OSPAR COMMISSION

Protecting and conserving the North-East Atlantic and its resources

OSPAR work session "Handling (plastic) garbage in the fishing industry"

Report with conclusions and recommendations.

10-11-2017

Rotterdam, The Netherlands

Index

INTRODUCTION

OSPAR has an objective to substantially reduce marine litter in the North-East Atlantic area. To reach this goal, which aligns with the objectives of the EU Marine Strategy Framework Directive (MSFD), the Regional Action Plan for Marine Litter was adopted in 2014. As a proportion of marine litter comes from the fishing sector, the plan includes the following action:

Action 36: *Through a multinational project, together with the fishing industry and competent authorities develop and promote best practice in relation to marine litter. All relevant aspects (including e.g. dolly rope, waste management on board, waste management at harbours and operational losses/net cuttings) should be included.*

In this context, the task leads (OSPAR, the Netherlands, Sweden and the United Kingdom) organised a work session in Rotterdam, Netherlands, 10 November 2017.

In 2016, a questionnaire was sent to all OSPAR contracting parties, requesting information on existing activities and awareness levels related to waste management in the fishing industry. Cefas[1] were commissioned to collate responses, collect additional information as required and develop a report which gave an overview of the different measures and best practices concerning marine litter management in the fishing industry[2]. It was recognised that this report was a high level review based predominantly on government experience and data.

As a next step, this work session was developed to focus on the practical experiences of practitioners working to prevent garbage from the fishing sector ending up in the oceans, especially concerning the handling of plastic domestic waste and discarded fishing gear on board of fishing vessels and in fishing harbours. By discussing existing and potential practices with participants from the fishing sector, waste companies, harbours and other organisations, we sought to explore new ways for better waste management and prevention.

This report presents the outcomes of the workshop and includes all best practices that were identified.

Objectives

- To add to the information of the Cefas Report in order to produce a more comprehensive list of existing practices;
- To discuss best practices, their strengths and limitations; and
- To assess together with the stakeholders what additional actions are necessary and feasible (on local, national or regional level) to further improve waste management in the fishing industry.

Outcomes

- Exchanging and promoting existing best practices;
- Inspiring each other to take further action; and
- Taking a step further towards a multinational project to develop and promote best practice in relation to marine litter together with the fishing industry and authorities.

Organisation of the work session

The meeting 'Handling (plastic) garbage in the fishing industry' was hosted by the OSPAR Commission, and organised by the Dutch Ministry of Infrastructure and Water Management[3] in cooperation with the UK's Department of Environment, Food and Rural Affairs and the Swedish Agency of Marine and Water. Rob Bonte and Alzira Schaap from Royalhaskoning/DHV were the facilitators The session was coordinated by Wouter Rooijakkers (NL), Lex Oosterbaan (NL), Julia Hunt (UK) and Åsa Lindskog (SW). The meeting took place in conjunction with the Europort Exhibition in Ahoy, Rotterdam, and had **34 participants**, from **29 organisations** and **9 nationalities**. ANNEX 1 includes the attendance list.

[1] The UK Centre for the Environment, Fisheries and Aquaculture Science.

[2] Cefas Report: A Review of Marine Litter Management Practices in the North-East Atlantic (see here).

[3] Former Ministry of Infrastructure and Environment, renamed since 01/11/2017 in conjunction with the new parliament.

It involved the presentation of existing initiatives to address waste in the fishing industry as well as discussions on how to improve them, roles of stakeholders and potential future activities.

ACTIVITIES

1) Pre-session collation of best practice examples

In order to develop a comprehensive collection of examples of best practice, all participants, presenters and members of their wider networks were asked to submit their Best Practice examples in advance of the work session. A diverse package of best practices all around Europe were identified. ANNEX 2 presents all best practice examples that were identified.

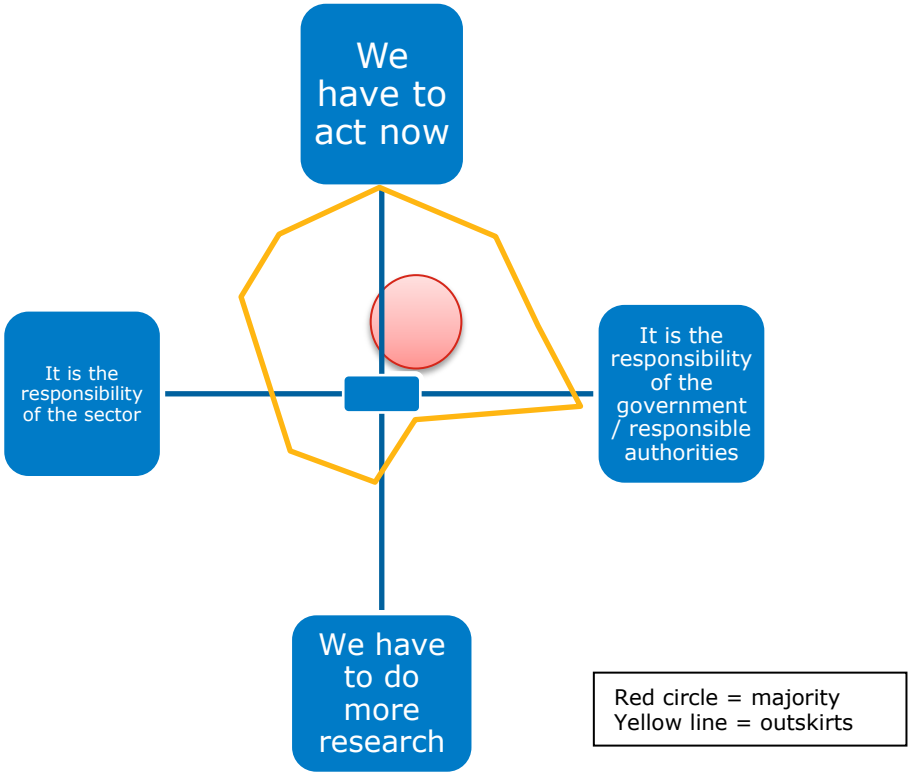
2) Meet & greet exercise

An interactive meet & greet exercise was developed to offer all participants the chance to introduce themselves and their ideas as well as their organisation or background. The room was divided in four quarters: two axes were taped on the floor, representing two dimensions of the task at hand:

- Axis 1: Timing. From "We know enough to act: action must be taken as soon as possible" to "We need to do more research first, involve stakeholders etc. and then decide which actions are most appropriate".
- Axis 2: Responsibility. From "It is mainly the responsibility of the fishing sector to take action" vs "The government needs to act on this issue".

Participants were asked to stand at the position which represented their view of the issue and to explain their reasoning. It was very interesting to see how divided the field was. There were people standing on each axis. There were different opinions within the same field (fishing representatives for example or governmental organisations) but also different opinions within different fields in the same country.

In general it can be concluded that most people feel that we should learn by doing and should start to act now. The actual implementation of actions lies within the sector while the local and national authorities should facilitate and support local initiatives. Furthermore it can be concluded that no one really felt that it was a task of the authorities and that more research should be done.



3) Illustrative initiatives

A number of initiatives from across Europe were presented to inspire participants, provide updates on existing activities and set the mood for the break-out sessions. Each presenter had five minutes to 'pitch' their initiatives and explain how it works.

a) Marek Press (Keep the Estonian Sea Tidy): Port Reception Facilities and experiences in the Baltic Sea

- MARELITT Baltic – Reducing the impact of marine litter in the form of derelict fishing gear on the Baltic Sea environment. https://www.marelittbaltic.eu/
    - The results of a survey on Harbour Reception Facilities at selected Baltic Sea fishing harbours. The aim of the survey was to obtain an overview of the current situation at the selected Baltic Sea fishing harbours regarding:
        - Collection and handling of derelict fishing gear (DFG = abandoned and retrieved fishing gear);
        - Collection and handling of old, redundant, damaged, retired or otherwise non-operational fishing gear (= end-of-life fishing gear).
    - Keys to success:
        - Clear vision (incl. properly consulted Waste Reception Harbour plans)
        - Enthusiastic harbour master (human factor)
        - Information available to all harbour users
        - Regional cooperation (harbours, municipalities)
        - Cooperation with net manufacturers and waste companies

b) Kenny Baas (Bek & Verburg): Cooperation in Dutch Green Deal and port reception facilities in the Netherlands.

- Green Deal Fisheries for a Clean Sea approach, how do we cooperate and what do we achieve?
    - How to solve the issues from a marine waste manager's perspective?
    - Keys to success:
        - Simplicity is the best!
        - Cooperation between all stakeholders
        - Information for all participants
            - Website / App
        - Convince all fishermen of need of cooperation
            - Shared value of a Clean Sea
            - Rewrite PR of fishermen -> Protectors of the Seas.

c) Julia Olsen (Nordland Research Institute): Recycling and education programmes in Northern Norway:

- Local waste management systems in harbours in Northern Norway are a crucial component of waste delivery and recycling;
- Developing of flexible waste management system in harbours for handling and recycling garbage;
- Measures for increasing awareness among students and fishermen, including integration of the educational program "Blue conscience" in secondary school programs.
- the importance of dissemination of possible solutions to fishers and fishers unions. The topic for example has been addressed on annual meetings in fishers' organizations.
- Keys to success:
    - Communication;
    - Education; and
    - Infrastructure

d) Chiara Vitali (World Animal Protection):The Best Practice Framework from the Global Ghost Gear Initiative

The complete framework can be found here

- Focus of presentation on 'improved redundant fishing gear disposal facilities'

  Problem:
  - An ongoing challenge for the fishing industry is the disposal of unwanted nets once they have reached the end of their life
  - Given the high economic costs associated with disposal, fishermen tended to leave nets piled in a corner at harbours
  - This takes up space and creates significant clean up costs for harbours
  - This was creating significant disposal costs for the harbour
  - Finding cost effective alternatives to disposal in landfill that also support local businesses, has been an ongoing challenge.

  Solution:
  - GWR Polymers provided several collection bins to Newlyn Harbour
  - Used to collect old nets and send on to GWR Polymers.
  - In 2011 a small baling unit was installed at Newlyn Harbour
  - Nets could be packaged into small bales and transported to depolymersation companies to supply nylon 6 feedstock
  - The nets are disposed of at no charge to the fishermen
  - The costs are recovered by selling on the regenerated plastic pellets

  Opportunities:
  - Common aim across industry, business and environmental organisations
  - Keep or get nets out of the sea, avoid costs (or profit)
  - Business sees increasing value in circular economy initiatives
  - New uses are constantly developed and increasingly marketed

  Challenges:
  - Volumes, segregation and quality, centralisation, storage, funding
  - Separation of fishing litter is the main barrier to commercial viability
  - Varying value attached to types of plastics
  - Streams such as nylon 6 are highly valued, others may still end up in landfill
  - Infrastructure for recycling projects is
  - lacking and often provided ad hoc

e) Marisa Fernandez (CETMAR): CleanAtlantic and Fishing for Litter in Spain

The recently launched EU project CleanAtlantic (Tackling marine litter in the Atlantic Area) is funded under the Atlantic Area Programme. It is coordinated by CETMAR and involves 18 partners from UK, France, Spain, Ireland and Portugal. CleanAtlantic aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove (macro) marine litter. The project will also contribute to raise awareness and change attitudes among stakeholders and to improve marine litter managing systems. OSPAR Secretariat is part of the Advisory Board and close interaction is foreseen to establish synergies between the Marine Litter Regional Action Plan and CleanAtlantic activities.

- Work package 7 under Clean Atlantic focusses on 'Tackling Marine Litter' and including:
  - Best practices to reduce inputs from the fishing and port sector
  - Fishing for litter in the Atlantic Area (protocols and pilot actions)
  - Reducing abandoned lost and otherwise discarded fishing gears (ALDFG)
  - Best practices for beach marine litter clean-up

- Some conclusions from previous CETMAR-led initiatives (Nothing thrown over board and PESCAL):
  - The Fishing for Litter (F4L or FfL) operational scheme fits well with the normal fishing operations, but adequate collections systems (big bags, bins/containers) should be provided as well as appropriate logistic arrangements at the port.
  - A crucial issue is the availability of adequate port reception facilities that facilitates the downloading of the collected waste material. Allocating reception facilities in the

piers and providing the necessary logistic support at the port are key issues to achieve success.
- Seafarers involvement (fishermen-skippers-ownerships) is essential as well as that of the port operators, waste managers and recyclers. For that purpose, meetings, training and awareness activities (when feasible "at pier") with all the stakeholders are crucial and will contribute to create a common goal and vision of healthier seas.
- The technical protocol and the equipment developed for gear retrieval performed reasonably well, but the costs of the operations are high. Improvements on retrieval equipment are necessary.
- In principle, fishermen are willing to participate, but other problems impacting on the fishing sector may jeopardise their motivation and involvement.
- Fishermen efforts should be made visible to the society to improve their image and promote their active role as "guardians of the sea".
- Exchange of experience, knowledge and good practices will improve the performance and the extension of the implementation of fishing for litter activities and adequate waste management systems on board and at the ports.

f) Anna Bobo Remijn (DG Move at the European Commission): European guidelines on the Port Reception Facilities Directive

An explanation of the EU legislative framework, i.e. the PRF Directive (Directive 2000/59/EC), how it covers waste from the fishing sector and what the Commission's plans are for the future Directive.

- **Directive 2000/59/EC**:
  - Objective: *reduce discharges of SGW and CR into the sea*
  - Scope: **all ships**, including fishing vessels and small recreational craft; **all EU ports** receiving seagoing vessels

- **REFIT Evaluation (2015):**
  - Commission Evaluation Report: COM(2016) 168 final;
  - Need for a legislative revision
  - Challenges to be addressed: **Availability of Adequate PRF**, **Delivery of Waste** to PRF and **Administrative Burden** associated with implementation

General objective of the revision: reduce discharges of SGW and CR into the sea, while ensuring an efficient operation of maritime operations in port. Preferred alignment will be **MARPOL Alignment + focus on Marine Litter.**

Marpol Alignment:
- ***Rationale****: clarify the relationship with the MARPOL Convention, simplify the legislative framework and reduce administrative burden*
  - Align the **definition** of SGW and cargo residues with the Annexes in MARPOL
  - **Waste notification** to be fully aligned with IMO Circular; introduction of a **Waste Receipt**
  - **Risk-based approach** for inspections: **Port State Control** (with separate regime for domestic vessels)
  - **Measures** to improve **adequacy** of PRF and increase delivery of SGW through **economic incentives**

Marine Litter Variant:
- ***Rationale****: contribution of sea-based sources to overall problem of marine litter: merchant ships, fishing vessels, recreational craft. Environmental vulnerability of different sea-basins.*
  - Mix of incentive and enforcement measures, with special focus on the delivery of garbage to PRF;
  - Improve adequacy of port reception facilities for receiving and handling this waste
  - Redefine the position of fishing vessels and recreational craft in the Directive (with thresholds!)

What will this mean for the fishing industry?
- Inclusion of fishing vessels in the indirect fee system (NSF – garbage, including domestic waste, operational waste and old fishing gear);
- Inclusion of passively fished waste (like fishing for litter) in this category;
- Improve adequacy of PRF for managing derelict fishing gear and passively fished waste;
- Improve inspection regime for large fishing vessels (>100GT)

g) Andrea Stolte (WWF Germany): Recycling fishing gear
In between the initiatives presented a bag with recycled fishing gear material. She explained how her project (MARELITT) does the testing of recycling methodologies for lost and end-of-life fishing gear, how they process & clean DFG and how they re-use of plastic materials through granulation (circular economy approach), disintegration by pyrolysis or hydrolysis generating fuel (raw oil) or synthetic gas. More about this can be found in the Best Practice Format of MARELITT.

4) Break-out sessions
For the break-out sessions three circles on different themes were created. There were two rounds of 30 minutes and a plenary feedback.

a) Break-out session 1. Projects, challenges and opportunities

The goals of this session were to exchange ideas about possible improvements on existing projects and to be inspired for new initiatives. The key discussion points were:

- Need for **clear vision**, reflected **in harbour plans**: make it easier to deliver waste in the ports
  - **Good information** in different languages!!
  - Small ports often don't have (good) facilities (but **PRF's** should be available **in all ports** according to EC PRF Directive)
  - Look at regional solutions (like Smogen in Baltic where there are more facilities to process various waste streams)
- Fishing for litter (F4L)
  - Norway pilot in 8 ports (in total there are 600 ports!)
    - F4L litter delivered for free
    - Challenge: to sort on board (wish of waste processor) or on land (wish of fishermen) – also a challenge in NL, it works best if you **adapt to wishes of fishermen**, make it easier for them on board
  - Germany: now mostly NGO's are active, need for longer term, structural funding including by the government since most F4L litter is old litter **("tragedy of the commons, so we should all be paying for it"**, through taxes)
    - EU Maritime Fisheries Fund is used to finance F4L (not in all countries)
  - Make it possible/**easier** to deliver F4L waste in ports in other countries
- Dealing with derelict fishing gear versus end-of-life fishing gear (better quality for recycling)
- New fishing gear and pots have a value; fishermen would like to retrieve them; marks on fishing gear (and pots), applied in Norway (also yearly (costly) retrieval action))
- **Deposit scheme**: might work for specific gear type/quality
  - Some fishermen make their own nets
  - Some lower quality nets are bought on internet (e.g. China)
- Don't forget the hobby fishermen! Cheap, low quality nets
- Look at **biodegradable materials**
- Basically it is very simple: collect/put it in bags/containers that could be easily picked up and processed in the ports!
  - Smaller vessels might need special attention because they have not a lot of room to store different waste streams onboard
    - Use of compressors (or even incinerator ….?)
- Challenge: many stakeholders are involved (fishermen, municipality, port authority, waste collectors/processors.
  - Green Deal in NL seems good model for shared learning (voluntary agreement; all parties present that write down what (and how) they are going to do to reduce litter from fisheries sector; not dependent on people because statements by party remain valid if someone leaves)
- Challenge: **keep motivation** of fishermen → use them more in communication and Public Relations; positive message: **Protectors of the Sea instead of Polluters of the Sea**.
- In general sea litter low quality, **give nets more value** (for recycling) (included in EU Circular Economy discussion
- Don't forget to look at environmental aspects of removal actions
- Reduce packaging before departure (and in whole production chain ….)!

b) Break-out session 2. Roles and cooperation

A group dialogue was established about how the different stakeholders in this field should cooperate and which roles each of them should take in this process. The outcomes of this discussion can be seen in table 1 (below)

Table 1. Stakeholders and their roles involved in waste management in the fishing industry

Stakeholder	Roles
Media	• Show good initiatives, share pride • Connect stakeholders • Create awareness
Waste processors	• Promote economic viable initiatives –> leading to free disposal • Improve recycling possibilities (currently not the case – so no incentive to collect separate waste streams)
Ports	• Display information about waste collection, reporting systems for lost gear etc. • Establish waste facilities (together with government)
Producers of gear	• Marking gear to track owner (RFID). Note: what is incentive for fishing company to take back their gear? Only if they don't have to pay for it or if their lost gear is very valuable. The idea of tracking owner to make them pay ("polluter pays") only possible by law enforcement –> checking if gear is marked on boats • Possibility of producer responsibility (Norway examines the possibilities; report follows – available for everyone)
NGOs (non-profit)	• Create awareness
Fish retailers	• Install requirements on products they buy from fishermen – e.g. only fish from company that has waste measures in place
Researchers	• Show the economics of recycling – include economists in research • Create awareness by sharing knowledge to youngsters and fishing companies • Research data about what materials can be found in the waste stream: so you know who the owners are and who to tackle/reach for solutions • Development of education courses.
Policy maker & national authorities	• Coordinate rules on national, local, international and EU level • Acknowledge that the "old" waste is our (community's) waste • Lack of enforcement & control now: but will it work?

Stakeholder	Roles
	• Improve legal framework • Install incentive measures
Fishing industry	• Report lost gear • Create awareness – spread the good stories & practices
Recreational fishery	• *Problem: big waste stream (especially in Scandinavian countries), but often not mentioned* • *No regulation in place*
User of recycled material (second life user)	• *Not identified*
Fish landing facilities/auctions	• *Not identified*

After identifying the roles, best practice cooperation examples were discussed and keys to success in cooperation were determined based upon the experiences of the participants.

Three best practices in cooperation came forward: International Network "Clean Nordic Oceans", the German Round Table "Marine Litter" and the Dutch "Green Deal Fisheries for a Clean Sea". The key to success in all initiatives was identified as direct communication between all stakeholders (research, government, NGO's and industry; make sure all sectors are involved).

Another good example of cooperation is the reporting of lost fishing gear by fishermen in Norway. Norway has a well-functioning system where fishermen call/email the responsible authorities to report lost gear. The authorities collect and return the (expensive) gear to the fishermen for free. The key to success in this cooperation was the personal touch and the direct contact with the fishermen.

Besides the keys to success of these best practices, three other success factors have been determined:

1. Learn by doing or learn on the job
2. Starting positive initiatives (as fishing for litter) and support these (participants are proud to take part in these initiatives)
3. Work bottom-up

c) Break-out session 3. What should be our next step?

This session aimed to identify the next step(s) in addressing the challenges that face us and establishing a realistic timeline for these actions, to inform future planning for RAP Action 36.

The key discussion points were:

<u>Fishing for litter</u>

- The question should be addressed what the role of the government should be in cleaning up litter from the sea, since a cleaner sea is not only a responsibility of the fisheries sector but government policy: the **government should be more active** in this field, and not be only reactive to what the fishery companies undertake in this field;
- Delivering of non-fisheries waste (like fishing for litter) at PRF's by fishing vessels should always be **free of charge**
- Experiences with business models and funding schemes should be exchanged more actively
- **Financial rewards for cleaning up the sea** by fishing vessels should be considered
- The capacity of PRF's and processing capacity for waste are now often the limiting factors for upscaling of successful initiatives

<u>Alternative materials and methods for fisheries</u>

- New materials such as improved and more sustainable nets should always be developed in a **joint effort with the fishermen**. There is a good example of such projects in the UK (here).

- Research and development by the sector on more sustainable methods should be **stimulated by the government** by providing funding.
- Concrete examples: biodegradable nets, led weights replaced by iron weights for less pollution, yak-leather;
- Development of an app that shows the location of lost nets

Join forces of the fishing sector and environmental NGO's based on shared value
- All stakeholder share the value of **'A clean sea'**
- This provides for a strong base for cooperation and joint actions
- **An independent mediation party can facilitate** this process of cooperation. The government can fill this gap or organisations in which these parties cooperate already could be funded to take up this role: KIMO is already playing this role and the EU regional fishing advisory boards could be an independent platform to facilitate this process

Recognition and appreciation of positive action and results by the fisheries sector
- Positive actions and results by the fisheries sector should be recognised by the government with **rewards** which do not have to be financial in character: examples such as sustainability rewards, attention in the media and role model can be effective ways to show appreciation;
- **"Make it easy for the fisherman":** delivering waste of fishing vessels should be made simple by for example: easy access to reception facilities, positive incentives
- The benefit for the fishermen should get more attention (improved public image, cleaner sea)

An analysis of the main barriers to upscaling of positive action and to do more
- Fishermen may perceive it as a **hassle** to do more;
- Not all stakeholders may be convinced that it is worth it;
- It may be perceived as a **threat** for commercial fisheries

Actions to make better use of existing expertise and experience
- **"Join the dots":** organise collaboration, both in research and concrete actions
- Match stakeholders (of different countries and sectors) to share experiences and stimulate knowledge exchange
- Take action to make existing knowledge better **accessible for all stakeholders**

Local multi-stakeholder cooperation are a key success-factor: therefore municipalities and local networks are important
- For an effective system cooperation at **the local (municipal, harbour, regional) level** is key;
- Waste management at the harbour is often a limiting factor: this call for cooperation between the fishermen willing to take the waste to the harbour, separate waste disposal facilities at the harbour, the waste management companies; decentral governments are in the position to bring these parties together and organise the system;

An analysis of legislative actions that work and have positive impacts
- Not all legislative actions work and have positive impacts, since they may not be enforceable or have unforeseen negative impacts for the fishermen;
- However: legislation is necessary: for example indirect fee systems that are necessary to finance port reception and waste management facilities
- Therefore an **analysis of best practices in national and regional legislation** and knowledge exchange about these examples will be useful for upscaling these successes

PROCEEDINGS

Recommendations

Based upon the meet & greet and break-out sessions the following recommendations were determined:

- Make it easy for the fishermen to dispose of their waste because 'Simplicity is the best'
- Work together and communicate (!), on small (local) and large (international) scale: Joint-Action, authorities facilitate and sector executes. Input of all parties is important.

- Communications between all stakeholders involved is key. Develop a cooperation with all stakeholders involved with preferably an independent mediation party to facilitate. We have a shared value 'clean sea', so work together and help each other.
- Transparency on what you can (not) deliver at each port -> Communication is key -> location bound app? Harmonise this communication internationally or make sure that all information is in each country (and harbour) easily accessible.
- Make it easier to deliver Fishing for litter.
  - Structural funding (free of charge?) since most F4L litter is old litter. "tragedy of the commons", so we should all be paying for it.
  - Make it possible to deliver F4L waste everywhere (also at other port than own home port)
- Don't blame for past action, look forward. Create a positive message; Protectors of the Seas instead of Polluters of the Seas (use the media!).
- Review new biodegradable materials or deposit scheme to cope with ALDFG
- New PRF seems to capture a number of challenges and opportunities and should be considered closely

Next steps?

- Create an overview of different legislative actions within OSPAR Contracting Parties and find out which work and which do not
- Research into biodegradable materials
- Develop a system of positive rewarding (in relation to new PRF)
- Join the dots

During ICG-ML 2017(2) Wouter Rooijakkers with the support of Julia Hunt gave a presentation to all Contracting Parties and the European Commission about the outcomes and recommendations from the work session. The next steps determined during ICG-ML were:

- Determine a clearer remit for Action 36 to distinguish it from (and/or agree collaborations with) other actions under the OSPAR Regional Action Plan and other existing initiatives.
- Determine future deliverables and accompanying timetable for Action 36 and write a proposal to EIHA 2018.

An update of these steps should be presented at ICG-ML 2018(1).

ANNEX 1 - Attendance list

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ANNEX 2 - Best Practice Examples

The following pages contain all examples of best practice that were sent before and after the work session. These will be distributed to all participants and ICG-ML and can be requested from the OSPAR Commission or the Dutch Ministry of Infrastructure and Water Management (communications@ospar.org or litter.worksession@rws.nl).

Green Deal Fishing for a Clean Sea (NL) : the collection of dolly rope and domestic waste

This Green Deal (one of 3 marine Green Deals out of an overall figure of 180) was signed on November 20th, 2014. In this Green Deal a number of sectors collaborate collectively, including:

- the fishing industry
- port authorities
- waste disposal companies and
- a number of environmental organisations.

The secretarial task is commissioned by Rijkswaterstaat (the Dutch Water Management Office, part of the Ministry of Infrastructure and the Environment), The association of coastal municipalities (KIMO) acts both as secretarial body and project partner.

Dolly rope and Domestic Waste with the ultimate goal Integrated Waste Collection and Storage in all Dutch Fisheries Ports

Under the framework of the Dutch Green Deal Fisheries for a Clean Sea, a number of pilots have been run. In 2015 two pilots started:

- The collection of waste dolly rope in fishing ports:
  - *Dolly rope is a protective layer of tiny fibers that are attached to a net to protect it from wear. Dolly rope is made of plastic and wears out as well, furthermore a lot of old dolly rope ends up in sea, through this plastic microfibers enter the marine ecosystem. By means of the project Fisherman can hand in dolly rope that has weared out. With the dolly rope project Fishermen get a small compensation for all the dolly rope they hand in, this compensation is given to the KNRM. Meanwhile another partner is experimenting with the development of an alternative for plastic dolly rope.*

- The collection of domestic waste:
  - *The normal garbage bags (galley waste) are too vulnerable, both during storage on board as after placement on the quay in the port. Using the infrastructure of the Fishing For Litter project KIMO has started to distribute a smaller type of "big bag" for the purpose of the collection and storage of domestic waste.*

  - *These bags can be attached to a pole on board preventing these to be blown overboard and made of stronger material so the seagulls cannot tear them open.*

In 2016 these projects have been integrated in one system and rolled out in the ports of Harlingen and Stellendam. The goal is to develop a system for an integrated way of collection and storage of fisheries related waste in ports.

This has been introduced during the last part of 2017 and this is running in a number of ports already. Expansion and enhancement is being prepared, including new ways of PR and communication to both fishermen and port authorities.

Green Deal
Visserij voor een schone zee

Strengths/weaknesses

- The project in a collective approach which is a strength
- Despite this, not all ports participate yet.

Opportunities & Challenges:

- There is room for more ports to actively participate
- Measures for integrated waste collection and storage have to respect the couleur locale of the ports, not all measures could be applied in all ports. The local fleets have their own peculiarities and needs.

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Green Deal Fishing for a Clean Sea: Integrated Collection of Waste of the Fishing Industry

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The Dutch Green Deal approach is very unique, all different stakeholders within the fishing waste industry sector come together to work on the same goal, a clean sea.

The Netherlands has one of the strongest recycling industries, almost every waste stream can be recycled in the Netherlands.
The most challenging part is to get all the waste streams on land.

Waste from Fishing industry is divided in five parts:

- Fishing for Litter
- Domestic waste
- Commercial waste (fishing nets)
- Dolly Rope
- Maintenance Waste

The biggest challenge is to collect this waste in the most efficient way.

We developed with all the stakeholders three different kinds of packing materials:

- Fishing for Litter Bigbags
- Mini kitchen waste Bigbags
- Dolly Rope Bags

In this way, we can place one container for each waste stream in the ports. In this container the waste streams, Fishing for Litter, Domestic waste, Dolly ropes and Fishing nets can be picked up in one call and brought to the recycling plant.

Due to the different packaging materials the waste streams can be sorted out easily and will been brought to the different recycling companies.

Next to this idea, we are producing an app for mobile phone.
With this app fishermen can make in a very easy and simple way a pre-notification of the waste they want to dispose of. This app is very easy, and new packing materials can be requested as well.
Every port is different and the app shows, after the fisherman enters his waste and amount of waste, what to do with the waste.
Will the waste be picked up, or does the fishermen have to bring the waste to an container (and in case, where the closest container is located)

In case the waste will be picked up by a collecting company, the company who is in charge gets a waste transfer sheet per mail which the company can print, so all the documents are arranged.

Discussion points about project:

- **Challenges:**
  - Creating a communication plan to activate all parties
  - Creating a waste announcement needs to become part of the workflow
  - Handling waste (for example splitting the fishing nets from Dolly ropes)
- **Opportunities**
  - Waste will be for a very short time on quayside, because all parties will know where and when the waste is there.
  - When fishing ships create an announcement to discharge their waste, it will become clear which fishing ships don't discharge waste, so we can get in contact with them.
  - Show the Netherlands, the fishing industry is not the polluter of the sea but the protector of the sea.

Fishing for Litter – KIMO

The Fishing for Litter project is one of the longest running (over 15 years) and most successful projects of KIMO International. It is being implemented in a number of NW European countries, like the UK, Sweden and the Netherlands. In the Netherlands, the project is coordinated by KIMO in close collaboration with the Dutch Ministry for Infrastructure and the Environment.

By the Fishing for Litter project, the waste that fishermen catch in their nets is brought back on shore. Thus preventing that the fishermen continuously catch the very same waste, or that it washes up on the beaches.

Henceforth, it is collected, transported, monitored, and processed. For the storage of the waste on the ships, the fishermen bring along hard wearing big bags. Upon their return to port, the fishermen – who participate voluntarily – place the big-bags on the quay, where it is picked up by the port authorities or waste collecting companies. Through this process, over **2.500.000 kg** of waste has been removed from the North Sea over the past **ten years**.

Six times a year the flow of waste from various harbours is monitored. In this way we are gaining insight into the type of waste and into its origin. These data are annually recorded by KIMO and the Fishing for Litter project is a fixed item on the agenda of the Oslo-Paris convention (OSPAR), and the Helsinki Commission (HELCOM). In this way, the KIMO organisation consistently brings the issue of the pollution of seas and oceans to the attention of the various authorities in Europe.

The project has been running for over **15 years**, and has been adopted by several members of the international KIMO network. In 2016 the Fishing for Litter Project is nominated for the Ocean Awards in the category Seafaring Communities. This nomination is a wonderful recognition of the significant positive contribution that the project has had on the marine environment.

Furthermore the project has been taken up by OSPAR as a policy instrument in the Regional Action Plan (RAP) for participating countries. This will contribute to further expansion of the project over countries that are currently no part of the KIMO network. The more fishing vessels participate the bigger is the contribution to a good environmental status of our seas. It is our aim to make Fishing for Litter an integral part of the waste collection and processing infrastructures in fishing ports by 2020.

Strengths/weaknesses:

- FFL is based upon a positive approach bearing in mind that fishermen who work at sea have a responsibility for their own work environment despite the fact that an extensive part of the waste is not theirs
- Contacting individual fishermen is labour intensive and time consuming

Opportunities & Challenges:

- Since not all fishing vessels participate there is the opportunity to expand the project and the cleaning actions at sea.
- Another challenge is to increase the recycling of the waste collected.
- Funding is an ongoing challenge, money is needed for storage, transport and processing of the waste.

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MARELITT Baltic – DFG harbours

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Summary/explanation of project (bullet points) incl. illustration

- **Overarching aim:**
  Mitigation of the impact of derelict fishing gear on the Baltic Sea environment.
- Improve reception facilities at harbours and environmentally sound waste management.
- Develop cost-efficient, safe and environmentally friendly derelict fishing gear cleaning methods.
- Produce a handbook on derelict fishing gear retrieval methodologies consisting of the evaluation of dragging operations and documentation of lessons learned.
- Establish a baseline for future cleaning measures and a map of host areas in the Baltic Sea and a plan for post-project operation.
- Increase responsible fishery schemes while developing a code of conduct for the fishing industry.

Best practice harbour reception facilities:

- Enable marine litter and derelict fishing gear to be received in harbours, avoiding additional cost for fishermen.
- The addition of containers and other reception facilities must be accompanied by an increase in the quantity and quality of suitable supporting waste management services.
- Promote full implementation of no-special-fee system (NSF) at fishing harbours, including the option that retrieved derelict fishing gear can be landed.
- Proper lost gear reporting: Information available and clearly visible at harbours about proper lost gear reporting and retrieval procedures.
- Port waste reception and handling (WRH) plans should include a description of proper collection and recycling procedures for DFG (retrieved gear) and end-of-life fishing gear.

Discussion points about project:

- **Challenges:**
  - **Retrieval of DFG by fishermen takes up time and is costly**
  - **Fishermen currently have very limited options to discard ALDFG in fishing harbours**
- **Opportunities**
  - **Removal of ALDFG from the marine environment, hence of plastic litter from fishing grounds**
  - **Support of fishermen in their retrieval actions**
  - **Waste management solutions for both end-of-life and lost& retrieved fishing gear could be developed at the same time IF harbour reception and waste management of fishing gear is implemented**

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

- Currently no or very limited PRF:s for retrieved ALDFG, which hinders the continuation of DFG retrieval beyond MARELITT Baltic.
- Recycling pathways for both ALDFG and end-of-life fishing gear need to be developed (although collection of end-of-life fishing gear has been organised in some harbours, it should be extended to all fishing harbours).
- Harbour reception and recycling logistics and possibilities need to be developed.

MARELITT Baltic – DFG recycling

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Summary/explanation of project (bullet points) incl. illustration

- **Overarching aim:**
  Mitigation of the impact of derelict fishing gear on the Baltic Sea environment.
- Improve reception facilities in harbours and environmentally sound waste management.
- Develop cost-efficient, safe and environmentally friendly derelict fishing gear cleaning methods.
- Produce a handbook on derelict fishing gear retrieval methodologies consisting of the evaluation of dragging operations and documentation of lessons learned.
- Establish a baseline for future cleaning measures and a map of host areas in the Baltic Sea and a plan for post-project operation.
- Increase responsible fishery schemes while developing a code of conduct for the fishing industry.

Best practice recycling of derelict fishing gear (ALDFG):

- Best practice recommendations at end of MARELITT Baltic (February 2019) for ALDFG treatment:
  - Testing of recycling methodologies for lost and end-of-life fishing gear
  - Processing & cleaning of DFG
  - Re-use of plastic materials through granulation (circular economy approach)
  - Re-use through disintegration by pyrolysis or hydrolysis generating fuel (raw oil) or synthetic gas
- DFG treatment scheme will summarise all recycling efforts and provide recommendations for DFG processing.

Pre-processing and sorting of retrieved fishing gear (left), cleaned and shredded for further testing (right), images © Andrea Stolte/WWF.

Discussion points about project:

- **Challenges:**
  - **Developping recycling pathways for mixed and diverse materials**
  - **Removal of metal fragments and large pieces (anchors, cables) and toxic lead lines which impede recycling**
  - **Developping logistic solutions that are economically feasible.**
- **Opportunities**
  - **Re-use of high-value polymers otherwise incinerated or landfilled**
  - **Mitigating the ghostnet impact by creating a value chain for lost as well as end-of-life fishing gear.**

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

- Mixed materials retrieved from the marine environment contain hazardous substances including toxic lead lines, which impede cleaning and processing in plants without wastewater treatment
- Mixed materials complicate automated processing and require time- and cost-intensive manual labour efforts
- A waste management stream for fishing gear does not exist, but should be developped to avoid loss of the material value.

MARELITT Baltic – DFG retrieval

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Summary/explanation of project (bullet points) incl. illustration

- **Overarching aim:**
  Mitigation of the impact of derelict fishing gear on the Baltic Sea environment.
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- Establish a baseline for future cleaning measures and a map of host areas in the Baltic Sea and a plan for post-project operation.
- Increase responsible fishery schemes while developing a code of conduct for the fishing industry.

Best practice retrieval of derelict fishing gear (ALDFG):

- Best practice recommendations at end of MARELITT Baltic (February 2019) for ALDFG retrieval from the marine environment:
  - Search & retrieval from the seafloor with dragging devices
  - Cleaning of wrecks with the aid of professional divers
  - Removal of ALDFG from sensitive habitats by divers
- Environmental Impact Assessment of ALDFG retrieval in the Baltic Sea, which provides a baseline for other marine areas with similar characteristics in the North Sea and OSPAR regions as well.

MARELITT Baltic creeper for ALDFG search and retrieval (left) and diver measuring indentation depth for the environmental impact assessment (right), images © Christian Howe.

Discussion points about project:

- **Challenges:**
  - **Finding ALDFG in the marine environment**
  - **Developing environmentally friendly retrieving methods**
  - **Considering the large diversity of marine seafloor habitats sensitive to introduction of plastic litter in the form of DFG, but potentially also to retrieval actions.**
- **Opportunities**
  - **Removal of lost fishing gear and hence plastics from the marine environment**
  - **Reduction of ghostfishing**
  - **Removal of microplastic fibre sources in the form of ALDFG**

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

- Finding lost fishing gear is a challenge even with the aid of local fishermen, a host area map is developed in MARELITT Baltic.
- The diversity of Baltic seafloor habitats (soft sediments, rocky shores) requires locally adapted retrieval technologies.
- Reasons for gear loss vary in each country and project area.

PECHPROPRE - France

The project PECHPRORE is led by the Ministry of Environment and the Marine Cooperation in France. It started in September 2016 with 5 objectives:

- provide an overview of plastics used in the fishing industry ;
- list the environmental and legal constraints for these wastes ;
- understand waste management systems in the regions ;
- conduct a feasibility study on recycling old plastics from fisheries ;
- raise awareness on the need for integrated management.

PECHPROPRE has been gathering 9 local initiatives in France

1. **DechAct** (PNMEPMO – North Coasts): improve PRF, collection on-shore, raising awareness, develop common waste treatment plants.
2. **Seaplast** (SMEL – Normandy): quantifying, characterising wastes from fisheries and aquaculture and evaluating each recycling scheme
3. **Marine Natural Park of Iroise** (Bretagne) focuses on marine litter in harbours and how to gather stakeholders to manage these wastes.
4. **Fil&Fab** (Bretagne) aims to build up a innovation platform to manufacture 100% recycled fishing nets and other designs.
5. **Navicule Bleue** "Gens de la Mer" (Poitou Charente) specialised in sorting out marine plastics waste and especially fishing nets.
6. **CIDPMEM & CCI** (Basque Country) is trying to launch back the collection of old fishing gear to recover, repair or recycle them.
7. **RECUPNET** (Marine Park of the Lion Gulf) : quantifying marine litter found in fishing nets, lost fishing nets and used equipment in the area.
8. **Palana Environnement** (Marseilles) is building up a local recycling branch out of used fishing gear
9. The **APAM** Project (Mediterranean Sea – 8 ports) aims to explore opportunities for recycling, reduction, reuse (the 3 Rs) through 8 pilots projects in ports

Discussion points about project:

Through its sub-contractors, the Marine Cooperation has collected data from 57 fishing ports and 177 fishers, 28 through the SMEL, 143 through Suez Consulting, 6 through its own network. 157 of them were established on the Atlantic seafront and 20 in the Mediterranean Sea.

Difficulties met:

- Fishermen are often at sea and when they are back on shore, they are not necessarily very eager to answer to questionnaires
- A lot of fishermen have no idea of the type of plastic theirs nets are made of, nor the quantities they estimate to lose or remain vague on the price of the equipment.
- Bad contacts between fishermen and a consulting firm
- Some of the ports that have been studied in the first place happened not to be the most relevant ones based on out dated data.
- The name of the project «Pechpropre» (CleanFishing literally) sounds accusing for fishermen
- Overlapping interests and operating methods between local projects show that cooperation is difficult even for small-scale projects.

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Quick summary of the different ongoing projects:

Fisheries- and aquaculture:

- Assess how a system will secure that fishermen can deliver marine waste that has been collected during commercial fishing activities to be delivered to harbour's free of charge, could be implemented. The purpose with this system is that it will replace Fishing For Litter.

- Assess whether a producer responsibility system for discarded gear from the fisheries- and aquaculture industry, should be implemented. An extended producer responsibility system provides the producers/importers a responsibility for the products throughout the life cycle, also when they have become waste. This implies that the producer/importer are given an organisational and economical responsibility for collecting, recycling and end-use of waste from their own products.

- The Directorate of Fisheries has conducted a yearly clean-up of lost fishing gear (5 week cruise) since 1983. The basis for the clean-up survey is lost fishing gear that is reported to the Coast Guard Central, along with information gathered from other channels. Each year about 1000 gillnets pots, longlines, ropes, wires, anchors along with other types of fishing gear and components from fishing gear are retrieved. A collaboration with Norsk Fiskeriretur AS (Nofir) for delivery and recycling was established in 2015.

- Development of technical processes and solutions that can retrieve lost fishing gear better and faster than todays practice.

- The use of degradable materials in gillnets. So far, these pilot studies have not been satisfactory. Through regulations such as requirement for reporting when gear is to be set/hauled, tending intervals, solutions are called for in order to reduce the loss of fishing gear.

Will be elaborated more in the next weeks.

Discussion points about project:

- **Challenges:**
  -
- **Opportunities**
  -

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

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GWR Polymers/ Newlyn Harbour Net Recycling

Dumping of unwanted, old nets was becoming an increasing problem at Newlyn Harbour, Cornwell, England. In 2004, Gavin Rees, owner of recycling company GWR Polymers, provided several bins to the Newlyn Harbour Master to collect old, unwanted nets and send them on to GWR Polymers.

In 2011 improvements were made to this recycling process. A small baling unit was installed at Newlyn Harbour so that nets could be packaged into small bales and transported to depolymersation companies to supply nylon 6 feedstock. The nets are disposed of at no charge to the fishermen, with GWR Polymers paying for the collection, cleaning, bailing and transport to depolymerisation companies in eastern Europe. From there the costs are recovered by selling on the regenerated plastic pellets.

The project has expanded into several other harbours in the South West of the United Kingdom, including Mevagissey, Newquay and Padstow. The local fishermen play a role by separating all rope and non-netting from the collection bins. This recycling process currently works for all parties; it provides a cost effective alternative to disposal in landfill and support local businesses. Since 2004 over 200 tonnes of used monofilament netting in the South West have been recycled. Annual tonnage is approximately 20 tonnes of nets.

Discussion points about project:

- **Challenges:**
  - Limitations on the types of nets that can be viably recycled - expertise exists to expand this but will take time
  - Correct identification and separation of material types & appropriate cleaning
  - Small volumes of nets make recycling process less economically viable.
- **Opportunities**
  - Collect nets directly from fishermen as soon as they meet their end of life
  - There are often existing networks to tap into when setting up a project

More information:

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Nothing thrown over the board project

More information:

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Summary/explanation of project (bullet points) incl. illustration

-Pilot action developed in the Galician Rias (NW Spain) in which fishermen for different fleets brought ashore the litter collected in their nets during normal fishing operations (gillnets & trawling net)
- Involved Fleets: 152 vessels: artisanal fishing boats + coastal trawlers, ships length ranged from 6 to 30 m.
- Participation: 11 ports, 600 fishermen
- Duration: 2009 - 2010 (~6 months each year)
- Participants: Fishing associations, Ports Autonomous of Galicia, Port of Coruña, Port of Marin, Port of Vigo. Funded by MARM, now MAPAMA.

Specific aims:

-Improve knowledge and understanding of marine litter in Galician waters
- Reduce the amount of marine litter and monitor it in order to collect data about location, typology, quantities, possible sources and trends
- Establish a marine litter management scheme (on board and in ports) including good practices of collection/storage/management on board and in port areas.
- Evaluation of the feasibility of implementing a sustainable management system in Galician Ports
- Raising awareness among fishermen, port operators and general public.




All ports	Weigh (Kg)	Litter type								
		Fishing gears (nets, ropes, wires, floats, etc.)			Plastic	Metal	Textile	Rubber	Wood-timber	Other
		gillnets	trawling	Tramps-pots						
Total	≈ 34 ton	7.399	3620	4201	3720	4087	1814	1223	925	6890
Apro. Percentage %		20	12	14	11 %	12 %	5 %	4 %	3 %	20 %
		45%								

Challenges:

- To demonstrate the suitability of implementing fishing for litter scheme in the Galician waters (NW Spain) with the participation of fishermen and port authorities.
- Demonstrate the environmental, economic and social benefits of such a single and cost-efficient system.

Opportunities

- A growing understanding-awareness of marine pollution impact on the fishing sector.
- Increasing support from public administration to tackle Marine Litter
- Marine Strategy framework Directive (2008) and Marine Litter as Ecological Descriptor for Good Environment State.

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

-The FfL operational scheme fits well with the normal fishing operations, but adequate collections systems (big bags, bins/containers) should be provided as well as appropriate logistic arrangements at the port.
-A crucial issue is the availability of adequate port reception facilities that facilitates the downloading of the collected waste material. Allocating reception facilities in the piers and providing the necessary logistic support at the port are key issues to achieve success.
- Seafarers involvement (fishermen-skippers-ownerships) is essential as well as that of the port operators, waste managers and recyclers. For that purpose, meetings, training and awareness activities (when feasible "at pier") with all the stakeholders are crucial and will contribute to create a common goal and vision of healthier seas.
-Fishermen efforts should be made visible to the society to improve their image and promote their active role as "guardians of the sea".
- In principle, fishermen are willing to participate, but other problems impacting on the fishing sector may jeopardise their motivation and involvement.
- The system is still in place in some of the involved fishing fleets and ports

Simrishamn / End-of-life FG

Initiator: Municipality of Simrishamn/Harbour office

Action: Reception facility for end-of-life fishing gears (but also for retrieved ALDFG)

Summary: There are 1 bigger and 6 smaller harbours administrated by the Municipality of Simrishamn. With increasing tourism sector, the attractiveness of the harbours is increasingly important. There are a lot old fishing gears spread around in the harbours and end-of-life fishing gears in private warehouses. Municipality has provided an open-top container in one of the harbours for collection of fishing gears not in use. When filled the container will be transported to a small recycling company on the Swedish west coast *Fiskarförening Norden* in Smögen, specialised for handling of end-of-life fishing gears/equipment and ALDFG.

Discussion points about project:

- **Challenges:**
  - To activate inhabitants or local people to collect possible remnants or old fishing gears, organise the transportation to the place/harbour with the container and place the gears there
  - To inform and supervise that no other litter will be place in the container like e.g. bigger metal objects etc.
  - Financing of the activity in the long run
- **Opportunities**
  - An easy way to get rid of the old fishing gears that have accumulated during several decades in the harbour area or in warehouses
  - Minimise potential microplastic sources
  - reuse some details of the fishing gears

One of the big challenges will be how to cover all coast areas, especially those with less operational harbours. Coastal and local fishing sector and fishing fleets are decreasing rapidly and in many harbours no fishing activity exists any longer. One possible solution could be regional collection centers.

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PESCAL Sustainable fishing in clean grounds

More information:

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Summary/explanation of project (bullet points) incl. illustration
Three different activities:
-Fishing for litter actions (passive scheme) with the participant vessels and litter monitoring: 67 vessels (small scale + coastal trawlers) + 235 fishermen in 4 Atlantic and Mediterranean ports
- Development of specific campaigns directed to remove litter from hotspots
- Pilot action on "Ghost fishing": follow up, control and monitoring of fishing capabilities of old gillnets disposed as abandoned gear.
- -Participants: Fishing Association (ONAPE) and CETMAR. Funded by MARM, now MAPAMA

Specific aims:
- Keeping data collection to complement environmental diagnose of previous projects (NPB): litter monitoring (typology, quantities, possible sources).
-Develop and implement a technical protocol in order to execute pilot campaigns/actionsof litter/gear removal with specific trawling gear adapted to that aim on board of a trawler.
-Study the behaviour and ecological impact of abandoned fishing gear in two contol sites at coastal waters: characterisation and quantification of the marine fauna trapped and how the gear evolved in time.
- Raising awareness among fishermen and the general public.

PESCAL *Fishing for litter actions*	Litter "group"	Kg	%
	"Waste" Fishing gear	13.642	30%
	General litter (not separe by typology)	31.433	70%
	Total	45.075	100%

PESCAL *4 Specific campaigns for Litter removal*	Litter "group"	Kg
	"Waste" Fishing gear	1.657
	Plastic	33
	Metal	175
	Others	135
	Total	2.000

Ghost fishing pilot experience results: May 2013-November 2014 / 2 stations of fishing nets / Missing gears, need for frecuent replacement / 36 sampligs-control of the nets /366 marine individuas catched (34 different species).



Discussion points about project:
Challenges:
- To define the best way/systems to locate derelict fishing gears and hotspots
- To develop an operational protocol to remove litter using an adapted trawling gear modified to operate as a "gear collector", operating in a coastal trawler.
- To evaluate the ecological impact of an abandoned fishing gear and the structure and materials evolution at sea

Opportunities
- A great concern about ghost fishing and marine litter. Increasing support from public administration.
- Participant vessels showed availability and willingness to develop litter removal campaigns in the fishing grounds.
- Collaboration from maritime administration to place controlled gears in the seabed to study their "ghost fishing" capabilities in two locations.

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?
-The Fishing for litter operational (passive) scheme fitted well with the normal fishing operations
- Seafarers' and port operators involvement is essential for the success as well as the provision of adequate systems for waste collection and management on board and at port.
--Pilot ghost gears were missing for different reasons (weather, stolen), what made it difficult to collect long term data (max. continuing sampling 5 months).
- The gears showed maximum fishing activity in the first 15 days. After one month the capture capability decrease. After one year, the gears become inactive, buried or covered by sediments, algae and other marine organisms,
- The technical protocol and the equipment developed for gear retrieval perfomed reasonably well, but the costs of the operations are high. Improvements on retrieval equipments are necessary.
- Fishing for litter schemes should evolve to a "Guardians of the Sea" scheme, in order to improve the image of the fishing sector and promote the use of the vessels as floating laboratories.

Education Module "Blue Responsibility"

«Blue Responsibility» is a 3-5 days-long interactive educational program for secondary and vocational school programs within the maritime and seafood sector. The course consists of seven topics and practical assignments. One of them is a beach cleaning day.

To be more effective the program also aims to reach persons already active within the sectors. Thus, the project group will also develop a shorter module to be incorporable into marine safety training. Given all persons working at sea are required by the STCW convention to complete safety training, along with refreshers at 5-8 year intervals, this offers an excellent platform for raising awareness and advocating change.

To be tested and implemented in spring 2018.

Discussion points about project:

- Challenges:
  - The main challenge is to get in touch with several schools;
  - Find solution for distribution of learning materials and secure dialogue with teachers;
  - Translate to several languages, including Russian and English
- Opportunities
  - Incorporation of research results
  - Implementation outside Norway

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OSPAR COMMISSION

<< Reduction of marine waste from fisheries >> (REMAFISK): WP3 on waste management system in harbours

The main objective is to contribute to reduced marine plastic pollution from fisheries through increased knowledge of practical solutions for prevention, and the education of fishers, both experienced fishers and students in maritime colleges.

Sub-goals are:

- Development and implementation of an education module for fishers
- Study routines for securing equipment and handling of waste on board
- Develop and establish good waste management systems in harbours.

In Nordland County (Norway), where there is considerable fishing activity, it is natural to focus on efforts to prevent marine plastic pollution coming from the fisheries sector. Two important measures on prevention of marine plastic pollution in fisheries are better systems for waste management and consciousness raising among the fishers.

There is a clear connection between waste management routines on board and availability of waste facilities in harbours. The fishery industry points at the lack of infrastructure for waste management in the ports as a challenge. Better availability and reduced transport costs through establishment of collection sites for delivery of waste is needed, along with the introduction of deposit schemes and producer responsibility.

Collaboration is in focus: The project has carried out a dialogue with fishers as a basis for developing a pilot waste management system for fishers in the harbour of the city of Bodø. This is a collaborative effort between researchers, fishers' unions, Bodø municipality, Bodø harbour and the local fish landing facilities.

Discussion points about the implementation of a waste management system for fishers in Bodø harbour:

- Challenges:
  - Distribution of costs: According to the polluter pays principle, the fishers should bear the cost. However, as the fishers already pay a harbour fee supposed to cover waste management costs (without the service currently functioning adequately), the distribution issue is not straightforward. A distribution of costs between municipal waste management services, harbour authorities and fishers should be expected.
  - There are practical issues related to giving access to the harbour waste collection facilities to fishers only, i.e. access should be restricted to prevent it being used by non-fishers but at the same time being easily available for the fishers. Access could be granted by the fish landing facility, or by establishing a system giving individual fishers access.
- Opportunities
  - According to the fishers, having easy to use waste management systems in the harbours may impact positively on fishers' attitudes towards marine pollution, possibly providing a positive add-on effect on recirculation rates
  - The pilot, if successful, can have wider implications for other fishery harbours regionally and nationally.
  - Increased recirculation rates can improve regional business opportunities on land

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Scottish Activities Summary

The Scottish fleet has several mechanisms in place to deal with plastic litter created by the commercial fishing fleet. As well as a code of best practice for preventing the loss of domestic plastic waste and fishing gear into the ocean, there are different measures for recovering domestic plastic waste and discarded fishing gear.

Domestic Waste:

i. Code of Best Practice for vessels: fishing vessels have on-board infrastructure allowing them to store waste on board until they reach a harbour at which the waste can be disposed of.
ii. Fishing for litter: vessels sign up to the scheme and receive a bag to collect litter they catch in their nets during fishing activities. These bags are then disposed of at the harbour. Many vessels carry out similar activities, but do so independently of this scheme.
iii. Harbour side facilities: UK harbours are equipped with facilities for waste disposal to be used by fishermen. Waste generated on board vessels is stored by fishermen on the boat while at sea, later to be transferred to the waste disposal units on the harbourside.

Discarded Fishing Gear:

i. Code of Best Practice for vessels: Fishers reduce the likelihood of losing gear by avoiding conditions which may contribute to the loss of gear- e.g. by paying attention to weather warnings. Loss of static gear is avoided through communication between different sectors of the fleet. Many fisheries associations have published contact details for static gear owners to encourage nomadic vessels to get in contact before entering a specific area, to minimise the likelihood of gear being accidentally lost.
ii. Ghost Fishing UK: Schemes in Scotland, such as ghost fishing UK, work to actively remove lost gear from within Scottish waters. Teams of divers work in certain areas, removing old fishing gear. A sister project of this scheme allows recreational as well as commercial divers to report lost fishing gear encountered on their dives via an app, to be recovered later. All recovered gear is logged so a scale of the problem can be created.
iii. Re-Use of old gear: Fishing gear that is washed up along Scottish beaches is re-purposed by local businesses, e.g. using old ropes to create mats and rugs. This not only encourages the removal of the gear from beaches, but raises awareness among the local community. One such company, A Frayed Knot, features in the EU's Circular Ocean Project

General Discussion points:

- **Challenges for Scotland:**
  - Encouraging more individuals to adhere to the codes of best practice as outline above
  - To create new ways to minimise the damage to the environment caused by fishing litter (e.g. using new materials)
  - To promote the uptake of these new materials by gear manufacturers and the fishing industry

- **Opportunities**
  - Increased communication can decrease the volume of lost gear, and can be used to co-ordinate clean-up projects
  - Advances in technology can mitigate fishing litter

Strengths/complications of project, what could make the project fail or succeed (what needs extra attention during implementation)?

n/a

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