITY (Complimentary)	RECONVERSION ACTIVITY (Substitutive)
Professional Insertion and Diversification project for the fishing sector	Isla Cristina (Andalucía) City Hall	No	Yes
Sail and Educate	Moncomunidad del Salnés (Galicia)	No	Yes
Grup Balfegó-tunatur (pescaturismo)	Grup Balfegó and the Scuba diving ceter from Subkro	Yes	No
Navigating between Islands	Astropenta Medio Ambiente S.L.	Yes	No
PESCAL	Secretaria General de Pesca -(MAGRAMA)	Yes	No
SAGITAL	EQUAL del Fondo Social Europeo y la Universidad Politécnica de Madrid	Yes	No
MAR GALAICA Turismo Mariñeiro	Cofradía de Pescadores de Lira	Yes	No
SURATLÁNTICO	EQUAL Fondo Social Europeo y Fundación Andanatura	Yes	No
MARIMED	Programa de Iniciativa Comunitaria INTERREG IIB Medocc	Yes	No
Recreational fishing	Organización de Armadores de Pesca de Catalunya	Yes	No
Roses Vila Marinera 37	Rosas. Gerona	Yes	No

Table 1. Main efforts and diversification projects and the fishing restructuring in Spain.

EUROPEAN EFFORTS	DEVELOPER	DIVERSIFICATION ACTIVITY (Complimentary)	RECONVERSION ACTIVITY (Substitutive)
Pescatourisme 83	GALP - Groupe Varois	Sí	No
Mar Galaica: coordinating & promoting fisheries-related tourism	GALP - Noia	Sí	No
Tourism training for fishermen	GALP - Northern & Eastern Lapland"	Sí	No
"Put 'n' Take" recreational fishery	GALP: "West Jutland"	Sí	No
Diversification of fisheries activities in the english channel	AGROCAMPUS OUEST and the University of Portsmouth	Sí	No
Cabaz do mar. FLAG Alem Tejo	Portugal	Sí	No
Supporting fisheries 2.0. FLAG Terredi di Mare	Italia	Sí	No
FantaRed	European Commission Norway, Sweden, the	Sí	No

EUROPEAN EFFORTS	DEVELOPER	DIVERSIFICATION ACTIVITY (Complimentary)	RECONVERSION ACTIVITY (Substitutive)
	UK, France, Spain and Portugal.		

Table 2. Main efforts and diversification projects and the fishing restructuring in Europe.

3.2 Activities proposed by the group of entrepreneurs participating in the project.

In order to identify and define the activities, a working group formed by students of the CIFP HESPERIDES currently attending the “Education cycle of sailing and Deep-sea fishing” has been created. They come mainly from families with a sailing tradition and their future, once ended the studies, will be linked to the fishing activity. These working groups have been dynamized with the partnership of IVEAEMPA, selecting those students with a better enterprising nature, fostering in this way the selection of activities with a more business exploitation potential. The results of these entrepreneurship seminars are collected in the Deliverable “D1.2. Lienzo Canvas.”, and help as a base to carry out the economic feasibility report (“Deliverable D 1.4. Feasibility report, evaluation and analysis of the economic sustainability of the restructuring activities”) and the business plan for each one of the activities (“D 1.3. Business plan”) The activities proposed by the entrepreneurs are:

1. Litter and ghost nets collection.
2. Training activities.
3. Touristic activities such as sport diving, sport fishing or Dolphin watching.
4. Touristic-fishing
5. Activities related to social inclusion: training ship for youth social inclusion, a vessel where activities for Elder people can be done, etc.
6. Reinforcing extra activities for other maritime activities such as environmental parameters monitoring or vessels such as the supply to anchored ships.

3.3 Alternative selected activities to analyse its feasibility.

After analysing the different activities identified by the bibliographic study and seminars of entrepreneurs, activities with a more economic feasibility and those where fishermen can add a new value have been selected.

In the following table are summarized the main activities identified in the previous sections that are:

ID	ACTIIVITY	DIVERSIFICATION ACTIVITIES (Complimentary)	RECONVERSION ACTIVITIES/ alternative.
	Leisure and Tourism		
1	Spreading of the fishing culture.	Yes	Yes
2	Recreational fishing	Yes	No
3	Dolphin watching	Yes	Yes
4	Sport Diving	Yes	Yes
5	Recreational Fishing	Yes	Yes
	Environmental		

ID	ACTIIVITY	DIVERSIFICATION ACTIVITIES (Complimentary)	RECONVERSION ACTIVITIES/ alternative.
6	Floating Litter collection	Yes	Yes
7	Lost Fishing gear collection	Yes	Yes
8	Environmental parameters monitoring and services supporting Research	Yes	Yes

Table 3. Summary of the main activities identified.

The activities identified and selected to be tested in the pilot campaigns in the framework of the MEDGuard project are:

- Leisure and Tourism: Sport Activities (Recreational fishing and diving).
- Environment. Floating Litter Collection.
- Environment. Lost fishing gear collection.
- Environmental parameters monitoring and services supporting researches.

4 Requirements of the vessels to carry out the activities.

The operating requirements for each one of the activities have been established from the study of the features of the vessels that are designed and constructed ad-hoc for each one of the activities, also considering the legal regulation suitable for each activity. Mandatory requirements have been analysed together with the advisable ones for the activity to be carried out within the best operating and safety conditions.

4.1 Leisure and Tourism activity.

Hereafter are described the main features and technical requirements desirable to be fulfilled by the vessel to carry out this set of activities:

4.1.1 Recreational Fishing

This activity is intended to spread the fishing culture, promoting a responsible recreational sport fishing. In this kind of activity, just a few non-professional fishing gears are allowed, disclosing selective practices, and fostering, on the other side, the touristic development.

- General requirements of the vessel:
 - The smaller vessels, like minor arts or gillnet, will have less capacity to carry out the activity with big groups, nevertheless, a closer contact with the fishermen gives an extra attractive to the activity.
 - The self stability of any fishing vessel should be enough to carry out this activity with no risks, anyway, it should be taken into account that the cargo conditions change considerably with the activity change, something that could infringe that stability.
- Regulatory requirements (safety, etc.)
 - The vessel will allow the carrying out of the activity with safety guarantees, for what it will be equipped with all the safety devices that the current regulation establishes in this area (See Regulation section 5.2).
 - Regulation for sport fishing demands an activity license for the vessel issued by the corresponding institutions of the autonomous communities and establishes the fishing types and allowed species.
- Operating requirements.
 - Large ship deck for the performing of hands-on workshops and different activities and allow the tourist to move freely with little difficulty in the vessel.
 - Excluding those short activities with no more than 5 or 6 people, it is advisable to have a rest area, mainly for activities that need a few hours on board, conveniently placed in a shading place.
 - For more than 18 hours trips, enabled cabins on board are compulsory.
 - The vessel must provide appropriate stairs/ramps for all kinds of people, visitors or public.

4.1.2 Sport Diving

The aim of this activity is to take people to special or relevant places for recreational diving/snorkel, to make people enjoy the experience of looking the underwater environment, and providing them with the required equipment for a good development of the activity.

- General requirements of the vessel:
 - The measurement of the vessel will allow an approach to the coast and will offer both the crew and the passengers some comfortability, having a recommended overall length of 15 meters.
 - It should be a fast vessel with low energy consumption and with good manoeuvrability.
 - Big stability requirements are not needed, due to the nature of the activity, the trips are done exclusively in good weather conditions.
- Regulatory requirements. (safety, etc.):
 - The vessel will allow the carrying out of the activity with safety guarantees, for what it will be equipped with all the safety devices that the current regulation establishes in this area. (See regulatory section 5.2).
 - The regulation for sport diving vessels demands some specific requirements, emphasizing in:
 - Visibility of the captain or other responsible staff to control the divers all the time when they are underwater.
 - Signpost devices such as dive flag alpha or buoys.
- Operating requirements:
 - It will have the best possible comfort and provisioning facilities as well as food preservation facilities.
 - Small freeboard allowing an easy Access to the water by the divers, or to have an small platform for freeboards bigger than half a meter from which a diver can have Access to the water with no risks.
 - For diving activities with more than 18 hours estimated time, enabled cabins on board are compulsory.
 - Placement of the passengers will be done in a well-balanced way side and side, giving a minimum stability to the vessel.
 - The cabin, if there is one, should be preferably in the bow, in order to have a cleared deck to enable divers to sit down during the trips and stow the scuba cylinders and the rest of the necessary equipment to carry out the activity.
 - Tent to cover the scuba cylinders from the sun.
 - Cleaning and stowing stations for the diving equipment.
 - Provision of an assistant inflatable boat to help the divers.
 - To have room for a hyperbaric chamber equipment if possible, diving bells, or similar.
 - Safe and comfortable means to allow an easy boarding and landing of the passengers.

4.2 Marine floating litter collection activity.

A service for the relevant authorities and responsible entities for the collection of floating solid litter in the coastal areas such as plastics, Wood, etc., improving the water quality and promoting the environment preservation. Specific trips and contracted services by the administration are intended to be done, for the collection of litter near the coast, next to the urban centres, harbours, etc., and next to the watercourses, where after rain or floods a big amount of litter can be found. After that, it will be taken to the harbor for its treatment and management.

- General requirements of the vessel:
 - The trawler is the ideal vessel for the activity, its technical features, disposition and equipment fit perfectly for the carrying out of this activity.
 - In principle, the established stability requirements for fishing ships are enough to carry out the activity.
- Regulatory standards:
 - The vessel will allow to perform the activity with safety guarantees, for what it will be equipped with all the safety and rescue devices that the current regulation establishes in this subject. (See Regulating section 5.2).
- Operating requirements:
 - It is convenient that the freeboard is not excessive, allowing the manual litter collection or with collection equipment in the stern or in one side.
 - A big vessel has an advantage for the collection, it allows better and more effective devices, together with the installation of machines that allow the stowage of heavy or big wastes.
 - The cabin, if there is one, should be placed preferably in the bow, in order to have a cleared deck for the classification and handling of wastes, it also allows trawl activities from the stern. An ideal solution.
 - The propulsive power will be great, necessary for the carrying out of this trawling activities.
 - The compulsory equipment on board: Collecting devices: (hooks, ankles, gram pins...), Ropes to tense them to the vessel, machines for lifting operations and bags for storage. A blocking device for the ropes should be arranged, in order to prevent an excessive stress in the machine, when doing trawling activities from the sea floor.
 - Detection equipment to improve the efficiency of the activity like lateral scanning probes, ROVs, multibeam. Partnership with divers is only advisable in shallow waters.

4.3 Lost fishing gear collection activity.

A service for the fishermen, preservation entities and relevant authorities for the recovery of lost fishing nets and fishing gears. The collection of ghost fishing nets reduces the environmental effect of fishing, avoiding ghost fishing and increases the benefits in the fishing sector, minimizing helix entanglements accidents and subsequently, the maintenance costs for all the maritime sector.

- General requirements of the vessel:
 - The trawler is the ideal vessel for this activity, its technical features, disposition and equipment fit perfectly for the performance of this activity.
 - The stability requirements established for this activity will be the ones applied for fishing operations, being not necessary to change things for its stability.
- Regulatory standards:
 - The vessel will allow the performance of the activity with safety guarantees, for that reason, it will be equipped with all the safety and rescue devices that the current regulation establishes in this subject. (See Regulating section 5.2).
- Operating requirements:
 - A big vessel has a big advantage for the collection, it allows better and more effective devices, together with the installation of machines that can allow the stowage of heavy and big gears.
 - The cabin, if there is one, should be placed preferably in the bow, in order to have a cleared deck for the handling of the captured nets, it also allows trawl activities from the stern, an ideal solution.
 - The propulsive power will be great, necessary for the performing of this trawling activities easily.
 - To have an equipment that bites the rope that tenses the collection device in order to avoid the stress of the machine.
 - For a better effectiveness of the procedure, it will be necessary to have a lateral sonar for a better tracking of the nets.
 - It is advisable to have some device that allows the checking up-to-the-minute of the whole size of the nets.
 - Compulsory equipment on board: Collecting devices (hooks, ankles, gram pins...), Ropes to tense them to the vessel, machines for lifting operations, and bags for storage. A blocking device for the ropes should be arranged in order to prevent an excessive stress in the machine when doing trawling activities such as the collection of wastes from the Sea floor.
 - Detection equipment to improve the efficiency of the activity such as lateral scanning probes, ROVs, multibeam, etc. Partnership with divers is only advisable in shallow waters.

4.4 Marine environmental monitoring parameters and helping services for research.

Service available for the scientific community and administrations for the use of the vessel as a helping platform for research activities such as data collection campaigns or the showing of relevant touristic areas. In this service, scientists and their marine environmental monitoring parameters collecting equipment are boarded, and the testing methods and prototypes and their start-up.

- General requirements of the vessel:
 - This activity is conditioned by the researching equipment that would be boarded. For small equipment or activities that would not need to board big weights, a small minor art vessel would fit to this activity. On the other hand, if bigger equipment for research is required, a bigger vessel would be necessary.

- As far as for stability is required, it should be studied according to the tonnage of the equipment to be lifted from the side of the vessel.

- Regulatory standards:
 - The vessel will allow to carry out the activity with safety guarantees, for what it will be equipped with all the safety and rescue devices that the current regulation establishes in this subject. (See Regulating section 5.2).

- Operating requirements and recommendations:
 - It is interesting to have a cabin to protect all the equipment, preferably in the bow, in order to have a clearer deck for the classification and handling of the equipment, having the necessary space for all the equipment allowing a good use of it.
 - It could be advisable and interesting to have a cold storage, laboratories, long winches, fixations for the containers in the deck or trawling net drums.
 - Other important factor is the period of duration, for trips longer than 18 hours, enabling cabins on board will be compulsory.
 - For smaller ships, a small freeboard will help the disposal of the equipment in the water, if a bath platform would not be possible, it will be needed one to have a safe Access to the water.
 - For bigger vessels, it is also interesting to have not very high freeboards, to avoid crashes of the equipment with the hull during their lifting or lowering processes.
 - Depending on the equipment, lifting machines will be necessary, together with ramps, scales or cranes for the transportation of the equipment. Handrails and all things needed to help the proper access of the scientists and their stay on board.

5 Analysis of the regulation to be fulfilled.

5.1 Legislative framework.

The International Maritime Organization (OMI) is the authority to establish a global legislative framework. Among the main international agreements are included the International Agreement to prevent Pollution from the Vessels (MARPOL), and the International Agreement for the Human Being Safety in the Sea (SOLAS) and the International Agreement on Training Regulation, Qualification and Guard for the Seamen (STCW).

Despite the OMI is the global authority to establish the safety regulations, the governments of the participating States are the ones responsible for their fulfilment, so, it is necessary to add to its legal system the different agreements. In the European Union the agreements and the established rules made by the OMI in maritime transportation are adapted to the Union law, which ensures a uniform application in all the member States. In Spain, the regulations integrated to the legal system by Royal Decrees and Orders, being their fulfilment regulated by different organs from which we can highlight the Maritime Authorities.

- **The Maritime Authorities in Spain**

The Maritime Authorities and the Maritime Districts depend functionally and organically from the Ministry of Public Works and Transport, through the General management of the Merchant Marine. Depending on the amount and conditions of the Maritime traffic, we distinguish between Maritime Authorities and Maritime Districts, the Maritime Authorities supervise and manage the Maritime Districts they have attached.

- **The Register of Ships.**

The Spanish Law, through the Royal Decree 1027/1989 establishes the compulsory inscription of all the ships and maritime companies that operate ships in a Register managed by the General Management of the Merchant Marine. This Register is based on a system of lists, (numbered and signed books). Each of these lists correspond to a determined activity. Each ship can only be registered in its corresponding list. There is a total of 9 lists and they are numbered in article 4.1 from the Royal Decree 1027/1989.

These are:

- First list: Drilling platforms, tugs, supporting vessels and the platform suppliers that do not register in other lists.
- Second list: National constructed vessels or the imported ones dedicated to transportation of goods, passengers or both.
- Third list: National constructed vessels or the imported ones dedicated to business fishing.
- Fourth list: Auxiliary fishing vessels or vessels devoted to aquaculture activities.
- Fifth list: Tugboats, ships or naval devices devoted to deck services or bay services.
- Sixth list: Recreational or sport boats operated with profitable aims, as a business activity.
- Seventh list: National constructed vessels or imported ones aimed to sport fishing or to a non-profitable fishing activity.
- Eighth list: Public Administration owned vessels or boats.

- Ninth list: Or provisionally registered: vessels in construction, but not including sport boats constructed from mass production.

Classification Societies

The classification Societies are non-governmental organizations whose aim is to promote the safety of the boats and the preservation of the marine natural environment, by means of rule making for the classification of the design, or by the inspection of the ship along its life cycle.

Currently, the degree of inspection tasks delegation and certification of vessels depends on each country's law. In Spain, legislation establishes that these tasks are exclusive competence of the Ministry of Public Works and transport, executed by the DGMM, General Management of the Merchant Marine and the Maritime Authorities as peripheral maritime administration. Anyway, the Administration delegated to these classifying societies some inspection and certification tasks that are contained in the Royal Decree 90/2003, from January the 24th, about common rules and standards for the organizations of inspection and control of ships, and for the corresponding activities of the Maritime Administration.

In essence, the national legislation framework is formed by the Royal decrees that transpose the Community Regulations, being the member States responsible for their correct fulfilment, subjected to the authorization of the Maritime Authority, because it will be the Harbour Master of each District the one which determines for example the maximum number of people on board, or the minimum number of crew for the appropriate development of the activity, taking into account the technical features, the navigation area, the equipment or other parameters from each boat.

5.2 Implementing Legislation for retired fishing vessels according to the activity to be carried out.

The study of the implementing legislation to the different restructuring activities proposed has been dealt by:

- Literature review
- Meetings with the Administration Authorities (Maritime Authorities).
- Study of the regulation requirements indicated in relevant diversifying efforts.

Due to the big amount of implementing legislation for this kind of ships, four areas of interest have been considered regarding Safety and the integrity of the vessel, and other three critical parameters of the vessel that condition the implementing legislation. It has been also taken into account the classification of the vessels into five groups:

- **Areas of interest to guarantee the safety and integrity of the vessel.**
 - Safety and rescue. Devices and means of rescue.
 - Radio Equipment.
 - Firefighting equipment and bilge bumps
 - Stability.

- **Critical parameters** of the ship that condition the implementing legislation.
 - Overall length.
 - Number of crew and passengers.
 - Navigation area.

- **Vessel typologies commonly used in the legislation.**
 - **Fishing vessel:** Every civil vessel equipped or used with business aims for the fish capture or other living resources in the sea.
 - **Recreational boat:** According to the article 2.1 from RD 1434/1999 from September the tenth, it is considered a recreational boat, any kind of boat, independently their means of propulsion, with an overall length between 2.5 and 24 metres, used for sport purposes, leisure or entertainment, or training for recreational sailing, despite being with a profit-making purpose.
 - **Recreational vessel or “mega yacht”:** Any kind of vessel, despite their means of propulsion, whose overall length is more than 24 metres, with a tonnage less than 3000 GT with a transport capacity for up to 12 passengers without the crew, intended for recreational sailing, leisure and tourism, the practice of sports or non-professional fishing, used by its owner or other person by leasing, passage contract, transfer or any other title. Special authorizations exist for recreational vessels to carry more than 12 passengers on rare occasions, anyway, they will be considered as recreational ones, not as passenger ships.
 - **Passenger ships:** Considered a vessel used for the transportation of more than twelve passengers.
 - **Freighter:** Those that do not transport more than twelve people, but goods or big things mainly

The retired fishing vessels, depending on their new activity to be carried out and the critical parameters considered before, become considered inside one of the previous typologies establishing the compliment of the regulations. In the next table, a summary of the new status of the vessel depending on the activity and its features:

ACTIVITY	PASSENGERS	LENGTH	KIND OF SHIP
Leisure and Tourism	≤ 12 Pax	L ≤ 24 m	Recreational boat
	≤ 12 Pax	L > 24 m	Recreational vessel
	>12 Pax	N.A.	Passenger vessel.
Environment: Floating Litter and ghost fishing nets collection.	N.A.	N.A.	Freighter
Environmental parameters monitoring and services helping research (allowing scientists and researchers on board)	≤ 12 Pax	N.A.	Cargo Ship

Table 4 Summary of the new status of the vessel.

The main applicable regulation for the restructuring of the fishing vessels is shown in table 5. This analysis is indicative because a big number of facts exist where in the opinion of the administration it can be modified or exclude the fulfilment of any determined regulation

	Act 1			Act2	Act3	Act4
	L<24	L>24	>12 Pax			
Royal Decree 1837/2000						
Inspection of civil vessels	V	V	V	V	V	V
Royal Decree 1727/2007						
Whale protection measures						
Order from 1997, October the 14th						
Safety rules for underwater activities	V	V	V			
Resolution 2015, July the 28th						
Safety rules for sport diving and leisure diving with Surface provisioning	V	V	V			
Order FOM/1144/2003						
Safety devices for leisure boats	V					
Order FOM/1076/2006						
Amendments Order FOM/1144	V					
UNE-EN ISO 9094:2016						
Firefighting protection in leisure boats	V					
UNE-EN ISO 15083:2003						
Pump system in leisure boats	V					
Royal Decree 98/2016						
Safety requirements in leisure boats	V	V				
UNE-EN ISO 12217-1:2013						
Evaluation and classification of stability and buoyancy.	V					
Royal Decree 804/2014						
Safety rules in leisure boats		V				
Real Decreto 457/2011						
Amendments RD1247/1999			V			
Royal Decree 1247/1999						
Applicable Regulation for Safety in passenger vessels			V			
SOLAS – Chapter III						

	Act 1			Act2	Act3	Act4
	L<24	L>24	>12 Pax			
Devices and life-saving equipment for freighters				V	V	V
SOLAS – Chapter II						
Structure, partitioned space used and stability for freighters				V	V	V
Royal Decree 1434/1999						
Regulation for examinations and inspections of the recreational boats	V					

Key

Act 1 – Sport activities

Act 3 – Lost fishing gear Collection

Act 2 – Floating Litter Collection

Act 4 – Environmental parameters monitoring

Table 5 Summary of the applicable regulation for each activity.

6 Conclusions.

The Works needed for the reassignment of a medium size fishing ship to carry out different activities than fishing in a sustainable way depend on:

- The operative requirements needed to carry out the restructuring activities with a quality criteria which allows the developers, ship owners and fishermen to be competitive to reach the needed market share.
- The requirements imposed by the implementing legislation to the vessel for each one of the activities proposed.

In general, the operating requirements for the reassignment of a fishing vessel to carry out the reconversion activities proposed are conditioned by:

- The specific forms and conditions of the cargo with which the fishing vessel was designed, very different to the ones the vessel will have with the new activity proposed. This can make that despite complying with the regulations, **its behaving in the sea would not be the better for passenger transportation or with the carrying out of leisure activities, compromising the comfort of the passengers.** In order to improve its behaving in the sea, it is convenient to make an exhaustive and individualized study of its dynamic stability and to evaluate the convenience of the installation of stabilizing blades.
- **The height of the freeboard, if it is big, it will be necessary the installation of ramps or Access platforms to help to the boarding and landing of the passengers and tourists to develop the activities of diving, etc.; Together with that, additional means will be necessary for the display and gathering of the equipment for the activities related to environmental parameters collection.**
- **The space available in the empowerment of the vessel,** because it will limit the number of **passengers** and the total final number of people on board and their accommodation.
- **The power is a compulsory requirement that the activities of floating litter collection or lost ghost nets and fishing gear collection,** where it is needed to trawl big heights and sizes. Anyway, we have to take into account that the greater power **goes together with a greater consume and subsequently to bigger associated costs.**
- The technology on board and the lifting equipment will be limiting for activities such as environmental parameters monitoring, collection of wastes ghost nets and lost fishing gears. The design and specific functionality of these elements installed on board makes their functionality difficult different than the usual tasks. To fix this situation it will be necessary the installation of a specific lifting equipment with an appropriate capacity and scope, like folding cranes among other things.
- The anchoring system is a key issue for leisure and tourism activities, because it is very important to ankle the ship in an easy and fast way, and in a safety ay in order to guarantee the current development of the activity, it may be necessary the installation of specific lifting means.
- The manoeuvrability required for floating litter collection activities to position the ship and to handle the collection device is high, being necessary, especially for bigger fishing vessels, the installation of systems for its improvement such as bow thrusters.

The **particular operational requirements for the fishing sector reassignment of a medium size fishing vessels operating in the Mediterranean coast** determined by each one of the activities, are shown as follows:

Leisure and Tourism. Sport Activities such as Diving and Recreational fishing

There are many reformations to be done to reassign the vessel for passenger transportation. Two main features are highlighted for a good operating: The first is the detailed study of the behaving of the vessel in the sea, because it is a critical point for the comfort of the passengers during the trip; the second one to be taken into account is the disposable anchoring system of the vessel, as the applicable regulations for fishing ships leaves to the Administrations the adaptation of this system in this kind of vessels, because due to their current activity they do not go usually to anchor in shallow waters. This is not the same thing for vessels devoted to tourism where anchoring is an important and key aspect for the safety.

Environment. Floating Litter collection

From a technical point of view, a fishing vessel can be devoted to floating litter collection with no more than the needed lifting means on board for the hoisting and lowering of things designed for that purposes. The meteorology and bathymetry of the place will determine the existence of recoverable floating wastes in a determined place and time. Meteorology is a relevant aspect because the rain is responsible for the arriving of great amounts of floating wastes to the sea and the marine currents determine the place where they can be located, etc. The location of watercourses through the coast, the bathymetry in coastal areas which together with the kind of sea floor will show the existence of marine canyons or other geographical features, will show where to find accumulated wastes.

Lost fishing gear collection.

In general, the fishing vessels, before being retired, have all the necessary fishing gears to collect the nets, but the acoustic equipment alone, has not been a very useful tool for the detection of those lost fishing gears, for this reason, it would be necessary to use other locating means such as SONAR, what increases highly the operative costs of both the equipment and the expertise staff for the interpretation of the obtained images. An alternative that would help for the location of gears is the installation of autonomous acoustic systems in the nets inside the monitoring ranges of the probes on board. The search and the locating should be done during the first month since the lost because this is the period when a bigger amount of the named ghost fishing is done. Its retirement is not recommended if the net is so much time in the sea bottom that marine organisms have grown on it.

Environmental parameters monitoring and helping services for Research.

The fishing ship appears to be a good choice for this kind of activities due to the high current demand that the oceanographic vessels have, together with their high operational costs, being the fishing vessels ones with less technological features but perfectly feasible for campaigns that do not need very specialized devices installed on board, but devices that can be boarded by the

scientists that charter the vessel. **It can be required the installation of additional media to help the display and collecting of the equipment.**

As far as **the requirements needed by the current regulation for the reassignment of medium size fishing vessels, it is not possible to establish a general list of the common requirements** for two reasons: First of all, a lack of a specific regulation that rules the change of activity in the fishing vessel, and secondly, a lack of a regulation for concrete restructuring activities. For that reason, **each step should be studied by the competent administration, in Spain is the General Management of the Merchant Marine, the one that can modify or exempt the fulfilment of a determined legislation.** For all the reconversion activities with shipments for more than twelve passengers it will be applied the regulation for Passenger ships, which implies a great difficulty for the fulfilment of all the requirements both for the economic costs and the technical feasibility. Particularly in reference with the four main fields analysed, it is highlighted:

Safety and Rescue. The requirements to be done depend on the number of passengers to board, for more than twelve passengers, the requirements are higher: For boarding up to twelve passengers, the reassignment of a fishing vessel into a leisure one or to a freighter, involves small changes in the safety devices on board such as the First aid kit change, life jackets for children in the case of leisure vessels, or an increase of the life rings depending on the sailing area to be shipped, etc. For more than twelve passengers, the vessel should comply with the safety requirements of the passenger ships that are much more demanding. And affect, among other elements, the number, kind and location of life jackets, boats and rescue rafts

Firefighting material and bilge bumps. Together with the ones for Safety, the requirements depend on whether the number of passengers is bigger or not than twelve. To board up to twelve people, it will be necessary to check and tune the fixed firefighting equipment, together with the mobile ones such as fire extinguishers, fire hoses, etc. For more than twelve passengers, the vessel should update its firefighting system and bilge bumps being possible the need of the installation of new bumps or an enlargement of their capacity, the installation of a new fixed firefighting system, etc.

Radio equipment: it could be necessary **to increase the number of VHF antenna**, and its corresponding Radar Transponders and to install them on board **depending on the sailing area.**

Stability: The requirements for fishing vessels are normally more restrictive than with Merchant ones, passenger or Leisure vessels. Anyway, the new cargo conditions for each particular case will be analysed, discussing with the Administration the conditions to meet. For more than twelve passengers transport, there are different partitioning requirements, leaking tests, testing of watertight bulkheads and cargo conditions, if apart from that, the overall length of the vessel is more than 24 metres, there exist requirements related to the floodable lengths after breakdowns.

7 Case of use – The fishing vessel Ciudad de Cartagena.

7.1 Description of the vessel.

- **Main features and brief summary of the vessel.**

It is a fishing vessel made from Steel in 1996 initially for trawl fishing. In 2005 it was transformed to focus on shrimp pots fishing in the Mediterranean Sea. The conversion operations taken into account substituted the trawling machinery into ones pot fishing ones, the stern gantry was dismantled and the portside windows from the superstructure were closed for the cold storage and freezes installation, together with some other not relevant operations for this study.

Its main features are:

Length between perpendiculars	19.50 metres
Overall Length	24 metres
Registered length	21.75 metres
Beam	6.30 metres
Moulded depth	3 metres
Design trim	1 metre
Lightship weight	143 Tm

Table 6 Main dimensions

In agreement with the International Regulation for the Human Being Safety in the sea, the vessel was classified in the third group, R class in coastal fishing (up to 60 miles from the coast) with a capacity for 10 crewmen.



Figure 2 Vessel Ciudad de Cartagena

As the Regulation requires, the ship was equipped with the following safety and rescue equipment:

Life Rafts	2 (SOLAS B) – With pointing signals and illuminating signals. With a 200% of the total capacity of the crew. Transferible (in less than 5 min).
Life Rings	2 –One with autopower light and the other with 27.5 M of tangling line.
Life jackets	12
Hand flares(pyrotechnic signals)	6
Rockets with parachute	6
Immersion suits	2
Radio beacons	1
First Aid Kit	Type B
Alarm System	General emergency alarm system powered by the energy sources, the main one and the emergency ones.
Bilge bumps	2¹²
Buckets	1⁸
Fire Extinguishers	3 stowed in the navigation bridge, kitchen Access and each accommodation of each deck. 3 4.5 kg dry powder extinguishers in the engine room.
Fire Bumps	1 principal + (1 additional)
Fire Hoses	2 CI Hoses

Table 7 Safety and rescue equipment of the fishing vessel CIUDAD DE CARTAGENA.

Apart from these equipment, the vessel disposes of this fishing equipment:

- An MC-600 model machine equipped with two 400mm of diameter aluminium beams.
- One side davit that incorporates a snatch block for pot ropes and cargo handling also activated by a hydraulic engine.

As far as Radio equipment is concerned, it disposes of:

- KODEN Radar modelMDC-3510
- Autopilot ROBERTSON model AP-35
- Navigation computer equipped with MAXSEA software, ARPA system and 3d mapping.
- GARWIN GPS model 128
- Satellite telephone INMARSAT.

7.2 Proposed activities and regulation to be met.

The proposed activities to be carried out by the vessel “Ciudad de Cartagena” are:

- Sport Activities (Fishing and Sport Diving).
- Floating Litter collection
- Lost fishing gear collection
- Environmental parameters monitoring

The vessel, having an overall length of less than 24 metres and with a maximum capacity of 12 passengers, will have to comply with the following current regulation:

	Act - 1	Act - 2	Act - 3	Act - 4
Royal Decree 1727/2007	V			

	Act - 1	Act - 2	Act - 3	Act - 4
Order from 1997, October the 14th	✓			
Resolution from 2015, July the 28th	✓			
Order FOM/1144/2003	✓			
Order FOM/1076/2006	✓			
Royal Decree 1185/2006	✓	✓	✓	✓
UNE-EN ISO 9094-1:2003	✓			
UNE-EN ISO 9094-2:2003	✓			
UNE-EN ISO 15083:2003	✓			
Royal Decree 98/2016	✓			
UNE-EN ISO 12217-1:2013	✓			
Royal Decree 804/2014				
Royal Decree 457/2011				
Royal Decree 1247/1999				
SOLAS - Capítulo III		✓	✓	✓
SOLAS - Capítulo II		✓	✓	✓
Royal Decree 1434/1999	✓			
Royal Decree 1837/2000	✓	✓	✓	✓

Key

Act 1 – Sport Activities

Act 3 – Lost fishing gear collection

Act 2 – Floating Litter Collection

Act 4 – Environmental parameters monitoring

Table 8 Summary of the regulation to be met by the “Ciudad de Cartagena” for activity change.

7.3 Adaptations needed to carry out the new activities and their estimated costs.

In the following chart, the needed investments to be carried out in order to reassign the vessel for each activity are detailed.

Labels	Act 1	Act 2	Act 3	Act 4
Investment				
Specific for activity				
Dive flag ALFA	✓			
Marker buoy	✓			
Basic fishing equipment formed by the set fishing rod + fishing reel + line and accessories	✓			
Different equipment (lures, lines, tools for the assemblymen...)	✓			
Aluminium or stainless steel ladder.	✓			
Steerable railing rod holder with 40 mm	✓			
Auxiliary inflatable boat - Mercury 470 HD XS Heavy Duty + Mercury F 25 ML EFI	✓			
Scuba cylinders - 15 l	✓			
Waste deposits - Model Big Box Altos Series CTR With ventilation grilles and covered		✓	✓	

Labels	Act 1	Act 2	Act 3	Act 4
Accessories (steel cables, hooks,...) for the lifting of wastes with the existing means of the vessel		✓	✓	
Device (type skimmers or scoop nets) for the collection of floating wastes. Useful for litter collection		✓		
Tools for the collection of nets			✓	
Stainless Steel structure for the stowage of the scuba cylinders				
Lifting beams + Accessories for its installation				
Empowerment				
Accommodation – Settlement of the accommodation areas of the vessel to adapt them to the comfortability requirements of the passengers.	✓			✓
Renovation of the kitchen area in order to adapt it to the activity.	✓			✓
Sanitation and adaptation of the toilets of the vessel.	✓			✓
Other costs				
Initial examinations	✓			✓
Elaborated and signed Project by the qualified and competent technician, in which according to the Maritime Management , it is proved that the vessels meet with the requirements established by the Order FOM/1144/2003	✓			✓
Safety and Rescue				
Lifeguard rings certified by SOLAS	✓			✓
Buckets CI	✓			✓
Life raft - TYPE B FOR 100% of the crew	✓			✓
First Aid Kit for life rafts	✓			✓
Certified life jackets with 150 N	✓			✓
Certified naval fire extinguishers Type 21B	✓			✓
Certified naval fire extinguisher Type 55B	✓			✓
Pyrotechnics kit for areas 3 and 4	✓			✓
Certified light for lifeguard rings by SOLAS	✓			✓
Varied sailing equipment for the operating of the vessel (ropes, boath hooks...)	✓			✓
Tangling for lifeguard rings	✓			✓
Compulsory sailing equipment required by legislation (compass, binoculars, nautical charts...)	✓			✓
Security railings to avoid the fall of the passengers and to define the risk areas	✓			✓
Protection from possible falling areas with access barriers	✓			✓
Sign posting for dangerous/ risky areas	✓			✓

Table 9 Summary of the modifications to be done in the vessel.

7.4 Investments to be done to reassign the vessel for activities other than fishing.

An economical estimation is shown as follows for the implementation of the proposed activities in this Project by the ship “Ciudad de Cartagena “.

- **Leisure and Tourism Activity– Sport Activities– Diving.**

Actividades deportivas - Buceo	
Inversión	
Especificas actividad	
Bandera ALFA	7,93 €
Boya señalización	14,80 €
Escala de Aluminio o Ac. Inox.	519,55 €
Neumática Auxiliar - Mercury 470 HD XS HeavyDuty + Mercury F 25 ML EFI	5.743,80 €
Botellas Buceo - 15 l	2.823,14 €
Estructura de Acero Inox para la estiba de las botellas de aire	1.400,00 €
Total Especificas actividad	10.509,23 €
Habilitación	
Acomodación - Arreglo de las zonas de acomodación de la embarcación para adaptarlas a los requisitos de confort de los pasajeros.	6.300,00 €
Reforma de la zona de cocina para adaptarla a la actividad.	1.680,00 €
Saneamiento y adaptación de los aseos de la embarcación.	1.500,00 €
Total Habilitación	9.480,00 €
Otros Gastos	
Inspecciones Inicial proyecto elaborado y firmado por técnico titulado competente, en el que a juicio de la Administración marítima se demuestre que la embarcación cumple con lo establecido en la Orden FOM/1144/2003	3.000,00 €
Total Otros Gastos	4.215,00 €
Seguridad y Salvamento	
Aro Salvavidas Homologado por SOLAS	21,53 €
Balde CI	19,01 €
Balsa salvavidas - SOLAS TIPO B para el 100% de la tripulación	4.358,63 €
Botiquín Tipo Balsa de Salvamento	29,71 €
Chalecos Salvavidas Homologado de 150 N	687,60 €
Extintor Naval homologado Tipo 21B	42,15 €
Extintor Naval homologado Tipo 55B	27,25 €
Kit Pirotecnia Zona 3 y 4	189,26 €
Luz para aro salvavidas homologada por SOLAS	27,56 €
Material náutico diverso para la operación de la embarcación (cabos, bicheros,...)	600,00 €
Rabiza para aro salvavidas	40,50 €
Material náutico obligatorio por normativa (compás, prismáticos, cartas y libros náuticos,...)	400,00 €
Barandillas de seguridad para evitar la caída del los pasajeros y delimitar las zonas con de riesgo	8.100,00 €
Protecciones de zonas con caída mediante barreras de acceso	400,00 €
Señalética para las zonas peligrosas y/o e riesgo	50,00 €
Total Seguridad y Salvamento	14.993,19 €

Table 10 Leisure and Tourism Activity – Sport Activities – Diving

• **Leisure and Tourism Activity – Spot Activities –Recreational Fishing.**

[-] Actividades deportivas - Pesca deportiva	
[-] Inversión	
[-] Especificas actividad	
Equipo básico de pesca compuesto por el Conjunto de caña + carrete + línea + accesorios	2.400,00 €
Equipos varios (señuelos, líneas, herramientas para el montaje,...)	400,00 €
Portacañas Barandilla Orientable 40 mm	525,12 €
Tangones + Accesorios para su instalación	958,33 €
Total Especificas actividad	4.283,45 €
[-] Habilitación	
Acomodación - Arreglo de las zonas de acomodación de la embarcación para adaptarlas a los requisitos de confort de los pasajeros.	6.300,00 €
Reforma de la zona de cocina para adaptarla a la actividad.	1.680,00 €
Saneamiento y adaptación de los aseos de la embarcación.	1.500,00 €
Total Habilitación	9.480,00 €
[-] Otros Gastos	
Inspecciones Inicial	1.215,00 €
proyecto elaborado y firmado por técnico titulado competente, en el que a juicio de la Administración marítima se demuestre que la embarcación cumple con lo establecido en la Orden FOM/1144/2003	3.000,00 €
Total Otros Gastos	4.215,00 €
[-] Seguridad y Salvamento	
Aro Salvavidas Homologado por SOLAS	21,53 €
Baldes CI	19,01 €
Balsa salvavidas - SOLAS TIPO B para el 100% de la tripulación	4.358,63 €
Botiquín Tipo Balsa de Salvamento	29,71 €
Chalecos Salvavidas Homologado de 150 N	687,60 €
Extintor Naval homologado Tipo 21B	42,15 €
Extintor Naval homologado Tipo 55B	27,25 €
Kit Pirotecnia Zona 3 y 4	189,26 €
Luz para aro salvavidas homologada por SOLAS	27,56 €
Material náutico diverso para la operación de la embarcación (cabos, bicheros,...)	600,00 €
Rabiza para aro salvavidas	40,50 €
Material náutico obligatorio por normativa (compás, prismáticos, cartas y libros náuticos,...)	400,00 €
Barandillas de seguridad para evitar la caída del los pasajeros y delimitar las zonas con de riesgo	8.100,00 €
Protecciones de zonas con caída mediante barreras de acceso	400,00 €
Señalética para las zonas peligrosas y/o e riesgo	50,00 €
Total Seguridad y Salvamento	14.993,19 €

Table 11 Leisure and Tourism Activity – Sport Activities –Recreational Fishing.

• **Floating Litter Collection Activity.**

Etiquetas de fila		
[-] Recogida de residuos		
[-] Recogida de residuos		
[-] Inversión		
[-] Especificas actividad		
Depósitos para residuos - Modelo Big Box Altos Serie CTR Rejillados - Con Tapa	544,00 €	
Accesorios (cables de acero, ganchos,...) para la elevación de los residuos con los propios m	1.000,00 €	
Dispositivo (tipo copo y/o salabre) para la recogida de los residuos flotantes que se encuen	2.000,00 €	
Total Especificas actividad	3.544,00 €	

Table 12 Floating Litter Collection Activity.

- **Lost Fishing gear collection activity.**

Etiquetas de fila		Suma de Total
[-] Recogida de artes de pesca perdidos		
[-] Recogida de artes de pesca perdidos		
[-] Inversión		
[-] Específicas actividad		
Depósitos para residuos - Modelo Big Box Altos Serie CTR Rejillados - Con Tapa		544,00 €
Accesorios (cables de acero, ganchos,...) para la elevación de los residuos con los propios medios existentes en la embarcación		1.000,00 €
Dispositivo (tipo copo y/o salabre) para la recogida de los residuos flotantes que se encuentren Útil para la recogida de residuos		2.000,00 €
Total Especificas actividad		3.544,00 €

Table 13 Lost Fishing gear collection activity.

- **Enviromental parameters monitoring activity.**

Etiquetas de fila		Suma de Total
[-] Monitorización de parámetros ambientales		
[-] Monitorización de parámetros ambientales		
[-] Inversión		
[-] Habilitación		
Acomodación - Arreglo de las zonas de acomodación de la embarcación para adaptarlas a los requisitos de confort de los pasajeros.		6.300,00 €
Reforma de la zona de cocina para adaptarla a la actividad.		1.680,00 €
Saneamiento y adaptación de los aseos de la embarcación.		1.500,00 €
Total Habilitación		9.480,00 €
Otros Gastos		3.000,00 €
[-] Seguridad y Salvamento		
Aro Salvavidas Homologado por SOLAS		21,53 €
Baldes CI		19,01 €
Balsa salvavidas - SOLAS TIPO B para el 100% de la tripulación		4.358,63 €
Botiquín Tipo Balsa de Salvamento		29,71 €
Chalecos Salvavidas Homologado de 150 N		627,44 €
Extintor Naval homologado Tipo 21B		42,15 €
Extintor Naval homologado Tipo 55B		27,25 €
Kit Pirotecnica Zona 3 y 4		189,26 €
Luz para aro salvavidas homologada por SOLAS		27,56 €
Material náutico diverso para la operación de la embarcación (cabos, bicheros,...)		600,00 €
Rabiza para aro salvavidas		40,50 €
Material náutico obligatorio por normativa (compás, prismáticos, cartas y libros náuticos,...)		400,00 €
Barandillas de seguridad para evitar la caída del los pasajeros y delimitar las zonas con de riesgo		- €
Protecciones de zonas con caída mediante barreras de acceso		400,00 €
Señalética para las zonas peligrosas y/o e riesgo		50,00 €
Total Seguridad y Salvamento		6.833,02 €

Table 14 Environmental parameters monitoring.