Catching THE Potential

D4.5 Evaluation report first and second pilot in Spain

Monday, 27 March 2023

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1. INTRODUCTION

Catching the potential is a project that started in 2019. The goal of this project is to develop a sustainable fisheries training standard for fishers in Europe (or even the world). As input for this standard, the project conducts sustainable fisheries trainings in seven European member states spread over the various sea basins located within the EU. In these member states different partners have been identified to develop and conduct the training pilots.

Two partners within the project represent the European fishing industry. These partners are Europêche and PFA, and they will contribute to the project through assisting in the development and implementation of the standard at the European level.

To make the training standard effective and efficient, we need to evaluate the pilots in the seven different European member states. This report describes the lessons learned and the evaluation process of the sustainable fisheries training pilot in Vigo, Spain with partner CETMAR.

2. QUICK SCAN– GETTING TO KNOW OUR PARTNERS

A quick scan was done for every partner at the start of Catching the Potential. The goal of this quick scan is to collect some background information on all partners in the project and the fisheries sector in the various EU member states. Two main questions were investigated:

1. **Background partner**: Who are our partners? What do they do?
2. **Background fishing sector**: What, how, where do they fish? What are relevant/sensitive topics that require attention in the development of the training?

The following checklist with topics was followed during the quick scan:

Background partner

1. School or institute
2. Size (number of students, age, teachers)
3. Type of education, level, durance, theoretic/practical, structure and internships
4. Method/mission

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5. Relation to fisheries sector
6. Language
7. Country specifics

Background fishing sector

1. Size of the fisheries sector (economics, employment, ships)
2. Characteristics fisheries sector (type of fishery, target species, size of companies, number of ships, innovations)
3. Fishing grounds (location, status stocks, issues)
4. Geographical/regional spread
5. Challenges, issues, threats, opportunities?
6. Country specifics

Because of the COVID pandemic, the first meeting between ProSea and CETMAR took place online on February 5th, 2020.

2.1 CETMAR - CENTRO TECHNOLOGICO DEL MAR

CETMAR is a public foundation aimed at promoting the competitiveness of marine sectors by acting as an interim organization between research, education and training organisations, administrations, and industry. Its scope extends at national, European and international level. The Centre is organised around eight departments, and among those, the Training department is the one involved in the CTP project. This department develops education and training activities for the maritime sector, such as the identification of skills needs, design of training materials and tools, and ocean literacy activities. Both the coordinator (Lucía Fraga) and the administrator (Flor Arenaza) attended this first meeting.

Since CETMAR does not educate fishers themselves, they reached out to the local public Vocational Education and Training (VET) Centre, the fishing academy of Vigo. This fishing academy is the "Instituto Martítimo Pesquero del Atlántico" or IMPA.

2.1.1 SCHOOL/INSTITUTE

The "Instituto Politécnico Marítimo Pesqueiro do Atlántico" (IMPA) is a maritime academy that offers a variety of courses, ranging from basic safety (two weeks) to full engineer or fishing skipper programs (2 years). In addition to offering training for fishers in Galicia, it is the Spanish National VET Reference Centre for fishing and

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navigation (https://crnpescaenavegacion.xunta.gal/es). IMPA was represented in the meeting by Javier Sánchez Girón, teacher's coordinator.

2.1.2 SIZE (NUMBER OF STUDENTS, AGE, FOCUS GROUP, TEACHERS)

Around 200 students are attending lessons from September to June (these are the ones studying the formal degrees that last two years). Moreover, IMPA has another 600 students participating in professional courses of different length that are provided between September and June. On a regular day there are about 300 students attending classes at the school.

Most students at IMPA come from the region and from families who are still active or were active in the past in the fishing industry.

2.1.3 TYPE OF EDUCATION, LEVEL, DURATION, THEORY/PRACTICE, STRUCTURE, INTERNSHIPS?

IMPA offers different courses whose duration vary according to the professional skills and competencies. In this way, IMPA offers the basic training for a fishing seafarer or shellfish catcher as well as the advanced training for a master or chief engineer of a fishing vessel and all the intermediate levels of training in between.

The duration of the training is related to its level; the basic training for a fishing seafarer or shellfish catcher would be undertaken in two weeks and the training for an engineer or fishing skipper would take two years to complete including a two-month internship (between April and July). All the courses at IMPA are fulltime and the theory and practice ratio is around 50:50. At least 1 day of the week the students have practical lessons as well.

The basic training for a fishing seafarer or shellfish catcher during the first year includes: health care on board, dispatch and administration of the ship, stability, trimming and stowage of the ship, training and job orientation, English, manoeuvring techniques, navigation techniques and communications. During the second year: business and entrepreneurship, maritime security, facilities and services, coastal fishing, guard procedures and training in workplaces.

The advanced training for a master or chief engineer of a fishing vessel includes different subjects: administration and management of the vessel and the fishing activity, manoeuvring and stowage, navigation, government and communications on the vessel, organization of health care on board and English during the first year. In

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the second year the subjects are: emergency control, business and entrepreneurship, implementation project of a maritime transport route, bridge guard, high-altitude and high-altitude fishing, and formation in workplaces as well.

The courses offered by IMPA are in person courses although since 2017 online distance courses of basic training for fishing seafarers are also available.

More details on the training offer are available on the webpage of the school: http://www.edu.xunta.gal/centros/institutopesqueiroatlantico/node/188.

2.1.4 LANGUAGE

Most students have a basic understanding and knowledge of English. However, their level of English is not sufficient to participate in a course in Englis. The pilot will have to be conducted in Spanish.

2.1.5 COUNTRY SPECIFICS

IMPA is open to conduct pilot courses at their institute and has the facilities to do so. The best time to conduct the pilot course would be the first two weeks of September or the last two weeks of June since the students don't have to attend classes; the regular classes usually begin the third week of September and end the third week of June.

For pilot courses it would be best to focus on the students who are about to enter the second year. This is about 100 students.

2.2 SPANISH FISHERIES SECTOR

No information on the Spanish fisheries sector was shared during the quick scan. The focus was on clarifying the training curriculum in Vigo and setting up a working relationship with IMPA. Information on the Spanish fisheries sector was collected during meetings after the quick scan and through the visit to Vigo.

3. FOR ALL COUNTRIES: MATERIALS AS STARTING POINT

The overall goal of Catching the Potential is to develop an international training standard for all fishers on sustainable fisheries training. To make sure we can

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compare all pilot trainings given with our partners, it is important to have the same starting point. To determine this starting point, we looked at all available best practices on sustainable fisheries training through a desk study (D2.2). In addition, we made an overview of all important rules and regulations for fisheries that we should incorporate in the training material (D2.1).

Through this desk study we identified that several countries provide training on various aspects of sustainable fisheries to fishers, but that the 'Fishing with a future' training is offering the most holistic approach to sustainable fisheries training. The desk study also revealed that some additional topics should be added to this training, mainly on social sustainability topics such as:

1. Fair wages
2. Save working environment.
3. Slavery
4. Corruption

Consequently, CTP decided to use the ProSea materials as a starting point for the development of the pilot trainings. ProSea translated the Dutch materials in English, included the additional social aspects, added an explanation of the content for all the slides and made 9 presentations available for all the CTP partners in basecamp:

1) Introduction Fishing into the Future
2) Marine ecology
3) Fisheries management
4) Oil and solid waste
5) Fishing and society
6) Communication
7) Overview air emissions and climate change
8) Fisheries economy
9) Sea the future

These PowerPoint presentations in English were included in the first evaluation report (D4.1). Due to their size, we did not include them again here, but we have included the Spanish presentations used in the pilot course.

The next step for setting up the pilot course in Spain was for ProSea to share the starting point (presentations and course approach) and for CETMAR to translate the content and adjust it to the local circumstances.

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The Spain pilot was the fifth pilot in the CTP project and every pilot has been a learning experience. The gained experiences helped in the organisation of the pilots, although the situation in Spain was very different than the other pilot countries, for example because this was the first country where we closely cooperated with a fishing academy that was not part of the CTP consortium. It was decided to use the same basic educational materials and course approach for the pilot, because it was seen as important to start from the same basis, so the results of the pilots in the different countries were more comparable.

4. LOCAL SITUATION & COMMUNICATION WITH LOCAL PARTNERS (TASK 4.1.)

After the initial contact was established between CTP partners ProSea and CETMAR and the maritime college IMPA in Vigo, CETMAR prepared a program and time schedule for a visit from the ProSea team to Vigo in April 2020. The aim of the visit was too getting to know each other, present the ProSea starting point and discuss how to customize the course for use at the maritime school in Vigo. Unfortunately, the visit was cancelled due to the COVID pandemic and was rescheduled several times to finally take place in May 2022.

4.1. COMMUNICATION BETWEEN CETMAR AND THE MARINE ACADEMY (IMPA)

After making the initial contact with the maritime academy IMPA, CETMAR kept up the communication while the project was waiting for the pandemic restrictions to lift. The communication was challenging due to many personnel changes at the school from 2020 and 2022:

Until June 2020, Javier Sánchez Girón (teacher's coordinator) was the contact person and contributed to gather information on the trainings developed in the IMPA. He participated in several meetings with CETMAR and PROSEA.

The next academic year, Javier left IMPA, and the Director, Ms Engracia Trillo replaced Javier as contact person while organizing a new group of teachers to get involved in the project.

From January to June 2021, several teachers participated in the review of overlaps between the Spanish and Dutch trainings addressing fisheries sustainability:

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Engracia Trillo Varela (Director), Teresa López Iglesias (English teacher), Margarita Espejo de la Fuente and Mª Dolores López Aggreko (Biology teachers). At this point, IMPA had not been able to hire a fisheries teacher.

In September 2021, Ms Engracia Trillo retired, and Ms. Ana Otero replaced her as director and as contact person for the CTP project. Other teachers involved in the planning and organisation of the pilot were were Consuelo Romar (teachers' coordinator), Mª Dolores López Aggreko (biology); Adrián Comesaña (Fisheries, started in January 2022) and Teresa López Iglesias (English).

4.2 VISIT PROSEA TEAM TO VIGO

Erik Bogaard and Isabelle Parqui from ProSea visited Vigo from May 2nd – May 4th, 2022. CETMAR prepared a program that included several meetings between ProSea and CETMAR to discuss the Vigo fishing sector, course content and organisation of the pilot course and several visits to relevant stakeholders in the fishing industry, including the ship owner's association ARVI, a large and small fish auction, a local fisheries action group and Aixola Vocational Training Centre. The last day CETMAR organised a meeting with maritime academy IMPA that was attended by CETMAR, ProSea, three teachers and management from IMPA and two external organisations that might be involved as course leaders for the pilot course. These two external organizations were: "ARDORA Formación" and "Residuos Cero". Both organizations were contracted by CETMAR and a had crucial role during the development of the project and as the main trainers during the CTP course, as it will be explained later.

PROGRAM VIGO VISIT – DAY 1: MONDAY MAY 2ND

9:00 - Meeting with Lucia at CETMAR – Review of the agenda and progress in the preparation of the Training course.

12:00 - Visit to Aixola Vocational Training Centre for boatbuilding services, addressed to the fishery sector. Aixola updates traditional training with new technologies in the following areas: timber, composites, marine engineering, sails and inflatable rubber, and fishing nets.

15:00 - Visit to the fish auction facilities in Baiona (exact schedule depending on the tide; from 15:00 to 16:00). First sale of barnacles. Meeting with a representative of the Fishermen's guild and barnacle gatherers.

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18:00 - End of the day.

PROGRAM VIGO VISIT – DAY 2: TUESDAY MAY 3RD

06:30 - Visit to Vigo Fishing Port– Visit the fish market facilities (offshore and artisanal fisheries). Visit to mini hatcheries for seafood.

08:30 - Meeting with ARVI (the Ship owners' association) at the Port of Vigo.

9:30 - Visit of fish shops in the Port.

12:00 - Meeting in CETMAR to exchange on the activities related to sustainable fisheries:

- CETMAR presentation: CETMAR and its lines of activity related with marine noise, marine litter, international cooperation to promote sustainable fisheries, and green skills.
- PROSEA presentation: PROSEA and CTP project. Advancements in the creation of a sustainable fishing training standard.

13:30 - End of the day.

PROGRAM VIGO VISIT – DAY 3: WEDNESDAY MAY 4TH

09:30 - Meeting at Instituto Politécnico Marítimo Pesqueiro (Fishing School) + Visit to the Facilities and the training boat. See more details below:

11:30 - Visit to the fishing boat.

13:00 - Meeting with the representatives of the Fisheries Local Action Group in the area (FLAG 7).

14:00 - Lunch at el Albatros.

MORE DETAILS OF MEETING WITH TEACHERS WEDNESDAY 04-05-22

PARTICIPANTS:

- IPMPA (4p): Consuelo Romar, Head of teachers; Mª Dolores López Aggreko, biology teacher; Adrián Comesaña, Fishing teacher, Teresa López Iglesias, English teacher.
- PROSEA (2p): Erik Bogaard and Isabelle Parqui.

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- CETMAR (5p): Lucía Fraga, Flor Arenaza and Gloria Mallou (Training Department).
- ARDORA (2p): Ana Pérez and Rita Pesqueira.
- Asociación Vertidos (1p): Juan Pablo Pérez Gómez

SUMMARY:

During a first round, all attendees introduced themselves and their organisations:

CETMAR promotes the sustainability and competitiveness of marine sectors, acting as an interface organization between research, education and training organisations, administrations, and industry. CETMAR is partner of the CTP project, with the commitment of facilitating the involvement of the IMPA in the consortium.

The Instituto Politécnico Marítimo Pesqueiro do Atlántico (IPMPA) is a maritime academy that offers a variety of courses, ranging from basic safety (two weeks) to full engineer or fishing skipper programs (2 years). The Centre started its activity in 1965, and it is in a strategic emplacement, they are teaching about 1,000 students per year (considering the students of academic courses, VET EQF levels 4 and 5), and non-academic trainings and STCW-f trainings (EQF levels 1 to 3). One of the most demanded courses is the one for sailor-fisher, so they start a new course each month of about 20 students each one. Other courses that were developed in the centre are for example: fishing captain, naval mechanical, coastal captain, social abilities, undertaking, first aids... This centre is supervised by Consellería de Educación, Consellería de Pesca and Capitanía Marítima and it is a reference centre since 2016.

ARDORA is a cooperative providing training services to the maritime and fisheries sector, which has been involved in the training for the fisheries sector in Galicia since 2004. They are specialised in life-long learning activities addressed at working adults and sustainability with a transversal focus on their activities. They have been working in sustainable fishing for example developing courses or creating the label “PescadeRías” among other activities.

VERTIDOS CERO (*ZERO DISCHARGES Association*) conduct activities aimed at minimizing marine litter in Galicia:

- Activity involving the fishing fleet for collaborating in the passive litter fishing: fishing boats provide to the Association the litter captured in their nets during

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their fishing activity. The associates identify the type of litter and provide information for its analysis and manage the litter for its recuperation.

- Preparation of the Spanish National Plan for marine litter management, and part of its working groups. Thinking about different options to compensate fishermen for their collaboration in fishing for litter activities are at present being discussed.
- Active fishing for litter is at present receiving economic compensations in regions as Galicia, but there is no consensus if this is the best approach: shouldn't fishermen go to the sea only for fishing fish, instead of fishing litter? Would they prefer to fish for litter instead than fish?
- Passive fishing for litter: could be compensated indirectly as with taxes reductions.
- New Spanish National regulation.

ProSea is an educational foundation from the Netherlands that has been developing training courses since 2001 all over the world. Their aim is to teach fishers in matter of sustainability. They already implemented their courses in The Netherlands, Belgium, and Spain; since 2020 they are promoting the CTP project to implement these trainings in more countries and create a STCW-F standard. They came to Vigo to fine tune the details of the course implementation in collaboration with CETMAR at the IMPA. Since the start of the project CTP shared material to develop the courses; this will be a first approach to be adjusted by the teachers when necessary.

CONCLUSIONS OF THE MEETING:

All agreed to implement the pilot course at IMPA in the next academic course 2022-2023.

DETAILS OF THE COURSE: CATCHING THE POTENTIAL

The idea was to develop **2 pilot courses in Autumn 2022** addressing the following students:

- Higher level: Senior Technicians in Sea Transport and Deep-Sea Fishing – after this course students are qualified to work as first officer or bridge officer on fishing vessels without any limitation and as captain or skipper on fishing vessels of no more than 50 meters in length.

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- Medium Level: Technicians in Navigation and Coastal Fishing – after this course students are qualified to work as officer or first officer on fishing vessels of no more than 50 meters in length and as captain or skipper in fishing vessels of no more than thirty meters in length in coastal waters.

All agreed on 3 – 21 October 2022 as the course dates with the following characteristics:

- Course during Biology lessons (2x) and Fisheries lessons (2x).
- Total time is 10 hours, divided over 4 days during a three-week period.
- Last two days in smaller groups as the activity in the boat has limitations in the number of crew.
- Teachers from IMPA have been involved in adjusting the materials for Vigo and were very keen to integrate the contents and methodologies in their own lessons at IMPA in the future. However, they did not feel comfortable teaching this pilot due to lack of knowledge and experience. They chose to experience the courses as observers themselves first.
- Pilots taught by two external teachers from ARDORA and VERTIDOS CERO (*ZERO DISCHARGES Association*) who were present at the planning meeting (see descriptions above). They will be contracted by CETMAR under the frame of the CTP project.
- PROSEA shared the materials that have been used for a similar course from before the CTP project in Ondarroa, at the Basque country, which are in Spanish but will require slight adaptations to the Galicia situation. The layout of the presentations required an adaptation to the CTP project.
- Overview of program:

Training content	**Description**	**Time (min)**	
Day 1			
Introduction - global context, sustainable development	Background story on why the world is talking about sustainable development and the participants are explained what it means for fishers (Triple P approach).	30	

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Opinion workshop	Participants are asked for their opinion on sustainability in a workshop.	30	Fisheries class
Fisheries Sustainable Economics (Blue Economy)	In fisheries economics we go into detail on the fishing fleet, supply chain and how fisheries earn an income with fishing. We discuss how this is changing because of sustainable development (Profit P).	90	
Day 2			
Environmental challenges - Climate change (Air Emissions, solid waste)	The fisheries are facing environmental challenges. We explain what the challenges are and what is being done to address these challenges.	50	Biology class
Marine Ecology	Crash course ecology: Why is the ocean important? How does it work? (Planet P).	50	
Image and identity workshop	The power of society. We discuss the reputation of fishers. What is determining your reputation? How is the acceptance of society drive your fishing practice? (People P).	50	
Day 3			
Tragedy of the commons - workshop	The concept of fisheries management is introduced with a game (candies are fishes and spoons are vessel).	30	Biology class
Fisheries Management	We explain the why, how and by who fisheries are managed. Cooperation between fishers,	50	

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	fisheries scientist and fisheries managers is key. (All 3P's).		
Communication - training	Communication training with an actor to make participants aware of the importance of communication.	70	
Day 4			
Practical activity: Fishing for litter	We could propose to show a specific device designed for fishing litter (developed). This activity needs to be done in groups due to the maximum number of people that can go in the boat at the same time.	120	Fisheries class
Fishers of the future - workshop	The course is concluded with a workshop 'Fishers of the future', where participants are challenged to come up with a solution for a challenge. What can you do to make the fisheries more sustainable?	30 Addressed as an assignment?	

SOME IDEAS THAT CAME UP:

- Make an exposition of all the litter captured in the activity of the boat in the hall of the IMPA.
- Best training is always in person.
- Customize content to Vigo.
- Involvement of local network (fishing sector / science institutes/ cofradías).

DETAILS OF THE TRAIN THE TRAINER SESSION:

The Instituto Politécnico Marítimo del Atlántico de Vigo was named a National Reference Center for Fishing and Navigation in Spain. The National Reference Centers are public Centers whose objective is to carry out innovative and

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experimental actions in professional training, to make it more competitive and capable of responding more quickly to the needs demanded by the labor market.

CTP and IMPA are exploring possibilities to integrate the CTP sustainable fisheries course in the activities proposed as a Spanish Reference VET Centre for Fisheries for 2023, which would mean that CTP would assist IMPA in organising a dedicated training session about sustainable fisheries training for teachers from other fishing academies in Spain. This would be a fantastic step in the implementation, not only in Vigo, but in Spain overall.

The pilot course for teachers would be developed in 2023, the best date for it would be early July. CETMAR has address this proposal with the new Managing team of IMPA and a proposal has been submitted. In case of acceptance, the train the trainer course would be part of the activities of IMPA as a National Reference Centre and therefore the involvement of IMPA would be funded by the Reference Centre program (CNR). The CTP project would contribute by facilitating the train-the-trainers course through time investment of CETMAR and ProSea and, maybe, hiring the same external trainers that conducted the pilot course.

To be part of the program, the course must fulfil the following features:

- The course will be 20 hours minimum (up to 100).
- 15 VET teachers from the maritime area attending as a minimum, the ideal number will be 20 and the maximum is 50.
- Teachers attending are hosted in the IMPA residence and receive the training for free. They must pay their travel.
- The program pays for the teachers developing the course.

The program of the course could include information about the new legislation STCW-F and the new legislation about the reception of litter in ports: “Real Decreto 128/2022 del 15 de Febrero, “sobre instalaciones portuarias receptoras de desechos de buques”. Since the application of the new law all the ports must receive the litter produced in the vessels.

Fisheries training is quite traditional. The sustainable fisheries training in CTP includes many active elements and the program of the train the trainers course could include a section using active methodologies in lessons, In addition, content from other relevant EU projects could be included, for example from the Interreg project ‘Clean Atlantic’- The fight against marine litter in the Atlantic Area http://www.cleanatlantic.eu/es/.

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NOTES AND CONCLUSIONS FROM THE VIGO VISIT (PROSEA):

Fishing is an extremely important sector in Galicia. Most fishing is small-scale and 67% of Galician fishers is between 35-54 years old. The majority of fishers is Spanish. Other nationalities include Indonesia (3.4%), Senegal (3%), Morocco (1.9%) and Peru (1.2%).

There are 60 auctions in Galicia. None of the auctions is online, but all auctions are developed with on-line support and the results available on-line in the same moment. Buyers cannot buy directly form ships, all sales go via the auction. They can negotiate with the fisher and then at the auction they can get it for the price that was agreed on if it doesn't sell. Otherwise, buyers need to be registered as an official buyer (restaurant etc.) and officially buy from the auction.

There are several initiatives coupling small scale fisheries with tourism and other initiatives for activities like kayaking and sports for younger generations to get them out of drugs – how to get them involved with the ocean that doesn't have to do with fishing.

'Pesca de rias' is a label that proves the fish has been caught in Galicia and is as fresh as 24h. The label is voluntary. Fishers must certify all their catch, they cannot certify part of your catch.

5. PREPARATION PILOT TRAININGS IN SPAIN (TASK 4.2)

5.1 CUSTOMIZING COURSE CONTENT

After the last meeting in Vigo, CETMAR started to translate and adapt the contents of the course. Adapting the course meant adjusting the content to the local fishing sector, supply chain and the local marine environment. This included changes to the fishing economy lecture and fishing management to the reality of fishing in Galicia. In addition, customizing the content meant including as many examples and illustration to the Galician context.

In 2019, before the CTP project started, ProSea conducted a sustainable fisheries training in Ondarroa in the Basque Country, Spain. Therefore, some of the course materials were already available in the Spanish language. ProSea made these

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materials available and CETMAR used these as the starting point, together with the starting set of CTP materials in English.

For adapting the contents, we collaborated with Rita Pesqueira, from ARDORA Formación, as she would be teaching the classroom parts of the course. From CETMAR we sent the material to her, and she started to translate the material and adapt the contents to the reality of the fishing sector in Galicia by giving local examples and personalizing the contents. While adapting, we found out that Galicia is one of the most important European Union (EU) fishing regions. As in a study of 128 European coastal regions, Salz & Macfadyen[1] pointed out that Galicia is the region with the highest employment and dependence on income from fishing sectors. There are around 60 ports and landing points with a fleet of approximately 4,800 ships[2] (representing 42 % of the Spanish fleet). Most of the crew members are part of the small-scale fishing strand, which represents a great social importance for the Galician coastal populations.

Rita made the changes to the lectures and then sent the new presentations to be revised by CETMAR and by ProSea. CETMAR added their experience encouraging respect for the marine environment and its resources through training, research, and innovation. When we had the final versions, we shared them with all the partners and with the teacher of IMPA. For doing that we create a Drive folder with all the partners and all the contents were uploaded there.

In relation with the practical lesson of litter fishing we collaborate with Juan Pablo from Vertidos Zero and for this session we didn't need a Power Point presentation. The preparation of this lesson was more related with solving practical problems. This section of the course was intended to create a practical approach to the management of marine litter on board. The intention is to raise awareness on the impact of marine litter and prepare the future fishers for the management of garbage captured during the fishing activity, also known as *passive litter fishing*. The preparation of this part included aspects like:

- Organising transport of the net from TECNOPESCA (the net was made there) to the boat Valentín Paz Andrade.
- Get big bags to collect waste and take it to the ship.
- Arrange a container to deposit the waste caught at the port.

[1] Salz, P. & Macfadyen, G. (2007). Regional dependency on fisheries. Study IP/B/PECH/ST/IC/ 2006-198. Brussels: European Parliament's Committee on Fisheries

[2] According to data retrieved from the online platform on fishing in Galicia (Plataforma pescadegalicia.gal, Xunta de Galicia https://www.pescadegalicia.gal

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- Obtain permission from the maritime captaincy to use the garbage fishing tackle.
- Consider the weather conditions and availability to set the date of boat departures.

5.2 PRACTICAL PREPARATION

CONTRACTING COURSE LEADER AND LECTURERS:

CETMAR does not employ trainers, ProSea trainers did not speak Spanish and for the teachers of IMPA the content of the course was too unfamiliar to be able to teach the pilot course. Therefore, CETMAR hired external trainers from ARDORA Formación (Rita Pesqueira) and Vertidos Cero (Juan Pablo).

- Rita Pesqueira already had experience as a trainer for the fishing industry, and had knowledge and experience working with aspects of sustainable fisheries (for example certification of fish). She was hired to be the trainer of the 3 theory classroom sessions.
- Juan Pablo is an expert in the fight against marine litter and has experience in the involvement of the fisheries sector in these activities. He was hired to lead the practical marine litter fishing part of the course.

CONTACT WITH TEACHERS AND PARTNERS:

The contact with the teachers and CTP partners were done through meetings, e-mails, and calls. **Annex I** includes a table with all the contributors, their e-mails, function, and the organization they are working.

SETTING UP THE FINAL SCHEDULE:

The courses took place from 4th until the 27th of October 2022. In the first case, for Higher Technicians in Sea Transport and Deep-Sea Fishing (high) we schedule a calendar that is available as **annex II** and the schedule for the Technicians in Navigation and Coastal Fishing (medium) it's available as **annex III**.

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VENUE

The course took place at the Instituto Politécnico Marítimo Pesquero del Atlántico (IPMPA), located in the heart of Vigo. The address is Avenida Beiramar, 55, 36202 Vigo, Pontevedra.

1. Location of IMPA

For the theory session we choose a big classroom with space enough for the development of all the activities. Other aspects we considered when choosing the space were to a have a space with internet connection, computer, and projector. This space is shown in the picture below:

2. The class during the development of the course.

The boat Valentín Paz Andrade was chosen to conduct the practical sessions.

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3. The ship: Valentín Paz Andrade.

NUMBER OF STUDENTS

The students attending the courses were selected by the teachers of IMPA on the basis of time schedules, relation with topic and suspected interest.

- 24 Students participated in the first pilot course for Senior Technicians (higher level)
- 21 students participated in the second pilot course for Technicians in Navigation and Coastal Fishing (medium level).

A participant list is included as **annex IV**.

TEACHING MATERIAL, SUPPLIES AND EQUIPMENT

The materials needed for the development of the course were:

- The Power Point presentations, included as **annex IX**.
- The materials for the workshop about the tragedy of commons (all of them bought in a supermarket), you can see them in the picture below (spoons, chickpeas, cubes).

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4. Material for the tragedy of commons workshop.

- The fishing gear modified to improve marine litter selection. This net had been designed and manufactured by TECNOPESCA in the framework of Clean Atlantic project and further tested in project pilot actions to retrieve seafloor litter for monitoring and cleaning purposes significantly avoiding fish captures, minimizing the ecological impact of this intervention[3].
- The app "Marnoba" for classifying the litter. That can be downloaded here MARNOBA and App Store (apple.com). The app is designed as a field notebook that allows the user to classify in categories all the marine litter collected. It is useful also to add the quantities and comments and to upload the information to Internet, making it available to everyone who is interested (scientists, technicians, or citizens).
- Big packs for collecting the litter.
- A container at the port for the collected waste.

6. CONDUCT FIRST PILOT IN SPAIN (TASK 4.3.) – HIGHER LEVEL

6.1 THEORY SESSIONS:

For the first two sessions, the whole group was together. These sessions consisted of lectures, workshops and activities that were led by the trainer.

[3] More information on this net is available at http://www.cleanatlantic.eu/wp-content/uploads/2021/10/Report-Marine-litter-retrieval-7.2_DEF.pdf
And a video showing it fishing at sea is also available in this link: https://www.youtube.com/watch?v=YU6oTl3UUOM

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In the **first session** the contents were divided in three topics, presented in Power Point presentations (**annex IX**):

1. Fishing with future: marine environmental awareness course.
2. Fishing and society.
3. Marine Ecology and ecosystems.

The development of the session was successful as the students were very participative, asking question and giving their points of view. Here we have one picture taken during this lesson while the students were thinking, in groups, about how to make the fishing sector more sustainable.

5. The students thinking in groups about: how to make the fishing sector more sustainable.

In the **second session** the contents were split in 5 Power Point presentations (**annex IX**):

1. Fishing economy.
2. Air emission.
3. Spills into the sea: oil.
4. Solid waste.
5. Another type of pollution: noise.

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6 Rita explaining the topic of fishing economy

For the **third session** we split the group in two, one part of the group was doing the third theory session and the other was doing the fisher litter session. In the **fourth session** the groups switched, so all students participated in all sessions. Some pictures of the third theory session:

7 The students in the workshop of tragedy of commons

8 Students doing the communication training activity

6.2 MARINE LITTER FISHING SESSION:

Sustainability is often an abstract concept that is hard to connect to for fishers. Marine litter is a problem in coastal areas and is one of the issues that fishers recognize and connect to. In many pilot courses we talk about solutions related to fishing for litter by fishers. CETMAR has a lot of knowledge about marine litter and was involved in the development of a special litter catching net. That gave CTP the possibility to include an activity related to catching marine litter and to show to the students this system as a part of the pilot course.

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On Friday 14th of October, we had planned to go on the boat with the group number 2 while the group number 1 was doing the 3rd theory lesson. However, it had to be postponed due to a strike at the center. On Monday 17th of October, group 1 went in the boat and did two throws of the net, the personal of the boat compiled all the litter in the big pack and then back in the port, we weight the total amount of litter, and we classified the most common items found. The results of the first throw is available in the following link Marnoba (vertidoscero.com) and of the second one in: Marnoba (vertidoscero.com). In summary of the results, the marine litter caught was: construction materials, bags, clothes. All the items collected in these two throws and the quantities are available in the **annex V**.

6.3 FINAL PROJECT SESSION:

The training activities were very motivating for both students and teachers, who actively participated in the different sessions. The course was concluded with a final assignment (see **annex IX**) where the students were divided in small groups to work on proposals for improvement and sustainable development in the fishing activity.

During the first session the students were working on their projects in groups of 4-5 students, the topics they chose were:

- Group 1: Reduction of waste for life on board.
- Group 2: Bad work conditions and the relation with the sustainable fishing.
- Group 3: The cycle of the plastic waste.
- Group 4: Sustainability from the eye of a fisher.

As the teacher reported the students were working on the chosen topics in a participative and active way. They had some difficulties at first, especially regarding how to organize their group work, how to work together, how to find information and how to decide what to include in the presentation. With help of the internet and guidance from their teacher, all groups worked it out. That shows their motivation, they have a good global view of the course and a critical vision of the fishing sector.

Finally, during the last session they presented their proposals for improvement in front of their colleagues and teachers their work using a Power Point presentation.

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7. CONDUCT SECOND PILOT IN SPAIN (TASK 4.3) – LOWER LEVEL

7.1 THEORY SESSIONS:

For the first two sessions, the whole group was together. These sessions consisted of lectures, workshops and activities that were led by the trainer.

In the **first session** the contents were divided in three topics, presented in Power Point presentations (**annex IX**):

1. Fishing with future: marine environmental awareness course.
2. Fishing and society.
3. Marine Ecology and ecosystems.

9 Students participating in the opinion workshop

In the **second session** the contents were split in 5 Power Point presentations (**annex IX**):

1. Fishing economy.
2. Air emission.
3. Spill into the sea: oil
4. Solid waste.
5. Another type of pollution: noise.

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For the **third session** we split the group in two, one part of the group was doing the third theory session and the other was doing the fisher litter session. In the **fourth session** the groups switched, so all students participated in all sessions.

7.2 MARINE LITTER FISHING SESSION:

Fishing for litter with this group took place on 11th October and 18th October. During the first boarding (11th October) we did one throw of the net, the personal of the boat compilated all the litter in the big pack and then back in the port, the total amount of litter was weighed and classified in most common items found.

The information of the first throw is available via the following link: Marnoba (vertidoscero.com). Summarizing, what we collected were: nets, clothes, objects used in fishing sector or aquaculture. The items captured, and the quantity are available as **annex V**.

During the second boarding (18th October) we did one throw of the net, the personal of the boat compiled all the litter in the big pack and then back in the port, the total amount of litter was weighed, and classified in the most common items found. The information of the fist throw is available in the following link: Marnoba (vertidoscero.com). A list of what was collected is available in **annex V**.

It is important to indicate that during those training activities, the vocational training centre is not allowed to fish, so the operation was done with an open fishing trawl. Some pictures of litter fishing are:

10. The net operating with all the litter inside.

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11. Weighing the waste.

12. The teacher explaining the types of waste collected.

In total, with all the groups, 145 objects with a total weight of 383 kilos was caught. Most of the objects collected (68%, 99 of the 145 items) were plastic.

FINAL PROJECT SESSION:

The training activities were very motivating for both students and teachers, who actively participated in the different sessions. The course was concluded with a final assignment (see **annex IX**) where the students were divided in small groups to work on proposals for improvement and sustainable development in the fishing activity.

For doing the final project, the students had two sessions. In the first one they worked on their projects in groups of 4-5 students, the topics they chose, in this case, were:

- Group 1: Litter fishing: active or passive?
- Group 2: The youngest in the fishing sector.
- Group 3: The image of fishing and the acceptation from society.

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- Group 4: Myths of bottom-trawling.

Finally, during the last session they presented their proposals for improvement in front of their colleagues and teachers their work using a Power Point presentation.

13 Students presenting the job: the youngest in fishing.

The more relevant proposals to tackle the presented issues were:

- Regarding fishing for litter, all students on using the passive method. As they found the active one a loss of energy and a source of pollution.
- Regarding attracting youth to the fishing industry, students agreed that youth would need better work conditions to want to be part of the fishing sector. Otherwise, they will focus on other careers with better salaries and conditions.
- Students think that the image of the fisherman should be improved. The solution is again to make their lives easier with better conditions, and this will reflect in personal aspects.
- Students support bottom-trawling, but a solution can be to protect some areas.

8. DISSEMINATION OF THE PROJECT

During the development of the course to disseminate what we were doing, we created some post in different social media. First, we started to post on Twitter information of the different activities that took place. From the account: @FundacionCETMAR, we did several posts that can be seen in the link.

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Moreover, to have the opportunity to fish some marine litter and learn on the most common items found and its management, we used a fishing gear modified to improve marine litter selection. This net has been designed and manufactured by TECNOPESCA in the framework of Clean Atlantic project and further tested in project pilot actions to retrieve seafloor litter for monitoring and cleaning purposes significantly avoiding fish captures, minimizing the ecological impact of this intervention[4]. Therefore, a collaboration among Clean Atlantic and Catching the Potential projects has been established, to promote the uptake of the raising awareness materials and good practices developed by Clean Atlantic in the Sustainable fishing courses developed in Spain. Due to the collaboration with this other project some actions related with the dissemination of the project were made as well. For example, a post on the CETMAR webpage is available here.

[4] More information on this net is available at http://www.cleanatlantic.eu/wp-content/uploads/2021/10/Report-Marine-litter-retrieval-7.2_DEF.pdf
And a video showing it fishing at sea is also available in this link: https://www.youtube.com/watch?v=YU6oTl3UUOM

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9. EVALUATION PILOT COURSES IN SPAIN (TASK 4.4)

Students, teachers and partners were invited to assess this activity and to give their opinion about the pilots and the inclusion of this training approach in the curriculum of fishing training.

9.1 EVALUATION BY THE PARTICIPANTS

Individual participants were asked to complete the evaluation form for participants. This form invites them to share their opinion of the training and its parts and is designed to assess the results of the course with a focus on their understanding before/after the course, area/topics participants liked and/or benefited from, subjects they did not like and how they see their role in the sustainable development of the fishing industry. The evaluation was made using a form in Google forms (**annex VI**).

9.1.1 PARTICIPANTS EVALUATION - MAIN CONCLUSIONS

This evaluation invited the students to share their general thoughts about the course through a Google forms questionnaire. While all the students were invited to fill out the questionnaire, only 15 students did. It is not clear what the reason is that students did not fill it out, but it could be because google forms was used. Next time we need to keep in mind to make filling out the questionnaire mandatory, and, make it as easy for participants as possible.

Looking at their answers (available in **annex VII**) the main conclusions are:

- The part they enjoyed the most was the information given in relation with marine litter and the practical session of fishing for litter.
- The part they enjoyed the least were the heavy theory moments.
- The students think one of the best uses of the course is that they can show others what they learnt and applying the learning at their jobs.
- Their level of knowledge in relation with sustainability has increased.

HOW FAMILIAR WAS THE CONCEPT OF SUSTAINABLE FISHERIES

The participants were asked to talk about the concept of sustainability. How familiar was this before and after the training?

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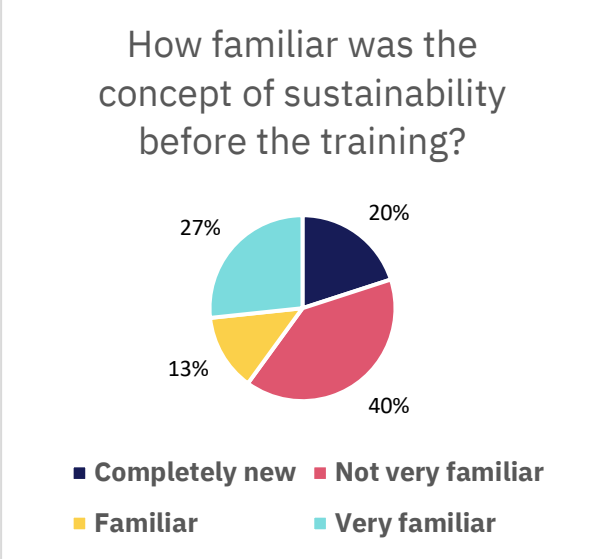
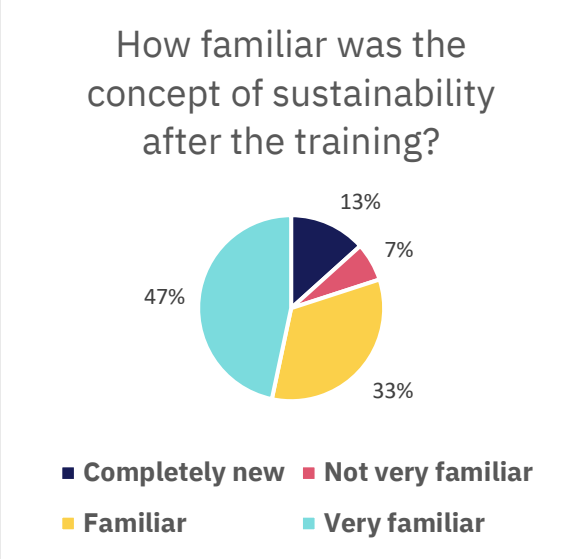
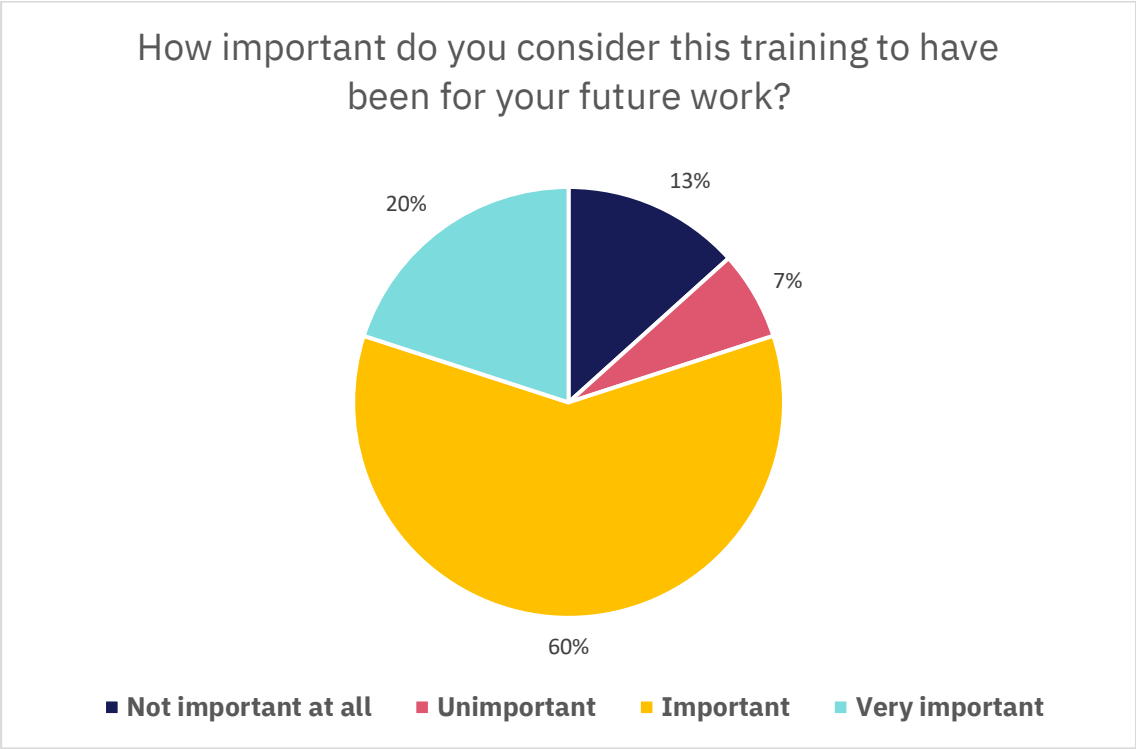
Most students believed to be not very familiar with the concept or the concept was completely new for them before the training (60%).

Almost all students became more familiar with the concept of sustainability (80%. The concept remained new and unfamiliar to a few of the students (20%).





When asked about the usefulness of the course the following answers were given by the participant.



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Most students thought this training was interesting and important for their future careers (80%). A few did not believe the training to be important. While it would be interesting to know why, there has not been follow-up with these students.

9.1.2 EVALUATION BY THE PARTICIPANTS – EXTRA QUESTIONS

In order to have more information about our students we added some more questions in the questionnaire. The answers are available as **annex VIII,** main conclusions are:

1. A total of 15 students filled out the evaluation forms.
2. Most students were Spanish men and most of them between the age of 18 to 24.
3. There is no considerable difference between the different parts and activities of the course, but usually the activities of debate, game or practical experiences were appreciated more than the theory ones.
4. The students think the most useful content is: Fishing and sustainable economy and the least one: the litter fishing (even it is the one that they enjoyed the most). Six out of ten students preferred the fishing for litter class. This could likely be due to the activity of the day.
5. The evaluation of the practical aspects is positive in relation with the teachers, appropriate number of students, materials, schedule, attention, facilities, activities, and contents. Students were not as positive about the duration of the course. Would be nice to know if they think the course is too short or too long.
6. As half of the students have relatives in the fishing sector and for the most part of their relatives in the sector the sustainability in fisheries is important.
7. The students think the course has improved their career.
8. Half of the students thinks their view of fishing has changed after doing the course in relation with their understanding and consciousness.
9. One of the students said the course should be longer, other that it should be more specific.

9.2 EVALUATION COURSE LEADER AND TEACHER

The pilot training was led by two local course leaders in the fisher's language. As the primary contact with the fishers, the course leader was asked to answer a series of open question (evaluation form for the course leader). The focus of this evaluation is threefold. First, the course leader was asked about their opinion about the training

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materials. Are the training materials applicable to the local situation and level of the group? Which adjustments need to be made? Second, she was asked for an assessment of what went well during the pilot, what could have gone better and how the interaction was with the participants. Third, the course leader can express what she needs to continue to be involved in the training including the need for extra training/coaching.

9.2.1 EVALUATION BY COURSE LEADER/TRAINER

Course leader Rita Pesqueira from the ARDORA Formation worked on the adaptation and translation of the course content. Overall, that went well, although due to a misunderstanding about different versions of the presentation, some last-minute changes had to be made to the presentations to be used in the course, which caused some difficulties in preparing some content. For example, some content about the social part of fishing was added the day before the course.

The general impression of the course is good, especially due to the good acceptance by students and teachers. The students were very receptive and very participatory in the sessions. They were also very critical of certain content taught such as certifications (MSC example), sustainability, fisheries management through quotas and TACs, the Common Fisheries Policy.

Listing the subjects in order of usefulness: (1) Image of fisheries, (2) concept of sustainability, (3) Fishing management, (4) Fishing Economy, (5) Fishing for Litter, (6) Environmental goals, (7) Marine Environment.

There are certain topics that are very basic for the profile and age of the students to whom they were addressed. To give an example: the exercise of 'who is the best fisherman?' The issue of the economy of fishing should be worked on more or change its focus. Include a part of commercialization of fishing products. The subject of Fisheries Management is too dense and abstract for students, especially for the medium level. In my opinion, a topic on the impact of different fishing gears on the marine environment should be included, as it was a topic that aroused interest among the students.

The topics of this course must be approached in a practical way. Some solutions are missing, and the course could be improved by participation of a fishing research centre that presents the studies that are being carried out in the management of fisheries, in studies of impacts of fishing gear on the environment, R+D+I in new materials, new designs of fishing gear, etc.

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Main lessons learned for Rita as instructor are:

1. The importance of the identity of the fishing sector and that image and identity come closer to society.
2. The lack of vision towards the sustainability of fishing and the sector. Future fishing professionals still need to become aware of issues of sustainability, resource management and get closer to the research that is being carried out for fisheries management, since there are still misconceptions and prejudices that are spreading.
3. The contents have been too extensive for the time available.

9.2.2 EVALUATION ADRIÁN COMESAÑA (FISHING TEACHER)

Adrián Comesaña, fishing teacher from IMPA has not worked on the translation and customization of the materials. His opinion about the materials is that they had a good structure. Moreover, the coordination between the different partners was good when it came to develop the materials. It represented respect for the fishing sector, responsibility in fishing and balance between fishing and the environment.

Listing the subjects in order of usefulness: (1) Sustainability concept, (2) Image and identity of the fisherman, (3) Fishing and economy, (4) Fishing for litter, (5) Marine environment and ecology, (6) Fishing management, (7) Environmental goals.

The course was well developed, very dynamic and interesting. I like the teaching method; it makes students think with all the examples and participatory activities. The participation of the students was very good, they all shared their different points of view.

The objective of raising awareness among future professionals in the sector about the importance of respecting the environment and protecting resources had a good approach. In my opinion we should keep the approach used for the next courses. However, I would deduce the contents to have more light lessons. It seemed like a good course to me; I would simplify it and make the sessions less than three hours long.

Implementing the course at IMPA would take commitment on the part of all, professionals, teachers and students so that the sector demands certain criteria on sustainable fishing.

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9.3 EVALUATION FORM CTP PARTNERS:

CTP partners in the pilot country evaluate the pilot training by sharing their experiences and opinion on the development, organization, and execution of the pilot training in their country. In addition to sharing what went right or wrong in the pilot course, the form identifies lessons-learnt and consequences of the pilot for the development of the standard training in WP5 of the CTP project and elaborates on next steps to take for implementing sustainable fisheries training in the pilot country.

9.3.1 PROSEA EVALUATION OF COOPERATION BETWEEN CETMAR AND PROSEA

ProSea (Erik and Isabelle) was involved in initiating the pilots in Vigo by visiting Vigo in May 2022 and sharing experiences and the base materials for the course, both from the CTP project (in English) and an earlier pilot in San Sebastian (in Spanish). In addition, ProSea transferred their insights on purpose and objectives of the sustainable fisheries course and the CTP project.

After that, CETMAR, the fishing academy teachers and the trainers adjusted the course to the Vigo situation and organized the pilot courses. ProSea offered assistance in customizing the materials, but CETMAR took the lead and did an excellent job.

It was decided that the course was incorporated in the school program and executed during their normal lessons. Pilots for two groups were scheduled during a three-week period, and Erik and Isabelle from ProSea visited Vigo in the first week of the pilot, during day 1 and day 2 of the course for both groups.

A pre-course meeting with everyone involved the day before the course was attended by CETMAR and ProSea, two trainers and eight staff members from the fishing academy. To have that many teachers that are involved is unique and fantastic. The pilot courses were discussed with special focus on the final assignment for the students and the way to grade the course (attendance required). This meeting not only instilled confidence in the upcoming pilots, but also showed how motivated the teachers of the fishing academy are to incorporate the content of the course in the school program.

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ProSea only participated in the first two days of both pilot courses, but those two days went very well, especially considering it was the first time for the trainer. Course leader/trainer Rita has a good presence, is knowledgeable about the course subjects and was able to involve the participants, both in the workshops and during the lectures. Great job of including local content. Both groups were engaged and participatory.

The engagement of both groups was excellent. Most participants talked while they were in the smaller group workshops, at least half of the participants presented results of the workshops or answered questions from the trainer.

9.3.2 PROSEA RECOMMENDATIONS

Rita tried to convince the fishers about her own views and that is not the role the trainer should have. The objective of the course is to involve fishers in the concept of sustainable fisheries and inspire them to include it in their own thinking and their (future) career in fisheries. The job of the trainer is to make the participants think about the subjects, even if that means that they are critical of the content. It is the job of the trainer to share information and examples, NOT to disagree and discuss with individual participants. That is hard, but CTP is trying to start a process of thinking about sustainable fisheries and the course is set up in such a way that participants are given the opportunity to share their opinions, doubt, and scepticism. It is important to let this happen and not tell them they are wrong.

Customizing the course to Vigo meant that a lot of good content was added to the course lectures. This meant that most of the lectures are now too long and there is too much information for the time allocated to the course. This is not a problem and is part of the process of adjusting the course to a new location. Challenge for the next course is to cut content, make it your own story while keeping the overall objective of the course into account: (1) the lectures are shorter, (2) still contain the general content of CTP, and (3) fit with Vigo.

The first lecture took too long. This opening lecture is meant to set the scene and explain in about 30-45 minutes why sustainable fisheries is important and what the course is all about. Many subjects that are mentioned in the first lecture are included in other parts of the course. One example is certification in fishing that is also part of the people P and Profit P lecture. There is no need to elaborate on these subjects early in the course. This is also a normal process – if Rita does

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the course more often, she will have more overview of the course content and will be able to balance when to talk about the different subjects.

Top 5: this workshop is given after the introduction in sustainability. Participants are now familiar with the concept of sustainability and are asked to rate the challenges in their work/sector related to sustainability. The participants are divided in groups of 4 or 5 an asked to describe a Top 5 of challenges in a sustainable fisheries sector. This TOP 5 workshop went very well. It was an excellent opportunity for the fishers to share their views and opinions. There is no need to discuss, disagree and/or try to come up with an overall summary. Give the fishers a chance to share and use that to address the subjects they think that are important in the rest of the course. In the first group, two men clearly had more experience and they engaged in direct discussions with Rita about their TOP 5 while the rest of the group was silent. The trainer must prevent that one or two students monopolize the discussion and/or involve the group.

Teaching method and content could be adjusted depending on level of students or the level of engagement with certain subjects. The advanced group had a very high level of understanding and knowledge and could therefore handle more information/discussion.

Regarding the subjects related to prevention of pollution, ProSea suggests focussing on the most important subjects for fisheries: marine litter, climate change and to a lesser extent, oil. While all subjects are important, the other air pollution (SOx, NOx, PM) and noise should only be included when there is more time available for these subjects. Also, some of the other air pollution lecture (like the use of heavy fuel oil) is only relevant for shipping and should be taken out.

Climate change is a subject where most people have their own opinions. The trainer should ask for those opinions and ideas.

Mentioning fish welfare standard for consumers was met with disapproval. Depending in the country, this should not be mentioned.

The workshops (TOP 5 and People P on day 1/2) are a great way to give participants time and opportunity to digest the large amount of information, hear the views of their peers and give their opinion. Maybe it is better to schedule one workshop on day 1 and one workshop on day 2 (now both were on day one).

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9.3.3 PROSEA LESSONS-LEARNED FROM THIS PILOT COURSE

1. We need to make sure that the trainers/teachers of the course internalize the overall objective and the methods of the sustainable fisheries training as involving fishers in the concept of sustainable fisheries and inspire them to include it in their own thinking and their (future) career in fisheries.
2. The first step in customizing the course has been taken in adding Vigo content. The next step should be to shorten the lectures by balancing general content, Vigo content and time allocated for the lecture.
3. The triple P concept and the variety of teaching methods are important to connect to the participants and to keep them engaged.

9.3.4 CETMAR EVALUATION OF PRACTICAL ASPECTS

Now, we include the evaluation carried out by CETMAR in relation with the next questions:

The collaboration with all the partners was very easy, everyone was involved and interested in the development of the course. In first place, Erik, and Isabelle from ProSea were very helpful, sending all the materials. Finally, what we consider it was one of the best parts was the collaboration with the teachers of the Instituto Politécnico Marítimo Pesqueiro do Atlántico, Center of National Reference of fishing and navigation. As the development of the course allowed us to reinforce the bonds between CETMAR and the IMPA and opened the door to develop or design other education or projects in the future. Their help was essential for making the course a reality.

IMPA was the place chosen for the development of the course and it was the ideal place since it has everything necessary. Moreover, the IMPA has a team of teachers that are open to include the contents of the course in their curriculum and disseminate them as National Reference Centre of fishing and navigation. The ship Valentín Paz Andrade for practical lesson was also well, is a comfortable ship and in very good condition.

The materials provided by ProSea were very useful to us, as all we had to do was adapt them to our context (the process is described in this report in 5.1). Isabelle and Erik were very kind when it came to send everything necessary. In addition, Rita did a great job of adapting the PowerPoint presentations used in the theoretical sessions and she was always available to make changes.

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9.3.5 CETMAR OPINION ABOUT COURSE LEADER/TRAINER

Two trainers were involved in the course teaching:

Rita from ARDORA, did a great job adapting the contents to the local case of Galicia and the communication with her was always effective. As teacher she was able to explain a lot of difficult concepts in a very short period of time and always keeping it simple. She adapted the contents to the level of the students, catching their attention and supporting their learning. She also gave them space to share their opinions and to participate during the lessons.

Juan Pablo sent all of us relevant information about marine litter, explaining the most important details to the students and he was always open to hear their opinions. Nevertheless, he had a technical profile rather than a teaching one, having sometimes trouble to catch the student's attention. But after all, his job was great.

9.3.6 CETMAR EVALUATION OF COURSE CONTENT

Regarding the theoretical sessions, the contents are very extensive for the duration of the course. Considering the opinions of both the trainer (Rita) and the students, so many theoretical concepts are not necessary and some of them are far from the reality of the student. On the other hand, the debate and workshop parts are the most interesting parts and the ones that create the greatest interest among the students. Although it is essential to make a theory part to clarify certain concepts, this shouldn't be the central part.

It is also important to know that, due to the short duration of the course, addressing less content can be positive. Since very extensive theoretical presentations become heavy and students lose attention more easily.

In the case of the practical session, contrary to the previous one, we perceived that more content could be necessary. For example, it can be useful to include aspects related to: what types of litter fishing technics exist: passive and active, the benefits and disadvantages of each of them, in what context the net was created, what types of litter are more common, what we do with the waste after we catch it.

In addition, during the trip while traveling from one point to another, there is time to have a brief debate on whether fishing for garbage is profitable or if it pollutes more than it solves.

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The completion of the final work and its presentation seems to us a very good idea since it forces the students to search for themselves the sources of information. We also think that group work is a very good methodology for working on relationships between classmates and for students to learn how to work in teams, a skill that we consider essential for life. The oral presentation also is good practice, since it allows all the students to speak and participate in the class and allows them to work on communicative competence.

10. LESSON LEARNED AND CONSEQUENCES FOR STANDARD – WP5

The development of the CTP course in Vigo is another step to achieve the final goal of developing a European standard for sustainable fisheries training. Again, as in the other pilots, the CTP starting point materials that were used in the pilot course in Spain worked very well. In this part of the evaluation, we identify lessons-learned and consequences of the pilot for the development of the training standard (WP5) of the CTP project.

1. The cooperation between CETMAR, IMPA and the two external trainers was effective and emphasizes the importance of building a local network to support the implementation of the training, in Vigo but also in general.

2. Before the pilot course, sustainable fisheries training was not included in the curriculum of the Instituto Politécnico Marítimo Pesqueiro (IMPA) in Vigo. Eight teachers/managers from IMPA were involved in the project and collectively indicated that they are keen in using CTP materials in their lessons. This indicates a gap in the education of fishers that the CTP project is trying to address – teachers want to include sustainable fisheries, but do not have the resources to do so. CTP is filling this gap.

3. In general, the participants were positive about the training content and training approach. Also in Spain, the CTP approach works.

4. Courses need to be customized to reflect the reality of the local situation, so it is easier for participants to understand and to identify with the content. It is a challenge to customize the courses – the aim is to keep the general content and

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approach and put that in the context of the local situation. One risk is that customizing simply means adding more (local) content, another is that too much of the original content is cut. It is important to keep in mind that (1) the course still reflects the course objectives and content as intended and as indicated by the STCW-F Code, and (2) that the content is presented in such a way that participants can identify with the courses, including by adding local examples.

5. The CTP standard should be very clear that the main objective of the training is to give a broad view of the concept of sustainability. In the description of the individual parts, it should be made very clear how the individual parts of the course tie back to the overall theme of the course, to sustainable fisheries, and to the Triple P concept. In addition, the CTP standard also needs to be clear that the objective of the course is to involve fishers in the concept of sustainable fisheries and inspire them to include it in their own thinking and their (future) career in fisheries.

6. All parts of the course are included for a reason. This reason will be talked about in the teacher's manual in the CTP standard. Trainers and teachers should be aware of this and have good reasons to discard parts of the course.

7. The training needs to find a balance between theoretical content and interaction. The content is important to raise the knowledge level of the participants, but the interactive part gives the students the possibility to talk about that content with peers and to connect that knowledge to their own circumstances. It is important to realize that active participation is not always common in our educational system. When possible, theoretical content could be reduced in favor of more interaction.

8. The objective of the course is to involve fishers in the concept of sustainable fisheries and inspire them to include it in their own thinking and their (future) career in fisheries. The job of the trainer is to make the participants think about the subjects, even if that means that they are critical of the content. It is the job of the trainer to share information and examples, NOT to disagree and discuss with individual participants.

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9. For Vigo, add a discussion on the boat trip about the benefits of garbage fishing and a little more theoretical explanation.

The project consortium will take these lessons into account in the development process of the European training standard.

11. NEXT STEPS FOR IMPLEMENTATION IN VIGO AND SPAIN

When looking at further implementation of the training in Spain, the following steps are proposed, and recommendations are given:

1. CETMAR did an excellent job in getting support from both the fishing school in Vigo and several trainers for the pilot courses and they informed the local network about the training. The involvement of eight teachers shows great promise for the implementation in Vigo after CTP. The contents are now available to use by IMPA teachers in their future classes and to include the contents of CTP in the curriculum of their subjects. It is recommended that the relationship between CETMAR, local trainers and IMPA is maintained and that the teachers are encouraged to ask for support or information when they need it.

2. Customizing the courses to the local situation in Vigo increased the amount of content, since local content was added to the general content. The next step is cutting some of the content and making the course fit in the available timeframe. It is emphasized that it is essential to keep the general objectives of the course and the value of the individual course parts into account.

3. Now that the course in Vigo is developed, it is easier to do it in other Spanish centres. Since this project started, new materials were created in Spanish and in Galician with new examples of the Galician fishing sector. Therefore, now the materials are available in more languages, and they are ready to be used. One of the best things done for the implementation of the standard is the methodology of developing a pilot course using external trainers and having both students and teachers during the development of the course. This gives teachers the possibility to experience new didactic methodologies without the first barrier of having to start from zero creating the materials and doing the initial research.

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The CTP project can be used as an example for others in Spain. Including sustainable fisheries training in the activities of the Spanish reference centre would enable CTP and IMPA to conduct a Train the Trainer program for teachers from other fishing schools which would jumpstart the implementation in these schools.

12. CTP PILOTS AND PARTICIPANTS

Based on the first pilot in Spain the following conclusions can be drawn:

1. The pilot trainings in Spain were pilot trainings number 6 and 7 in the CTP project. The project has now completed 7 out of 14 pilots (50% completion). In total the project has trained 99 active fishers or other relevant stakeholders in the European fishing industry out of an expected total of 300 (33% completion).

2. An important conclusion is that the structure and method of the course is also successful in Spain, as in the other pilot countries. The project has been successful in 100% of the pilot countries and that is a wonderful result. This means that the basis is good and that the content is ready for further implementation in Spain.

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ANNEX I – LIST OF CONTRIBUTORS PILOT COURSE

Name	E-mail	Function	Centre
Ana Otero	ana.otero@edu.xunta.es	Principal	IMPA
Ramón Otero	ramonotero@edu.xunta.es	Substitute of the Principal	
Consuelo Romar	cromar@edu.xunta.es	Head of teachers	
Margarita Espejo	margaespejo@edu.xunta.es	Teacher	
Adrián Comesaña	acomesana@edu.xunta.gal	Teacher	
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María López	mateloi@edu.xunta.es	Teacher	
Berta Castro	berta.castro.fernandez@edu.xunta.es	Teacher	
Lucía Fraga Lago	lfraga@cetmar.org	Coordinator (technical support to the project)	CETMAR, Training area
Gloria Mallou Tato	gmallou@cetmar.org	Technician (technical support to the project)	CETMAR, Training area
Flor Arenaza	farenaza@cetmar.org	Administrative technician (technical support to the project)	CETMAR, Training area
Isabelle Parqui	isabelle@prosea.info	Project leader	PROSEA
Erik	erik@prosea.info	Project leader	PROSEA
Rita Pesqueira	rita.pesqueira@ardoraformacion.com	Trainer	ARDORA
Ana Pérez	ana.perez@ardoraformacion.com	Trainer	ARDORA
Juan Pablo Pérez Gómez	jp.perez.gomez@gmail.com	Trainer	Vertidos Cero

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ANNEX II -COURSE PROGRAM HIGHER LEVEL

Higher Technicians				
Week from the 3rd of October to the 7th				
Monday 03/10 -------	Tuesday 04/10 --------	Wednesday 05/10 -------	Thursday 06/10 From 08:15 to 11:15 Theory session 1	Friday 07/10 From 09:15 to 12:15 Theory session 2
Week from the 10th of October to the 14th				
Monday 10/10 -------	Tuesday 11/10 -------	Wednesday 12/10 ---------	Thursday 13/10 ---------	Friday 14/10 From 09:15 to 12:15 G1 Theory session 3 G2 Session 4 BOAT
Week from the 17th to the 21st of October				
Monday 17/10 From 11:45 to 14:45 G1 Session 4 BOAT G2 Theory session 3	Tuesday 18/10 -------	Wednesday 19/10 --------	Thursday 20/10 From 8:15 to 10:15 Group job Preparation of the final activity.	Friday 21/10 --------
Week from 24th to 28th of October				
Monday 24/10	Tuesday 25/10	Wednesday 26/10	Thursday 27/10 From 8:15 to 10:15 Presentations of the groups works and debate.	Friday 27/10

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ANNEX III PILOT COURSE PROGRAM MEDIUM LEVEL

Technicians in Navigation and Coastal Fishing				
Week from the 3rd of October to the 7th				
Monday 03/10 -------	Tuesday 04/10 From 08:15 to 11:15 Theory session 1	Wednesday 05/10 From 08:15 to 11:15 Theory session 2	Thursday 06/10 -------	Friday 07/10 --------
Week from the 10th of October to the 14th				
Monday 10/10 ---------	Tuesday 11/10 From 08:15 to 11:15 G1 Theory session 3 G2 Session 4 BOAT	Wednesday 12/10 --------	Thursday 13/10 --------	Friday 14/10 --------
Week from the 17th to the 21st of October				
Monday 17/10 ---------	Tuesday 18/10 From 08:15 to 11:15 G1 Session 4 BARCO G2 Theory session 3	Wednesday 19/10 From 08:15 to 11:15 Group job Preparation of the final activity.	Thursday 20/10 --------	Friday 21/10 ---------
Week from 24th to 28th of October				
Monday 24/10 --------	Tuesday 25/10 -------	Wednesday 26/10 From 08:15 to 11:15	Thursday 27/10 -----	Friday 28/10 ----

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		Presentations of the groups works and debate.		

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ANNEX IV – PARTICIPANT LIST

Students Higher Technicians (higher):

1. David Baz Baz.
2. David Eusebio Buceta Caamaño.
3. Miguel Ángel Castro Carrasco.
4. Pablo Cordeiro Bermúdez.
5. Chiara di Nicola Agulla.
6. Inmaculada Dios González.
7. Miguel Ángel Estévez Bermúdez.
8. Eloy Ferreiro Rodríguez.
9. Adrián García Rodríguez.
10. David Lago Decaso.
11. Rubén López García.
12. Alejandro Miranda Pastoriza.
13. José Luis Nerga Bacelar.
14. Gonzalo Otero Graña.
15. Alejandro Pérez Varela.
16. Mónica Piñeiro Molanes.
17. Natalia Piquer Janini.
18. Ignacio José Pousa Muñoz.
19. María Reiriz González.
20. Abel Rivas Pena.
21. Diego Rodríguez Acevedo.
22. Paul Alejandro Rodríguez Chávez.
23. Manuel Antonio Sotelo Novas.

Students Technicians in Navigation and Coastal Fishing (medium):

1. Samuel Álvarez Correia.
2. Diego Boga Álvarez.
3. Iago Cabral Touza.
4. Uxía Cameselle Pino.
5. Aarón Cimas López.
6. Henrique Fernández Miramontes.
7. Simón Ferreiro Nogueira.

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8. Rodrigo García Cachón.
9. Antonio González González.
10. Eloy Gonzalo Piñeiro.
11. Zerihum Luis Feijoo.
12. Ángel Martínez Argibay.
13. Antón Martínez Cadilla.
14. Carmen Yadira Mávarez Estévez.
15. Andrés Otero Pousada.
16. Breixo Otero Tabuenca.
17. Iago Pintos Vázquez.
18. Joseph Leonardo Quemba Vilariño.
19. María Zaida Ramírez Jiménez.
20. Ainhoa Rúa Boubeta.

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ANNEX V – WASTE COLLECTED IN FISHING ACTIVITY

Type of waste (waste collected in the two thoughts with the higher level, 17th October)	Quantity found
Construction materials	10
Bags (shopping, food, congeals)	5
Clothes	4
Pipelines	4
Ropes	3
Rubber (balloons, balls, ribbons, valves…)	3
Nets and pieces of nets, Ropes and tangled nets, Traps, Gannets for octopuses	3
Metal objects <50 cm	2
drink cans	2
Bags, wrappers, sticks… of sweets	2
Drink bottles	2
Food and cosmetic containers	2
Electronic devices, batteries	1
Wood materials <50 cm	1
Industrial packaging (plastic sheet, raffia bag…)	1
Cleaner containers	1
Straws, Cutlery, Glasses, Cups, Cups	1
The total amount of litter was 97 kg.	

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Type of waste (waste collected in the thought done with the medium level, 11th October)	Quantity found
Nets and pieces of nets, Ropes and tangled nets, Traps, Gannets for octopuses	18
Clothes	3
Objects used in aquaculture (Tahitians, Oyster farming baskets, Mussel/oyster culture bags, Tarugos, Plastic labels...)	3
Pipelines	2
Other identifiable plastic objects (pens, lighters...)	2
Glass bottles and jars	1
Drink bottles	1
Lines, Baits and Luminous Tubes	1
Rubber (balloons, balls, ribbons, valves...)	1
Bags (shopping, food, congeals)	1
Food and cosmetic containers	1
Ropes	1
The total amount of litter was 97 kg.	

Type of waste (waste collected in the thought done with the medium level, 18th October)	Quantity found
Nets and pieces of nets, Ropes and tangled nets, Traps, Gannets for octopuses	20
Bags (shopping, food, congeals)	11

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Other identifiable plastic objects (pens, lighters...)	6
Clothes and Shoes (Leather)	5
Rubber (balloons, balls, ribbons, valves...)	4
Objects used in aquaculture (Tahitians, Oyster farming baskets, Mussel/oyster culture bags, Tarugos, Plastic labels...)	3
Pneumatics	2
Pipelines	2
Lines, Baits and Luminous Tubes	1
Drink bottles	1
Large drums (> 25 liters)	1
Rope Wood materials >50 cm	1
Wood materials <50 cm	1
The total amount of litter was 136 kg.	

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Evaluación formación piloto en pesca sostenible - Participantes

Primer curso piloto en España.

Gracias por participar en esta formación sobre pesca sostenible. Esta es la primera vez del proyecto Catching the Potencial en España y nos gustaría conocer su opinión sobre las diferentes secciones del curso y qué partes consideras que te pueden ser de utilidad en el futuro.

* Vereist

1. Eres... *

- ◯ Hombre
- ◯ Mujer
- ◯ Andere

2. ¿En qué rango de edad te encuentras? *

- ◯ Menor de 18
- ◯ Entre 18 y 24
- ◯ Entre 25 y 34
- ◯ Entre 45 y 54
- ◯ Mayor de 55

3. ¿Cuál es tu nacionalidad? *

- ◯ Española
- ◯ Andere

4. ¿Qué piensas del curso en general? Puntúa del 1 al 5 *

1
2
3
4
5

DÍA 1: Conferencia- Introducción a la sostenibilidad
Taller – los 5 retos de la pesca sostenible
Clase interactiva: Pesca y sociedad
Clase interactiva – Ecoloxía mariña e ecosistemas
Día 2: clases interactivas Economía de la Pesca
Concienciación ambiental marina. Emisions a la atmósfera
Vertidos al mar - petróleo
Residuos sólidos
Otro tipo de contaminación: el ruido
DÍA 3: Clase interactiva – Comunicación
Taller– Comunicación
Clase interactiva – Gestión de pesquerías
Juego de la pesca
DÍA 4: Práctica de pesca de basura
Trabajo Final Preparación en grupo
Taller final de presentación de trabajos

5. Ordena los diferentes temas tratados en el curso en orden de utilidad, situando arriba los que te parecen más útiles.
*

Pesca y economía sostenible
↑↓
Concepto de sostenibilidad
↑↓
Retos medio ambiente
↑↓
Ambiente marino y ecología
↑↓
Imagen e identidad del pescador
↑↓
Gestión de las pesquerías
↑↓
Pescando basura
↑↓

6. Valora los siguientes aspectos relacionados con el desarrollo del curso, siendo 5 la máxima puntuación.
*

	1	2	3	4	5
La actividad docente	○	○	○	○	○
El número de alumnos es adecuado	○	○	○	○	○
El material del curso	○	○	○	○	○
Los horarios del curso	○	○	○	○	○
La duración del curso	○	○	○	○	○
La atención al alumnado y la resolución de dudas	○	○	○	○	○
El contenido del curso	○	○	○	○	○
La utilidad y claridad de los ejercicios prácticos	○	○	○	○	○
El aula e instalaciones donde se ha impartido el curso	○	○	○	○	○

7. ¿Qué temas / actividades te gustarón **más**? ¿Por qué? *

Voer uw antwoord in

8. ¿Qué temas / actividades te gustarón **menos**? ¿Por qué? *

Voer uw antwoord in

9. ¿Qué temas / conferencias / talleres te resultaron más útiles? *

Voer uw antwoord in

10. ¿Del 1 al 4 cómo de familiar te resultaba el concepto de Pesca Sostenible antes de este curso? *

11. ¿Del 1 al 4 cómo de familiar te resulta ahora el concepto de Pesca Sostenible? *

12. ¿Qué papel crees que podrías tener para hacer la pesca más sostenible? Cómo utilizarías esta formación para esto? *

Voer uw antwoord in

13. ¿Tienes familiares en el sector pesquero?
*

◯Si

◯No

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Evaluación formación piloto en pesca sostenible - Líderes del curso

La encuesta tardará aproximadamente 5 minutos en completarse. Primer curso piloto en España.

Gracias por participar en esta formación sobre pesca sostenible. Esta es la primera vez del proyecto Catching the Potencial en España y nos gustaría conocer su opinión sobre las diferentes secciones del curso y qué partes consideras que te pueden ser de utilidad en el futuro.

* Vereist

1. Eres... *

- ◯ Hombre
- ◯ Mujer
- ◯ Andere

2. Eres... *

- ◯ Docente del IPMPA
- ◯ Formador del curso piloto de pesca sostenible
- ◯ Andere

3. ¿Como ha sido la preparación y organización de los materiales del curso? ¿Estuviste trabajando en la traducción o customización de los materiales? *

Voer uw antwoord in

4. ¿Como ha sido el curso piloto? Describe tu impresión general. ¿Como ha sido el director del curso? ¿Qué ha ido bien? ¿Como podría mejorarse? *

Voer uw antwoord in

5. Da tu opinión sobre el contenido del curso piloto y de los materiales del curso. Describe que temas te han resultado útiles y cuales podrías ser mejorados. ¿Hay algún tema que consideras que debería ser eliminado para futuros alumnos del curso? ¿Hay algún tema que falta y debería ser incluido? Recuerda dar razones, ejemplos o detalles específicos cuando sea necesario. *

Voer uw antwoord in

6. Da tu opinión sobre la organización del curso y los diferentes métodos de enseñanza. ¿Algún cambio necesario? *

Voer uw antwoord in

7. ¿Cómo fue el compromiso y la participación de los alumnos? Describa ejemplos cuando sea necesario. *

Voer uw antwoord in

8. ¿Cuáles son las tres principales lecciones aprendidas de este curso piloto? *

Voer uw antwoord in

9. ¿Qué crees que sería necesario para que esta formación se siga impartiendo en tu Centro? ¿Y en España? *

Voer uw antwoord in

10. Ordena los diferentes temas tratados en el curso en orden de utilidad, situando arriba los que te parecen más útiles. *

Pesca y economía sostenible

Concepto de sostenibilidad

Retos medio ambiente

Ambiente marino y ecología

Imagen e identidad del pescador

Gestión de las pesquerías

Pescando basura

11. ¿Tienes algún otro comentario / sugerencia para mejorar el curso? *

Voer uw antwoord in

Verzenden

Which parts did you like or enjoy the most?

The answers to this question were:

1	The litter fishing lesson.
2	Nothing.
3	Management of the marine environment, litter fishing and sustainability of the ecosystems. These topics were entertaining and essentials to have future in fishing and conserve the seas. Also, the Image of fishermen, since it is an issue that concerns the entire maritime sector, as they see us is how they treat us, and a good image is necessary to maintain the trade and promote the sea work to future generations.
4	The litter fishing lesson.
5	The litter fishing lesson.
6	Sustainable economy.
7	Fishing litter and sustainable economy.
10	Nothing.
11	Everything.
12	The image and identity of fishing, sustainable fishing and litter fishing because it is important for our future.
13	Everything.
14	The litter fishing lesson.

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15	How litter affects the marine system.

And least?

The answers to this question were:

1	Nothing.
2	Everything.
3	The economy part of fishing, although it is a very important subject, it is the one that I found the least entertaining. The rest were entertaining and useful for our training.
4	Nothing.
5	The second session. Very heavy theory, I did not care.
6	The biologic part.
7	The litter fishing lesson.
8	The theory.
9	I don’t know.
10	The litter fishing lesson.
11	Everything was fine
12	I liked everything, but perhaps the heaviest thing was the introduction part because you do not know the subject, but once you understand what you are going you are entertained.
13	Activity of ship buying.
14	The tragedy of commons game, I didn’t understand the point of the activity even it was funny.
15	The social vision of fishing sector.

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Which parts did you find most useful?

1	Sensibilization.
2	Anything.
3	The Sustainable Fishing exercise and the practice of litter fishing on the boat, as they help to see the problem and understand that garbage is harmful to the maritime environment.
4	Everything.
5	Most of the topics that we discuss.
6	The conferences.
7	Marine environment, economic part and fishing game.
8	Sustainable fishing.
9	I don’t know.
10	Fishermen image.
11	The tragedy of commons game.
12	Sustainable fishing and topics related with the environment.
13	Everything in general.
14	The litter fishing lesson since I did not have the knowledge of the amount of waste that can be found in the estuary for example in our case.
15	Litter fishing.

From 1 to 4 how familiar was the concept of Sustainable Fishing before this course?

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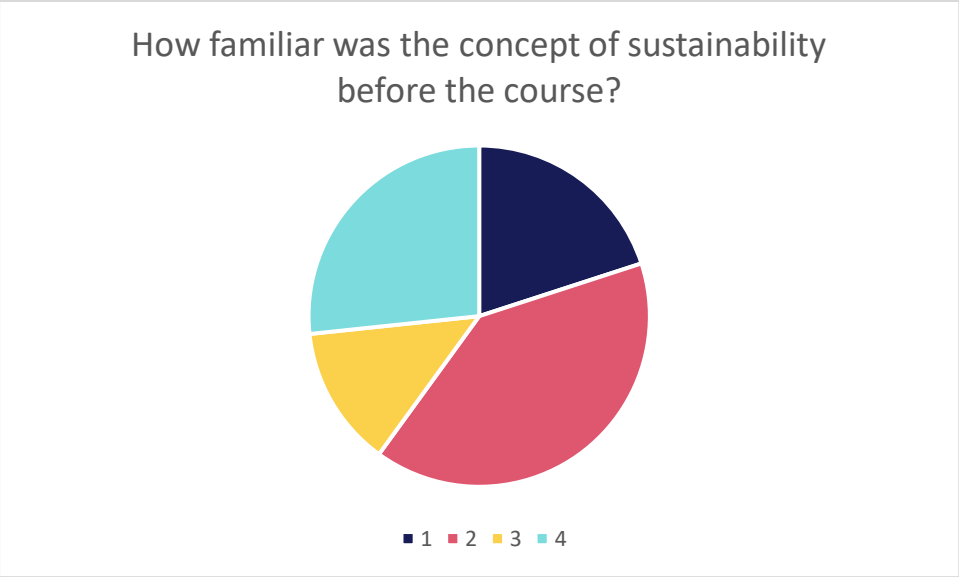
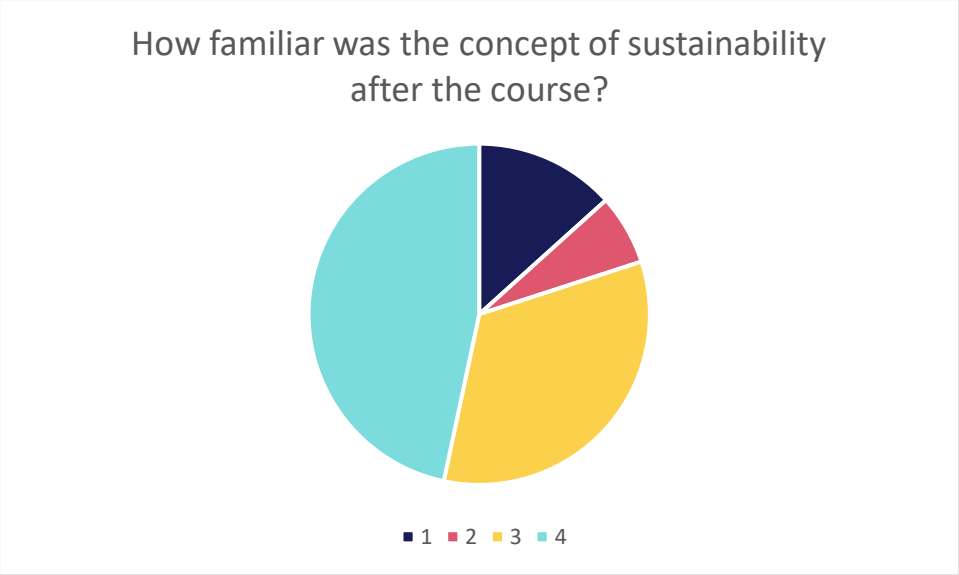
Average answer: 2.47



Ilustration 14

From 1 to 4, how familiar is the concept of Sustainable Fishing now to you?

Average answer: 3.13



Which role do you think you could play in making fishing more sustainable? How would you use this training for this?

The answers to this question were:

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1	Showing others what we learned in the course, even people who don’t work in the fishing sector, due to the importance of keeping the sea and species healthy and cause them less damage.
2	Improving people's awareness with talks.
3	Showing others what I learnt.
4	Raising awareness among the new generation
5	I don’t know.
6	Nothing.
7	I would try to carry it out, but that not only depends on me, I cannot risk my work if for example, I am under orders of a negationist boss / shipowner, but if I could be a shipowner, I would facilitate my employees to be more sustainable.
8	Showing the administration, the real situation.
9	Making fishing more responsible, applying what I learnt it to working life
10	Enter a position that can make a change

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ANNEX VIII – EVALUATION RESULTS EXTRA

1. Gender:

Men	10
Woman	4
Others	1

2. In which age range are you in?

Less than 18	3
Between 18 and 24	6
Between 25 and 34	3
Between 45 and 54	3
More than 55	0

3. What is your nationality?

Spanish	13
Other	2

4. What do you think about the activities of course in general?
(Score them: 5-higher punctuation and 1 lowest punctuation)

The votes are expressed in %*

Day 1					
Activity	**1**	**2**	**3**	**4**	**5**
Introduction - global context, sustainable development	13.3	6.7	20	26.7	33.3
Workshop: 5 goals of sustainable fishing	13.3	13.3	26.7	20	26.7

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Interactive lesson. Fishing and society	13.3	13.3	20	26.7	26.7
Interactive lesson: Marine ecology and ecosystems	20	6.7	20	20	33.3
Day 2					
Interactive lesson: Fishing economy	13.3	11	11	46,7	13.3
Marine environmental awareness. Emissions to the atmosphere	20	6.7	26.7	13.3	33.3
Spilled into the sea: oil	20	6.7	26.7	20	26.7
Solid waste	13.3	0	33.3	33.3	20
Other types of pollution: noise	20	0	33.3	33.3	20
Day 3					
Interactive lesson: Communication	6.7	20	33.3	20	20
Workshop: Communication	13.3	13.3	11	13.3	26.7
Interactive lesson: fishing management	13.3	6.7	26.7	33.3	20
Fishing game	13.3	6.7	20	20	40
Day 4					
Practical session: fishing for litter	20	0	13.3	13.3	53.3
Final work: preparation in groups	13.3	0	6.7	40	40
Presentation of works	13.7	0	13.3	26.7	46.7

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5. Now, we give some topics that we study during the course and the students must order them in order of utility. Putting in the first places the ones you find more useful, the result was:

1º	Fishing and sustainable economy.
2º	Environmental goals.
3º	Marine environment and ecology
4º	The concept of sustainability
5º	Image of the fisherman and fisherwoman.
6º	Fishing gestion
7º	Fisher for litter

6. Evaluation of different aspects of the course (score them: 5-higher punctuation and 1 lowest punctuation).

Activity	**1**	**2**	**3**	**4**	**5**
Teaching	20	0	20	26.7	33.3
The number of students is appropriate	6.7	6.7	13.3	26.7	46.7
Materials of the course	13.3	6.7	13.3	26.7	40
The Schedule of the course	6.7	13.3	13.3	40	26.7
Duration	13.3	13.3	6.7	53.3	13.3
Attention to the students and doubt solving	13.3	6.7	13.3	20	46.7
Contents	13.3	6.7	26.7	26.7	26.7

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Practical exercises	13.3	6.7	6.7	46.7	26.7
The facilities	6.7	0	20	46.7	26.7

7. Do you have members of your family that work in the fishing sector?

Yes	7
No	8

8. Do you think fishing sustainability is important to your relatives? And for you? Do you think there is a divergence of opinions between you and your family members when it comes to sustainability in fisheries?

Answers:

1	No, no, no.
3	Yes, we try to do responsible fishing, we all have the same opinion of responsible fishing.
4	No No
5	Yes
7	Yes, for everyone in general, it's always better for everyone in the long run.

9. Put a mark in the benefits you have since you participate in the course, you can mark more than one:

Benefit:	**Number of votes:**

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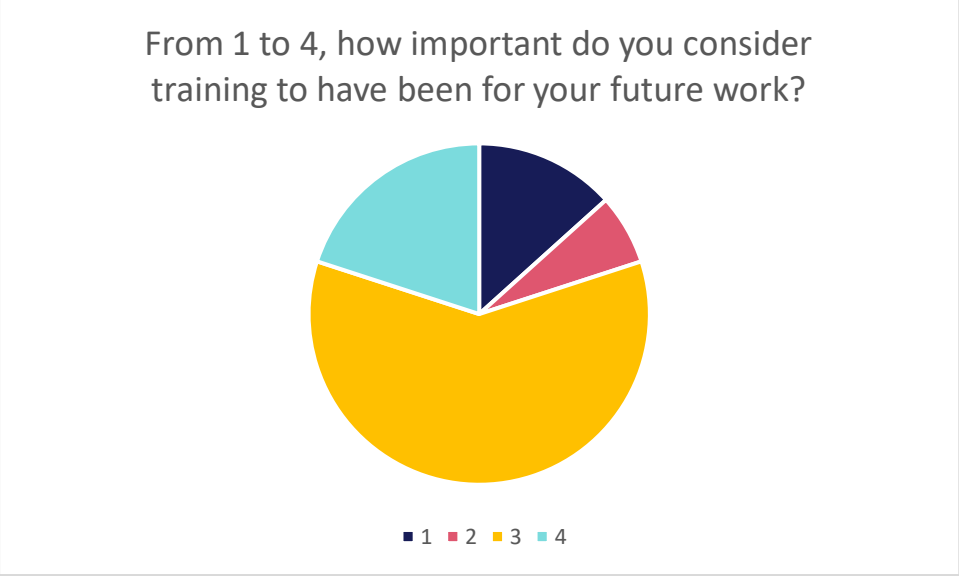
It has allowed me to acquire new knowledge and skills that will improve my employability.	10
It has improved my professional career.	2
It has improved my personal development.	3

10. From 1 to 4, how important do you consider training to have been for your future work?

Average answer: 2.87



Most of the students, a total of nine students rated a 3 which means they found the training to be important for their future work. The second highest score was three,

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with three students voting for 4, the highest possible score. Two students rated a 1 and one student rated a 2.

11. Do you think that after doing the course your way of seeing fishing has changed?

Answer	Number of votes
Yes	7
No	8

12. How has the way you see fishing changed?

1	In a positive way
2	In the importance of understanding that the abuse of the sea and the marine ecosystem only brings dire consequences 5s for the future. It is necessary to find the right balance between being able to develop healthy fishing and respecting the sea.
3	In a good sense
4	That you can do a better fishing without being so bloodthirsty and being more responsible and respectful of the marine environment.
5	Now I know the pollution we have in our area
6	I am more conscious about sustainability now

13. Do you have any other comments/suggestions to improve the course?

Answer:

1	More time
3	No
4	No
5	No

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6	More specific and realistic ideas.
7	More implication of everyone.
8	More coffee breaks.
13	More activities in the boat

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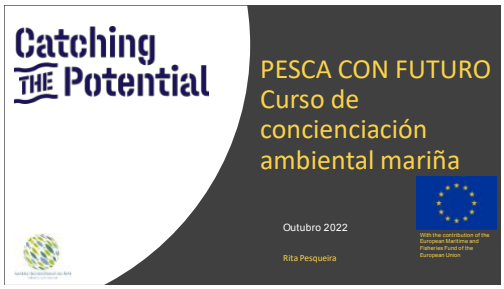
25-3-2023



1

Presentacións

- Quen es?
- Como ves o teu futuro na pesca?
- Que esperas deste curso?


2

A pesca ten unha longa historia...

3

A pesca cambiou, máis eficiente e a maior escala

4

Desenvolvementos tecnolóxicos

5

Máis cooperación con partes implicadas e intercambio de coñecemento

Vigo A Coruña Santander

DIVERSIMAR

REDEMAR

ICCAT

6

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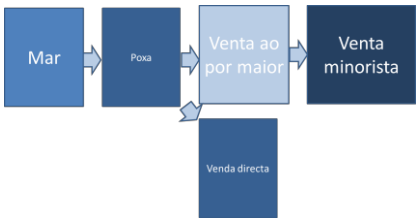
Uso de modelos de certificación

7

Os pescadores buscan oportunidades na cadea de subministro de peixe



8

A pesca está cambiando e necesitamos coñecemento para adaptarnos

9

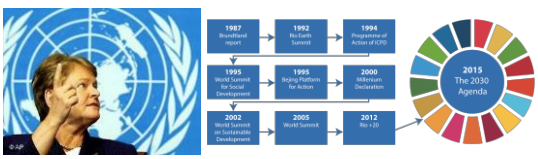
Sostibilidade?

- O primeiro que che ven á cabeza...
- Escríbeo nun papel
- Pono en común

10

Desenvolvemento sostible

Satisfacer as necesidades da xeración **presente** sen comprometer as necesidades **das xeracións futuras**"



11

Desenvolvemento sostible

Pesqueiras sostibles

12

Desenvolvemento sostible. Antecedentes

A humanidade cambiou

- ❖Tecnoloxía
- ❖Coñecemento
- ❖Globalización
- ❖Uso de enerxía
- ❖Uso de recursos

13

Volvémonos poderosos e cambiamos o mundo cando queremos:

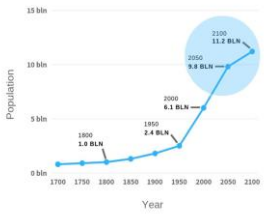
14

Pero tamén pasa que cambiamos o mundo incluso cando non queremos facelo:

- Acidificación
- Reducción da capa de ozono
- Extinción de especies
- Cambio climático
- Introducción de especies invasoras
- Illas de lixo flotante

15

Aínda que podemos facer máis, a poboación está medrando (7 billóns!)



Source: United Nations

16

Máis xente, máis tecnoloxía, máis coñecemento en todo o mundo

...a nosa influencia sobre o planeta cambiou...

17

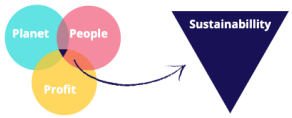
A nosa influencia sobre o planeta cambiou...

18

O desenvolvemento sostible implica...

- People (Persoas): aceptación por parte da sociedade
- Planet (Planeta): conservación da calidade ambiental
- Profit (Proveito): rentabilidade das empresas

4	6	
4	6	
9	6	
No sostenible	Sostenible	



19

O camiño cara a sostibilidade

Normativa

Innovación & procedementos

Xente competente!

20

Diferentes persoas deben contribuír a unha pesca sostible:

- Pescadores
- Comerciantes
- Gobernos
- ONGs
- Investigadores
- Consumidores

21

Taller – A túa opinion

1. Poñédevos en grupos pequenos
2. Fai unha lista dos retos máis importantes dunha pesca sostible.
   ¿Cómo de urxentes son? ¿Por qué?
   - ❖**Designar un lider e moderador**
   - ❖**Discutide os retos no grupo (15')**
   - ❖**Escribide no cartel os 5 máis relevantes (10')**
3. Sesión conxunta (todos os grupos)
   - ❖**Presentación dos resultados (20')**

Prioridade	Reto	¿Por qué este nivel de prioridade?
1		
2		
3		
4		
5		

22

Catching THE Potential

PESCA E SOCIEDADE

Outubro 2022

CETMAR CENTRO TECNOLÓXICO DEL MAR

With the contribution of the European Maritime and Fisheries Fund of the European Union

ProSea marine education

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

Adaptacións: Rita Pesqueira

1

2

3

Hoxe en día todos teñen unha opinión...

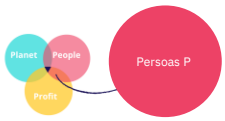
CTP


4

5

A aceptación social é a túa licenza para operar/producir

CTP

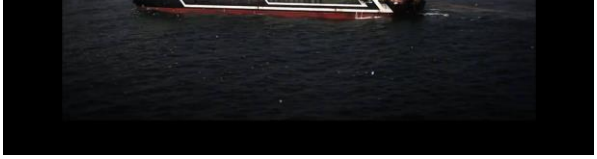


6

A aceptación social é a túa licenza para producir

7

A aceptación social é a túa licenza para producir



8

- Fíxose investigación
- Os stocks de peixe mantivéronse estables
- Vantaxes económicas

Entón, que pasou...

Medios

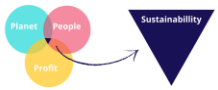
Civís

Consumidores

9

A elección dos consumidores é a túa licenza para producir

- Estándares sociais
- Normas ambientais
- Normas de benestar dos peixes



10

Ademais do rendemento medioambiental da pesca, hai que abordar os estándares sociais da industria pesqueira

11

Ghanaians deceived by Danish shipowner: 'We were treated like slaves'

14 Jul 2020

By Anna Birch-Schmidt for 3F Fagbladet. Reposted with permission.

A shipowner in Thyboaren, Denmark has been charged with human trafficking and violation of the *Danish Aliens Act* after exploiting two Ghanaian sailors and subjecting them to labour under slave-like conditions.

12

Normas sociais para mellores condicións laborais

Algunhas das primeiras e máis importantes organizacións nos estándares sociais son: a Alianza de Conservación para solucións de produtos do mar, Fair Trade USA, Fish Wise e Seafish.
As condicións de traballo e outros estándares sociais non formaron parte da etiqueta MSC durante moito tempo. A presión dos casos de traballo forzoso e tráfico de persoas presionou a MSC para que tamén tivese en conta estes estándares.
Fishwise ten unha ferramenta RISE (Roadmap for Improving Seafood Ethics) para axudar ás empresas a ser máis transparentes na súa cadea de produtos.

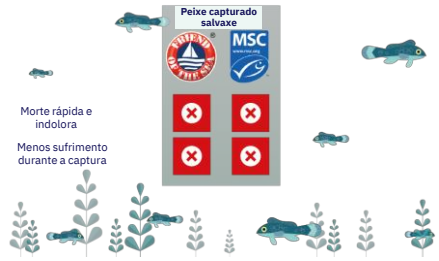
Os estándares sociais cobran máis importancia na pesca sostible

People P

13

A aceptación social é a túa licenza para producir

O benestar dos peixes faise máis importante tamén para o consumidor...



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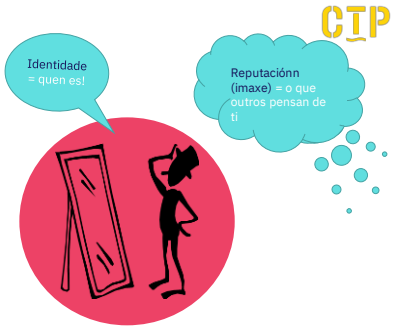
15

16

Imaxe da pesca

A túa reputación reflicte a túa "aceptación pola sociedade"



17

Imaxe da pesca

Tarefa 1:

- **Cal é a imaxe da pesca?**
- **Como ve a xente aos pescadores?**

❖15 minutos
❖Anota as respostas
❖Presenta aos outros grupos

18

Imaxe da pesca

19

Identidade da pesca/pescadores

Tarefa 2:

- Como vexo a pesca/pescadores ?

- 15 minutos
- Anota as respostas
- Estás de acordo?
- Presenta a outros grupos

20

Identidade da pesca

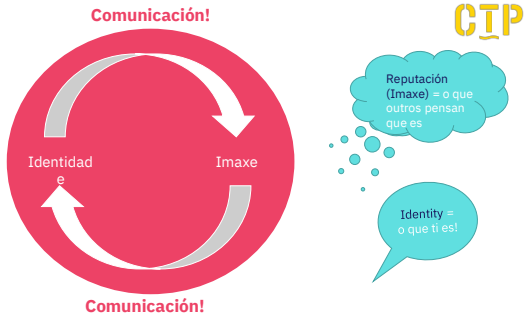
21

22

Para pensar

1. Que/quen determina a imaxe da pesca e dos pescadores?
   Está determinada polos Medios, política ou ONG's?
2. É unha boa imaxe importante?
   Por que, por que non?
3. Como podes (intentar) cambiar/mellorar a fama?

23



24

25

Catching THE Potential

Ecoloxía mariña + ecosistemas

Outubro 2022

Rita Pesqueira

With the contribution of the European Maritime and Fisheries Fund of the European Union

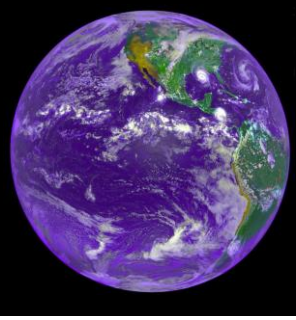
1

- Organismos máis pequenos son os de maior importancia
- Todo está conectado
- De vital importancia para a vida

2

1. **Importancia**
2. Ecoloxía
3. Costa e mar aberto
4. Diferentes ecosistemas

3



Máis do 70% é océano

"Cuan inapropiado es llamar a este planeta tierra, cuando claramente es Océano"
Arthur C. Clarke

4

1/3 da poboación

5

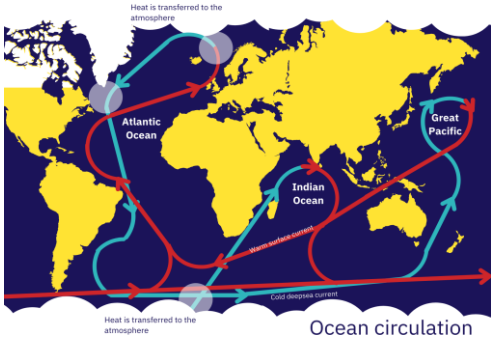
Por que é o mar importante?

6

- Alimento
- 80% comercio mundial
- Cru (30%) e gas (50%)
- > 50% osíxeno..!
- Clima

7

Clima



8

9

1. **Importancia**
2. Ecoloxía
3. Costa e mar aberto
4. Diferentes ecosistemas

10

Fitoplancto

- Microalgas
- Producen alimento
- Base da cadea trófica
- Produce osíxeno

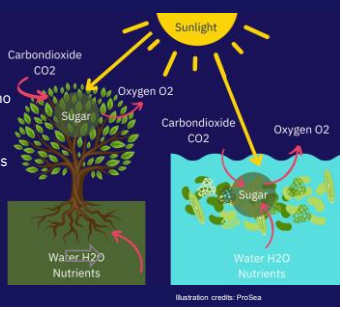
11

Fotosíntese

Sunlight = Luz solar
Sugar = Azucre
Carbondioxide = Dióxido de carbono

Nitratos
Fosfatos
Calcio
...

Aminoácidos
Proteínas
Enzimas
...



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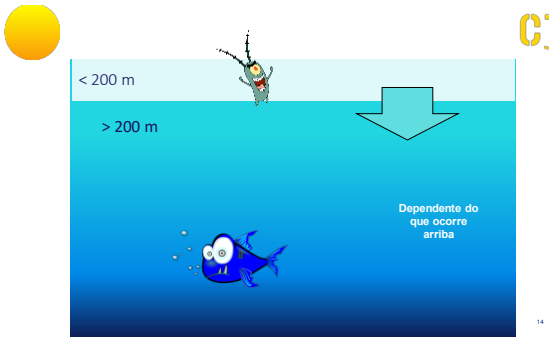

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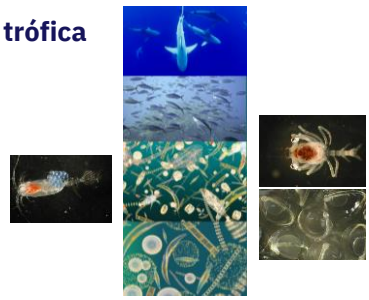
Cadea trófica



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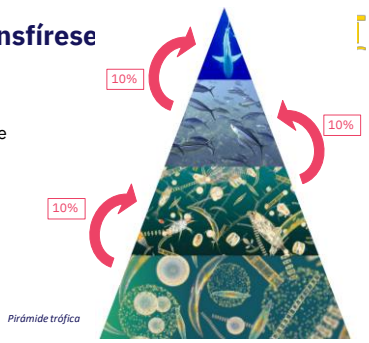
16

A enerxía transfírese

- 90% utilízase
- 10% transfírese



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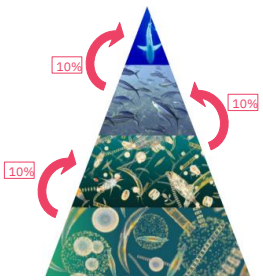
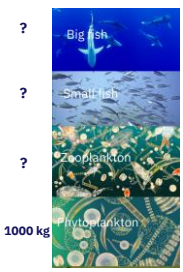
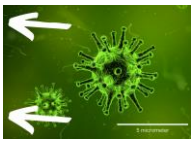
Consecuencia da regra do 10%





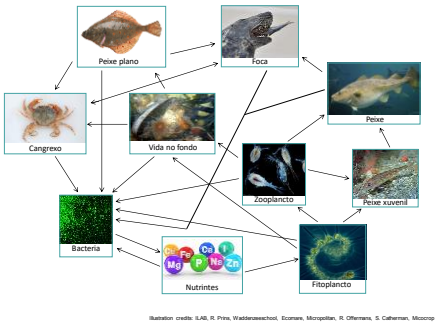
18

As bacterias fan que as cadeas tróficas sexan circulares



Os virus mariños teñen un rol clave

19



20

1. **Importancia**
2. Ecoloxía
3. Costa e mar aberto
4. Diferentes ecosistemas

21

Dous sistemas diferentes

Se foras fitoplancto, onde che gustaría vivir?

22

Diferenzas: costa & mar aberto

Físicas

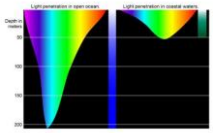
Nutrintes
- Mar aberto: **alimento escaso**
- Costa: **alimento abundante**

Luz

Temperatura

Salinidade

...

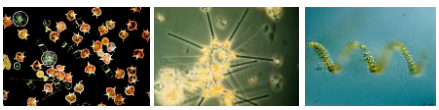


Biolóxicas

1. Tipo de fitoplancto
2. Produción primaria
3. Lonxitude das cadeas tróficas

23

(1) Diferentes tipos de Fitoplancto

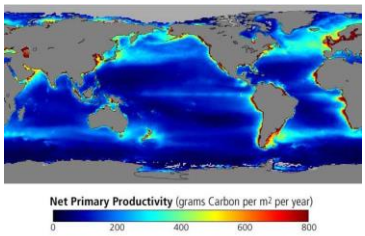


Mar aberto: pequeno e esférico

Costa: de maior tamaño e de distintas formas

24

(2) Diferenzas na produción primaria



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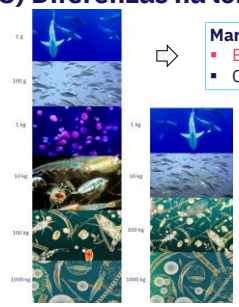
(3) Diferenzas na lonxitude das cadeas

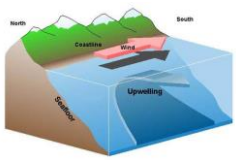


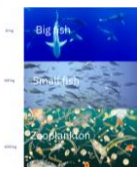
Mar aberto
- Escaseza de alimento
- Cadeas longas

Costa
- Alimento abundante
- Cadeas curtas

26

"Zonas de afloramento"





Zonas de afloramento
- Alimento extremadamente abundante
- Cadeas extremadamente curtas

27

28

1. **Importancia**
2. Ecoloxía
3. Costa e mar aberto
4. Diferentes ecosistemas

Ecosistema

'Abiótico' ⇌ 'Biótico'

Unha área

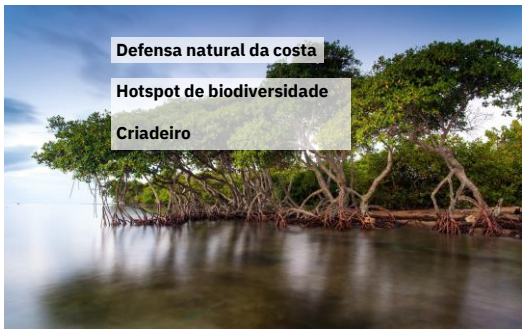
29

A costa

Zonas intermareais

Zonas submareais

30



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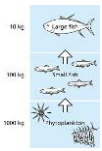
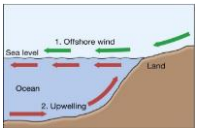
Afloramento



Rico en nutrintes

Cadeas tróficas curtas

⇨ **Alta produtividade**



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Catching THE Potential

Curso de concienciación ambiental mariña. Emisións á atmosfera

Outubro 2022

CETMAR

With the contribution of the European Maritime and Fisheries Fund of the European Union

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

Adaptacións: Rita Pesqueira

1

2

Contaminantes

CO_2 – carbon dioxide
Dióxido de carbono

SOx – sulphur oxides
Óxidos de xofre

NOx – nitrogen oxides
Óxidos de nitróxeno

PM – particulate matter
Materia particulada

Motor

Halones e CFC's — Sistemas de refrixeración

COVs – Compostos orgánicos volátiles — Relacionados coa carga e aceites

3

4

CO2 - Dióxido de carbono → Cambio climático

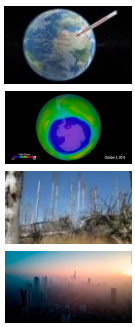
Halones e CFC's → Redución da capa de ozono

SOx - Óxidos de xofre

NOx - Óxidos de nitróxeno → Chuvia ácida

PM – Materia partículada

COVs → Alidade do aire



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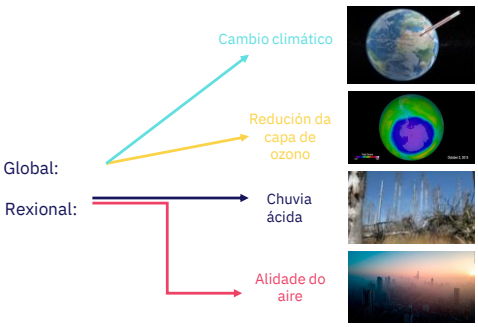

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Definición de cambio climático

‘O cambio que se produce no clima (os patróns habituais de temperaturas, precipitacións, intensidade e frecuencia de tormentas globais, producidos por variabilidade natural e a actividade humana, que perdura no tempo’.

- O quecemento global pode ser parte do cambio climático
- O tempo non é o mesmo que o clima

9

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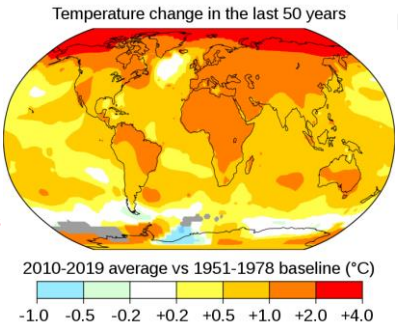
Cambio:
A temperatura aumentou

IPCC: 1ºC máis quente (1880-2018



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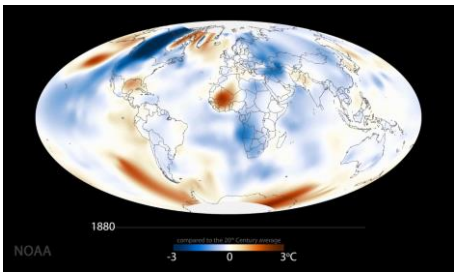

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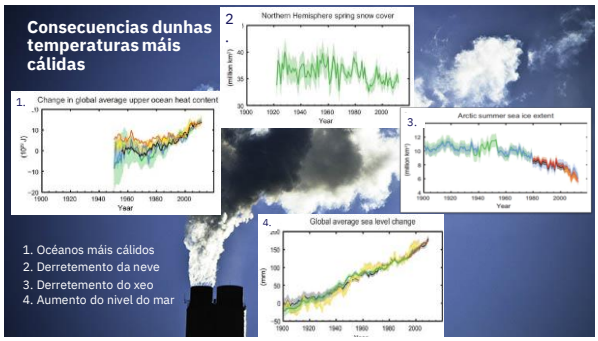

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10 indicadores de que o mundo se quenta:
todos están ocorrendo

14

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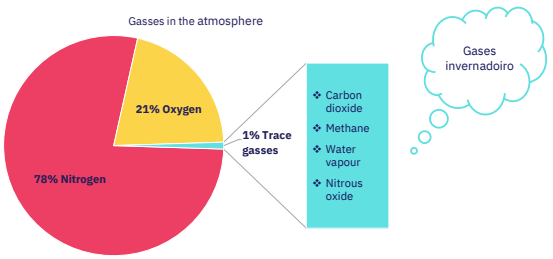
Cales son as causas?



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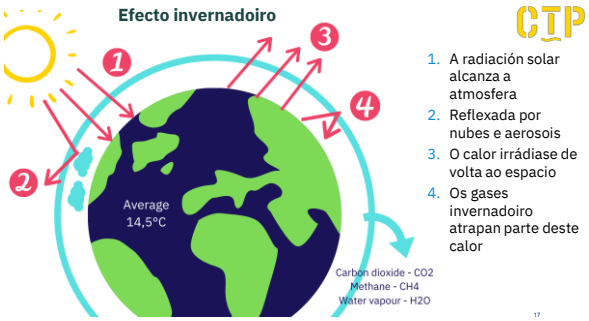
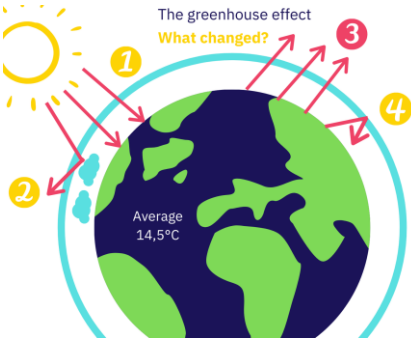


1. A radiación solar alcanza a atmosfera
2. Reflexada por nubes e aerosois
3. O calor irrádiase de volta ao espacio
4. Os gases invernadoiro atrapan parte deste calor

17



A temperatura da atmosfera pode cambiar por:

1. Cambios na radiación solar
2. Cambios en nubes/aerosois
3. -
4. Cambios en gases invernadoiro

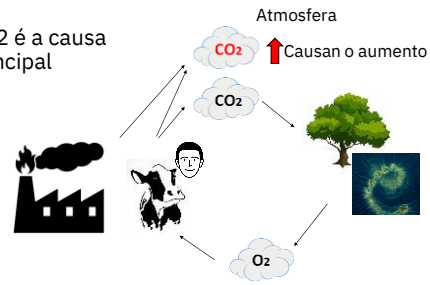
18

IPCC 2013: "É extremadamente posible que a influenza do ser humano sexa a causa principal dos cambios observados dende a metade do século XX."

Maior concentración de gases invernadoiro potencian o efecto invernadoiro: a temperatura media aumenta

19

CO2 é a causa principal



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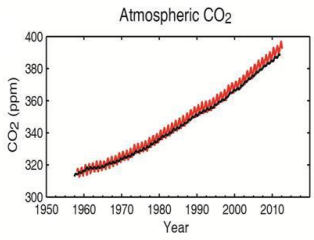

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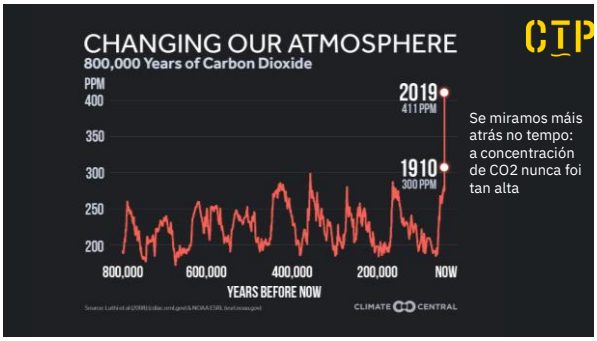

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Conclusións

Sabemos / hai consenso científico sobre que está cambiando e as súas causas

As posibles consecuencias... non as coñecemos aínda o clima é complicado moitos procesos á vez procesos que potencian e reducen o quentamento

23

Cales poden ser as consecuencias?

24

Animais, Acidificación dos océanos, branqueamento dos corais

As especies **adáptanse**, **móvense**, **ou morren**




25

25

Conclusións

26

Obxectivos climáticos

Manter o aumento da temperatura < 2°C

IMO

PARIS2015 COP21·CMP11

27

Reducir as emisións do sector marítimo

O 16 de setembro de 2020, os eurodiputados votaron a favor de incluír o transporte marítimo no sistema de comercio de emisións da UE a partir de 2022 e de establecer requisitos vinculantes para que as compañías navieiras reduzan as súas emisións de CO2 en alo menos un 40% para 2030.

O Parlamento propuxo medidas que contribúan a que o sector marítimo sexa máis limpo e eficiente na transición cara unha Europa climaticamente neutra:

- A eliminación progresiva dos combustibles pesados a través de fomentar os incentivos, como as exencións fiscais, uso de combustibles alternativos.
- A descarbonización, dixitalización e automatización dos portos europeos.
- Acceso regulado aos portos da UE para os buques máis contaminantes.
- Melloras técnicas como a optimización da velocidade dos buques, a innovac hidrodinámica e os novos sistemas de propulsión.

29

IMO

2013 – Anexo VI
MARPOL
EEDI (Indice de Deseño de Eficiencia Enerxética) (– niveis de eficiencia enerxética)
SEEMP (Plan de xestión da eficiencia enerxética do buque)

2019
Rexistro de uso de combustibl e

Futuro

Medidas baseadas no mercado
Impostos e dereitos

Sistema de Mercado de emisións


Illustration credits: Romzicom , noun project / Air Pollution & Climate Secretariat (Airclim)

28

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Destrución da capa de ozono

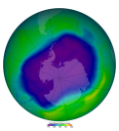
O ozono diminueu en todo o mundo durante os anos 80 e principios dos 90.

- Substancias que reducen a capa de ozono emitidas polo ser humano:
- CFCs, producidos pola refrixeración, aire acondicionado, equipo utilizado no apagado de incendios....

⇨ Maior radiación UV na Terra

Consecuencias

. Perigo para a saúde humana (Cancro de pel)
. O fitoplancto vese danado
. Danos dos cultivos



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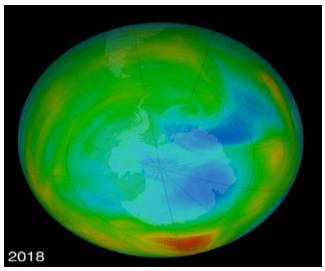
As substancias que destrúen a capa de ozono fóronse eliminando pouco a pouco dende 1989



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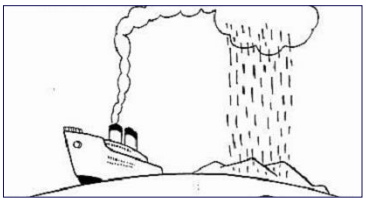
Acidificación

NO_x, SO_2 no aire, reacciona coa auga, formando ácidos.



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Acidificación

- O chan perde nutrintes: dano a árbores/prantas
- O chan libera metais pesados: tóxicos para peixes, insectos e persoas
- Edificios: dánanse por corrosión

- *Foi un problema que destacou en Europa nos anos 80, actualmente é menos problemático (aínda que non está totalmente resolto)*
- *É un problema moi grande en Asia*

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Calidade do aire (SOx)

Emisións de NOx, SOx, COV e PM contribúen á formación de smog (néboa de fumes), cuxo compoñente principal é o ozono (O_3)

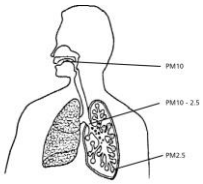
Ozono en capas baixas:
tóxico: pulmóns, ollos, peito
dana follas (en prantas e árbores)

34

Calidade do aire (SOx)

Non detectado → pasa ao fluxo sanguíneo

Efectos para a saúde:
Mortes prematuras
fallo cardíaco e pulmonar
asma
bronquitis (crónica)
(posibilidade de cancro



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Catching THE Potential

ECONOMÍA DA PESCA

Outubro 4, 2022

CETMAR CENTRO TECNOLÓXICO DO MAR

With the contribution of the European Maritime and Fisheries Fund of the European Union

PROSea marine education

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

Adaptacións: Rita Pesqueira

1

2

CTP

Quen é o mellor pescador?

Escribe nun post-it que significa para ti ser "o mellor pescador"

Todos os post-its son recollidos nun folio.

3

4

5

6


Quen é o mellor pescador?
CTP

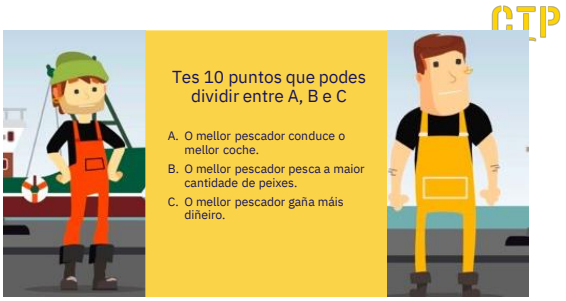
7


Quen é o mellor pescador?
CTP

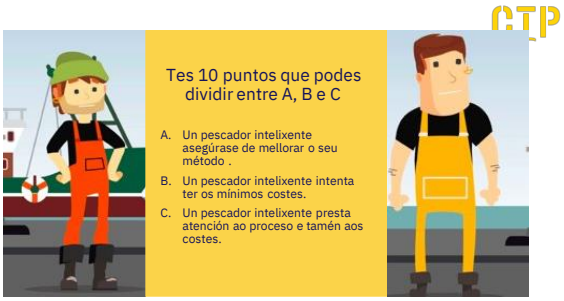
8


Quen é o mellor pescador?
CTP

9


CTP
Tes 10 puntos que podes dividir entre A, B e C
A. O mellor pescador conduce o mellor coche.
B. O mellor pescador pesca a maior cantidade de peixes.
C. O mellor pescador gaña máis diñeiro.

10


CTP
Tes 10 puntos que podes dividir entre A, B e C
A. Un pescador intelixente asegúrase de mellorar o seu método .
B. Un pescador intelixente intenta ter os mínimos costes.
C. Un pescador intelixente presta atención ao proceso e tamén aos costes.

11


Economía da pesca
CTP
❖ Quen é o mellor pescador?
❖ Tamaño da flota e economía
❖ Ingresos e costes
❖ Cadea de suministro

12

14

15

17

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Ocupación na pesca por extracto

Táboa nº2. Poboación ocupada na pesca extractiva por caladoiro/tipo de pesca. Ano 2019

CALADOIRO	Barcos		Tripulantes		Tripulantes / barco (media)
	N.º	%	N.º	%	
Caladoiro nacional Cantábrico-noroeste	**4.169**	**96,17 %**	**8.942**	**81,66 %**	**2,14**
Arrastre	57	1,31 %	560	5,12 %	9,83
Artes menores	3.862	89,09 %	6.319	57,71 %	1,64
Cerco	152	3,51 %	1.286	11,75 %	8,46
Enmalle	25	0,58 %	178	1,63 %	7,12
Palangre de fondo	22	0,51 %	131	1,20 %	5,95
Palangre de superficie	51	1,18 %	467	4,26 %	9,16
Pesqueiras comunitarias	**69**	**1,59 %**	**1.059**	**9,67 %**	**15,34**
Arrastre	23	0,53 %	339	3,10 %	14,75
Palangre de fondo	46	1,06 %	719	6,57 %	15,64
Pesqueiras internacionais	**97**	**2,24 %**	**950**	**8,68 %**	**9,79**
Arrastre e cerco	30	0,69 %	507	4,64 %	16,93
Palangre de superficie	67	1,59 %	442	4,04 %	6,60
TOTAL	**4.335**	**100,00 %**	**10.951**	**100,00 %**	**2,53**

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Poboación ocupada na pesca por extracto

Táboa nº3. Poboación ocupada na pesca extractiva por estrato. Comparativa 2017-2019

CALADOIRO	N.º de buques			N.º de tripulantes		
	2019	2017	% var.	2019	2017	% var.
Caladoiro nacional Cantábrico-noroeste	**4.170**	**4.251**	**-1,91%**	**8.942**	**9.283**	**-3,67%**
Artes menores	3.863	3.927	-1,63%	6319	6558	-3,64%
Resto	307	324	-5,25%	2623	2725	-3,74%
Pesqueiras comunitarias	**69**	**68**	**1,47%**	**1.059**	**1.099**	**-3,64%**
Pesqueiras internacionais	**97**	**100**	**-3,00%**	**950**	**995**	**-4,52%**
TOTAL	**4.336**	**4.419**	**-1,88%**	**10.951**	**11.377**	**-3,74%**

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Evolución da ocupación na pesca por extracto

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Facturación na pesca extractiva

Táboa nº22. Facturación media na pesca extractiva por estrato. Ano 2019

Caladoiro	Facturación		N.º ocupados/as		€/ocupado/a
	Miles €	%	N.º	%	
Caladoiro nacional Cantábrico-noroeste	**306.587**	**36,9 %**	**8.942**	**81,7 %**	**34.285**
Artes menores	132.753	16,0 %	6.319	57,7 %	21.008
Resto	173.834	20,9 %	2.623	24,0 %	66.276
Pesqueiras comunitarias	**146.153**	**17,6 %**	**1.059**	**9,7 %**	**138.073**
Pesqueiras internacionais	**377.153**	**45,4 %**	**950**	**8,7 %**	**396.935**
TOTAL	**829.892**	**100,0 %**	**10.951**	**100,0 %**	**75.783**

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Evolución da facturación na pesca extractiva

Táboa nº23. Evolución da facturación na pesca extractiva por estrato.

CALADOIRO	Facturación total (miles de euros)				
	2011	2013	2015	2017	2019
Caladoiro nacional Cantábrico-noroeste	**272.294**	**286.387**	**263.456**	**316.452**	**306.587**
Artes menores	86.700	75.627	92.156	121.862	132.753
Resto	185.593	210.760	171.300	194.590	173.834
Pesqueiras comunitarias	**153.425**	**163.182**	**131.011**	**137.778**	**146.153**
Pesqueiras internacionais	**251.572**	**353.412**	**407.165**	**435.024**	**377.153**
TOTAL	**677.292**	**802.981**	**801.633**	**889.254**	**829.892**

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Evolución da facturación por persoa ocupada na pesca

Táboa nº24. Evolución da facturación por persoa ocupada na pesca extractiva por estrato.

CALADOIRO	€ / Persoa ocupada				
	2011	2013	2015	2017	2019
Caladoiro nacional Cantábrico-noroeste	**24.591**	**28.599**	**31.145**	**34.090**	**34.285**
Artes menores	11.522	11.257	16.077	18.582	21.008
Resto	54.780	63.944	62.816	71.414	66.276
Pesqueiras comunitarias	**104.585**	**123.810**	**119.536**	**125.377**	**138.073**
Pesqueiras internacionais	**186.212**	**181.144**	**377.005**	**437.097**	**396.935**
TOTAL	**49.326**	**60.452**	**75.377**	**78.162**	**75.783**

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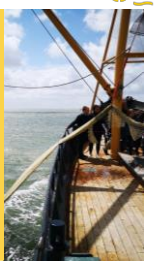
Tamaño da flota

O consumo medio por persoa de peixe en España é 45kg/ano.

A poboación española é de 46.934.632 persoas.

1. **Canto peixe se necesita capturar cada ano?**
2. **Capturamos suficiente?**



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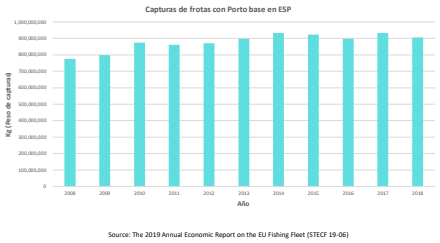
Capturas en 2018 – 905.945 toneladas



Source: The 2019 Annual Economic Report on the EU Fishing Fleet (STECF 19-06)

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Quen consume o peixe?

- Consumo interno:

Os produtos pesqueiros forman parte importante da alimentación habitual dos fogares españois. En xaneiro 2022 o porcentaxe de consumo (en kg) per cápita é o seguinte

- Números de exportación:

32

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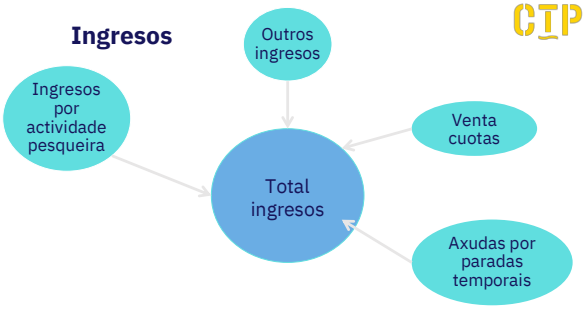
Igresos e custes

Assignment 1:

Make a list of all proceeds of a fishing company. How do you earn money?

34



35

Ingresos e custes

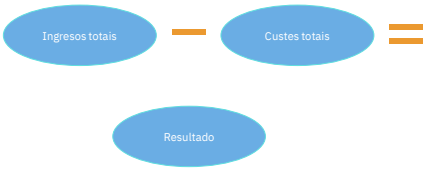
Tarefa 2:

Fai unha lista co custos de operación dunha empresa de pesca.

36

37

Ingresos e custes

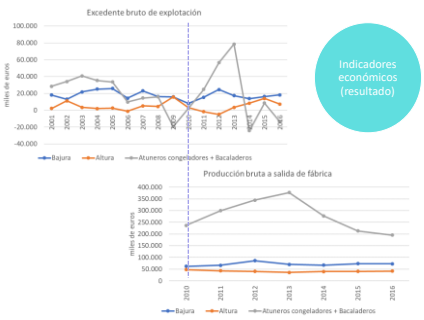


38

Ingresos e custos

Tarefa 3:
Como podes influir ti nos ingresos e nos custos?

39



Indicadores económicos (resultado)

40

Economía da pesca

- Quen é o mellor pescador?
- Tamaño da flota e economía
- Ingresos e costes
- Cadea de suministro

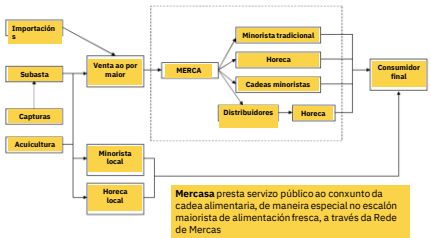
42

Preguntas sobre as que pensar:

Por que camiño debe "nadar" o peixe para chegar ao consumidor?

43

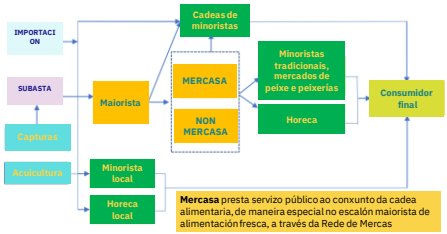
Cadea de subministro tradicional de mariscos en España



Mercasa presta servizo público ao conxunto da cadea alimentaria, de maneira especial no escalón maiorista de alimentación fresca, a través da Rede de Mercas

44

Cadea de subministro moderna de mariscos en España



45

Cuestións sobre as que pensar:

Como é posible que os consumidores paguen máis de 10 EUR por un quilogramo de pescada cando o pescador só recibe 4 euros?

Pensa sobre os diferentes elos da cadea de valor, quen fai que e a que custe?

Pesca e subasta	
Canto obtes por 1 kg de peixe	€
Manexo de costes e subasta	€

46

Preguntas sobre as que pensar:

Peixe enteiro	
Precio de puxa	€
Transporte e transaccións	€
Outros custos (20%)	€

Procesado	
Transporte e transaccións	€
Pérdida por fileteado (50%)	€
Corte, envasado/conxelación	€
Outros custos(40%)	€

47

Preguntas sobre as que pensar:

Venta	
Custo tenda (50%)	€
Imposto sobre o valor engadido (IVE)	€

Consumer	
Precio en tenda por kg	€
Precio en tenda por 100 mg	€

48

Oportunidades para aumentar o beneficio

- ❖ Crear un novo produto.
- ❖ Atopar novos consumidores.
- ❖ Acurtar a cadea.

51

Crear un novo produto

Mexillóns ao minuto

Conservas

52

Atopar novos consumidores

Bolas de peixe, sen espiña fáciles de masticar para os máis maiores. Proxecto SEAFOOD AGE

53

Exemplos de cadea máis curta:

As **cadeas curtas** inclúen todas as formas de venta nas que o pescador vende a súa captura ao consumidor final cun máximo dun intermediario.

La *mejor captura*: las oportunidades surgen en el punto donde coinciden las expectativas de los pescadores y las de los consumidores

54

55

Traballo grupal:

1. Elixe un producto.
2. Describe como che gustaría crearlle valor adicional na cadea de valor.
3. Describe a cadea de valor do teu producto.
4. Como inflúe o teuplan para crear valor adicional nas 3 P (Persoas, Planeta, Ganancias)?
5. Que socios necesita para executar este plan?
6. Crees que o teu plan é realista?

56

Como pescador podes facer máis do que pensas!

57

Catching THE Potential

VERTIDOS AO MAR - PETRÓLEO

CETMAR
CENTRO TECNOLÓXICO DO MAR

Outubro 2022

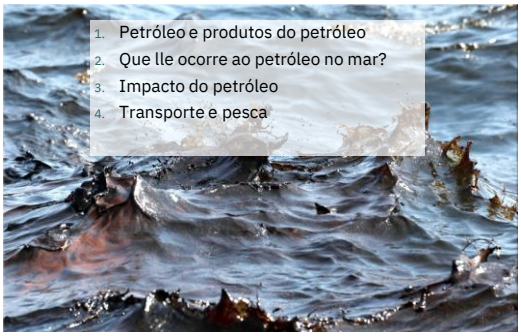
With the contribution of the European Maritime and Fisheries Fund of the European Union

ProSea marine education

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

Adaptacións: Rita Pesqueira

1



1. Petróleo e produtos do petróleo
2. Que lle ocorre ao petróleo no mar?
3. Impacto do petróleo
4. Transporte e pesca

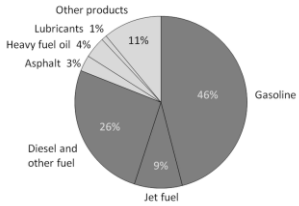
2

Petróleo

- En 2019: produción de 95.2 millóns de barriles (159 litros) por día
- Pode introducirse no mar durante a exploración, transporte e uso
- Moita xente o ve como un gran problema.

3

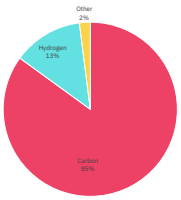
Petróleo e os seus derivados



Produtos do petróleo dun barril típico de cru de EEUU.
- Gris escuro = combustibles
- Gris claro = outros produtos

4

Composition crude oil

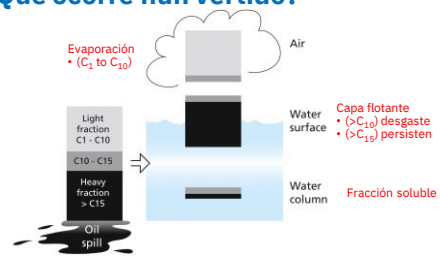


Petróleo cru
- Principalmente C, un pouco de H
- N, S, O2
- Varios metais pesados (Fe, Zn)
- Especialmente os hidrocarburos aromáticos son tóxicos

A súa composición **varía** enormemente!

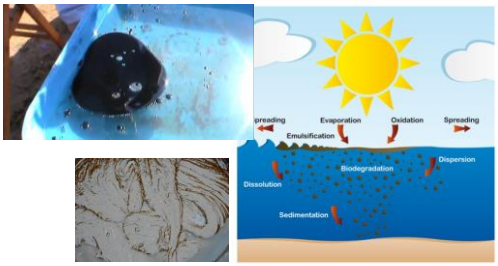
5

3. Que ocorre nun vertido?



6

Comportamento do petróleo



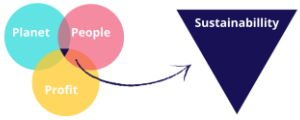
7

Persistencia do petróleo

8

Impacto do petróleo – People P (Persoas)

- Moita xente ve os vertidos no mar como un gran problema ambiental
- Os desastres con buques petroleiros atraen moita atención mediática

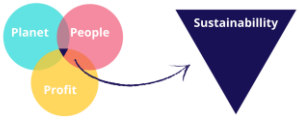


9

Impacto do petróleo– Planet P (medioambiente)

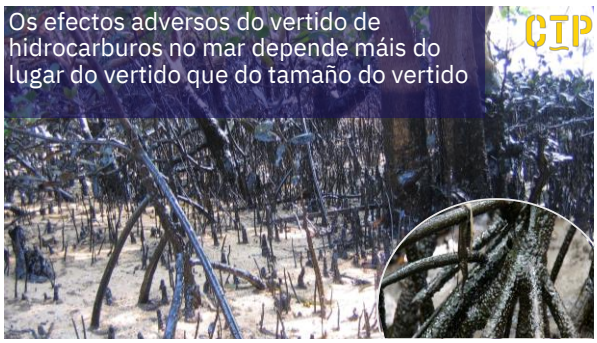
impacto depende de:

- Tipo e cantidade de petróleo
- Tempo atmosférico
- Estación
- Lugar



10

Os efectos adversos do vertido de hidrocarburos no mar depende máis do lugar do vertido que do tamaño do vertido



11

Afundimento do Prestige

19 de Novembro de 2002

12

Que consecuencias para o medioambiente tivo o accidente do petroleiro?

- Unha redución da biodiversidade nas augas e costas afectadas por vertidos, un cambio na flora e fauna e afectou directamente a todos os seres vivos de Galicia, Asturias, Cantabria e Euskadi

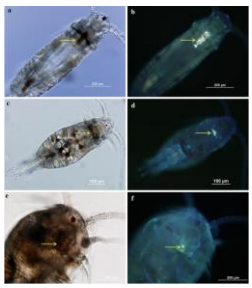
13

Aves

14

Plancto (incl. larvas)

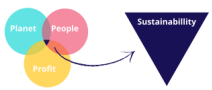
Exposición crónica ao vertido debilita o seu sistema



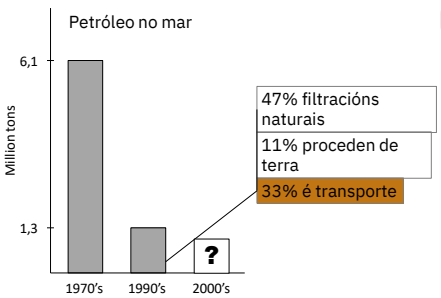
15

16

Impacto do petróleo – Proveito P (económico



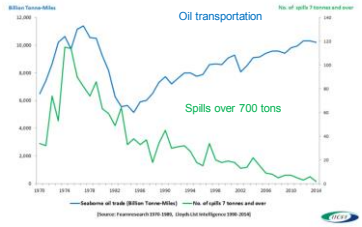
17



18

O papel dos vertidos de petroleiros

A cantidade de petróleo no mar, como resultado de vertidos, descendeu dende os 70



19

Petróleo no mar:

As operacións de rutina contribúen **3x** (2002)

Accidentes 25% Operacións 75%

A exposición crónica pode ser máis danina que os accidentes

20

A "tubería máxica" de 36 m€: multa record para os cruceiros Princess por verter combustible ao mar

Violación de MARPOL

1. Tubería máxica
2. Minteu á inspección
3. Falsificación de rexistros
4. Descargas ilegais dende 2005

Consecuencias
1. 36 millóns € de multa
2. Programa de Cumprimento Ambiental para 78 barcos
3. Tripulación pode ser despedida e o incidente rexistrado no seu expediente

21

21

Catching THE Potential

Residuos sólidos

Outubro 2022

CETMAR CENTRO TECNOLÓXICO DO MAR

ProSea marine education

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Adaptacións: Rita Pesqueira

1

1. Resíduos sólidos/lixo mariño
2. Impactos
3. Rol da pesca/navegación
4. Solucións

2

Residuos sólidos

Marpol Annex V:

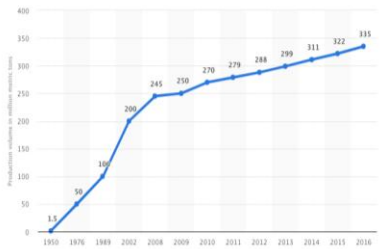
- plástico,
- metal,
- madeira,
- cristal,
- ...

- Orixe:
  - Cociña
  - Sala de máquinas
  - Relacionado co transporte

3

4

Produción de plástico no mundo 1950 – 2016 (en millóns de toneladas)



5

Os plásticos duran unha eternidade

Moitos beneficios

Pero o plástico...

- Dura moito tempo
- Contén moitos químicos
- Degrádase en anacos moi pequenos

6

50 anos

7

7

450 anos

5 minutos

8

8

9

9

Cada ano, vértense 8 millóns de toneladas de plástico ao mar (UNEP, 2017)

Cada minuto

10

10

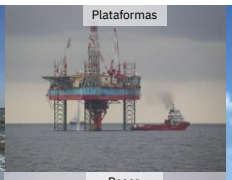



De adonde viene?

Illustration credits: NOAA

11

11



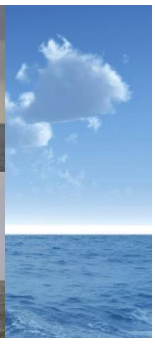
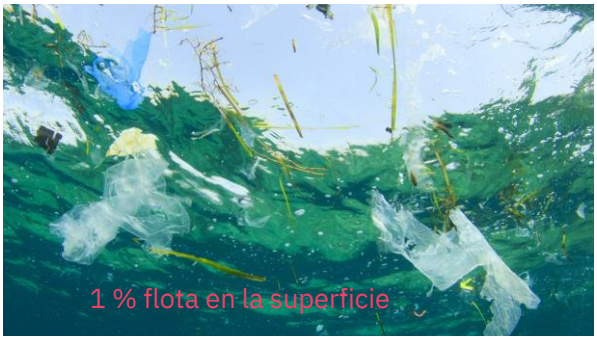



Photo credits: North Sea Foundation / ProSea

12

3 – 15% termina en las costas…

13



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16

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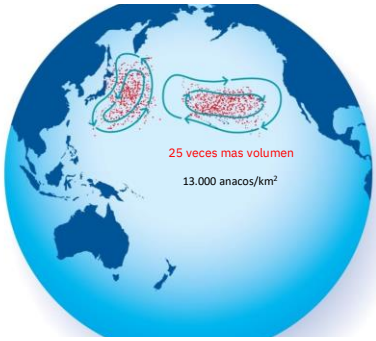


Sopa de plástico

18

19

20

Con todo, a maior parte do lixo non se ve...

Canto se afunde (en %)?

Photo credits: Textilia; prosea; publicomainpictures

21

21

Flotará?
Afundirase?

22

23

Flotará?
Afundirase?

24

25

Flotará?
Afundirase?

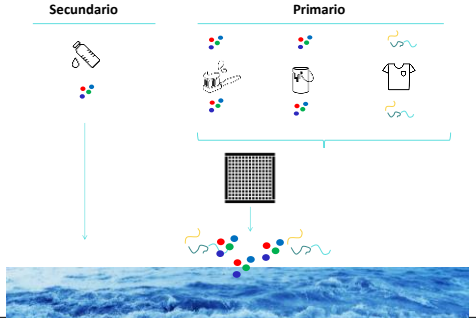
26

27

De onde proceden os fragmentos pequenos?

Microplásticos:
< 5 milímetros
Nanoplásticos:
< 100 nanómetros

28



29

1. Residuos sólidos/lixo mariño
2. **Impactos**
3. Rol da pesca/navegación
4. Solucións

30

31

Dano ecolóxico

- **Enganches/enredos**
- **Inxesta**
- Dispersión de especies invasoras
- Erosiona as comunidades bentónicas


32

32




Photo credits: Marine Photobank from (c) 1990 Bob Talbot, LegaSea Project / Ecomare, Saiko de Wolf

33

33

credits: World Press Photo 2017; Francis Peréz

34

Enredos/enganches


35

35




36

36

Inxesta

University Of Queensland Study Shows One In Three Turtles Have Eaten Marine Plastic

37

37

Inxesta (albatros)

• VIDEO

38

38

39

Regurxítanse ou excretan a través das feces

Os plásticos quédanse no estómago para sempre
- Non teñen valor nutricional → os animais pasan fame

40

40

O maior problema....

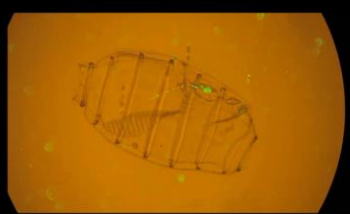
o dos plásticos máis pequenos

Micro & Nano
<5 mm <100 nm

41

41

Consumidos por fitoplancto



42

42

Conteñen compoñentes químicos tóxicos

- Anti-bacterial
- Flame retardants,
- ...

Os components químicos **tóxicos** **adhírense** aos plásticos

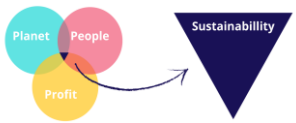
PCB
POP

43

43

Hay mucho que no sabemos...

44



Dano económico mundial causado polos plásticos a ecosistemas mariños en U.S. $13 billóns por ano.

45

45

1. Resíduos sólidos/lixo mariño
2. Impactos
3. Rol da pesca/navegación
4. Solucións

46

Resultados de investigación de praias españolas

España participa en ICG-ML dende finais dos anos 90 e uniuse ao Proxecto piloto de OSPAR para a Monitorización de Lixo Mariño en praias no ano 2001.

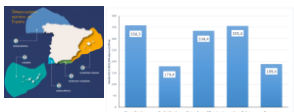
Actualmente o programa de monitoring cubre 29 praias, muestreos estacionais (4 veces por ano) seguindo a metodoloxía establecida por OSPAR:

- Transecto de 1 Km: só obxectos > 50cm; clasificación en 24 ítems
- Transecto de 100 m: todos os obxecto; clasificación en 133 ítems

Resultados TOTAIS (2013-2021): Abundancia

nº/EU	2013	2014	2015	2016	2017	2018	2019	2020	2021
Nº Campañas	96	105	100	100	103	102	104	78*	104
Media / campaña	278	346	320	321	377	366	327	313	278

Resultados DEMARCACIÓNS (2013-2021): Abundancia



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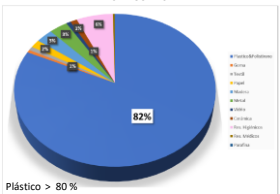
Resultados de investigación de praias españolas

COMPOSICIÓN (2013 – 2021)

CATEGORÍAS



Plástico > 80 %

TOP – X ítems

	ID	Tipo de objeto	Nº	%	% acumulado
1	1171	Frag. plástico no identificables 0,5 - 2,5 cm	59808	20,6	20,6
2	321	Cabitos / cordeles / filamentos de plástico (diámetro < 1 cm)	30288	10,4	31,0
3	64	Colillas de cigarrillos	28109	9,7	40,6
4	461	Frag. plástico no identificables 2,5 - 50 cm	26526	9,1	49,7
5	15	Tapas, tapones y corchos de plástico	21560	7,4	57,1
6	981	Bastoncillos de algodón de plástico	14777	5,1	62,2
7	19	Bolsas pequeñas finas, envoltorios y palos	8275	2,8	65,1
8	4	Botellas y garrafas de bebida de plástico	7281	2,5	67,6
9	48	Otros obj. klent. plástico o sus fragmentos	7186	2,5	70,0
10	45	Espumas e esponjas sintéticas	5155	1,8	71,8
11	74	Otras piezas de madera > 50 cm	4928	1,7	73,5
12	2	Bolsas de la compra (o trozos reconocibles)	3844	1,3	74,8
13	31	Cabos y cuerdas de plástico (ø > 1 cm)	3574	1,2	76,1
14	22	Pajitas, cubiertos y platos de plástico	3016	1,0	77,1
15	610	Envases de comida de plástico	2660	0,9	78,0
16	78	Latas de bebida o anillas de latas de bebida	2345	0,8	78,8
17	67	Otros objetos de papel o cartón	2063	0,7	79,5
18	81	Papel de aluminio	1901	0,7	80,2

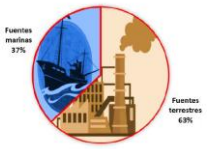
48

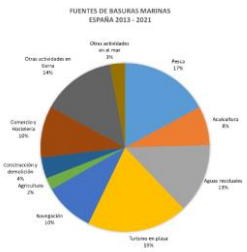
Resultados de investigación de praias españolas

ORIXE DO LIXO MARIÑO EN PRAIAS - ESPAÑA

No ano 2020, implementouse unha nova metodoloxía para estimar a orixe do lixo mariño nas praias españolas

Matrix Scoring Technique **(Tudor y Williams, 2004)**





Principais fontes: Turismo e pesca

49

Citar que a información que se mostra nas diapositivas 43, 44 e 45 provén da presentación:

Speaker: Marta Martínez-Gil Pardo de Vera

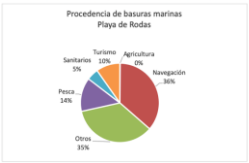
SESSION: MONITORING AND ASSESSMENT

50

Clasificación do lixo mariño de máis de 50 cm por categorías e orixe. Praia de Rodas, Illas Cíes

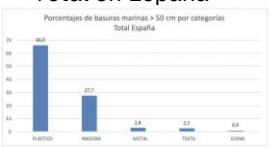
51

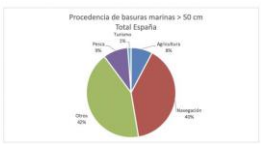
Clasificación do lixo mariño de menos de 50 cm por categorías e orixe. Praia de Rodas, Illas Cíes

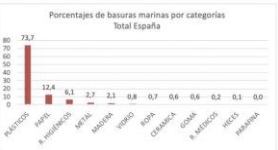


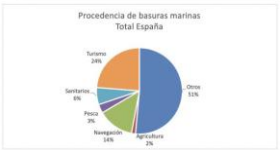
52

Total en España







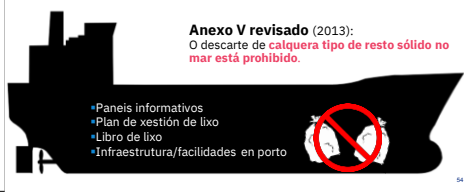


53

Normativa

Permitido:

- Comida,
- Residuos de carga,
- Auga de lavado,
- Restos animais (espiñas)



Anexo V revisado (2013):
O descarte de **calquera tipo de resto sólido no mar está prohibido**.

- Paneis informativos
- Plan de xestión de lixo
- Libro de lixo
- Infraestrutura/facilidades en porto

54

54

55

En Porto (Rotterdam)

96% reciclado

160 -180 categorías

'Libertade' (taxas de porto)

24 categorías

Separar lixo custa menos, xa que B&V leva menos tempo

Credits: binnenvaartkrant

56

No barco

- Queimar ('incineradora')
- Comprimir ('compactadoras')
- Separar o lixo
- Minimizar a cantidade de lixo

57

Pesca de lixo – Fishing for litter

58

Exemplos de Proxectos Loita contra Lixo Mariño en Galicia

repesca PLAS 3 · UPCYCLING THE OCEANS · MARES CIRCULARES · interreg Atlantic Area · Clean Atlantic

ASOCIACIÓN vertidoscero · ECOALF · ecoembes · Lpn · ecomar · Coca-Cola · CETMAR · intecmar · ASOCIACIÓN vertidoscero · PROGRAMA pleamar · AIMPLAS · Universidade de Vigo · Puerto de Vigo · Puerto de Marín · USC

Fonte: Documento de Criterios Generales para la Pesca de Basura LIFE IP INTEMARES

59

Proxectos levados a cabo dende CETMAR

Nada pola Borda – Limpando as costas mariñas

Proxecto desenvolvido nas Rías Galegas. Pescadores de diferentes frotas desembarcaron o lixo recollido nas súas redes de enmalle e de arrastre durante as xornadas de pesca. 2009-2010

152 (barcos de pesca artesanal e arrastre costeiro) 600 pescadores. 11 portos **= 34 toneladas de residuos**

Artes de pesca	Plástico	Metal	Téxtil	Goma	Madeira	Outros
15.200 kg	3.700 kg	4.000 kg	1.800 kg	1.200 kg	925 kg	6.900 kg

PESCAL

Iniciativa para impremantar FfL e campañas específicas dirixidas a retirar lixo/recuperar artes de pesca abandonados utilizando barcos de pesca. 2012-2014

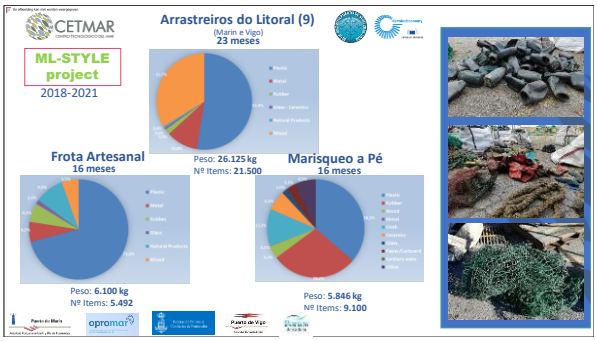
Frota➔ 67 barcos (arrastreiros costeiros)
235 pescadores - 4 portos

Fishing for Litter
45.000 kg ➔ 13.600 kg (30%) residuos artes de pesca

Retirada activa de lixo mariño
2.000 kg (75% restos de pesca)

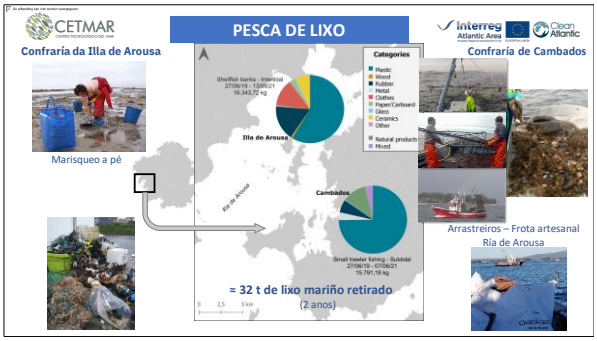
60

61

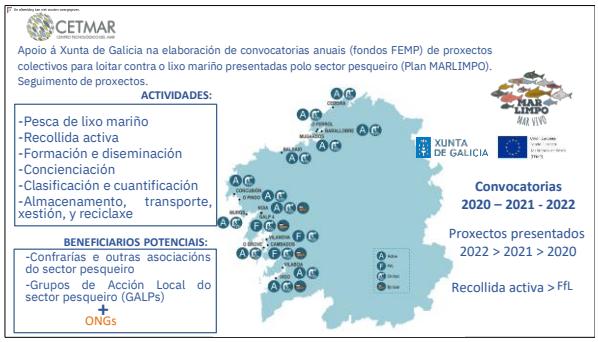


62

63



64



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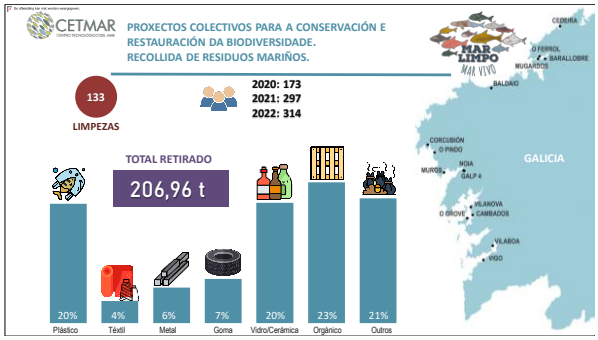
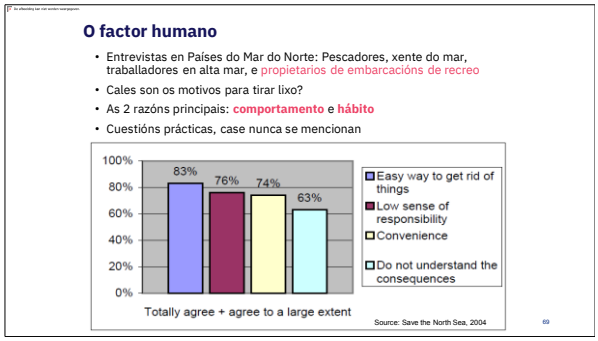
66


CETMAR
PROXECTOS COLECTIVOS PARA A CONSERVACIÓN E RESTAURACIÓN DA BIODIVERSIDADE. RECOLLIDA DE RESIDUOS MARIÑOS.
MAR LIMPO
MAR VIVO
133
LIMPEZAS
2020: 173
2021: 297
2022: 314
TOTAL RETIRADO
206,96 t
20% Plástico
4% Téxtil
6% Metal
7% Goma
20% Vidro/Cerámica
23% Orgánico
21% Outros
GALICIA
CEDEIRA
O FERROL
BARALLOBRE
MUGARDOS
BALDAIO
CORCUBIÓN
O PINDO
NOIA
MUROS
SALP 4
O GROVE
VILANOVA
CAMBADOS
VILABOA
VIGO

67


Experiencia de Pesca e retirada activa de lixo mariño en Galicia.
Diapositivas 55 – 63. Presentación:
CETMAR
Iniciativas para la prevención y reducción de las basuras marinas en Galicia
Luis Gómez Gesteira
M. Fernández, A. Ovejero , A. Mena, B. Pungin y R. Diez
Área de Control y Gestión de Medio y Recursos Marinos
Fundación CETMAR
PROYECTO ECOFISH 4.0.
Sanlúcar de Barrameda – 22 de Septiembre 2022

68


O factor humano
Entrevistas en Países do Mar do Norte: Pescadores, xente do mar, traballadores en alta mar, e propietarios de embarcacións de recreo
Cales son os motivos para tirar lixo?
As 2 razóns principais: comportamento e hábito
Cuestións prácticas, case nunca se mencionan
100%
80%
60%
40%
20%
0%
83%
76%
74%
63%
Easy way to get rid of things
Low sense of responsibility
Convenience
Do not understand the consequences
Totally agree + agree to a large extent
Source: Save the North Sea, 2004
69

69


CTP
Preguntas?

70

Catching THE Potential

Outro tipo de contaminación: o ruído

Outubro 2022

CETMAR CENTRO TECNOLÓXICO DEL MAR

With the contribution of the European Maritime and Fisheries Fund of the European Union

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

Adaptación: Rita Pesqueira

1

Que é o ruído?

O son é unha variación da presión dun fluído que se produce cando un obxecto vibra no seu interior. Este movemento despraza as partículas cercanas, que desplazan ás contiguas e así sucesivamente, xerando unha perturbación que se propaga: onda sonora.

Fonte das infografías Virtual sobre el ruido submarino, CNT (https://www.ctnaval.com/exposicion-virtual-sobre-ruido-submarino/)

2

Que ruído temos no mar?

Ruído natural: ondas, fauna, etc.

Balea Xibarte (*Megaptera novaeangliae*)

Arroaces (*Tursiops truncatus*)

3

Que ruído temos no mar?

Moitos animais usan o son para realizar as súas funcións básicas

Fonte das infografías Virtual sobre el ruido submarino, CNT (https://www.ctnaval.com/exposicion-virtual-sobre-ruido-submarino/)

4

Que ruído temos no mar?

Ruído natural: ondas, fauna, etc.

Ruído de Orixe humana: extracción, pesca, obras, etc.

Fonte das infografías Virtual sobre el ruido submarino, CNT (https://www.ctnaval.com/exposicion-virtual-sobre-ruido-submarino/)

5

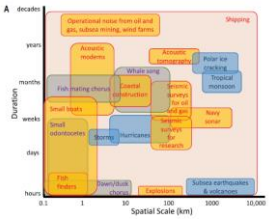
Que ruído temos no mar?

Moitos animáis usan o son para realizar as súas funcións básicas

Ruído de Orixe humana interfire coa fauna

6

Que ruído temos no mar?



Duarte et al., Science 371, 583 (2021)

7

Proxecto SILENCIO

CETMAR

Obxectivo

"Establecer as bases para o desenvolvemento dunha actividade pesqueira e marisqueira máis sostible e con menor impacto acústico para mellorar o estado ambiental do medio mariño"

- Mellorar o coñecemento sobre ruído mariño
- Estudar a viabilidade de electrificar a propulsión dos barcos de pequeno porte
- Potenciar o compromiso do sector e da súa contorna coa problemática do ruído mariño

@SILENCIO_CETMAR

8

Que se fixo no Proxecto SILENCIO?

a.- Monitorizar e estudar o ruído mariño

b.- Estudar a viabilidade de usar propulsión eléctrica nas pequenas embarcacións

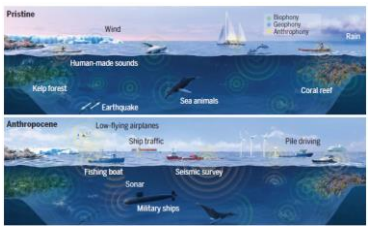
9

Por que é tan interesante mellorar o noso coñecemento do ruído no mar?

Directiva Marco da Estratexia Mariña (2008/56/CE)

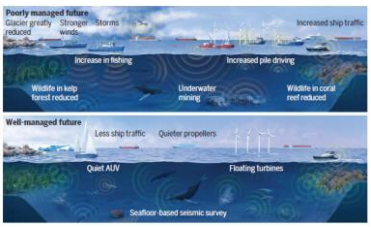
Fonte das infografías Virtual sobre el ruido submarino, CNT (https://www.ctnaval.com/exposicion-virtual-sobre-ruido-submarino/)

10



Duarte *et al.*, Science 371, 583 (2021)

11



Duarte *et al.*, Science 371, 583 (2021)

12

Como se mide o ruído???

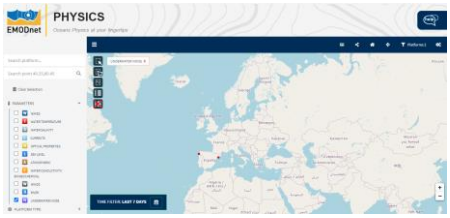



PLATAFORMA DE CORTEGADA

- Próxima ao Parque das Illas Atlánticas
- Maior subministro enerxético
- Gran actividade extractiva

13

Como se mide o ruido???



14

Que se quere facer?

Limpar os rexistros…



15

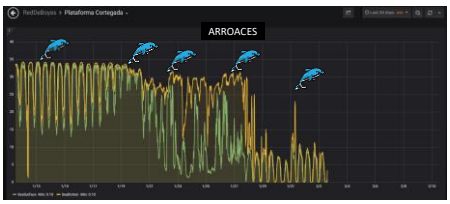
Que se quere facer?

Ferramenta de visualización

16

Que se quere facer?

Ferramenta de visualización



17

Que se fixo no Proxecto SILENCIO?

a.- Monitorizar e estudar o ruído mariño

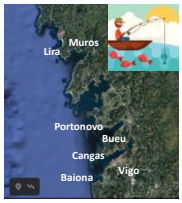
b.- Estudar a viabilidade de usar propulsión eléctrica nas pequenas embarcacións



18

Como se fixo?

Colaborando con diferentes confrarías de Pescadores



- ✓ Identificando posibles casos de uso de propulsión eléctrica.
- ✓ Caracterizando usos de embarcacións de pequeno porte: GPS en diferentes casos de uso.
- ✓ Realizando diferentes probas piloto
- ✓ Analizando a redución de ruído mariño e da pegada de carbono

19

Como se fixo?

Adaptando propulsión eléctrica a un pequeno motor foraborda

20

Como se fixo?

2 motores que alimentados a 70 voltios teñen unha potencia de 10-15 CV

3x3 baterías 6S 16Ah — 70 vol 48Ah

-Térmico 25CV potencia real de 3,75 Cv

-Eléctrico 10-15CV potencia real de 4-6 CV

21

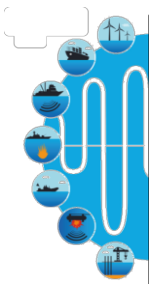
Como se fixo?

-Estudar a redución de ruído mariño

-Estudar a pegada de carbono

22

<u>Reflexión</u>: a redución de ruídos mellora o equilibrio ambiental e tamén o rendemento da pesca (os barcos ruidosos espantan a pesca).



23

Catching THE Potential

Comunicación

Outubro 2022

Autores:
Adaptacións: Rita Pesqueira

With the contribution of the European Maritime and Fisheries Fund of the European Union

Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

1

1. Exemplos de comunicación
2. Taller de comunicación

2

Exemplos de comunicación

Unha mensaxe pode ser comunicada de formas diferentes

3

Campañas de comunicación

4

Exemplo de comunicación

- Pensa a mensaxe que queres trasladar
- Que queres dicir? A quen? Como?

5

Exemplos de campañas de comunicación

6

Taller 1: comunicación

Tres mensaxes

1. Que fai que a pesca galega sexa fantástica?

2. Temos que mellorar a imaxe?

3. Que ten que coñecer todo o mundo sobre a pesca?

7

Taller 2: comunicación

1. Simulación dun programa de TV:
   - cada equipo un rol
   - Discusión de cuestións
   - Análise e conclusións

2. Conversación nun bar:
   - Tema a tratar
   - Rol dos participantes
   - Comunicación para obter información
   - Análise e conclusións

8

Catching THE Potential

Xestión de pesqueiras

Outubro 2022

CETMAR

Autores:
Adaptacións: Rita Pesqueira

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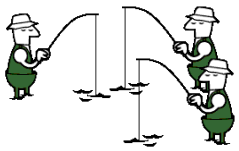
Presentación baseada no curso de sostenibilidade pesqueira desenvolvido pola fundación PROSEA en Holanda

1

O xogo da pesca



2

Xestión de pesqueiras

- **Xestión de pesqueiras**
  - **Que é?**
  - **Por que?**
  - **Que se necesita?**
  - **Política Pesqueira Común-PPC (obxectivos e medidas)**

3

'Xestión sostible das pesqueiras'

Uso intelixente dos stocks pesqueiros no mar:

A longo prazo, non pesques máis que o que se produce (pesca os "intereses")

4

O peixe é un recurso renovable

'Xestionar stocks pesqueiros é como xestionar bosques, coa diferenza que os peixes son invisibles e se moven'

5

Por que?

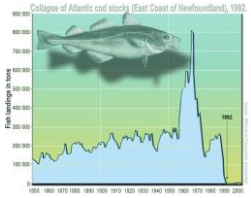
- **Impacto económico**
- **Impacto ecolóxico**
- **Impacto social**

6

Colapso da pesqueira de bacallao en Terranova

Impacto económico

- Non hai pesca dende 1992/1993 (moratoria)
- Bancarrota
- Peche das prantas procesadoras, perda de mercados
- 2.000 m € en axudas e reorientación laboral

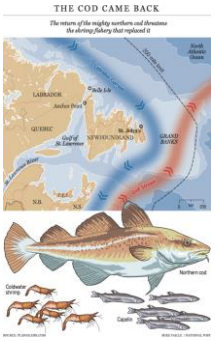


7

Colapso da pesqueira de bacallao en Terranova

Impacto ecolóxico

- Recuperación lenta (se sucede)
- Efecto nas cadeas alimentarias
- Transformación do ecosistema
- Cambio a pesqueiras de cangrexo das neves (centolo) e gamba



8

Colapso da pesqueira de bacallao en Terranova

Impacto social

- Desemprego (+/- 37.000 empregos)
- Perda da identidade nos pobos pesqueiros
- Alcoholismo, depresións, migración

9

Que se necesita?

- **Regulacións**
- **Cooperación**
- **Visión a longo prazo**

A diferentes niveis!

10

Nivel internacional

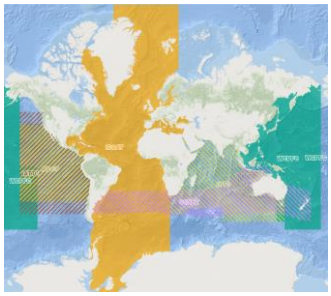
- Rendemento Máximo Sostible
- Enfoque ecosistémico
- Biodiversidade

11

Que significa o enfoque ecosistémico?

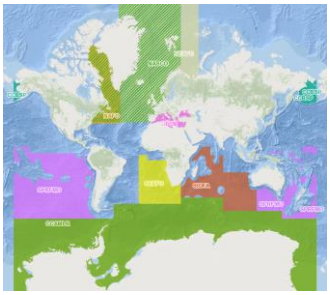
12

Organizacións para especies altamente migradoras (atúns)



13

Organizacións por área xeográfica



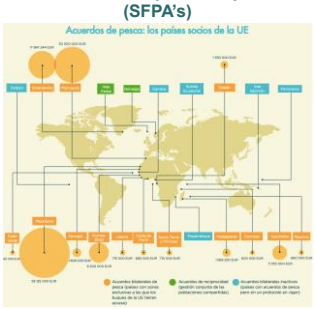
14

Nivel europeo

- Acordos de Partenariado de Pesqueiras Sostibles (SFPA's)
- Acordos de Pesca Bilaterais
- Política Pesqueira Común

15

Acordos de Partenariado para Pesqueiras Sostibles (SFPA's)



16

Acordos de Pesca Bilaterais

Xestión colectiva dun stock compartido ou dos dereitos de pesca

17

Quen xestiona os stocks de pesca na EU?

A quen pertence o peixe?

18

Zonas Económicas Exclusivas (EEZ's)

19

Pero a xestión das pesqueiras é unha cuestión europea

A Unión Europea (EU) decide:
- Obxectivos
- Medidas

Estados Membros:
- **Imprantan leis EU**
- **Libres para propoñer medidas**

20

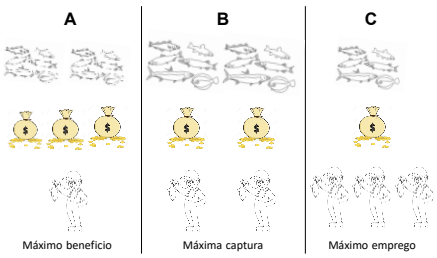
Política Pesqueira Común (PPC)

- **Dende 1983**
- **Cubre aspectos de:**
  - **Subsidios a frotas**
  - **Tamaño da frota**
  - **Capturas accesorias**
  - **Importancia da natureza**
  - **…**

- **Revisión cada 10 anos (última – 1 xaneiro 2014!)**
- **España entrou en 1986**

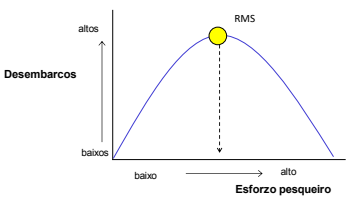
21

Obxectivo da PPC



22

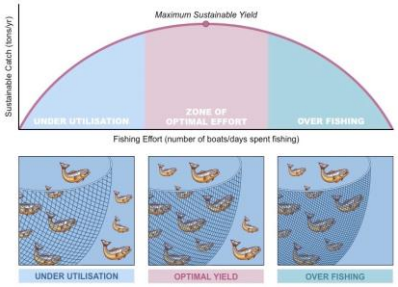
Determinar o obxectivo da política de pesca



RMS (Rendemento Máximo Sostible)

23

Sobre- e sub-explotación



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Obxectivos: que quere conseguir o xestor?

Pescar o máximo de forma responsable (RMS = rendemento máximo sostible)

Base para un sector pesqueiro rentable

División xusta dos dereitos de captura

Parar o descarte, o retorno das capturas accesorias

Rexionalización

25

Medidas: como quere conseguir o xestor os seus obxectivos?

Xestionar:

Cantidade de peixe capturado – 'cantos peixes se pescan'
- Quota/TAC – por especies
- TAE – por área de pesca

Esforzo de pesca – 'canto se pesca'
- Cantos barcos
- Potencia en cabalos
- Días de mar

Selectividade – Reducir capturas de juvenís e capturas accesorias
- Tamaño mínimo de malla
- Áreas pechadas

Descartes
- Impremantación da obriga de desembarco

26

Nivel nacional

Ministerio de Agricultura, Pesca y Alimentación

XUNTA DE GALICIA | CONSELLERÍA DO MAR

Consellería do Mar-Xunta de Galicia

Organizacións de Produtores (OPP)//Confrarías de Pescadores

27

O que se debería saber sobre xestión de pesqueiras

28

Tamaño de malla

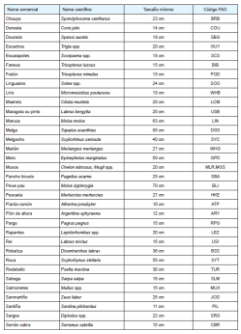
29

Lonxitude (en cm) = factor de selección x tamaño de malla (en cm)

Especies	Factor de selección
Solla de altura	2,2
Linguado	3,4
Bacallao	3,0
Abadeixo	3,2
Lirio	3,4

1. Que tamaño de linguado se queda atrapado nunha rede de 8 cm?
2. Que tamaño de linguado se queda atrapado nunha rede de 9 cm?
3. Que tamaño de solla de altura se queda atrapada nunha rede de 9 cm?
4. Que supón pescar linguado e solla de altura cunha rede de 8 cm?
5. O tamaño de desembarco para a solla de altura é 27 cm. Que tamaño de malla deberías usar para evitar a solla de altura pequena?

30



Tamaños mínimos peixes

ANEXO I-A
Peixes

Nome comercial	Nome científico	Tamaño mínimo	Código FAO
Altadexo	*Polachius pollachius*	30 cm	POL
Acedía	*Dicologlossa cuneata*	15 cm	CET
Agulla	*Belone belone*	25 cm	GAR
Alcréique	*Scomberesox saurus*	18 cm	SAU
Anguía	*Anguilla anguilla*	20 cm [1]	ELE
Barbadas	*Oaedropsarus spp.*	20 cm	ROL
Bertorelas	*Phycis spp.*	25 cm	FOX
Boga	*Boops boops*	11 cm	BOG
Bolos	*Ammodytes spp.*	15 cm	SAN
Bolo verde	*Hyperoplus lanceolatus*	15 cm	YEZ
Breca	*Pagellus erythrinus*	25 cm	PAC
Cabiza de altura	*Helicolenus dactylopterus*	20 cm	BRF
Castañeta	*Brama brama*	16 cm	POA
Chema	*Polyprion americanus*	50 cm	WRF
Congro	*Conger conger*	58 cm	COE
Cirrusio	*Scophthalmus rhombus*	30 cm	BLL

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8 on 12 cm – Descartes ou non?

Lonxitude en cm		Tamaño de malla (cm)	
SOLLA	LINGUADO		
15,4	23,8	7	Descartes
17,6	27,2	8	Mercado
19,8	30,6	9	
22	34	10	
24,2	37,4	11	
26,4	40,8	12	
28,6	44,2	13	
30,8	47,6	14	
33	51	15	

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Obriga de desembarco

33

Que hai das normas?

Parte da captura	Hai que desembarcar
Especies obxectivo <tamaño mínimo	1 xaneiro 2016
Cangrexos, estrelas de mar, organismos bentónicos	NON
Especies <tamaño mínimo con cota	1 xaneiro 2019
Especies protexidas	NON
Especies <tamaño mínimo sen cota	NON

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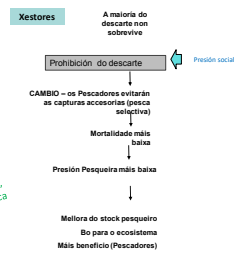
Percepcións – Obriga de desembarco

O descarte é a práctica de arroxar ao mar as capturas non desexadas tras un lance.

A reforma da PCP:
- Gradualmente eliminar os descartes
- Obriga de desembarco.

Decisión moral, xustificación ecolóxica



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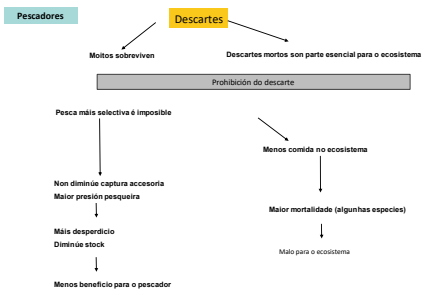

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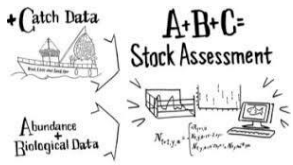
Avaliación do stock de pesca

38

Que é?

1. Cantidade de peixe no mar (cantidades absolutas)	2. Cambios nos stocks (cambios relativos)



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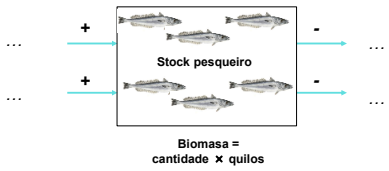
Por que avaliación do stock?

- **Para fixar a cota (TAC)**
- **Para comprobar a efectividade das políticas**

40

A base: como cambia un stock?



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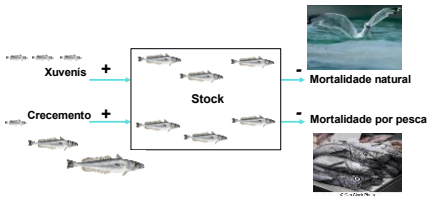
Como cambia un stock pesqueiro?



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Roles e xogadores na xestión. Quen fai que?

43

Roles e xogadores, quen fai que?

Os científicos investigan, calculan e informan aos politicos/xestores

- ICES – International Council for the Exploration of the Sea
- Organismos de investigación (IEO, IIM (CSIC), etc → aconsella a ICES
- **Cada vez máis, Pescadores colaboran en proxectos de recollida de datos**

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https://www.youtube.com/watch?v=qWayNVwrJG8

https://www.youtube.com/watch?v=BSWj-wEwJg8

45

Pescadores e organizacións ambientais dan consello

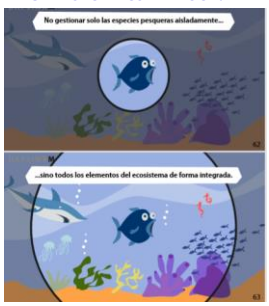
Por exemplo a través dos Consellos Asesores dende 2004

11 AC's

SWWAC

46

GRAZAS POLA VOSA ATENCIÓN!



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Catching THE Potential

Taller final

Outubro 18, 2022

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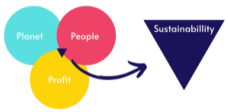
1

Desenvolvemento sostible é a balanza entre as 3 P.

Persoas	Aceptación pola sociedade
Planeta	Conservación da natureza e do medioambiente
Proveito	Rendibilidade das empresas

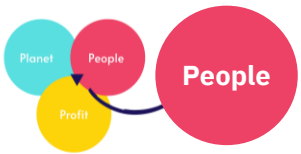


2

Persoas

- Permiso para producir
- Permiso para operar

A sociedade é fundamental!



3

Planeta

Conservación da natureza e o medio ambiente

4

Proveito

Rendibilidade das empresas

- Atención a cadea de suministro.
- Oportunidades na cadea de suministro.
- Cadeas de suministro máis curtas.

5

Traballo final

Pescadores do futuro:

- Oportunidades na cadea de suministro
- Barcos de pesca do futuro

6

Traballo final

Pescadores do futuro

- Dividídevos en 2 grupos.
- Lede o documento entregado.
- Preparade unha presentación.
- Presentade en grupo.

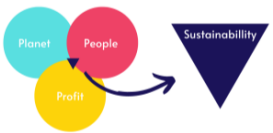
7

CIP

Evaluación

8

Leva a mensaxe a casa!



Non empeza, nin remata
A sustentabilidade é un estado mental.

9

Taller final

Pescando con un futuro

Moito cambiou no sector pesqueiro nos últimos anos. Moitos pescadores pescan con artes diferentes ás de hai 15 anos, cada vez hai máis cooperación na cadea pesqueira, os pescadores participan en proxectos de eliminación de residuos do mar e hai todo tipo de novidades técnicas que podes aplicar como pescador. Pero...quizais cambie aínda moito máis no futuro.

Ao longo desta semana estiveches ocupado con todo tipo de temas relacionados coa pesca sostible. Cando falamos de sustentabilidade, falamos de futuro. Sodes o futuro da industria pesqueira de Galicia, sodes os ''Pescadores do Futuro''! Despois desta semana, probablemente teñas todo tipo de ideas sobre como ves o teu propio futuro e o dunha industria pesqueira sostible. Agora é a túa oportunidade de compartir connosco as túas visións do futuro sobre os seguintes temas ou calquera outro que poida ser do teu interese. Para iso, faremos **grupos de 4 ou 5** integrantes e cada grupo traballará nun tema que fose tratado ao longo do curso; a continuación poñemos exemplos de dous posibles temas de traballo:

• Oportunidades na cadea de mercado

• Os buques pesqueiros do futuro

Podes buscar preguntas que responder a cerca do tema e cada grupo traballará nesta tarefa e preparará unha presentación (PowerPoint, flip-over, debuxo, etc.) de 5 – 10 minutos.

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TEMA 1. OPORTUNIDADES NA CADEA DE SUMINISTRO

Antigamente, como pescador, levabas o teu peixe á costa e entón só esperabas que os prezos fosen bos. Hoxe en día hai varias vías polas que o pescador, como produtor ao comezo da cadea, pode tentar sacar máis valor ao seu produto. Como empresario pesqueiro, non só podes gañar máis reducindo os teus custos, senón que tamén podes gañar máis creando valor engadido para o teu produto ou traballando mellor na cadea. Por exemplo, aínda quedan todo tipo de novos mercados por descubrir. Tamén se pode reestruturar ou acurtar a cadea "da granxa ao garfo".

1) Nomea tres formas diferentes a través das que engadirías valor ao teu produto como pescador/a.

2) Menciona unha vantaxe e unha desvantaxe (mínimo) de cada una das 3 formas.

3) Escolla unha forma na que crearías valor engadido para o produto elixido. Como produto podes escoller entre mexillón, ameixa, sardiña, xurelo ou polvo.

4) Describe como será a cadea do produto escollido.

5) A túa forma de crear valor engadido afecta ás 3 P (Persoas, Planeta, Beneficio)?

6) Quen/que partes precisa para executar este plan?

7) Cres que é realista esta forma de crear valor engadido?

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TEMA 2. BARCOS DE PESCA DO FUTURO

Esta tarefa céntrase no futuro. Todo tipo de cousas son posibles agora, pero como será o teu barco dentro de 10 ou 20 anos?

1) Debuxa/deseña o teu barco do futuro. Como será un pesqueiro dentro de 15 anos?

Considere, por exemplo:

• O método de pesca

• O motor

• A forma do barco

• Enerxía (petróleo, gas, vento, sol)

2) Na túa presentación, cita cinco cousas que consideras moi importantes para o barco do futuro.

3) Durante a túa presentación, explica por que este barco funciona mellor para as 3 P (Persoas, Planeta, Beneficio).

4) Quen/que partes necesitas para poñer en marcha este barco?

5) Cres que é factible/realista que este barco poida navegar en 15 anos? Por que?

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TEMA 3. OS MÁIS NOVOS E A PESCA

Esta tarefa céntrase no futuro e en como podemos cambiar a imaxe que ten a sociedade das persoas que traballan na pesca para atraer as novas xeracións ao sector pesqueiro.

1)Cal pensas que é a imaxe que ten a sociedade das persoas que se dedican ao sector pesqueiro?

2) Crees que esta imaxe se corresponde coa realidade?

3) Propón 5 accións para mudar esta imaxe.

4) Pensas que os nenos de hoxe en día se queren dedicar a pesca? Por que?

5) Como farías que cada vez máis persoas e sobre todo as novas xeracións quixesen ser pescadores/as?

6) Propón unha actividade para achegar os máis novos aos traballos relacionados co mar.

7) Pensas que as xeracións futuras estarán máis concienciadas coa protección do medio mariño? Por que?

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Outros posibles temas:

- Pesca de lixo activa ou pasiva?
- Ruído no medio mariño e como evitalo.

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