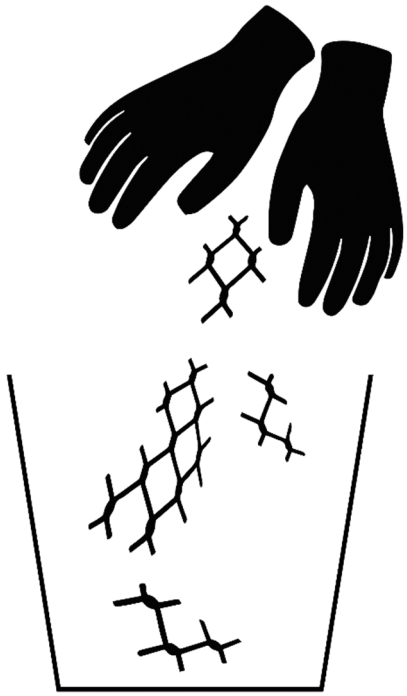
Swedish Agency for Marine and Water Management

KIMO

Net cuttings waste from fishing in the North-East Atlantic: best practices for mitigation

A report for OSPAR Action 36: to develop best practice in the fishing industry



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Net cuttings waste from fishing in the North-East Atlantic: best practices for mitigation

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List of Abbreviations

CEFAS	The Centre for Environment, Fisheries and Aquaculture Science
CETMAR	Centro Tecnológico Del Mar
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFL	Fishing for Litter
GES	Good Environmental Status
HELCOM	Helsinki Commission – The Baltic Marine Environment Protection Commission
KIMO	Kommunenes Internationale Miljøorganisation (Municipalities for Sustainable Seas)
MSFD	Marine Strategy Framework Directive
ICG-ML	OSPAR Intersessional Correspondence Group on Marine Litter
NGO	Non-Governmental Organization
OSPAR	Oslo-Paris Convention for the protection and conservation the North-East Atlantic and its resources
PRF	Port Reception Facilities
RAP	Regional Action Plan
RFS	Responsible Fishing Scheme
SwAM	Swedish Agency for Marine and Water Management

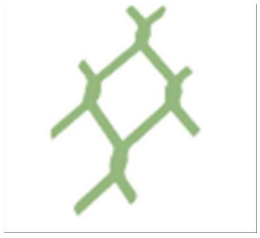
Executive Summary

The issue of pollution from waste net cuttings needs to be addressed. These small items, found in abundance on shores and in the marine environment, cause harm to marine wildlife through ingestion and entanglement and to our fishing industry through damage to fishing gear. Simple, effective solutions can be implemented by fishers and port authorities to collect and contain pieces of net, rope and cord before they are washed to sea. Mitigation requires awareness raising within the industry and engagement by fishers and harbour authorities to modify existing work practices and use methods and tools to better manage cuttings waste.

On behalf of the Swedish Agency for Marine and Water Management, KIMO International conducted a survey of harbour authorities and fishers from four countries in the North Sea region in order to explore challenges and solutions to reducing the volume of waste net cuttings from the fishing industry that end up in the sea.

This report presents an analysis of background research and of the results from the survey, including feedback gained through face to face interviews. Information was gathered about the sources of net cuttings and practices that mitigate inputs to the marine environment. Fishers and harbour authorities contributed valuable information about current work practices, attitudes towards disposal of cuttings, and evaluation of remedial measures. Recommendations for next steps for national governments, ports and fishers are also provided in the report.

The surveys, a best practices guide and a set of awareness-raising materials have been developed to accompany this report. It is our hope that these will be widely circulated and used to raise awareness in the OSPAR maritime area, and in any area where commercial fishing activities take place, thus preventing further inputs of waste net cuttings into our marine environment.



1. Introduction

Cuttings from rope, cord and nets discarded unintentionally or disposed of irresponsibly have a significant impact on our marine environment, one that has not been much in the public eye. We have used the term “net cuttings” in this report to include bits of waste cord and rope, as well as bits of net from the reparation of fishing gear. These items are within the top ten items found during beach surveys in OSPAR’s North Sea area and as reported in the JRC technical report: Marine Beach Litter in Europe – Top Items (Hanke, 2016). Pieces of net, rope and cord from the fisheries industry make up three of the top ten items found on northern European beaches. Nets and ropes comprise from 23 % to 32 % of the total items found in both the southern and northern North Sea and in the Arctic waters (OSPAR data 2014-2015), in contrast to other European seas, where they are less prevalent (OSPAR Commission, 2015). There is therefore a need and an opportunity to increase awareness about this issue and to offer practical, concrete solutions for stakeholders in ports, harbours and in fishing communities to mitigate inputs to the sea. Based on direct interaction with the relevant stakeholders, this project represents the most comprehensive study to date, exploring existing best practices and presenting suggestions for improvement.

KIMO has a strong relationship with fishers and harbour authorities due to many years of experience through (inter alia) the Fishing for Litter scheme (www.fishingforlitter.org) and the implementation of marine environmental education activities in fisheries colleges. This relationship has been a valuable asset, ensuring trust and a good dialogue with the fishers. Harbours and the fishing community are essential parts of finding and implementing solutions to reducing marine litter.

Most net cuttings that end up as waste are produced during the mending of trawl nets, either on board vessels at sea or on the quay while at port. Sections of net that are damaged through regular wear and tear or by accident are cut from the rest of the netting to be replaced or mended. These sections are mended by cutting extra pieces from the existing net and knotting new material into place in the netting mesh so the netting is woven together.

Pieces of net, rope and cord can also originate directly from the wear of fishing gear in the water (such as dolly rope) or from derelict fishing gear (including ghost nets) that degrade in the sea over time. Mitigation from these sources is not within the scope of this report.

The primary source of net cuttings in the North Sea is the result of careless disposal (dropping or throwing onto the deck or quayside) as mending of nets is carried out. This might arise out of habit or through the need to keep up a certain speed or efficiency of mending work. If cuttings are not removed quickly from the deck, they can be washed overboard by storms, high winds, waves or rainwater running off the boat. They can also be swept overboard, either by design or accident. Cuttings that are not cleaned up from docks and quaysides can also find their way to the sea carried by wind or via runoff water, (storm drains or directly over the edge). They can also be swept into the sea during clean up activities.

Cuttings can also fall onto the fishing nets on board and be trapped there, or fall into the sea, when the net is rolled up on the boat or rolled out during regular fishing activities. They can fall into the water when nets are transferred from the quay to the boat. Pieces may also be released into the environment when new nets are taken in use as some pieces from the factory are trapped in the netting.

This project aims to present information and propose options that can mitigate waste net, rope and cord originating from net mending from reaching the sea. In many countries, awareness about marine litter is increasing in the fishing sector and general population due to multi-level government interaction and NGO initiatives and campaigns. However, the issue of waste net cuttings has not yet been adequately addressed.

This study focuses on Greater Northern Seas region, where waste from fisheries contributes the largest proportion of marine litter found during beach surveys (in the OSPAR maritime area). However, it is important to note that the project deliverables and recommendations in this study are widely applicable and may be used to inform policy and practice in any area where there is commercial fishing activity. The project deliverables - this report, a best practices guide and awareness-raising materials - are principally aimed at harbour authorities and fishers and are suitable for dissemination in any regional sea basin or any location where fishing activities take place.

2. Project Scope

Due to the significant amount of fishing activity, coastal areas around the Greater North Sea are significantly polluted by waste gear from the fishing industry. The results from the OSPAR beach litter monitoring showed that, between 2012 and 2018, 39% of the total abundance of litter items found on beaches and shores in this area were fishing-related. This represents the highest number by far of individual items than in any other OSPAR maritime area. Study of the entire OSPAR maritime area shows that 13% of all litter items are attributable to the fishing industry. Of these, 67% are of the category 'plastic string and cord' which includes waste net cuttings; items from this category were most prevalent in 77% of survey sites (OSPAR Commission, 2020).

Many actors are working hard to find solutions to reduce marine litter but few have looked at net cuttings waste in any detail. This study aims to demonstrate that, used effectively, good practices can significantly reduce marine litter from waste net cuttings and thus contribute towards meeting the goals of (inter alia):

- European Marine Strategy Framework Directive (MSFD) (2008/56/EC)
- European Strategy for Plastics within a Circular Economy (2018)
- European Single Use Plastics Directive (2019/904/EU)
- United Nations Agenda 2030 (Sustainable Development Goal 14)
- G7 Action Plan on Marine Litter.
- OSPAR Marine Litter Regional Action Plan (RAP) (2014-2021)
- HELCOM Regional Action Plan for Marine Litter in the Baltic Sea (RAP) (2015-2021)

OSPAR is important in bringing together countries around the North-East Atlantic in a collaborative forum with a common goal to substantially reduce litter in the marine environment from both land-based and sea-based sources and achieves this through implementation of its Marine Litter Regional Action Plan (ML RAP). This net cuttings project aims specifically to address Action 36 of the ML RAP:

“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.” (OSPAR Commission, 2014, p.10)

This project also aims to inform HELCOM’s Regional Action Plan for Marine Litter in the Baltic Sea, Action RS5 to “Promote and disseminate best practice in relation to all relevant aspects of waste management within the fishing sector (including e.g. waste management on board, waste management at harbours and operational losses/net cuttings).” (HELCOM, 2015, p.10)

3. Methodology

KIMO created detailed questionnaires, in four languages, for harbour staff and fishers (Annexes 1 and 2). The questionnaires were designed to collect information on perceptions, current practices for waste management, best practices, barriers and solutions to the issue of collection and disposal of waste net cuttings in order to limit their impact on the marine environment.

Harbour authorities in Denmark, the Netherlands, Scotland and Sweden were contacted and dialogue meetings were held with relevant officials. Contacts with local fishers and fisheries associations were made and face-to-face interviews were conducted. KIMO has documented the best practices for cuttings of rope, nets and cord found during a desktop study and through personal interviews. These have been included in KIMO's ***Best Practices to reduce marine litter from net cuttings waste*** that accompanies this report. Some best practices have also been assessed first hand by the harbour personnel and fishers.

Surveys of harbour authorities and fishers

8 harbour staff and 12 fishers responded to the survey through face to face interviews.

Country	Harbour	Harbour Staff	Fishers
Denmark	Hvide Sande	1	2
Denmark	Thyborøn	1	2
Netherlands	Den Oever	1	0
Netherlands	Ijmuiden	1	1
Netherlands	Oudeschild, Texel	1	0
Netherlands	Stellandam	0	1
Scotland	Lerwick	2	2
Scotland	Scalloway	0	1
Sweden	Ökerö	1	0
Sweden	Resö	0	1
Sweden	Rönnäng	0	2

TABLE 1

4. Background Study

Most of the focus to develop best practice in the fishing industry over the past years has concentrated on the larger items of lost gear and ghost nets. Comparatively, little work has been done to specifically address the issue of net cuttings even though they are one of the most common items on beaches in the North Sea area. This section gives information on some of the current and recent practices and projects in which net cuttings waste has been addressed indirectly, through other categories of waste items from fisheries.

Regional Seas Conventions

The Regional Seas Conventions OSPAR (www.ospar.org) and HELCOM (https://helcom.fi) are important in bringing together countries around the North Atlantic and Baltic seas respectively in collaborative forums with a common goal to reduce marine litter in the marine environment from both land-based and sea-based sources. This they achieve through marine litter Regional Action Plans.

The OSPAR Marine Litter Regional Action Plan (ML RAP) for the prevention and management of marine litter in the North-East Atlantic was adopted in 2014 and runs until 2021. Its primary objective is to "substantially reduce marine litter in the OSPAR maritime area to levels where properties and quantities do not cause harm to the marine environment" (OSPAR 2014, p.4)

The HELCOM Regional Action Plans for Marine Litter (RAP ML) was adopted in 2015 with the aims of "achieving a significant reduction of marine litter by 2025, compared to 2015" and to "prevent harm to the coastal and marine environment" (HELCOM, 2015, p.4) Sweden is the lead contracting party responsible for RS5 of the HELCOM RAP.

This study aims to address Action 36 of OSPAR's Marine Litter Regional Action Plan. It also supports HELCOM's Regional Action Plan for Marine Litter, Actions RS5, RS7 and RS8. Regional Seas Conventions can be effective catalysts to promote and disseminate best practices that target and reduce cuttings waste.

OSPAR undertook a “Scoping study to identify key waste items from the fishing industry and aquaculture” (OSPAR 2019). This report had a focus on the OSPAR Marine Litter RAP Action 36. Although the report deals with general types of waste, cuttings do not appear to have been directly addressed in this study (although they would be included in the ‘fishing nets’ and ‘ropes in polypropylene plastic’ categories). The origins of the fishing nets and ropes category of waste are noted in the report as “harbours’ garbage” and “fish trade houses”. (OSPAR, 2019 p.12 Table 2.)

Output from KIMO’s net cuttings project will enrich Action 36 through its particular focus on waste net cuttings.

OSPAR undertook “A review of marine litter management practices for the fishing industry in the North-East Atlantic Area” (Mengo, E., 2017). The review used results from a questionnaire sent to twelve OSPAR Contracting Parties that collected information on existing practices relating to marine litter from the fishing industries in OSPAR countries, in order to ascertain any gaps and identify best practices. It was found that all twelve countries surveyed have measures in place, in co-operation with the fishing sector, to prevent waste from the fishing industry becoming marine litter. However, there is no mention of any specific actions to target cuttings from net mending. Five OSPAR countries have a national code of practice or guidance that delivers the FAO code for Responsible Fisheries and/or a voluntary agreement with the fishing sector. In these countries, there are commitments to reduce the amount of marine litter form the fishing industry by ensuring best practice. (Mengo, E., 2017) These voluntary measures do not specifically mention cuttings waste. There is an opportunity therefore to set focus on best practices for waste cuttings through these voluntary agreements for preventing waste through responsible fisheries by ensuring that they are addressed through national code of conduct guidance.

The Netherlands, Spain, Portugal, Ireland and Belgium reported that they have implemented projects with an emphasis on a collaborative approach to finding practical solutions to improve waste management on board vessels and in harbours, for example, by distributing containers for waste generated on board vessels - an effective method to raise awareness of marine litter and to target cuttings waste from net mending. France and Spain have also undertaken studies

to identify good practices for waste management in ports in order to guide and promote best waste management actions nationally.

Norway and Spain have developed educational materials and environmental best practice guides for fishers, to educate and improve handling waste on board vessels. Nationally produced educational resources and awareness projects could be amended to include a section on dealing with waste cuttings, where this is not already addressed.

The review shows that most of the OSPAR countries have a focus on waste from the fishing industry as a source of marine pollution and are addressing this through education, awareness raising, developing and improving waste management processes and adopting national codes of practice or voluntary agreements. In the report's gap analysis, Sweden noted that "There appears to be inadequate waste management in harbours, resulting in net or rope cuttings from fishing gear that has been repaired on quays becoming marine litter, whereas waste from handling and repairing nets on board vessels can be disposed of in bins or bags on the vessels". (Mengo, E., 2017, p.34) This is the only direct mention of net cuttings in the report. There is no mention of best practices or solutions that directly target net cuttings waste, but the report does conclude that there is a need for "further awareness raising and improving waste management in the fishing sector, including practical solutions for better waste management on board fishing vessels and in harbours by discussing how best to do this with the stakeholders in the fishing sector, harbours and with waste companies" (Mengo, E., 2017, p.35).

OSPAR held a workshop "Handling (plastic) garbage in the fishing industry" in Rotterdam, the Netherlands in 2017. The workshop report presented the final outcomes, including a synopsis of the best practices that were identified, and made recommendations for next steps and future work (OSPAR, 2017). Thirteen best practices are described in Annex 2 of the report that highlight the many initiatives and projects working on targeting waste from the fishing industry in the OSPAR region.

The relevant messages from this work session (OSPAR, 2017 pp. 10-11) that can be applied to waste management for cuttings and other fisheries waste are:

- Communication between stakeholders is key to working together toward common goals
- Information about waste management needs to be clear and easily accessible

- Collaboration and cooperation is necessary to raise awareness, share best practices and develop concrete actions
- Disposal of waste should be made easy for fishermen through provision of adequate facilities
- A system of positive rewarding and promotion of positive messages should be developed by sharing examples of where fishers are protectors of the sea

Other projects

CleanAtlantic (2017-2020)

CleanAtlantic is an EU Interreg (Atlantic Area) project that aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove marine litter. Work Package 7 on Tackling Marine Litter includes an expected collation of best practices for waste management on-board and in ports. The project is working on the development of electronic resources, protocols, best practices and tools focused on: 1) waste management by the fishing, aquaculture and port sectors 2) fishing for litter and 3) management, impact and retrieval of ALDFG.
http://www.cleanatlantic.eu

Green Deal: Fishing for a clean sea (2014-2020)

Initiated in the Netherlands, this green deal brings together relevant stakeholders in collaborative projects with the goal of a clean sea. The green deal with a focus on Integrated Collection of Waste of the Fishing Industry has tackled the challenges of waste management on board ships and in harbours. Waste from the fishing industry is divided into five fractions, one of which (commercial waste) includes fishing nets. While net cuttings are not included as a unique waste stream, they are accepted in the waste stream dedicated to nets. The green deal approach presents an excellent opportunity to integrate best practices for net cuttings into such a project where there is already effective dialogue between stakeholders and a robust system in place for waste management.

PECHPROPRE (2016-2018)

The Pechpropre project in France had the objectives to understand waste management systems in the regions and raise awareness about the need for integrated management. This was achieved by making an inventory of all plastic products used in fisheries and of all collection mechanisms that are in place to collect end-of-life products. One of the measures of the project was to improve prevention and waste management in marinas, fishing and commercial ports. Net cuttings were not addressed specifically since they were deemed difficult to quantify. (Gueguen, M., 2020, pers. comm.)

REMAFISK (2017-2018)

The REMAFISK project was undertaken with fisheries in the north of Norway. The project initiated a dialogue with fishers and stakeholders in order to develop a pilot waste management system for fishers in the harbour of the city of Bodø.

This project examined cuttings from mending work and observed that pieces of rope were an important source of garbage from fishing activities. Fishers have no standard practices for handling the many small cuttings produced from net mending. It was found that some fishers sweep cuttings together and collect them, however other feel that they are not at all aware about collecting cuttings before they are lost to the sea. They process of mending is so automated, that there is not much thought given to the small pieces that are produced.

The REMAFISK report concluded that fishers who were interviewed believed that the solution to these challenges lies in addressing it on multiple fronts at the same time. Implementing practices onboard, effective solutions for waste management on land as well as working to exchange knowledge and change attitudes are areas that can be improved. It was felt that the implementation of effective waste management systems give rise to better attitudes among fishers. (Vangelsten, B and Bay-Larsen, I, 2018)

While the report does not specifically point to clear best practices, cuttings were integrated into an educational module called Blue Responsibility. The module was tested through a local maritime education program. Cuttings were shown to the students who were challenged to draw their own conclusions as to whether the material was cut and eventually dumped in the

sea. This practical part of the educational module was seen as important for awareness and for understanding the extent of the problem.

MARLISCO (2012-2015)

The EU sponsored project MARLISCO produced a collection of best practices that included management of waste from ships. It includes common sense best practices for shipping companies, small fishing boat owners and local authorities with a fishing port or marina.

The following best practices are relevant to reduce litter from cuttings (Orhodoxiou, D.L., 2014):

- Train staff on the effects of marine litter and how to appropriately store and dispose of all types of waste
- Make sure that waste created on board does not enter the sea but is brought to port and disposed of in appropriate bins
- Provide small rubbish bins on the boat to discourage boat users from throwing litter overboard
- Provide rubbish and recycling bins in harbours where boats can dispose of their waste
- Put up information signs urging boat users to bring their litter back to shore
- Implement the “polluter pays principle” to fine any boat caught throwing waste in the sea.

Work by SALT on plastic waste

SALT in Norway analyzed cuttings waste in their report from 2019 concerning plastic waste from fishing fleets. The report suggests that fishers have mixed views on prevention of cuttings waste. Those that believe it is easy to prevent have a systematic attitude to collecting the waste. Other fishers claim that it is difficult and time-consuming to prevent smaller pieces of waste from entering the sea. The perception is that smaller pieces are very difficult to collect even with effective routines. SALT concludes that prevention of this type of litter will depend on the context. Space, working conditions on deck, pace, weather conditions (as one of the most important factors), crew awareness and the situations in which cuttings arise are all determining factors. (Larsen Haarr, M. et al., 2019)

The SALT report presents the following recommendations (Larsen Haarr, M. et al., 2019):

- Weather conditions should be taken into account when repairs must be made
- Changing to better routines for waste management for continuous collection of waste
- Designate areas for waste storage
- Better material choices (more durable nets)
- Changing attitudes and automatic behaviour
- Larger vessels can keep a log of repairs and handling of cuttings
- An environmental poster which reminds the fishers on board how they must be constantly aware of their work practices.

The principal messages collected form this background study are incorporated in the recommendations in this report and the best practice guide that accompanies this report.

5. Survey of fishers and harbour authorities

KIMO conducted a survey of fishers and harbour authorities in Denmark, the Netherlands, Scotland and Sweden in January 2020. In total, twelve fishers and staff from eight harbours were interviewed, using a combination of open and closed questions that were asked during face to face interviews, allowing for a richer dialogue. For the avoidance of doubt, all participants were shown photographs and examples of several types of waste cutting. Questions focused both on the issue of cuttings waste and on fisheries waste management more generally (Annex 1 and 2). Despite a moderate sample size, a considerable amount of information was gained, resulting in useful findings. The main results from the surveys are summarized and presented below. Where the responses to a specific question are discussed individually, the relevant question is quoted, marked with a "Q" and formatted in green italics.

Questions common to both harbours and fishers

Q - Are you personally concerned about plastics/waste in the North Sea?

The majority of both fishers and harbour staff were concerned and intended to take action to address plastic waste. Fishers felt that littering from ships has generally been reducing over time and there is now less waste fished up. They point to land-based sources that should also be addressed. Fishers surveyed felt that they are doing their part, but are blamed for polluting the sea. The persistence of plastic in the marine environment and the issue of microplastics were expressed as main concerns especially where they negatively affect the fishing industry.

Harbour authorities generally expressed that plastics and waste do not belong in the sea and they are concerned about the environmental impact especially from microplastics. They felt that intentional waste from fishing is minimal. The impression is that there is a large amount of litter in the sea that is damaging to marine life. Some respondents felt that other regions (such as Asia) have a much greater quantity of marine litter than is in the North Sea.

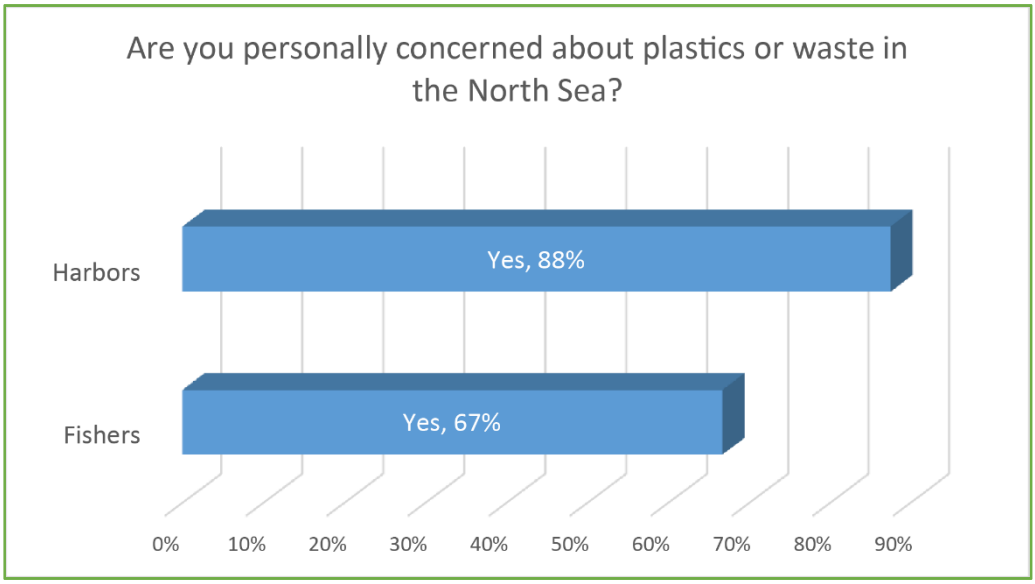


FIGURE 1

Q - On a scale of 1-10 (where 1 = most frequent item) where would you rank cuttings as an item found on European beaches?

67% of the fishers ranked cuttings high up on the list of litter found on European beaches (between 1 and 5). Most were aware that cuttings waste is an issue but seem not to think that it is the most prevalent item on beaches. Harbour authorities ranked cuttings very high up on the list of items found on European beaches – 100% of those questioned gave cuttings waste a rank of between 1 and 6. Both fishers and harbour authorities are clearly aware that cuttings waste is problematic in the North Sea area.

Q - From your experience, tell us about fisheries practices that can produce cuttings waste?

Both fishers and harbour staff responded that cuttings generally arise from maintenance repairs of worn fishing gear on board of the ship and/or in the harbour. Fishers indicated that the types of cuttings shown to them (by those conducting the surveys) originate from trawlers, as nets are damaged when they get dragged along the sea floor (bottom trawling) during fishing activities. The damaged nets need to be regularly repaired, both at sea and in port.

Harbour staff expressed that little effort is made (by fishers) to clean up cuttings from frequent net mending on quaysides. Cuttings are often left on the ground to be dealt with by harbour staff. Net mending was sometimes conducted outside of designated areas, meaning that the area that needs to be cleaned was enlarged.

Some harbours noted that the amount of waste from cuttings seems to have decreased over the last 10-15 years. They suggested this was because there are fewer fishers in some harbours and that they manage their waste better. Harbour staff stated that management of waste has generally become more orderly and that the rules are more transparent.

Fishers pointed out other situations where pieces of net can arise:

- Pieces originate from new nets when the nets are being unfolded and installed. Loose pieces from the manufacturing process fall out of the nets. The new nets come directly from the manufacturer. These pieces will have another character than cuttings from mending nets.
- Pieces of net are lost when the nets trawl across the bottom of the sea
- "You might swill it down from the deck, into the sea. Nowadays you think about it, before you didn´t. Cuttings sometimes flow overboard. The remainder are being cleaned up and put in the Big Bags."
- Cuttings can fall onto the net and be a problem to collect because they are caught up and hang in the netting.
- Cuttings can come from quick repairs on board, where there is no time to clean or sweep.

Solutions to reduce cuttings may therefore be more complex than targeting only work areas on vessels and at port. However, it is clear from these responses that a significant reduction in the amount of cuttings lost to sea could be made if fishers made a greater effort to contain and then clean up the work area after maintenance repairs are finished.

Q - What percentage of waste cuttings do you think are produced on board of a ship compared to the amount produced at port?

The survey results show that fishers were split on this issue as 50% of the respondents answered that the majority of cuttings are produced on board of the ship and 50% felt that the majority of cuttings were produced at port. There were also regional differences; Swedish fishers felt that most cuttings are produced at the harbour, whereas 70% of UK fishers and 75% of Danish fishers felt strongly that more were generated on the fishing vessel. Dutch fishers' responses were split evenly. The results show that a slight majority of fishers point to work in ports as the main source of waste net cuttings.

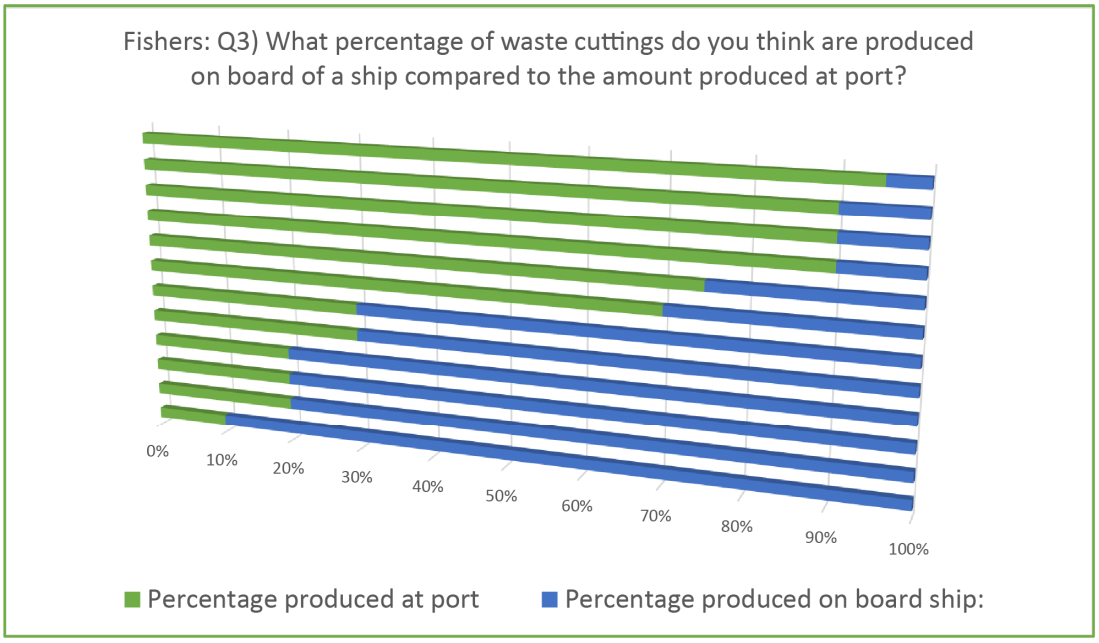


FIGURE 2

A majority of harbour staff felt that most of the cuttings are produced on shore in port. One notable exception was a Danish harbour staff member who answered that 90% of cuttings were produced on board fishing boats.

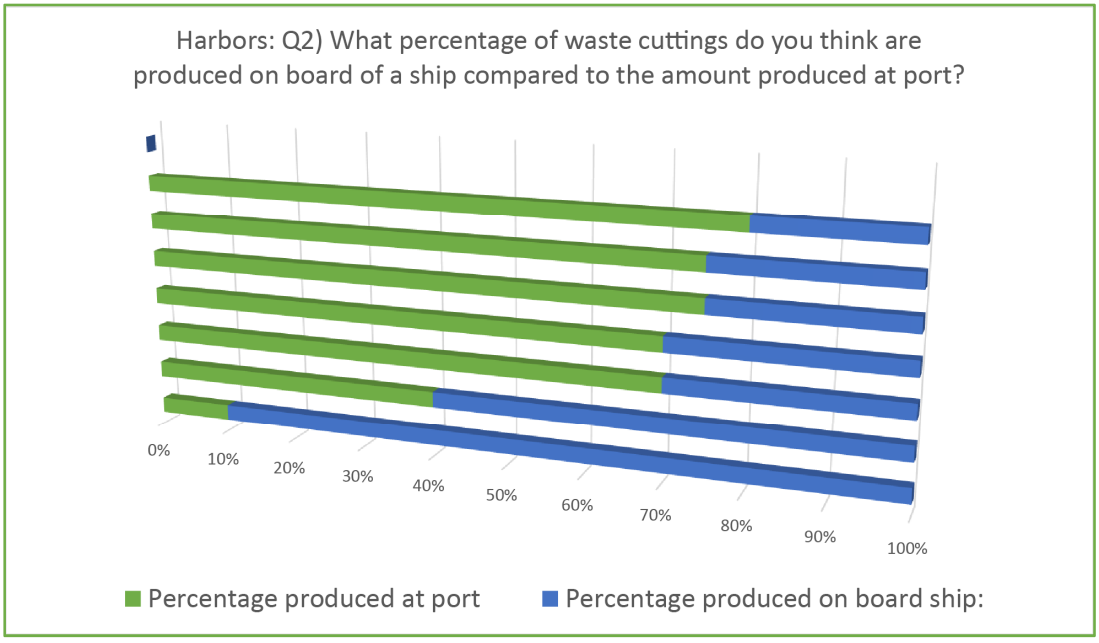


FIGURE 3

The results indicate that ports could be a larger source, although it should be noted that harbour staff are unlikely to have a benchmark against which to make a comparison (since they will not have detailed knowledge of on board practices or amounts of net cuttings waste). However, it is clear that there is a need to improve waste management of net cuttings in general. More emphasis on implementation of best practices in harbours and on board could significantly reduce the number of cuttings from reaching the sea.

Q - Where is it most difficult to collect cuttings – if possible describe where and why?

Both fishers and harbours were asked this question. Fishers state that the challenging working environment on boats where rough weather, wind and waves cause cuttings to easily wash over the side. Safety is important and so dropped cuttings may not be the worker's main concern. Many small pieces can be difficult and time consuming to pick up, taking time away from fishing activities.

Fishing work is labour intensive and time dependent and the fishers' responses indicate that cuttings are dropped on the deck and are not immediately gathered for disposal. This leaves the cuttings on the deck vulnerable to the elements and it is probable that most are washed to sea. Best practices on board need therefore to be an efficient and integrated part of the mending task and be compatible with the needs of the fishers.

Harbour staff felt that cuttings can be easily collected by sweeping, however they mentioned some challenges. Cuttings can be mixed with organic matter at the quayside and the mixture can be weighty to collect. The material can also cause disposal and handling issues. Cuttings become caught between paving stones, fenders and tyres making collection difficult. Weather causes migration of materials from the quayside to the sea. Once in the water at the harbour, very few are retrieved. It was felt that crews mending nets in harbour should clean up their cuttings as frequently as possible, as this would prevent losses to the sea and resolve many of these issues.

Q -Which current practices do you have on board your vessel to collect and dispose of cuttings? How is this done?

The following practices were mentioned by fishers:

- Sweeping with regular broom and put into container
- Collected by hand and put in big bags
- Collected and put in small boxes, large bags, big bags, clear plastic bags, dedicated basket or fishing box
- No practices at the moment
- Repair under deck in an enclosed space – modern fishing vessel
- Brought to port for disposal – emptied into containers at port

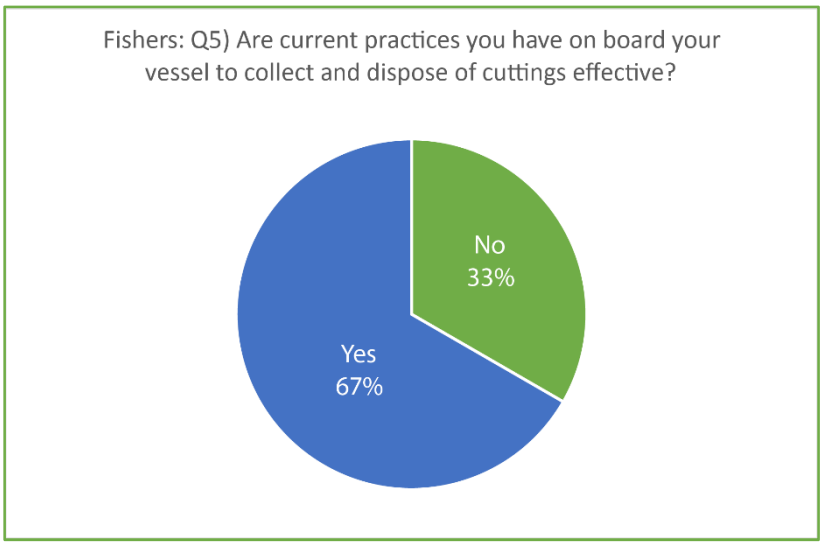


FIGURE 4

Fishers mention that practices to collect cuttings need to be as simple and effective as possible and fit with their fishing work. They need something that is easy to use and mention that bags or containers have to be sturdy and practical. Where big bags or containers were provided to the workers, they were used. Some of the fishers interviewed admit that there needs to be better education of the crew about waste management, as there is some lack of awareness about personal responsibility with regard to cleaning up.

Q - Which current practices do you have at the harbour to collect and dispose of cuttings? How is this done?

The following practices were mentioned by harbour authorities during the interviews.

- The quaysides and open areas are swept daily with a sweeping / suction machine. There is at minimum weekly sweeps on areas where trawls are repaired if there are no trawls in the area. The individual trawlers and fishers are obliged to clear areas they have worked on.
- One harbour authority has purchased a back pack vacuum unit to collect cuttings both on fenders and at quayside and also have a sweeper attachment on a fore loader to clean general litter on flat surfaces. Cuttings are monitored by operatives. If cuttings are excessive and time consuming to clean up, individual vessels are charged for time through their agents.
- Vessels are requested to remove large net items. Small cuttings are never collected. Quaysides are swept once a week but by municipal road sweeper.
- Mending areas are swept by machine after there have been people working there.
- This is done by skippers and crews themselves, putting the waste into bins or Fishing for Litter big bags. Seaport IJmuiden has hired a sweeping machine. This machine comes twice per week to sweep along the quay sides.
- The area where fishers are working (repairing nets) is being swept clean by the fishers themselves.
- The polluter cleans up their own waste. This is an assignment from the Port Manager. The Port of Oudeschild has sufficient waste bins to deposit waste without extra costs.
- A shed with shovels and bags and waste containers are provided for fishers to use. Repairs are carried out in a boathouse, which is always open.
- If fishers haven´t cleaned up after themselves, we will do it, and then send a bill.
- One member of harbour staff suggested having a specific bin just for cuttings.

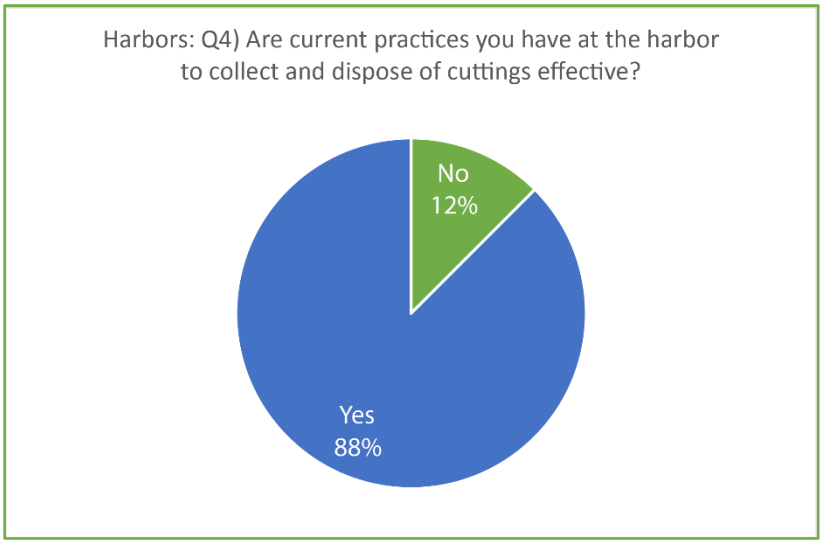


FIGURE 5

Harbour authorities noted that there is a need for an effective method to collect cuttings as nets are mended both at the quayside and offshore. They feel that waste management facilities are sufficient and fishers can easily dispose of their waste at port, where it is disposed of properly. Harbour authorities also noted that the cuttings are easily collected on flat surfaces using the current procedures.

When harbour authorities were asked if they have knowledge of current fisheries practices on board vessels or at the quayside, about 50% stated that they were unsure if cuttings are brought ashore from on board mending. They feel that sweeping is relatively effective, but that skippers and crews should be made more aware of the issues and take more responsibility for the prevention of litter.

In general, fishers thought they have a personal responsibility to clean up and use the provided containers and that harbour workers would collect cuttings from the quayside. One respondent mentions that sweeping cuttings into piles makes it easier for the harbour while another doubts that sweeping the quay is done systematically.

Questions about general waste management to prevent marine litter

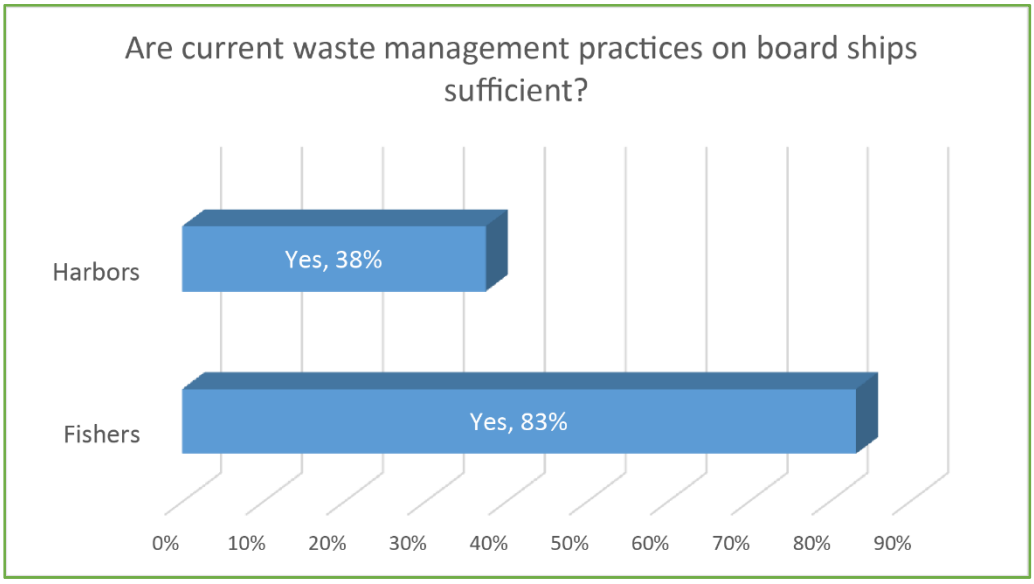


FIGURE 6

Most fishers (83%) thought that waste management practices on board were sufficient. Two fishers from Denmark thought that waste collection on board was weather dependent and was not systematic. Some fishers felt that most of the onboard waste goes ashore and is treated correctly. Big bags (such as Fishing for Litter bags) are seen as very helpful to manage waste on board. Some fishers believed that good waste management practices need to be targeted at the young and communicated through fisheries colleges.

Harbour authorities are more critical about waste management aboard fishing vessels. This can be misleading since they note in their comments that they have little insight or experience on board. They do admit that waste management has improved, but could be better. They also mention that there is a lack of requirement for sorting of waste on board that makes it difficult when transferring to the harbours in sorted fractions.

Most of the harbour authorities surveyed find that current waste management practices at harbours is sufficient. However, better sorting of waste streams on board and clearer signage in port would facilitate better waste management are seen as areas that require improvement.

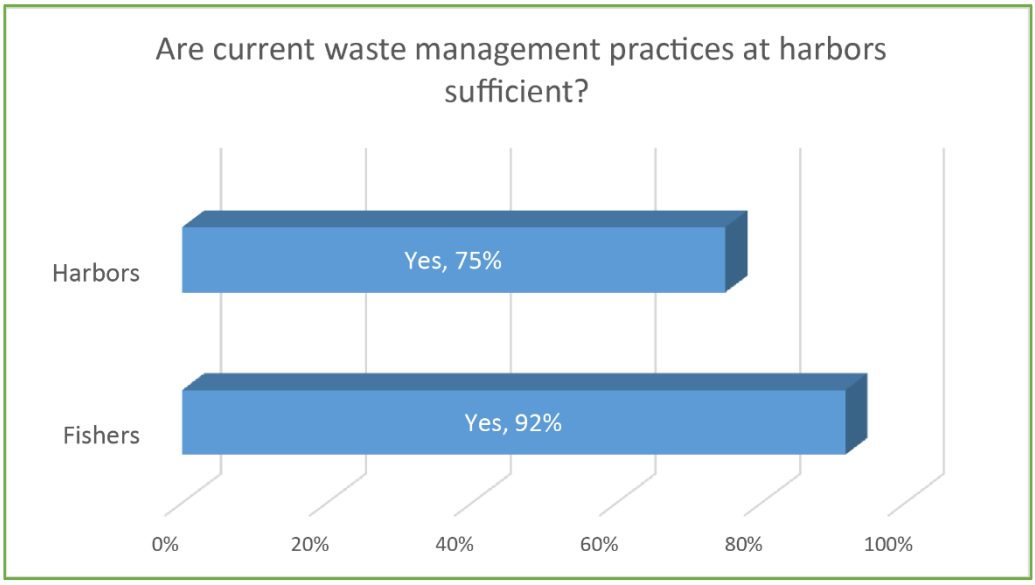


FIGURE 7

Generally, fishers thought that there are usually sufficient containers and the harbour disposes of waste, although in some harbours fishers are obliged to contact the harbour to inform them when bins need to be emptied (the implication here is that regular checking by harbour staff may not be part of the harbour's waste management processes). Fishers mention that good waste management, good service, access to containers for waste and sorting facilities are positive aspects, as was not being charged a fee for collection of their waste. Some felt that waste management at smaller harbours could be improved as well as in places where the larger vessels are docked and more waste is generated (landed).

Q -Has waste from cuttings negatively affected your fishing practices and your business in any way?

A majority of fishers respond that net cuttings have not affected their fishing practices. The small cuttings do not seem to be a large problem. Respondents indicate that blockages of grate/ grid that clogs gear can result in a smaller catch, however it was noted that larger pieces of trawl net that have worn off are more problematic. Paint cans and objects containing oil are seen as the largest threat to fishing practices because they can pollute a large portion of a catch.

Questions specific to harbour authorities.

The survey shows that most harbour authorities have a focus on this waste on their quayside and address it either via sweeping or through monitoring and enforcement of cleaning waste left on the quayside. Most indicated that they would be willing to make more of an effort to help stop cuttings from entering the marine environment through promoting an information campaign, possibly using a collaborative forum. An area for improvement is to expressly manage cuttings via the ports' waste management plans, as most of the harbours surveyed said they did not currently include cuttings specifically in their waste management plans.

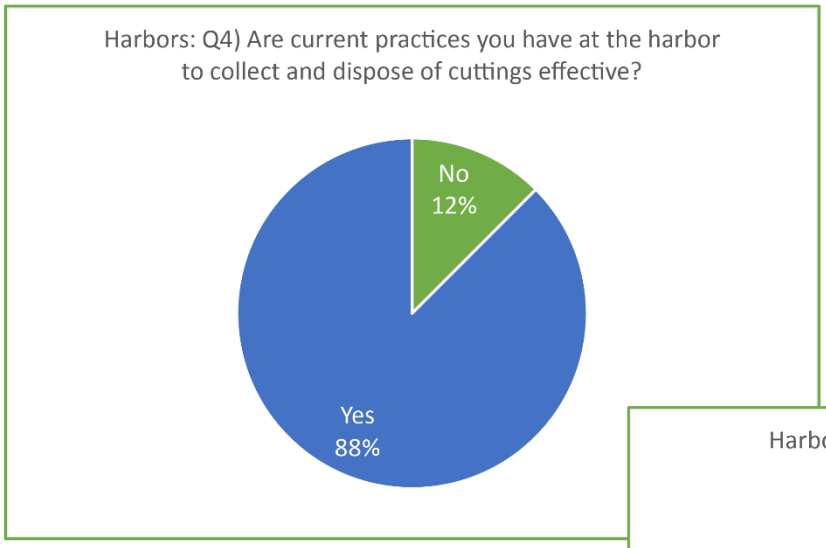


FIGURE 8

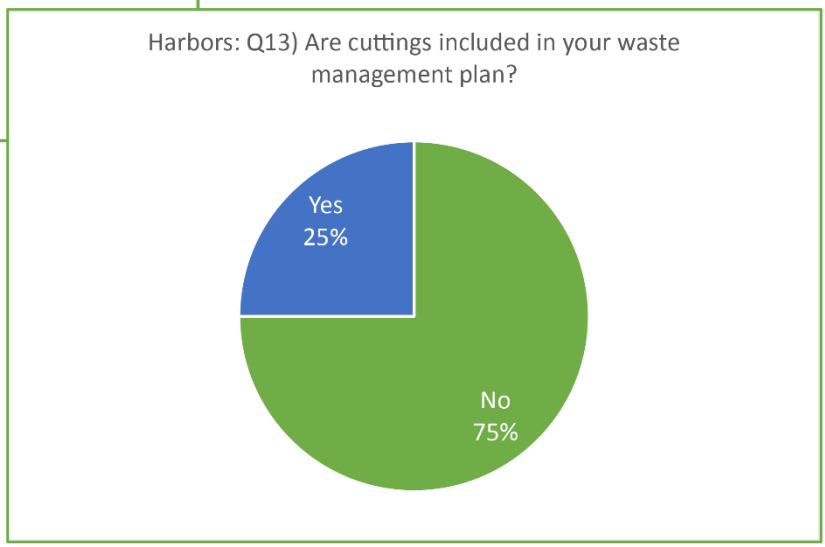


FIGURE 9

Q - In your experience and opinion what would be most effective – prevention at source or sweeping and collection of waste?

Harbour Authorities feel that a combination of practices targeting both prevention and clean up would be most effective. They also feel that the producer of the waste should be responsible for their waste and make sure that it is collected and disposed of correctly.

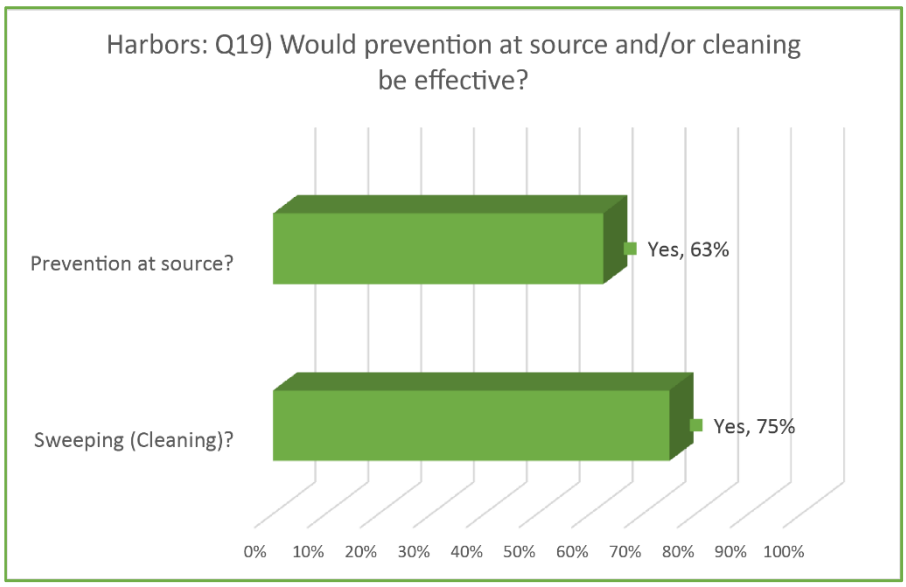


FIGURE 10

Questions specific to fishers

75% of the fishers surveyed reported that they often collect waste in their nets while fishing and a large majority (83%) collect waste in their fishing gear and dispose of it in the harbour. This demonstrates that they play an active role in removing litter from the sea and would be receptive to practices that would keep more waste from reaching the sea. Most respondents were aware of forums or platforms they could use where fishers and harbours can interact to make efforts towards more sustainable practices and felt these were an opportunity to work together to share best practices to reduce the amount of cuttings litter.

Q - Please rank the most effective way for an information campaign to reach fishers? (1 = most effective, 6 = least effective)

Fishers and harbour authorities were asked to rank 6 different methods of communication in order to explore which they thought were the most effective. These were:

- Social media
- Posters in harbours
- Stickers as reminders on board fishing vessels
- Flyers
- Workshops
- Other

These methods were chosen because they are known to be in use in ports in some European countries.

Overall, fishers felt that information on social media and posters in harbours would be most effective and stickers and flyers less effective. Opinions were divided on the effectiveness of workshops. There are some regional differences as Swedish fishers were more positive about workshops. UK fishers feel that posters and direct engagement would work best. Flyers were identified as a good method in the Netherlands but fishers in Sweden or Denmark felt they

would not work. An on board sticker could encourage and be a reminder for fishers but the message has to be a positive one.

Q14 – On a scale from 1-5 please rank the most effective way for an information campaign to reach fishers

1	Information on Social Media
2	Posters at harbours
=3	Stickers as reminders on fishers' boats
=3	Flyers
5	Workshops

TABLE 2

Amongst 'other' suggestions from fishers are to communicate information by using:

- Maritime education and integrating information in the skipper's manual
- Articles in fishers' magazines
- Message boards at harbour/auction house as visible reminders
- A 'how to' guide on waste management distributed through fisheries associations

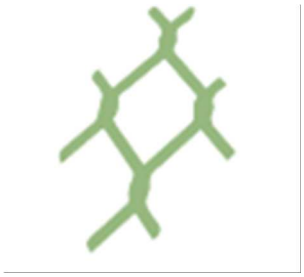
Harbour authorities felt that information on social media, and stickers and posters at harbours would be most effective ways to reach fishers. They were divided on the effectiveness of information flyers. None surveyed thought that workshops would be effective.

'Other' suggestions felt to be effective by harbour authorities were:

- Direct engagement with crews by pointing out good practices (or bad practices)
- Provision of tools to fishers (such as sturdy bags).
- One to one talks
- Coverage in media/ via fishers' union or fishers' magazines.

Surveying these two stakeholder groups demonstrates that multiple methods are necessary to achieve a successful information campaign. Visibility in places where fishers operate via posters is felt to be highly effective as is sharing information on social media. Direct engagement with fishers and communicating a positive message is felt to be very important as well as using channels such as fishers unions and magazines to promote the campaign and to put as much focus as possible on the issue. Providing materials or tools free of charge to fishers, such as big bags and smaller containers that will fit a in variety of environments, will develop goodwill from fishers and increase the chances that the tools will be used to help manage waste.

It was also noted that recognition or rewards for environmental stewardship among fishers and sharing positive stories among their peers will also encourage the implementation of good practices. Therefore, the introduction of accreditation schemes or other forms of recognition of those fishers and crews that implement best practices would also be a positive step and be likely to result in increased engagement by the fishing industry.



6. Discussion and outputs

The primary source of net cuttings in the North Sea is from trawl nets that are being repaired on board fishing vessels at sea and on the quayside in port. Sections of net that have been damaged through regular wear and tear or by accident are cut from the net and discarded, through lack of awareness, habit or carelessness. If they are not removed quickly from the deck of the vessel they can be washed overboard by storms, high winds, waves or rainwater or swept overboard (by design or accident) when the deck is cleaned. If they are not removed from docks and quaysides they can be carried to the sea by wind or runoff water, (storm drains or directly over the edge) or swept into the sea during clean-up activities.

Targeting net cuttings waste at its source is the most effective way to prevent material from becoming marine litter. Most cuttings waste originates directly from mending activities carried out by fishers. It is not realistic to expect fishers to collect every piece of net, rope and cord, however much more can be done by fishers, skippers and crews to limit inputs of cutting waste to the marine environment. Good practices should be adopted into daily routines and tailored to conditions on board. Implementation of good waste management practices will ensure that the majority of cuttings are collected and disposed of correctly.

Dialogue and cooperation between harbour authorities and fishers is essential to find effective solutions that can reduce the amount of cuttings entering the marine environment from harbours. Fishers should be encouraged to practice good waste management by implementing new routines and procedures to facilitate clean up after working on their nets. Fisheries associations, harbour authorities and skippers of vessels all have an important role to play in raising awareness amongst fishers of the consequences of careless disposal of net cuttings, and to ensure that all fishers follow correct procedures and use the tools (such as brushes, brooms, tarpaulins) and waste containers provided.

Skippers can take the lead by setting standards for their vessel and compelling fishers to adopt behaviours that limit litter from entering the sea. Leadership on a vessel sets the example for fishers and should be used to raise awareness of marine environmental issues and to encourage effective waste management.

For any ship, a simple, effective and accessible waste management plan must be in place and must include procedures on handling operational waste produced during fishing activities. For fishing vessels, this should include specific procedures on containing and disposing of net cuttings. Harbours should also consider the specific inclusion of net cuttings waste in future revisions of their waste management strategies and plans. A small amount of additional work in terms of provision of information and signage could see a significant impact on the volume of cuttings being lost from the quayside.

Fishers and harbour authorities were surveyed to determine their thoughts about selected best practices. They were asked to rate the effectiveness of the following practices to reduce cuttings:

- Awareness raising campaigns
- Pouches to put cuttings in while working
- Cleaning from the deck after work
- A larger number of bins or bags on ships
- A larger number of bins at the harbour
- More practical bins on ships
- More practical bins at the harbour
- Better waste information at the harbour
- More frequent sweeping and collecting on board
- More frequent sweeping and collecting at the harbour

Awareness raising

The interviewed fishers rated awareness raising campaigns, as the second best practice to reduce cuttings. Harbour authorities also rated awareness campaigns very high out of the suggested practices. This could indicate that there is presently a lack of awareness and focus on this issue and/or that this is the most effective way to spread the message. From the background study, we can see that net cuttings waste has not been adequately addressed and much more focus has been put on larger pieces of derelict fishing gear. Work carried out by the

Norwegian organization SALT has suggested that cutting works is an automatic routine that is often carried out without much thought about the fate of this waste material. (Larsen Haarr, M., et al. 2019) There is great potential for reductions via an awareness campaign. An effective campaign can nudge workers towards behavioural changes that will result in a significant increase in containment of waste from net mending activities.

Pouches

Fishers did not feel that pouches would be very effective but it was not clear why. One reason could be the perception that pouches would get in the way of work or maybe because they could reduce the efficiency of their work. Harbour staff were divided on the issue, but it should be noted that they do not necessarily have any experience or practical knowledge on this issue on which to draw.

Cleaning up after work

Cleaning the deck after work is rated as most effective by both fishers and harbour authorities. Both stakeholder groups recognize that cuttings left on deck are easily lost to the marine environment. Good routines need therefore to be implemented on board so that the majority of cuttings are collected. Fishers could use more bins/bags or more accessible containers on ships to contain cuttings. Both harbours and fishers agree that more frequent sweeping reduces marine litter, with first priority on board of the ship and second at the harbour quay/net mending areas. This gives more weight to the argument that best practices on board need to be adapted to incorporate more effective ways to gather a larger number of cuttings before they are washed overboard.

Bins on board

Respondents to the interviews mentioned that solutions need to be practical. Fishers cited that one big container or big bag for all litter on board would simplify waste management. Another respondent noted that, as nets are dragged back on board after mending, cuttings fall into the water. Some mechanism to catch them at this point could prevent losses here.

Bins in harbour

Increasing the number of bins, or supply of more practical bins at the harbour was not considered by fishers to be an effective method. Most fishers surveyed feel that waste management at harbours is very effective and the number of bins is sufficient. Other suggested practices at harbours do not rate as effective by fishers in this survey. Harbour staff felt that increasing the number of bins in harbour was not likely to be the most effective option.

Waste information in harbour

Harbour staff feel that better waste information at the harbour is the least effective practice and fishers agreed that this was not seen as a measure that would reduce cuttings waste. This is a surprising result, but it could indicate that they feel that information is already effective enough and other measure are more important to directly reduce cuttings waste.

An analysis of all the information gathered through surveys and background research shows that most cuttings will be produced anywhere nets are mended. Cuttings are often dropped onto the ground or deck or are trapped in the netting. Inclement weather while on board and fishers automated work routines that do not incorporate collection of pieces are most likely to contribute the most cuttings entering the marine environment. Effective reductions of cuttings will require implementation of a variety of best practices as there is not one solution to the

challenges facing fishers and harbours. It is clear that the best practices most likely to be adopted need to be simple, practical and effective both on-board fishing vessels and at the port.

Fishers: *Q16) On a scale from 1-10 or 11 please rate the effectiveness of the following practices to reduce cuttings*

1	Cleaning from the deck after work
2	Awareness campaigns
3	More frequent sweeping and collecting on board
4	More frequent sweeping and collecting at the harbour
5	A larger number of bins or bags on ships
6	Better waste information at the harbour
7	More practical bins at the harbour
8	More practical bins on ships
9	A larger number of bins at the harbour
10	Pouches to put cuttings in while working

TABLE 3

Best Practices Guide

The best practice guide developed in conjunction with this report gives examples of measures that could be incorporated to reduce net cuttings from entering the environment and are the result of both background research and interviews and dialogue with harbour authorities and fishers. The guide is divided into two sections. The first section focusses on practices that fishers can adopt based on individual factors. Some measures will for example be more appropriate for larger ships or work areas and a larger number of crew than smaller fishing vessels. Other measures are suitable to be implemented both at sea and on land. In order to be most effective, all measures need to be adapted to fit the circumstances. The second section of the guide presents measures that harbour authorities can implement in their harbours. Each measure is described and some have associated case studies where the best practice has been implemented.

The guide is generic and therefore suitable for use in any country and location where commercial fishing activity takes place. The best practices are suitable to be adapted to fit any harbour or fishing vessel, albeit that in some cases , especially for smaller harbours and vessels, some degree of creativity and ability to think outside the box could be helpful.

Awareness-raising materials

KIMO has created campaign materials that can be used to address and influence fishers' behaviours by reminding them to collect their net and rope cuttings waste and to dispose of it properly.

Several posters and a campaign logo were designed to have a common branding. The concept is eye catching, recognizable and contains a simple and positive message. Text on the posters is kept to a minimum and can be easily translated into any language. One poster is designed to be displayed on board fishing vessels in the areas where net cuttings are produced, as a reminder to think about cuttings while they are working and to collect and bin them. Another is designed to be displayed in harbours in proximity to the areas where net mending takes place. A third poster is meant to be placed on bins where cuttings are accepted. This should help

remind workers to pick up and dispose of them correctly. The posters have a colourful, comic book appearance where the hero “Fisher-Man” reminds the viewer to put pieces of net, rope and cord in the bin. The fishers are themselves invited to be a hero and take care of the marine environment by collecting and disposing of net cuttings correctly.

7. Recommendations

Principles that should be applied when addressing the issue of reducing cuttings litter:

- Good communication between stakeholders to foster collaboration
- Awareness raising and education to change attitudes, work habits and routines to properly manage waste
- Ships and harbours have clear and easily accessible waste management information
- Provision of adequate facilities, relevant bins, bags and equipment at low cost or free of charge
- Positive rewarding for good waste management practices
- Designated waste storage that is clearly marked
- Integration of net cuttings into existing projects (e.g. Green Deals).

Suggestions for international and national authorities:

- Recognize that more focus needs to be put on reducing litter from net cuttings
- Cuttings waste should be incorporated in national code of practice for fisheries and in legislation
- Recognize and address (through positive action) the disparity in waste management between small and large harbours
- Cuttings waste should be specifically included in action plans (e.g. OSPAR, HELCOM, IMO)
- Inclusion of net cuttings in maritime education at marine colleges
- Nationally produced educational resources and awareness-raising via campaign and information on best practices that focus on mitigating inputs to the marine environment.

Best practice suggestions for fishers

- Implement relevant best practice solutions to collect, contain and clean-up cuttings at harbours and on board fishing vessels, appropriately chosen for the work conditions:
    - Wearing pouches or pockets to temporarily contain cuttings
    - Systematic sweeping of work areas to remove cuttings
    - Using enclosed areas where repairs of nets can be made
    - Using tarpaulins or traps to stop cuttings from becoming marine litter
    - Avoid repairing nets in stormy weather whenever possible
    - Waste management planning of containers and bins on board the fishing vessel
    - Captains leadership role in effective waste management
    - Keeping a log of repairs and disposal of cuttings
    - Incentives for implementing good practices
    - Choosing nets made from more durable and recyclable materials.

Best practice suggestions for harbour authorities

- Implement the following best practice solutions that are relevant for the situation at the harbour:
    - Establish a raised border at the quayside
    - Designate dedicated areas for repairing of nets and trawls at the port
    - Dedicated containers for cuttings waste
    - Clear signage for disposing net cuttings
    - Fishers' access to cleaning equipment such as brooms, dustpans, containers
    - Frequent inspection and cleaning of the quayside
    - Net cuttings included in harbour waste management plans
    - Initiating awareness campaigns including the effects on the fish population of ingestion of the plastic from net cuttings
    - Following the 'Polluter pays' principle for cuttings left on the quay.

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Annex 1 – Harbours Survey

Questionnaire for harbors/harbormasters

Introduction: The purpose of this survey is to collect information about current practices that give rise to plastic pollution from cuttings of net and cord. Information collected will be used to define effective practices and awareness opportunities that could limit the loss of these items and help to reduce its prevalence in the sea and on beaches.

(Pictures of cuttings will be provided to show exactly what we are asking about)

1. From your experience, tell us about fisheries practices that can produce ”cuttings” waste?

_____
_____
_____
_____

2. What percentage of waste “cuttings” do you think are produced on board of a ship compared to the amount produced at port?

Percentage produced on board of a ship: _____

Percentage produced at port: _____

= 100 %

3. Where is it most difficult to collect “cuttings”? What limitations are there? If possible describe where and why?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

4. Which current practices do you have at the harbor to collect and dispose of cuttings? How is this done?

_____
_____
_____
_____
_____
_____
_____
_____
_____

Do you feel that it is effective to prevent marine litter? Why or why not?

Yes _____ No _____

_____
_____
_____
_____
_____
_____

5. Do you have knowledge of current practices about net cuttings on board vessels or at the quayside?

Yes _____ No _____

What are they?:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Do you feel that it is (they are) effective to prevent marine litter? Why or why not?

Yes _____ No _____

_____
_____
_____
_____
_____
_____

6. Can fishers deliver on board waste to separate waste streams at the harbor?

   Yes _____ No _____

7. Are waste cuttings part of a separate waste stream (f.eks, together with waste fishnets or derelict fishing gear).

   Yes _____ No _____

8. Does this also apply to quayside waste from mending of nets?

   Yes _____ No _____

Comments:

_____
_____
_____
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_____
_____

9. In your opinion, are current waste management practices at harbors sufficient?

   Yes _____ No _____

_____
_____
_____
_____
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_____

How could waste management practices at harbors be improved to increase sustainability and strengthen your business?

_____
_____

10. In your opinion, are current waste management practices on board ships sufficient?

Yes _____ No _____

How could waste management practices on board ships be improved to increase sustainability and strengthen your business?

11. What more could be done to reduce “cuttings” from reaching the sea?

_____
_____
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_____

12. Is there a focus on collecting cuttings at the harbor by sweeping or other methods? Which?

Yes _____ No _____

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_____
_____
_____
_____

13. Are cuttings included in your waste management plan?

Yes _____ No _____

(get copy as reference)

14. From 1 -10 (1 as the most frequent item and 10 as the least frequent item) where would you rank “cuttings” as an item found on European beaches?

1 2 3 4 5 6 7 8 9 10

15. On a scale from 1-5 or 6 (where 1 is the most effective) please rank the most effective way for an information campaign to reach fishers? Could you suggest another way?

RANK

- Information on Social Media _____
- Posters at harbors _____
- Stickers as reminders on fishers’ boats _____
- Flyers _____
- Workshops _____
- other? _____ _____

16. Would harbor be willing to help promote such an information campaign?

Yes _____ No _____

17. Is there a forum where fishers and harbors can interact and cooperate to make common efforts towards more sustainable practices?

Yes _____ No _____

What is it? (reference)

_____
_____
_____
_____
_____

Are you personally concerned about plastics/ waste in the North Sea? Why/Why not?

Yes _____ No _____

_____
_____
_____
_____
_____

18. On a scale from 1-10 or 11 (where 1 is the most effective) please rate the effectiveness of the following practices to reduce cuttings:

- Awareness campaigns _____
- Pouches to put cuttings in while working _____
- Cleaning from the deck after work _____
- A larger number of bins or bags on ships _____
- A larger number of bins at the harbor _____
- More practical bins on ships _____
- More practical bins at the harbor _____
- Better waste information at the harbor _____
- More frequent sweeping and collecting on board _____
- More frequent sweeping and collecting at the harbor _____
- other? _____ _____

19. In your experience and opinion what would be most effective – prevention at source or sweeping and collection of waste? Why or Why not?

Prevention at source: Yes_____ No_____

Sweeping(Cleaning): Yes_____ No_____

_____
_____
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20. Does the harbor accept waste caught by fishers and landed at the harbor?

Yes _____ No _____

21. Do you have any additional information or remarks that you would like to share about the issue of cuttings or waste management for these items.

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Annex 2 – Fishers Survey

Questionnaire for fishers

Introduction: The purpose of this survey is to collect information about current practices that give rise to plastic pollution from cuttings of net and cord. Information collected will be used to define effective practices and awareness opportunities that could limit the loss of these items and help to reduce its prevalence in the sea and on beaches.

(Pictures of cuttings will be provided to show exactly what we are asking about)

22. From your experience, tell us about fisheries practices that can produce ”cuttings” waste?

_____
_____
_____
_____
_____

23. Is this a general practice for all fisheries or are there certain types of fisheries that produce more cuttings than others? Which ones?

_____
_____
_____
_____
_____

24. What percentage of waste “cuttings” do you think are produced on board of a ship compared to the amount produced at port?

Percentage produced on board of a ship: _____

Percentage produced at port: _____

= 100 %

25. Where is it most difficult to collect “cuttings” – if possible describe where and why?

_____
_____
_____

_____
_____
_____

26. Which current practices do you have on board your vessel to collect and dispose of cuttings?
    How is this done?

_____
_____
_____
_____
_____
_____
_____
_____

Do you feel that it is effective to prevent marine litter? Why or why not?

Yes _____ No _____

_____
_____
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_____

27. When you and your colleagues do maintenance work on nets do you collect the waste cuttings yourself? What are your thoughts on why you do or do not collect cuttings?

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_____
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28. Do you know of current practices at the harbor to collect and dispose of cuttings produced at sea or produced at the quayside? How is this done?

Do you feel that it is effective to prevent marine litter? Why or why not?

Yes _____ No _____

29. In your opinion, are current waste management practices on board ships sufficient?

Yes _____ No _____

How could waste management practices on board ships be improved to increase sustainability and strengthen your business?

Has waste from cuttings negatively affected your fishing practices and your business in any way? If so in what way?

Yes _____ No _____

_____
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30. In your opinion, are current waste management practices at harbors sufficient?

Yes _____ No _____

_____
_____
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_____
_____

How could waste management practices at harbors be improved to increase sustainability and strengthen your business?

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31. What more could be done to reduce “cuttings” from reaching the sea?

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32. When, how and where do you collect cuttings as a part of your current work practices?

_____
_____
_____
_____
_____

Do you feel that this is efficient?

Yes _____ No _____

How could your work practices be adjusted to both collect cuttings and be effective?

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33. From 1 -10 (1 as the most frequent item and 10 as the least frequent item) where would you rank “cuttings” as an item found on European beaches?

1 2 3 4 5 6 7 8 9 10

34. On a scale from 1-5 or 6 (where 1 is the most effective) please rank the most effective way for an information campaign to reach fishers? Could you suggest another way?

RANK

- Information on Social Media _____
- Posters at harbors _____

- Stickers as reminders on fishers' boats _____
- Flyers _____
- Workshops _____
- other? _____ _____

35. Are you personally concerned about plastics/ waste in the North Sea? Why/Why not?

Yes _____ No _____

_____
_____
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_____

36. On a scale from 1-10 or 11 (where 1 is the most effective) please rate the effectiveness of the following practices to reduce cuttings:

RANK

- Awareness campaigns _____
- Pouches to put cuttings in while working _____
- Cleaning from the deck after work _____
- A larger number of bins or bags on ships _____
- A larger number of bins at the harbor _____
- More practical bins on ships _____
- More practical bins at the harbor _____
- Better waste information at the harbor _____
- More frequent sweeping and collecting on board _____
- More frequent sweeping and collecting at the harbor _____
- other? _____ _____

37. Do you often collect waste in your nets while fishing?

Yes _____ No _____

38. Do you collect waste as a part of your fishing activities and dispose of it in the harbor?

Yes _____ No _____

39. Do the harbors that you frequent accept this waste?

Yes _____ No _____ Don't Know _____

40. Is there a forum where fishers and harbors can interact and cooperate to make common efforts towards more sustainable practices?

Yes _____ No _____

What is it? (reference)

_____
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41. Do you have any additional information or remarks that you would like to share about the issue of cuttings or waste management for these items.

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