

## **PUBLIC CONSULTATION ON MARINE LITTER- AN ANALYSIS**

EUROPEAN COMMISSION

31 January 2014

: - Final

C03041.002950.700





# Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
<b>2</b>	<b>Public consultation .....</b>	<b>5</b>
2.1	Background of respondents.....	5
2.2	Replies to questions.....	6
2.2.1	Materials and methods closed questions .....	6
2.2.2	Materials and methods open questions .....	7
2.2.3	Relevant criteria .....	7
2.2.4	Potential negative impacts.....	8
2.2.5	Consumers .....	10
2.2.6	Local or sub-national authorities .....	11
2.2.7	National authorities.....	16
2.2.8	European Union policy makers .....	18
2.2.9	Non Governmental organisations (NGO's).....	20
2.2.10	Plastic industry.....	22
2.2.11	Retail sector.....	24
2.2.12	Tourism and recreational sector .....	26
2.2.13	Waste management sector .....	28
2.2.14	Fisheries sector .....	30
2.2.15	Shipping sector.....	32
2.2.16	Port authorities.....	34
2.3	Conclusions .....	36
	<b>Colophon .....</b>	<b>38</b>

## 1

## Introduction

In response to the agreement at the Rio+20 summit to achieve, by 2025, “significant reductions in marine debris to prevent harm to the coastal and marine environment”, as well as the call in the 7<sup>th</sup> Environment Action Programme (7<sup>th</sup> EAP) for an EU-wide “quantitative reduction headline target” for marine litter, the European Commission is in the process of developing such a reduction target. As part of this process, the Commission launched an online public consultation in October 2013, which closed at the end of December 2013, focussing on possible actions by different stakeholder groups to address the issue of marine litter. This consultation complements earlier exercises conducted by DG Environment, specifically those related to the waste target review<sup>1</sup>, on the Green Paper on Plastic Waste<sup>2</sup> and on options to reduce the use of plastic carrier bags<sup>3</sup>.

This report gives an overview of the outcomes of the public consultation, including a statistical analysis and visual representations of the responses provided. The report will first provide a background description of the respondents, followed by a description of the materials and methods used to analyse the consultation. Next, the report goes through the entire consultation, giving overviews of the answers filled in by the respondents. It concludes with a short overview in table form of the most-frequently mentioned responses.

The public consultation addresses the issue of marine litter, a growing problem and threat to the environment. There are many sources of marine litter, though it is estimated that up to 80% comes from land-based sources, including litter transported into the marine environment from inland by rivers, drainage or wind. Once in the marine area, the litter threatens biodiversity, animal and human health and even the economy. The Marine Strategy Framework Directive (2008/56/EC) (MSFD) introduces the requirement to develop integrated strategies for the EU’s seas<sup>4</sup> with the aim of achieving “Good Environmental Status” (GES) by 2020. One of the “descriptors” of GES is marine litter and all the EU Member States are obliged to address it.

The analysis of the public consultation is part of a wider study undertaken by Arcadis in order to support, the preparation of a proposal for a quantitative reduction headline target for marine litter, as called for in the 7<sup>th</sup> EAP.

In addition to the responses in the public consultation, some respondents sent additional position papers. An overview of these can be found in the Appendix.

<sup>1</sup> [http://ec.europa.eu/environment/consultations/waste\\_targets\\_en.htm](http://ec.europa.eu/environment/consultations/waste_targets_en.htm)

<sup>2</sup> [http://ec.europa.eu/environment/consultations/plastic\\_waste\\_en.htm](http://ec.europa.eu/environment/consultations/plastic_waste_en.htm)

<sup>3</sup> [http://ec.europa.eu/environment/consultations/plasticbags\\_en.htm](http://ec.europa.eu/environment/consultations/plasticbags_en.htm)

<sup>4</sup> The term “EU’s seas/oceans” and “Europe’s seas/ oceans” is used to encompass the four regional sea basins which EU Member States share with their neighbours.

# 2

## Public consultation

### 2.1 BACKGROUND OF RESPONDENTS

The questionnaire started with a number of questions about the respondents' backgrounds. Of the 437 responses, 273 replied as an interested individual/consumer, 38 as a sectorial representative, 43 as a non-governmental organisation (NGO), nine as another association, 39 as an academic/scientist, eight as local/regional authority, eight as a national authority and one as an international body. Eighteen respondents replied as an "other". [Figure 1](#) shows this distribution in percentages.

When asked how well the respondents felt they were informed about marine litter, 146 respondents indicated they were very well informed, 241 indicated they were fairly well informed, while 49 felt they were not very well informed and one respondent indicated he/she was not informed at all. [Figure 2](#) shows this distribution in percentages.

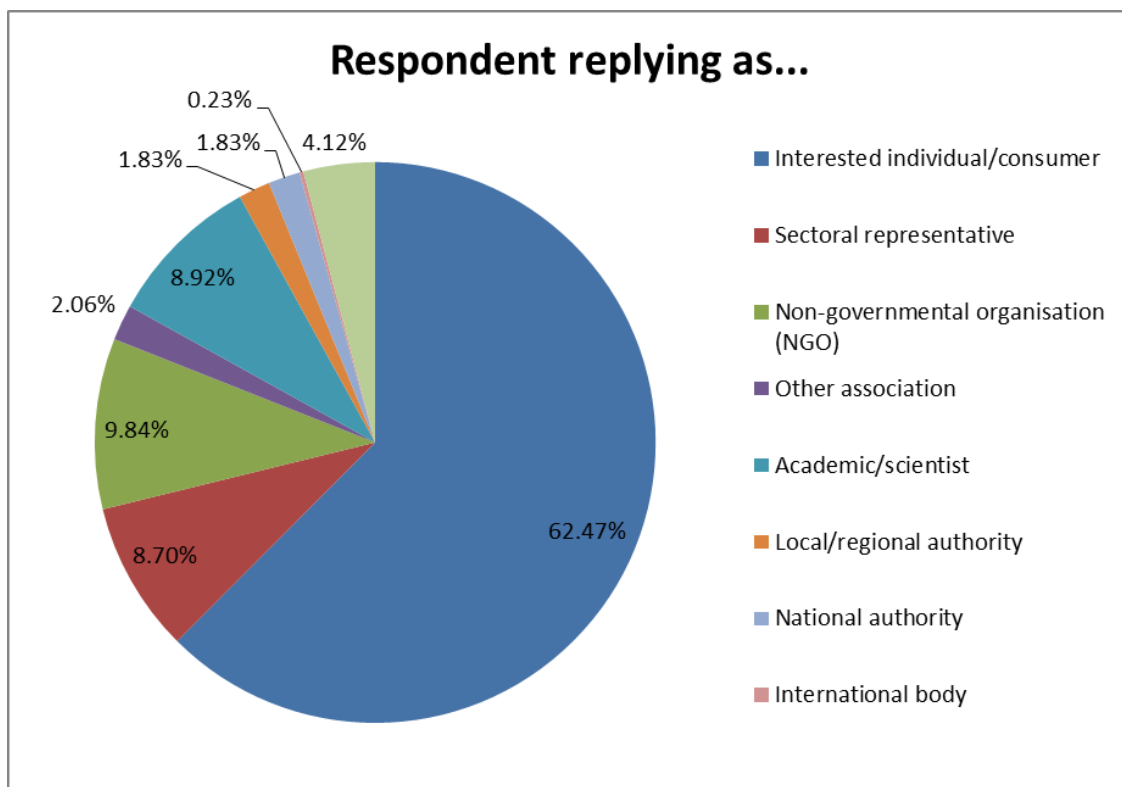


Figure 1: Respondents replying as blank in percentages.

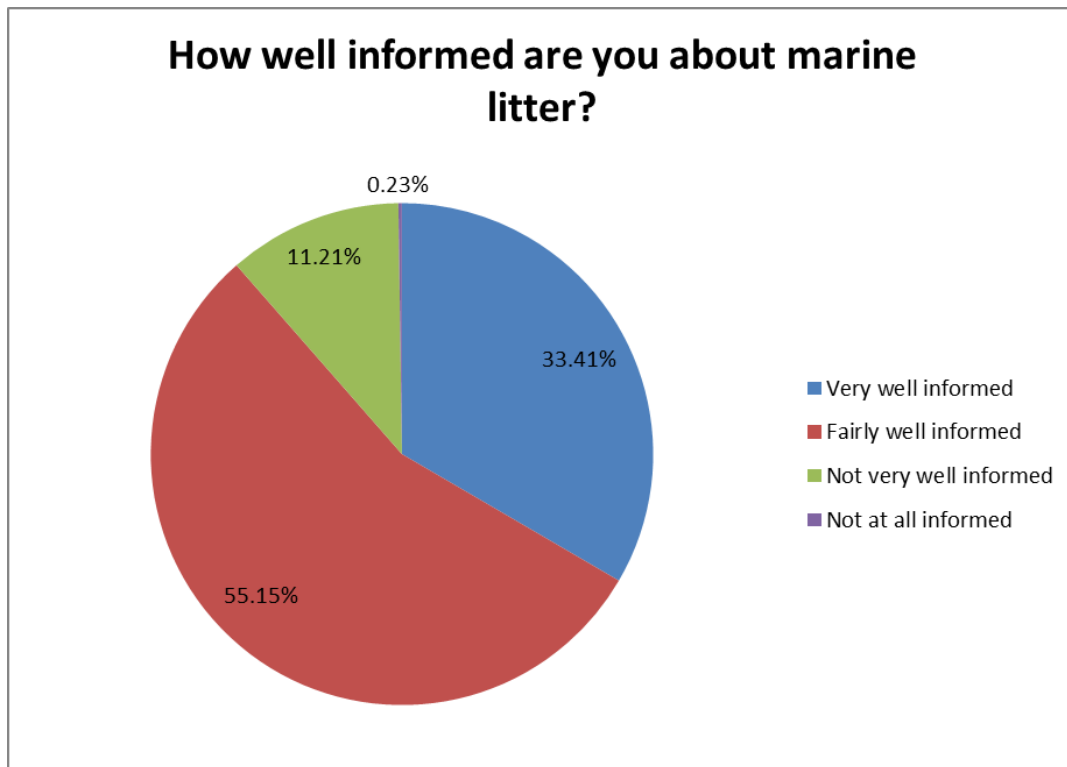


Figure 2: The level the respondents felt informed when filling in the questionnaire, in percentages.

## 2.2 REPLIES TO QUESTIONS

### 2.2.1 MATERIALS AND METHODS CLOSED QUESTIONS

In presenting the answers, first the question is listed, followed by the possible answers in the public consultation. For all the closed questions the public could choose between five categories of agreement, “don’t know” or they could leave the answer as a blank. The number of people answering in each category is presented in a histogram.

A weighted average is calculated as follows:

$$W = \sum_{i=1}^5 i * n_i$$

In which

W = weighted answer

$n_i$  = number of respondents indicating category i

In this weighting, the “don’t know” and blanks are ignored. Whether the possible answers differed significantly in answers is tested with a  $\chi^2$  test. The maximum score ( $n_5 = 437$ ) is 2185. The weighted answers are also presented in a histogram.

### 2.2.2 MATERIALS AND METHODS OPEN QUESTIONS

The answers to the open questions are first sorted into categories, as multiple respondents may have a comparable answer. The categories are then counted and presented.

### 2.2.3 RELEVANT CRITERIA

*What are the most relevant criteria to assess various actions aimed at reducing the presence and impact of marine litter?*

The possible answers on this question where:

- Feasibility
- Costs
- Effectiveness
- Transferability and replicability
- Stakeholder impact
- Respect for the polluter pays principle

The answers varied between 1 (not relevant at all) to 5 (very relevant) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 3** shows the response to the question divided over the possible answers. The figure shows the highest scores (i.e. “very relevant”) for effectiveness (301) and feasibility (257). Costs were considered less relevant, with 30 people scoring these as “not relevant at all”.

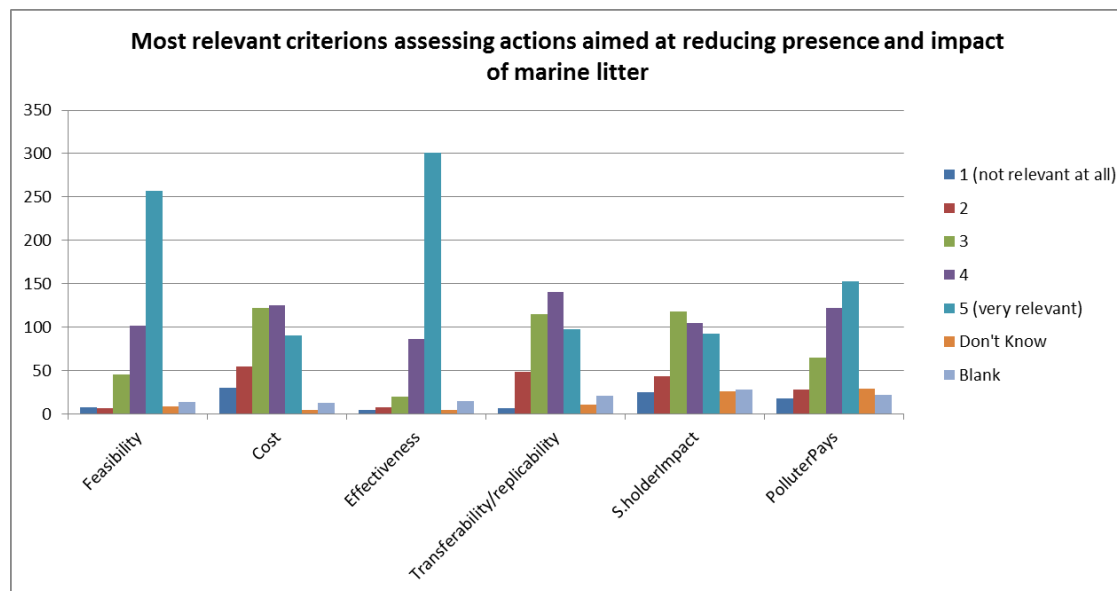


Figure 3: Division of answers on criterions for actions

After weighting the answers, effectiveness appears to be the most relevant criterion, with stakeholder impact the least relevant. **Figure 4** shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=169$ ;  $df=5$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

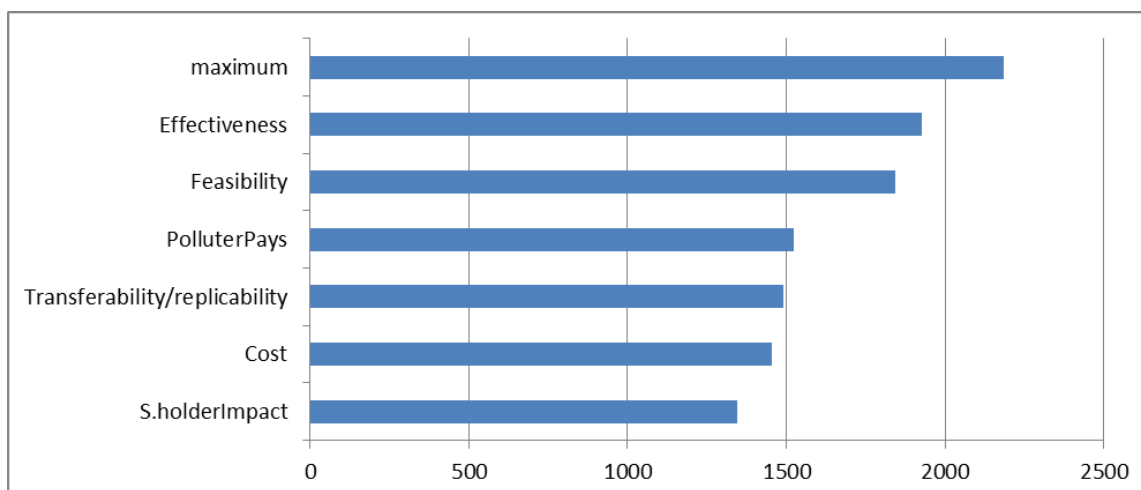


Figure 4: Ranking of answers on criteria for actions aimed at reducing the presence and impact of marine litter.

***Are there other relevant criteria which should be used when assessing actions aimed at reducing the presence and impact of marine litter?***

This question was answered by 158 respondents with 179 suggestions in 45 categories. Most of the suggestions were on the protection of nature or the environment (18), on prevention (17), education (16) and long-term thinking (16). Also legislation was mentioned (13), the impact of marine litter (10), the responsibilities within the problem (9), the urgency of the problem (8), sustainability (7), plastic bags (6), the time frame (6) and the economic consequences (5). Furthermore, recycling (5) was mentioned as well as community involvement (4), global stand points (4), evaluation (2), monitoring (2), plastic bottles (2), the polluter pays principle (2) and the risks involved (2). Other topics mentioned only once were: action to behaviour, availability, benefits of marine litter, biodegradability, capability, citizens before companies, clean ups, commitment of sectors, compatibility, continuation, cost/benefit, differentiation in areas, the ecosystem approach, efficiency, health, homogeneity, the influence of landlocked countries, infrastructure, maritime security, measurability, mitigation, practicality, quality of knowledge, storm water and tourism.

## 2.2.4 POTENTIAL NEGATIVE IMPACTS

***How problematic are the summed up potential negative impacts?***

The options put forward in the questionnaire were:

- Entanglement of marine species in discarded fishing gear, ropes and other litter
- Ingestion of litter by birds, fish and other species
- Health risk for humans due to consumption of affected seafood
- Spreading of invasive species
- Negative impacts on coastal tourism
- Damage to (fishing) vessels
- Costs associated with beach clean up

The answers varied between 1 (not problematic) to 5 (very problematic) or “don’t know”. There was also the possibility to leave the answer blank.

Figure 5 shows the response to the question divided over the possible answers. The figure shows the highest score (very problematic) for the problem of ingestion (360) and entanglement (304). Damage to vessels was considered less problematic, 59 people scored on “not problematic”.



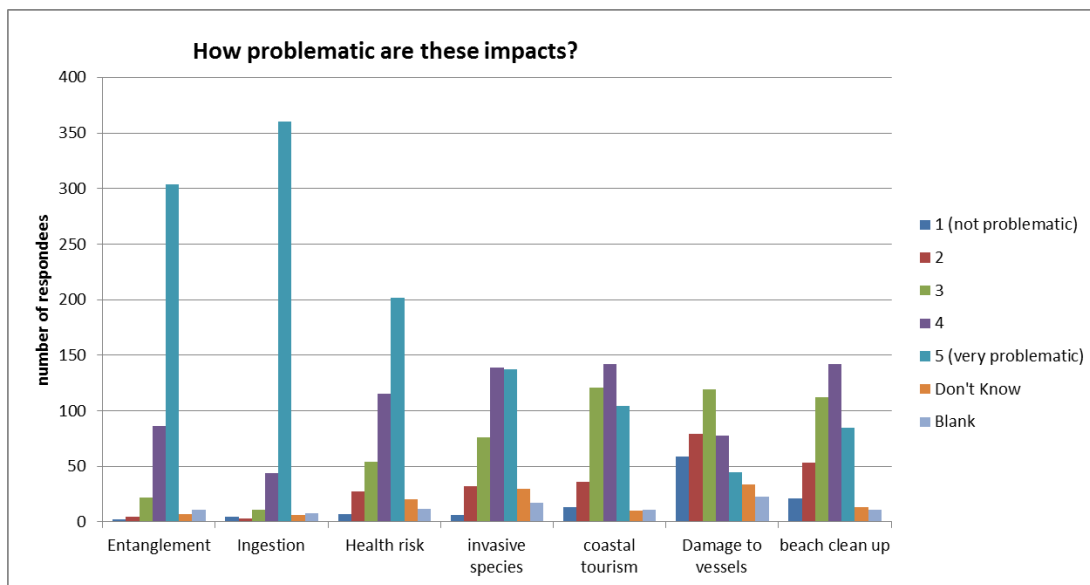


Figure 5: Division of answers on negative impacts.

After weighting the answers for their score on problematic ingestion is indicated as most problematic. Damage to vessels is indicated as the least problematic problem. [Figure 6](#) shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=618$ ;  $df=6$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

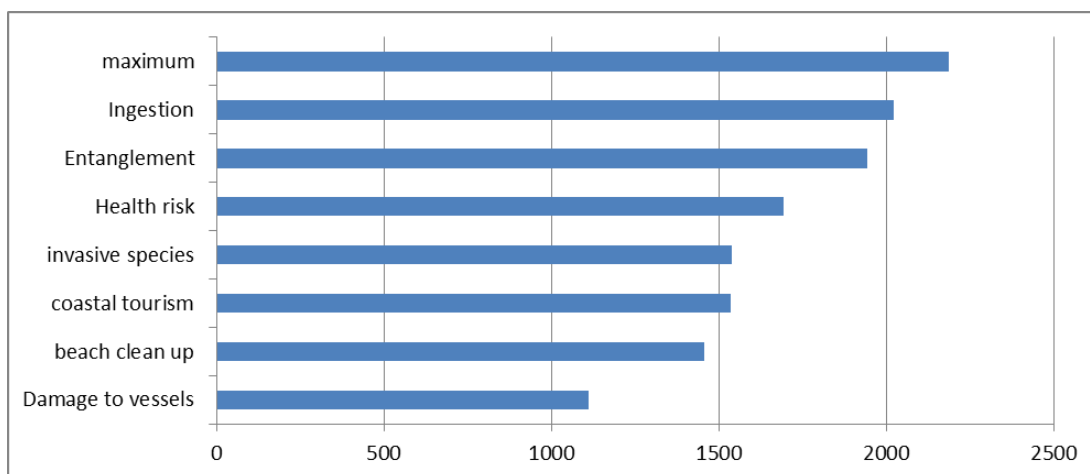


Figure 6: Ranking of answers on negative impacts.

***Are there other relevant negative impacts of marine litter which should be considered?***

131 of the respondents answered this question with 159 suggestions in 42 categories. Degrading ecosystems and changing habitats were mentioned most often (22) followed by health risks for humans and marine life (19), as well as for microplastics (16), costs (12), and toxicity (12). A need for long-term thinking was expressed (9), as well as a concern on the overall impact on the earth (9), water pollution (7), bioaccumulation (5), coastal area impacts (4) and ocean gyres (4). Furthermore, it was mentioned how an pre-existing litter problem leads to more littering (3) as were concerns about the loss of aesthetic values (3), the need for prevention (3) and education (2), concerns about effects through the food chain (2), effects on the quality of life (2) and the issue of responsibility (2). Other topics mentioned only once: awareness, , bird nesting behaviour, combined stressors, cruise ship pollution, drinking water, effects on the water

cycle, EPR implementation, erosion, fishing equipment, impacts on ships, karma, lack of knowledge, lost origins, natural litter removal through entanglement, negative impacts of clean ups, nanoplastics, psychology, recreational use, recycling, relative impacts, shortcomings in legislation, socio-economic impacts and sustainability.

## 2.2.5 CONSUMERS

*Which actions can be undertaken by consumers with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Reject single-use bags and bottles and use re-usable alternatives
- Drink tap water instead of bottled water/other bottled beverages
- Give greater consideration to the packaging used when making purchasing choices
- Separate waste at home and participate in systems for separate collection and deposit refund systems
- Avoid littering (either on the beach, at sea or elsewhere)
- Avoid flushing sanitary waste down the toilet
- Participate in organised clean-ups

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 7** shows the response to the question divided between the possible answers. The figure shows that avoiding littering is the most strongly recommended action (376), with avoidance of single-use plastic bags and bottles in second place (308). Switching from bottled to tap water is considered “not recommended” by 24 respondents.

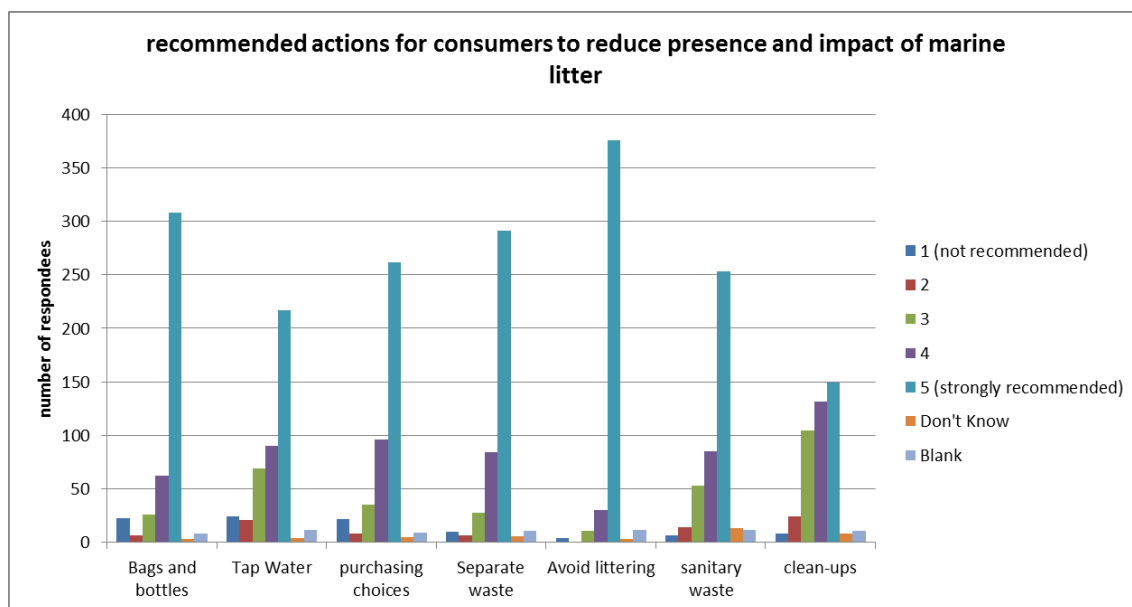


Figure 7: Division of answers on actions for consumers.

The answers are weighted. After weighting, avoiding litter is indicated as the most strongly recommended action, with participating in organised clean-ups the least recommended action. **Figure 8** shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=56$ ;  $df=6$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

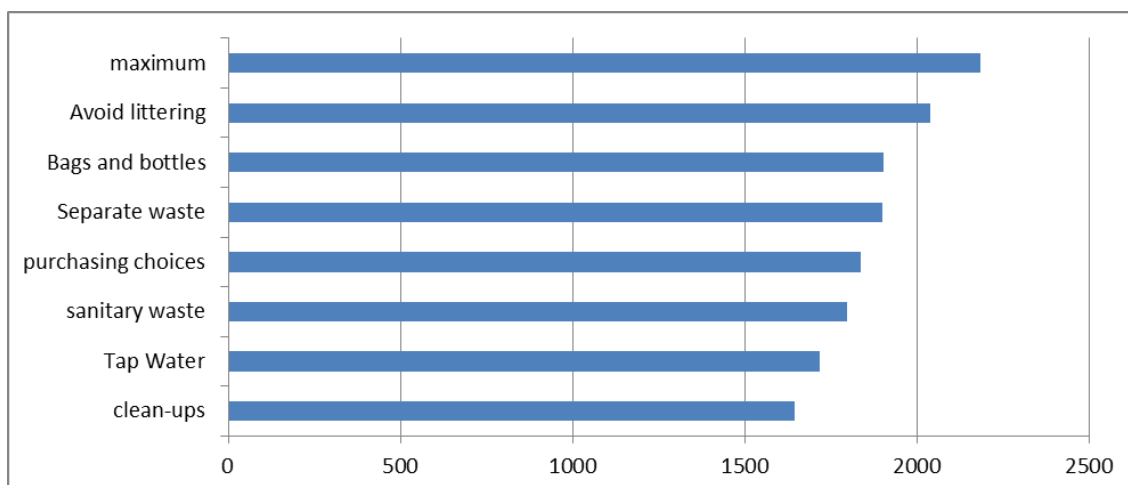


Figure 8: Ranking of answers on criteria on actions for consumers.

#### *Are there other actions which could be undertaken by consumers to reduce marine litter?*

170 respondents replied to this question, with 208 suggestions in 56 categories. Education and raising awareness was the most mentioned suggestion (32), followed by avoiding microbeads (16) and reusing products (15). The use of deposit refund systems was also mentioned (12), as well as recycling (11), the avoidance of single use plastics (10), proper waste collection (13) and waste separation (9). It was also mentioned that consumers should pick up more litter (7), use biodegradable materials (7), avoid plastic products all together (6), use product labelling (which producers should ensure is adequate) (5), participate in clean-ups (4), take one's own responsibilities (4) and push others to take theirs (4). It was also suggested to initiate a litter patrol (3), to use the polluter pays principle (3), to reduce general consumption (3), to take one's own litter home (3), drink tap water (3), force prison inmates to do clean ups (2), reduce the consumption of marine foodstuffs (2), support innovative solutions (2) or support NGOs (2). Furthermore, the following single suggestions were made: avoid packaged food at sea, buy in bulk, buy local food, buy unpackaged food, change suppliers, charge for plastic bags, demand others to use less packaging materials, develop and promote EPR schemes, do not produce any more plastic, do not use or wash plastic clothes, do not use styrofoam while fishing, establish eco points on beaches, establish a platform to connect producers and consumers, force the government to improve legislation, give preference to environmentally (pro)active producers and retailers, introduce higher penalties, limit economic activity, notify authorities of suspected pollution, organise compulsory clean up actions, provide initiatives, purchase products with low environmental impacts, reduce littering, scientists should stop inventing trash, set requirements for producers, store food in glass, tag fishing gear, take action against fishermen, use environmentally friendly boats, use portable ashtrays, and write complaints.

### 2.2.6 LOCAL OR SUB-NATIONAL AUTHORITIES

#### *Which actions can be undertaken by local or sub national authorities with a view to reducing the presence and impact of marine litter?*

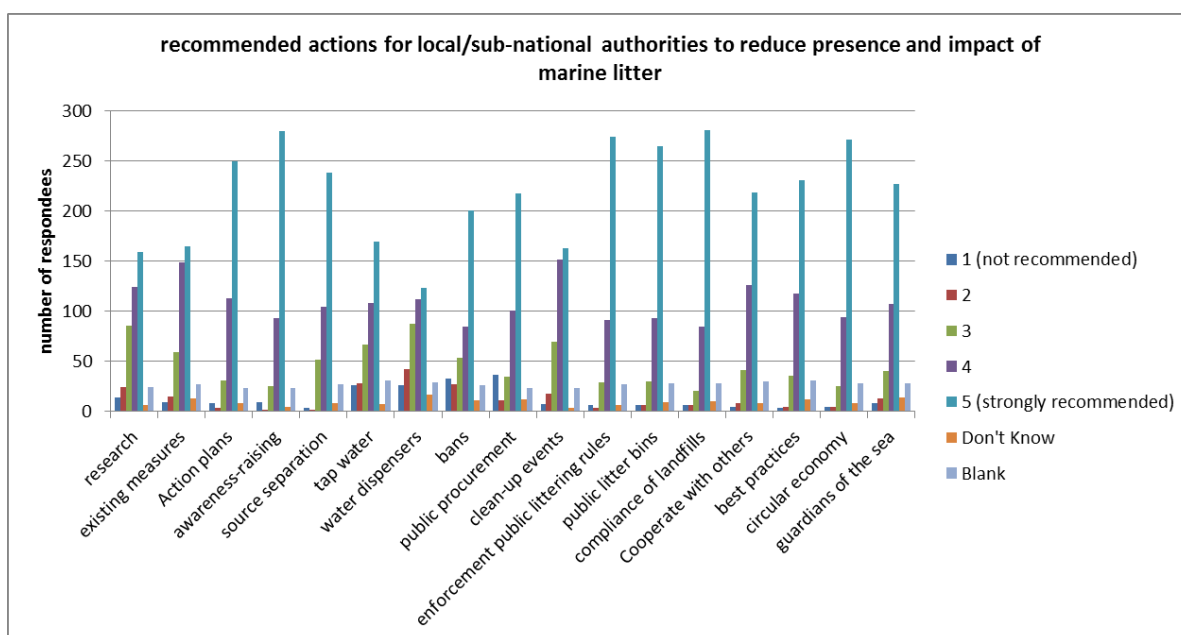
The options put forward in the questionnaire were:

- Invest in research and monitoring activities to identify the types and sources of marine litter
- Map existing measures undertaken and analyse gaps to be filled
- Establish action plans and/or targets for marine litter prevention and clean-up initiatives
- Implement awareness-raising campaigns on the sources and impacts of marine litter
- Develop initiatives to encourage/incentivise source separation
- Develop initiatives to encourage/incentivise consumption of tap water
- Install public water dispensers

- Introduce (seasonal) bans on plastic bags in coastal cities, and/or bans on plastic bottles during beach events and concerts
- Avoid plastic packaging in public procurement
- Organise clean-up events
- Ensure enforcement of existing public littering rules
- Ensure adequate availability of public litter bins
- Take action to ensure regulatory compliance of landfills and eradicate illegal dumpsites
- Cooperate with tourist sector, waste managers and retailers
- Exchange best practices with other municipalities
- Develop initiatives to promote the circular economy, diverting waste from landfill to recycling or energy recovery
- Cooperate in initiatives to promote fishermen as 'guardians of the sea', including monitoring and fishing for litter activities (collecting litter in large bags while fishing)

The answers varied between 1 (not recommended) to 5 (strongly recommended) or "don't know". There was also the possibility to leave the answer blank.

**Figure 9** shows the responses to the question divided between the possible answers. The figure shows that ensuring the regulatory compliance of landfills as the most strongly recommended action (281), with raising awareness in second place (280). Public procurement is considered "not recommended" by 37 people.



**Figure 9:** Division of answers on recommended actions for local or sub-national authorities.

After weighting, awareness-raising is indicated as the most strongly recommended action, and installing more public water dispensers is the least recommended action. **Figure 10** shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=128$ ;  $df=16$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

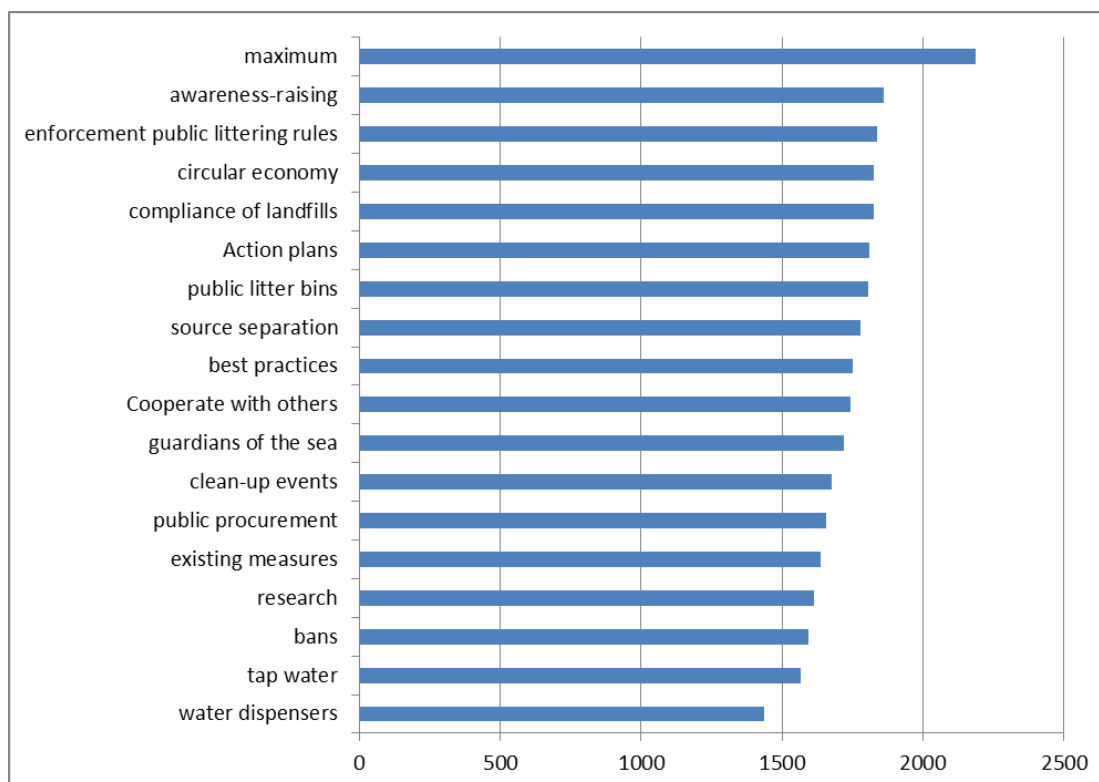


Figure 10: Ranking of weighted answers on actions for local or sub-national authorities.

***Are there other actions which could be undertaken by local/sub-national authorities to reduce marine litter?***

168 respondents replied to this question with 229 replies in 54 categories. Better legislation and enforcement was mentioned most (32), followed by education and raising awareness (27), the promotion of recycling and reducing (12, 12), provision of proper waste disposal systems (12) and the improvement of the sustainability of sewage and drainage systems (10). Deposit refund systems are recommended (9) as well as the development and use of alternative materials (9), a ban on plastic bags (8), organised clean ups (7), discouraging single use plastics (7), rewarding local sustainable initiatives (7), promoting reuse (5), banning balloon releases (4), provision of open drinking sources (4), provision of reusable drink containers (4), promotion of waste separation (4), waste collection in harbours (3), cooperation with industry for sustainable solutions (3), higher punishments (3), higher taxes (3), monitoring programmes (3), prevention (3), using the polluter pays principle and pay-as-you-throw (3), a ban on plastic bottles (2), cooperation at all different levels (2), diving involvement (2), sharing best practice (2) and focusing more on litter collection from rivers (2). Furthermore, the following single suggestions were made: avoid building incinerators, ban motor boats, better use of media, close landfills, don't let packaging companies rule the market, engage the public, improve tap water quality, establish publicly-funded recovery campaigns, increase cost of plastic products with good alternatives, limit the availability of plastics around beaches, limit the input, make companies collect litter, material supervision in fisheries, organise guardians of the sea groups, promote the circular economy, promote products that use no plastic packaging, provide beach cleaning jobs, punish the industry, push higher authorities, reward people who pick up litter, set manufacturing requirements, stop oil rigs, summer campaigns at seashore, sustainable tourism and a tax reduction for good behaviour.

***Which (if any) of the possible actions for local/sub-national authorities mentioned above are also of relevance for national authorities?***

For this question the respondents could choose from seventeen actions. 405 respondents chose something, leaving 32 respondents who did not respond. In total, 3735 options were ticked, as presented in [Table 1](#).

Table 1: Magnitudes in the different options ticked by the respondents.

Action	n
Establish action plans and/or targets for marine litter prevention and clean-up initiatives	289
Develop initiatives to promote the circular economy, diverting waste from landfill to recycling or energy recovery	286
Take action to ensure regulatory compliance of landfills and eradicate illegal dumpsites	286
Implement awareness-raising campaigns on the sources and impacts of marine litter	283
Invest in research and monitoring activities to identify the types and sources of marine litter	278
Map existing relevant measures already being implemented and analyse gaps to be filled	258
Avoid plastic packaging in public procurement	247
Ensure enforcement of existing public littering rules	247
Develop initiatives to encourage/incentivise source separation	234
Cooperate in initiatives to promote fishermen as 'guardians of the sea', including monitoring and fishing for litter activities (collecting litter in large bags while fishing)	223
Cooperate with tourist sector, waste managers and retailers	199
Introduce (seasonal) bans on plastic bags in coastal cities, and/or bans on plastic bottles during beach events and concerts	177
Develop initiatives to encourage/incentivise consumption of tap water	176
Exchange best practices with other municipalities	164
Ensure adequate availability of public litter bins	146
Organise clean-up events	143
Install public water dispensers	99

[Figure 11](#) shows the actions presented as a percentage. The distribution ranges from 3% (Install public water dispensers) to 8% (Establish action plans and/or targets for marine litter prevention and clean-up initiatives) per option. The answers differ significantly from each other ( $\chi^2=261$ ;  $df=16$ ;  $p<0.005$ ).

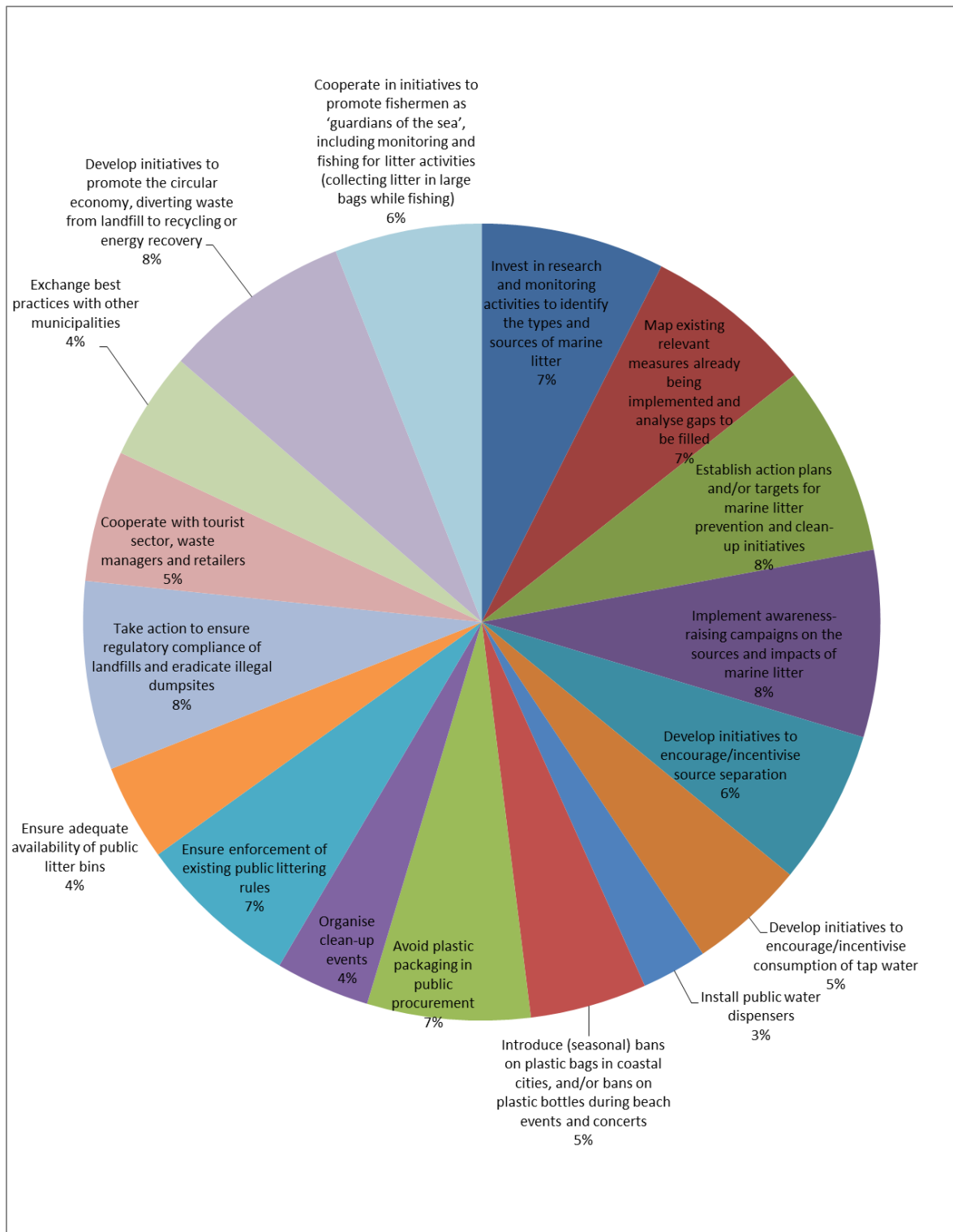


Figure 11: Possible actions for national authorities in percentages.

## 2.2.7 NATIONAL AUTHORITIES

*Which actions can be undertaken by national authorities with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Establish monitoring systems and environmental targets with a view to reducing litter inputs to the marine environment
- Share information, and develop knowledge-sharing platforms with authorities from neighbouring states, local authorities, NGOs and other stakeholders on amounts and sources of marine litter (particularly from monitoring in the framework of the Marine Strategy Framework Directive)
- Assist local authorities and NGOs in monitoring the effectiveness of measures aimed at combatting marine litter
- Provide guidance and resources to help local authorities select and implement measures to address marine litter
- Promote best practice and encourage NGOs, local authorities and other stakeholders to launch relevant initiatives to improve behaviour, prevent littering and support clean-up initiatives
- Support the development of Action Plans on marine litter within the framework of the four relevant Regional Seas Conventions (Barcelona, Bucharest, HELCOM and OSPAR)

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 12** shows the responses to the question divided over the possible answers. The figure shows the establishment of monitoring systems and environmental targets as the most strongly recommended action (254). Promoting best practice and developing action plans are both considered as “not recommended” by four respondents.

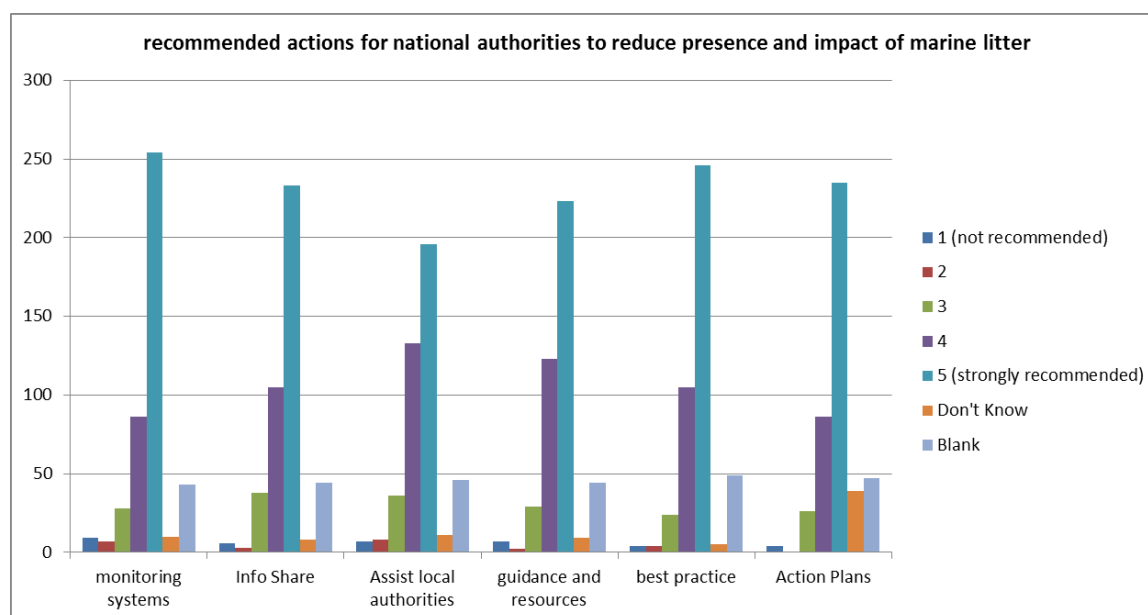


Figure 12: Division of answers on recommended actions

**Figure 13** shows the weighted answers. The expected values do not differ significantly from the observed ( $\chi^2=8$ ;  $df=5$ ;  $p>0.05$ ), meaning there is no significant difference between the answers. This means the public consultation did not indicate more or less recommendable actions for national authorities.



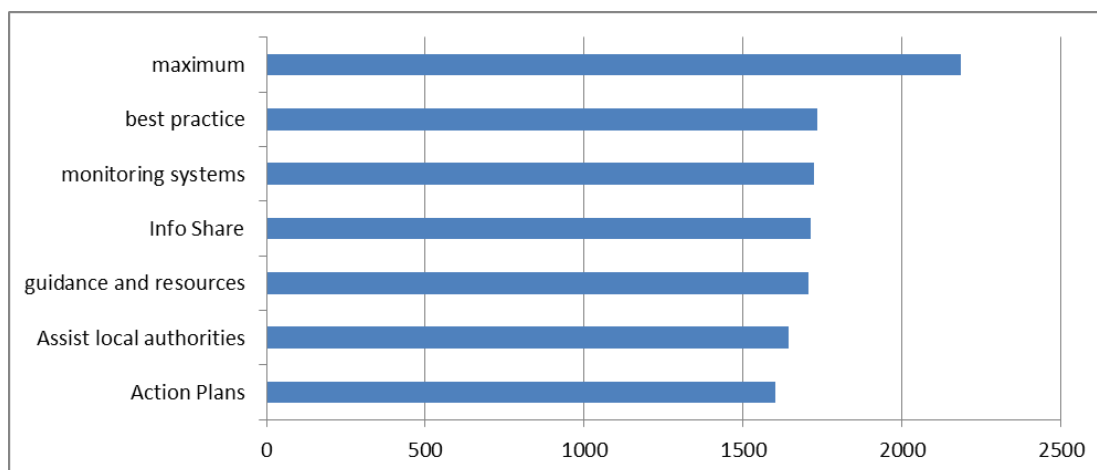


Figure 13: Ranking of weighted answers on actions national authorities.

***Are there other actions which could be undertaken by national authorities to reduce marine litter?***

145 respondents answered this question with 183 suggestions in 67 categories. Better legislation and enforcement (24) came highest, closely followed by education (22). Next suggestions were made for a deposit refund system (10), support for the polluter pays principle (7), promotion of recycling (7), facilitation of waste disposal in harbours (6), a ban on single use plastic bags (6), a ban on microplastics in products (6), increased taxation (5), restrictions in plastic packaging (5), a ban on harmful plastic waste (4), promoting sustainable initiatives (4), cooperation at the local level (3), improvements to producer responsibility, (3), promoting the circular economy (3), promoting the development of biodegradable materials (3), encouraging collection of plastics (3), enforcing the use of biodegradable materials (3), banning plastic in landfills (2), closing the gap between words and actions (2), giving financial support to coastal municipalities (2), focussing on existing legislation (2), focussing on river litter (2), increasing penalties (2), incentivising industry to replace plastics (2), optimising separate waste collection (2), creating workgroups of unemployed people for clean-up actions (2), improving waste water treatment (2) and building long-term economic structures to tackle marine litter (2). The following individual suggestions were made: assist local authorities in clean ups, ban balloon releases, ban motor boats and yachts, ban plastic bottles, ban removal of natural litter, clear labelling, control technical industry, create international NGO's to raise money to clean the oceans, decrease manufacturing of plastic packaging, decrease microbeads, EPR, establish marine reserves with litter controls, fine plastic producing industry, forbid the production of trash and pollution, fund improvement of sewage treatment plants, increase taxes on plastics, include littering in the waste hierarchy, fund international commitments, invest in development of environmental-friendly packaging material, make packaging traceable, make plastic materials float and recoverable from the sea, promote and encourage responsible use of materials in public sector organisations, record urban waste, remove litter from seabed, report losses at sea and combine with clean-up dives, reuse more, set targets to reduce littering, set up monitoring programmes, stimulate proper disposal of waste, stimulate technical solutions for microplastic outflows, structural clean ups, subsidise sustainable industries, support initiatives for improvement of efficiency in the plastic cycle, support research, target the industry and distributors, use economic incentives to reduce littering and promote proper disposal.

## 2.2.8 EUROPEAN UNION POLICY MAKERS

*Which actions can be undertaken by EU policy makers with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Establish target(s) for marine litter reduction
- Support the actions of local and Member State authorities by funding research
- Support the actions of local and Member State authorities by facilitating exchange of information, experience and best practice
- Facilitate coordination efforts across regional seas and support networking between authorities and other stakeholders
- Support development of Strategic Regional Action Plans on marine litter within the framework of the four relevant Regional Seas Conventions (Barcelona, Bucharest, HELCOM and OSPAR)
- Support international activities to combat marine litter (e.g. the Honolulu Strategy and marine debris reduction commitments in Rio+20)
- Establish a harmonised EU monitoring strategy for marine litter
- Extend and improve producer responsibility over the entire product lifecycle (e.g. optimisation of packaging and production including design for re-use, recycling, prevention, low material demand, etc.)

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

Figure 14 shows the responses to the question, divided between the possible answers. The figure shows extending and improving producer responsibility as the most strongly recommended action (298). The establishment of an EU target is considered “not recommended” by fifteen people.

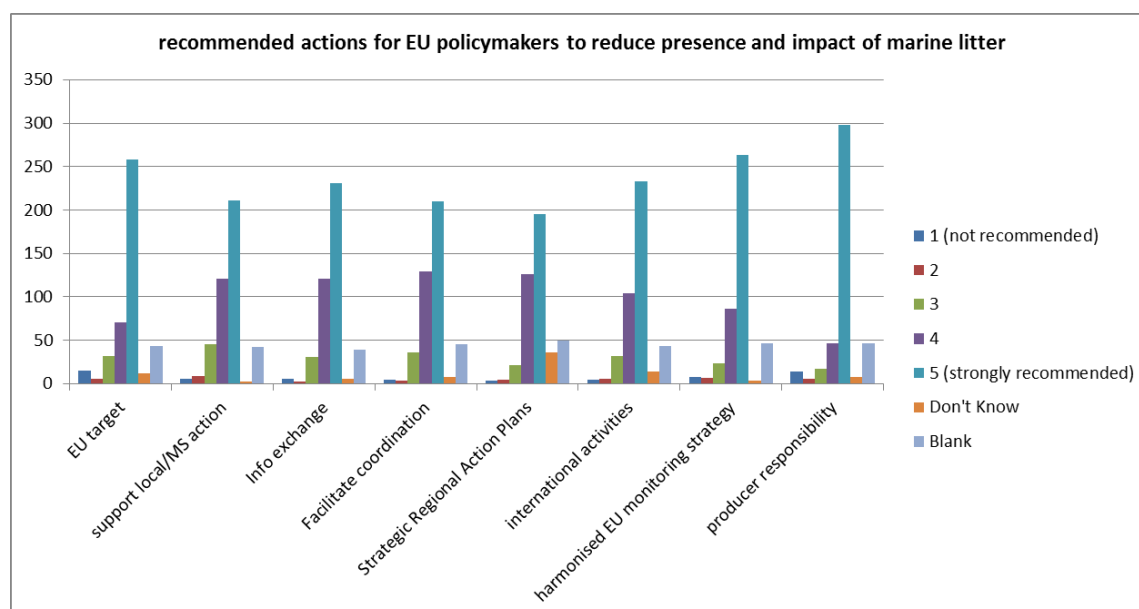


Figure 14: Division of answers on recommended actions for EU policy makers

After weighting, extending and improving producer responsibility is found to be the most strongly recommended action, while developing strategic regional action plans are the least recommended actions.

Figure 15 shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=17$ ;  $df=7$ ;  $p<0.025 \wedge p>0.01$ ), meaning there is a significant difference between the answers.

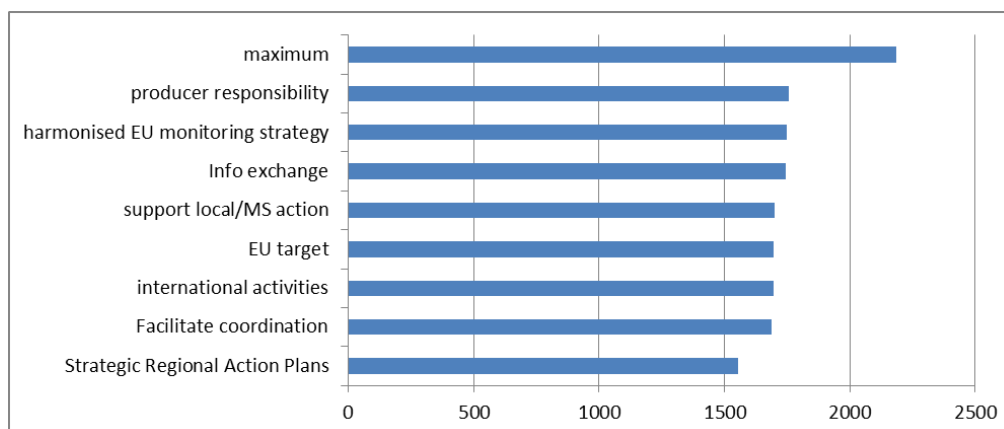


Figure 15: Ranking of weighted answers on actions for EU policy makers.

***Are there other actions which could be undertaken by EU policymakers to reduce marine litter?***

131 of the respondents answered this question with 151 suggestions across 50 categories. The suggestion which was made most frequently was to improve existing legislation and its enforcement (31), followed by a ban on single-use plastic bags (9), improving education (9), (financially) incentivising good practices and innovations (9), banning or limiting microplastics in cosmetics (8), promoting the development, use and appropriate disposal of bio-degradable materials (6), raising taxes/levies on single-use plastics and other potentially harmful products and operations (7), extending responsibility over the lifecycle of products (4), promoting recycling (4), promoting research (4), regulating plastic use to minimise its environmental impact (4), implementing targets and monitoring programs for (river) litter into the Water Framework Directive (4), banning (sea side-/plastic containing-) landfills (3), implementing (free) harbour waste collection facilities (3), increasing restrictions for discharges at sea (3), only allowing sustainable packaging within industries (3), subsidising clean-ups (3), globalising legislation and knowledge (3), banning oxo-biodegradable plastics (2), banning (single-use) plastics (2), creating a better understanding before implementing legislation and targets (2), implementing deposit refund systems (EU-wide) (2) and enforcing biodegradable materials where possible (2). Also, the following single suggestions were made: apply the precautionary principle, ban motor boats, ban oil rigs, ban plastic bottles, bridge the gap between words and actions, introduce clear labelling, collect plastic waste, control non-EU ships more severely, cooperate with industries to turn plastic litter into a resource, cooperate with other nations, create lists with "clean" places, deter and reduce the 'disposable product' mind-set, establish integrated policy, establish a target on plastic production, focus on river litter, include all types of marine litter (not only plastics), limit the input to the economy, ensure that companies with production outside the EU comply with legislation, make plastic materials float to facilitate recovery from the sea, increase funding for NGO's, prioritise source separation, develop a reporting system for lost fishing gear, restrict compostable plastics and bio plastics, set reduction targets, support coastal municipalities and tax/fine companies whose plastics are found in the environment.

### 2.2.9 NON GOVERNMENTAL ORGANISATIONS (NGO'S)

*Which actions can be undertaken by NGO's with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Establish action plans and/or targets for marine litter prevention and clean-up initiatives
- Implement awareness-raising campaigns on the sources and impacts of marine litter
- Organise clean-up events
- Share information with local authorities and other stakeholders on the amounts and sources of marine litter (particularly from monitoring in the framework of the Marine Strategy Framework Directive)
- Assist local authorities in identifying target groups responsible for littering
- Launch relevant behavioural and preventive initiatives with other stakeholders

The answers varied between 1 (not recommended) to 5 (strongly recommended) or "don't know". There was also the possibility to leave the answer blank.

**Figure 16** shows the responses to the question divided between the possible answers. The figure shows that awareness raising campaigns were the most strongly recommended action (273), while developing action plans and/or targets is considered "not recommended" by 20 people.

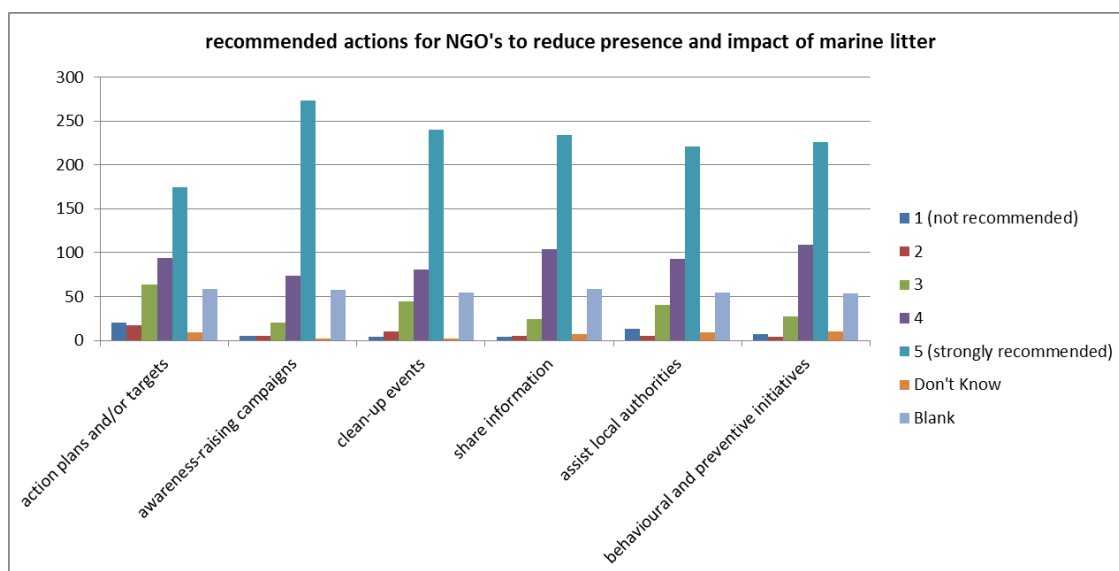


Figure 16: Division of answers on recommended actions for NGO's

After weighting, awareness-raising campaigns are indicated as the most strongly recommended action, while action plans and/or targets are the least recommended actions. **Figure 17** shows the weighted answers. The expected values differ significantly from the observed ( $\chi^2=21$ ;  $df=5$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

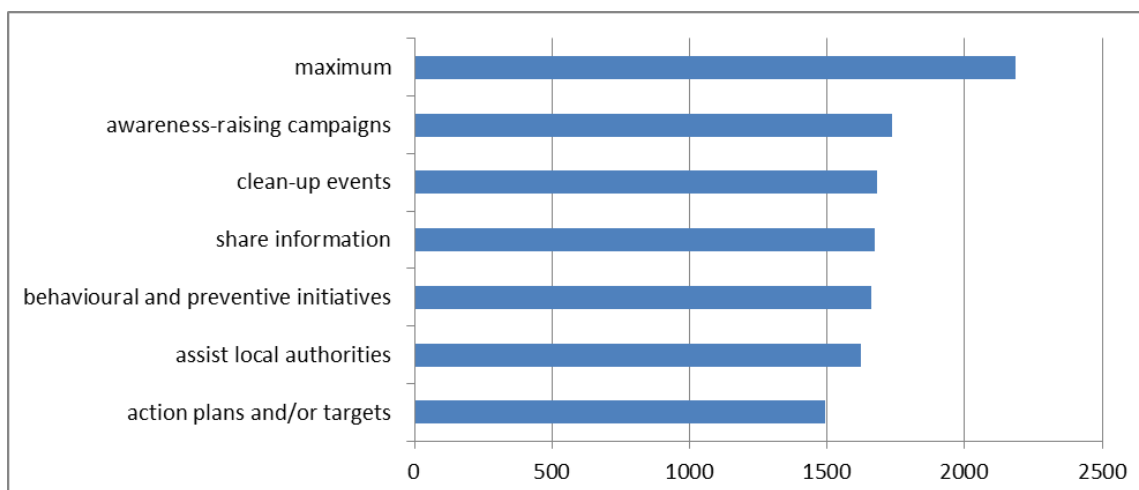


Figure 17: Ranking of weighted answers on actions for NGO's.

***Are there other actions which could be undertaken by NGOs to reduce marine litter?***

81 respondents answered this question with 90 suggestions across 29 categories. Education and raising awareness was the suggestion most frequently mentioned (25), followed by suggestions to: cooperate to form networks with authorities, communities and others (9), create links between policy makers, industry and citizens (8), create monitoring programmes (5), organise clean-ups (5), empower NGO's to act as civil enforcers (3), pressurise industry to develop sustainable products (3), stimulate the selective collection and proper disposal of waste (3), engage communities (2), lead and promote initiatives (2), lobby authorities for better legislation and enforcement (2), lobby for a ban on seaside landfills (2), promote biodegradable materials and proper disposal (2), push for deposit return systems (2), set a good example (2) and stimulate discussions on responsibility (2). Single suggestion made were: advocate for worldwide initiatives, ban plastic bags, contribute to plans and targets, coordinate actions at different levels, create a label for clean places, create transparency on sources and solutions, focus on marine litter, increase fundraising, lobby for a ban on discharges at sea, develop better plastic labelling, increase policy advocacy, increase corporate engagement, promote recycling and stop usage of motorboats and petrol at sea.

## 2.2.10 PLASTIC INDUSTRY

*Which actions can be undertaken by plastic industry with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Promote the development of products and packaging which use less (plastic) material
- Promote the development of products and packaging made from innovative materials which are easier to re-use or recycle and which degrade less harmfully in the marine environment
- Extend and improve producer responsibility over the entire product lifecycle (e.g. optimisation of packaging and production including design for re-use, recycling, prevention, low material demand etc.)
- Exchange information, knowledge and best practices on innovative technologies, production processes and sustainable plastic packaging products
- Promote and finance initiatives aimed at increasing recycling of plastics
- Promote and finance marine litter initiatives
- Incorporate eco-labelling criteria in product design

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 18** shows the response to the question divided over the possible answers. The figure shows that developing innovative materials was the action most frequently recommended (303), while eco-labelling was considered “not recommended” by 19 people.

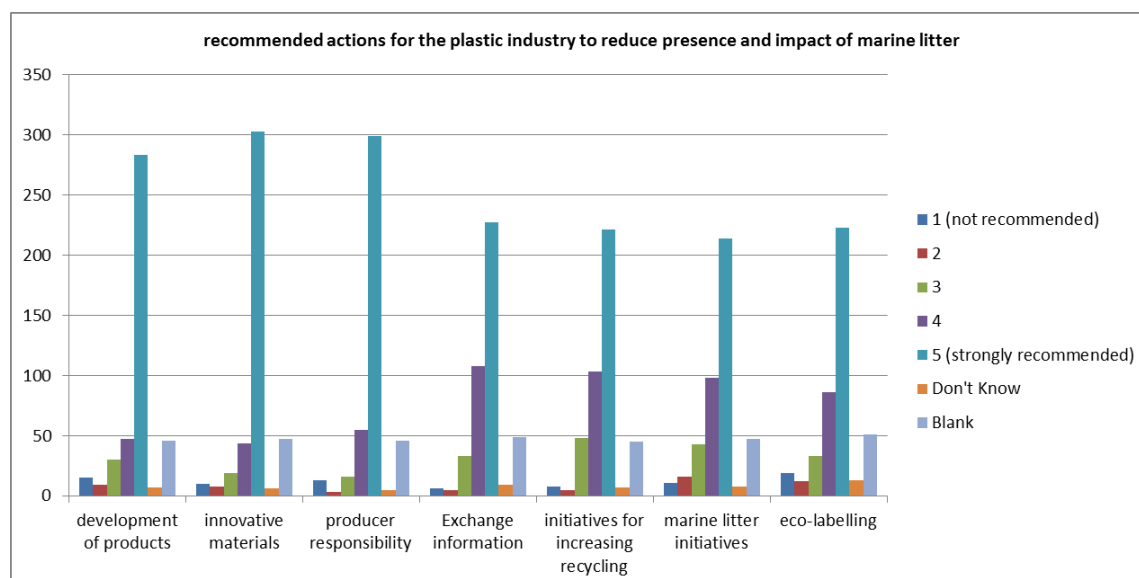


Figure 18: Division of answers on recommended actions for the plastic industry.

**Figure 19** shows the weighted answers. After weighting, improved producer responsibility is found to be the most strongly recommended action, while eco-labelling was the least recommended. The expected values differ significantly from the observed ( $\chi^2=16$ ;  $df=6$ ;  $p<0.025$   $\wedge$   $p>0.01$ ), meaning there is a significant difference between the answers.

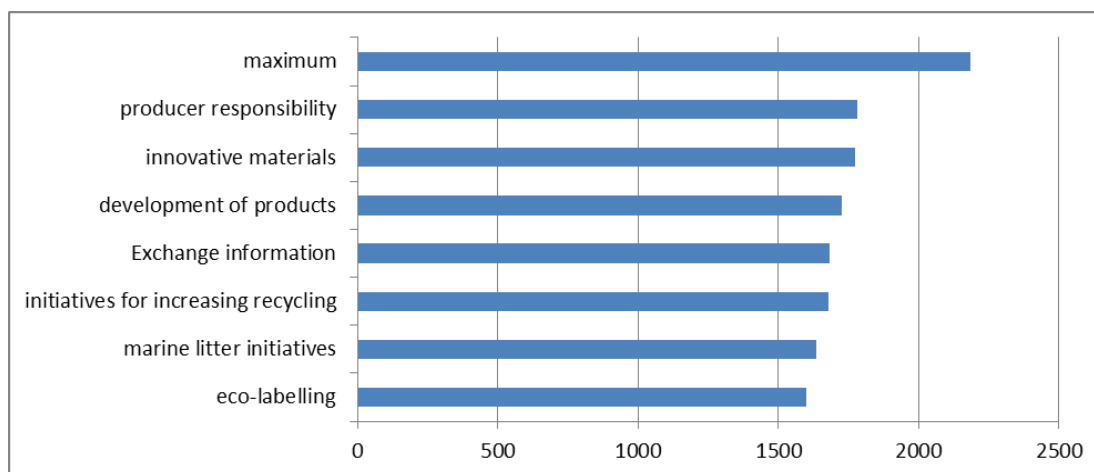


Figure 19: Ranking of weighted answers on actions for plastic industry

***Are there other actions which could be undertaken by the plastics industry to reduce marine litter?***

115 respondents answered this question, generating 136 suggestions across 40 categories. Most suggestions were directed at the optimisation of design for reducing, reusing and recycling (12) and also towards the promotion of sustainable materials (12). A number of suggestions were also made in relation to the promotion, research of and investing in recycling (10), as well as consumer awareness campaigns with other stakeholders (8). Other suggestions were to support deposit refund schemes (8), reduce the production and use of disposable plastics (7), cooperate with other sectors for sustainable solutions (6), reduce the spill of plastic pellets (6), stop producing microbeads for cosmetics (6), stop adding dangerous additives to plastic (5), take greater responsibility within the industry (5), ensure the clear labelling of products (4), introduce alternatives for single-use plastics (4), develop and share a code of best practise (4), actively search for alternatives (3), commit to existing sustainable initiatives (3), commit to the polluter-pays principle (3), replace plastic where possible (3), close or convert the entire industry (2), design for durability (2), monitor plastic littering (2), pay for NGO's with part of the industry's profits (2) and support sustainable initiatives (2). Single suggestions were to: buy back and reuse more plastic, not to label anything biodegradable as this will lead to more littering, to focus on bulk products, carry out further research of microplastics, improve the collection of waste, design bottles with caps which are permanently attached, make plastic materials float and recover from the sea, make products traceable, phase out the production of harmful products such as microbeads, promote a levy or tax on plastic bags, promote product reuse, reduce the use and possible creation of microplastics, set targets for bio-plastic use, share data in a transparent way, stop using oil-based products, support and implement consumer ideas and take immediate actions.

### 2.2.11 RETAIL SECTOR

*Which actions can be undertaken by the retail sector with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Motivate and inform customers on sustainable consumption
- Develop, promote and participate in separate collection and deposit refund systems for plastic bottles and bags
- Promote the use of reduced, reusable or recyclable packaging in products, both upstream (through purchasing/procurement decisions) and down-stream (through promotion of such products to consumers)
- Commit to targets for reduction of plastic packaging
- Exchange ideas and best practices with other retailers

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 20** shows the response to the question divided across the possible answers. The figure shows that the promotion of reduced, reusable or recycled packaging is the most strongly recommended action (305). Setting targets for reduction is considered “not recommended” by 28 people.

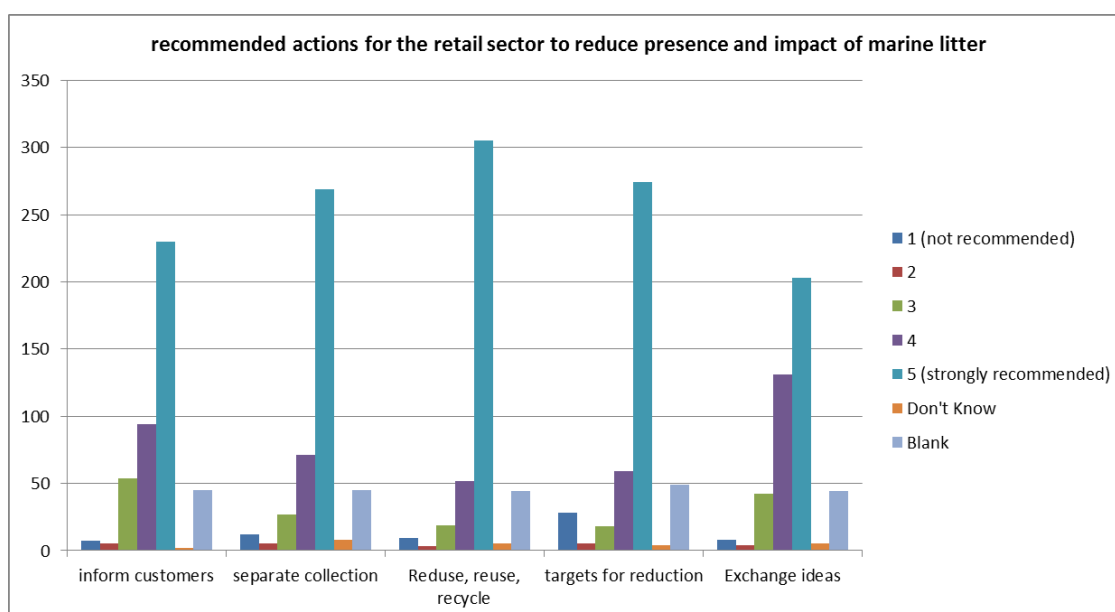


Figure 20: Division of answers on recommended actions for the retail sector

**Figure 21** shows the weighted answers. After weighting, the promotion of reduced, reusable or recycled materials in packaging was found to be the most strongly recommended action, while exchanging ideas is the least recommended. However, the expected values do not differ significantly from the observed ( $\chi^2=5.5$ ;  $df=4$ ;  $p>0.05$ ), meaning there is no significant difference between the answers.



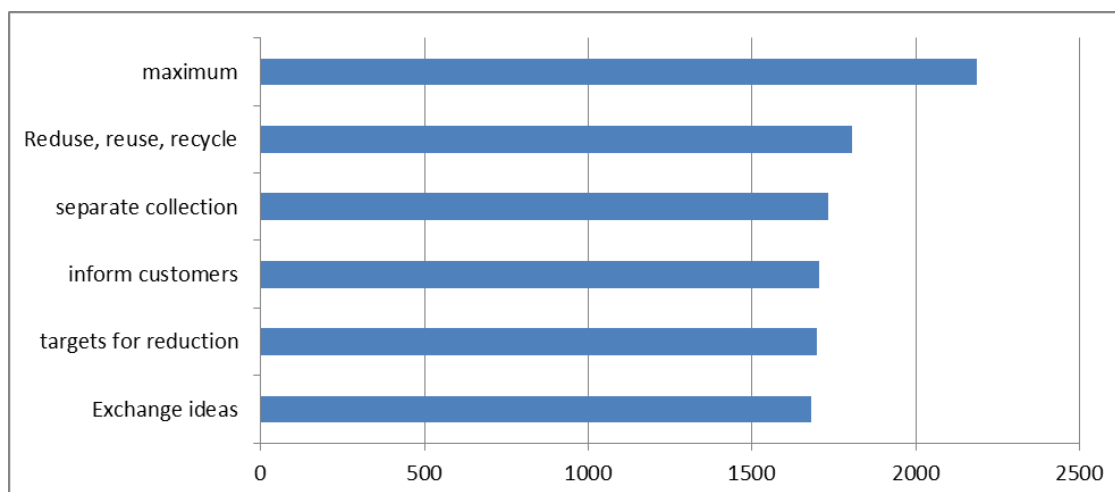


Figure 21: Ranking of weighted answers on actions for the retail sector.

***Are there other actions which could be undertaken by the retail sector to reduce marine litter?***

100 respondents answered this question, resulting in 105 suggestions across 37 categories. The suggestion most frequently mentioned was to commit to end the use of single-use plastic bags (11), followed by suggestions to promote alternative materials (10), promote deposit refund schemes (7), properly educate staff and customers (7), not sell products containing microbeads (5), support ecological packaging through its lifecycle (5), support separate waste collection (5), develop systems with a minimum of plastic packaging (4), organise or finance clean-up activities (4), promote bulk products (4), support local initiatives (4), charge (more) for single-use plastic items (3), develop and/or promote clear international labelling (3), encourage buyers to bring their own containers (3), promote recycling (3), stick to targets already set (3), not sell potentially harmful products (2), promote refill packaging (2) and take measures to reduce microplastics (2). Single suggestions included: boycott cooperation with non-environmentally-friendly parties, boycott plastic producers, commit to the polluter pays principle, communicate on waste-reduction, encourage staff and customers to participate in initiatives, increase cooperation to promote circular economy, install or finance water dispensers, prohibit plastic use in certain products, promote consumer feedback in environmentally friendly initiatives, promote reuse and repair, promote the reduction of harmful chemicals in products, reduce at the source, reduce costs of alternative products, reduce pollution, reduce promotional gifts, set requirements for manufacturers, stop selling disposable products and avoid the use of plastics altogether.

## 2.2.12 TOURISM AND RECREATIONAL SECTOR

*Which actions can be undertaken by the tourism and recreational sector with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Sensitise tourists to the impacts of litter on the marine environment
- Provide eco-alternatives to plastic ashtrays and plastic cups on the beach
- Establish water dispensers in communal areas (e.g. hotel lobbies, beachfronts etc.)
- Participate in eco-tourism certification schemes
- Create and promote stewardship concepts such as adopt-a-beach<sup>5</sup>
- Organise clean-up events
- Ensure adequate availability of litter bins
- Develop, promote and participate in separate collection and deposit refund systems for plastic bottles and bags
- Commit to targets for reduction of plastic packaging
- Exchange ideas and best practices

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 22** shows the response to the question divided over the possible answers. The figure shows that sensitising tourists is the most strongly recommended action (266) while committing to reduction targets for plastic packaging has been indicated as “not recommended” by 21 respondents.

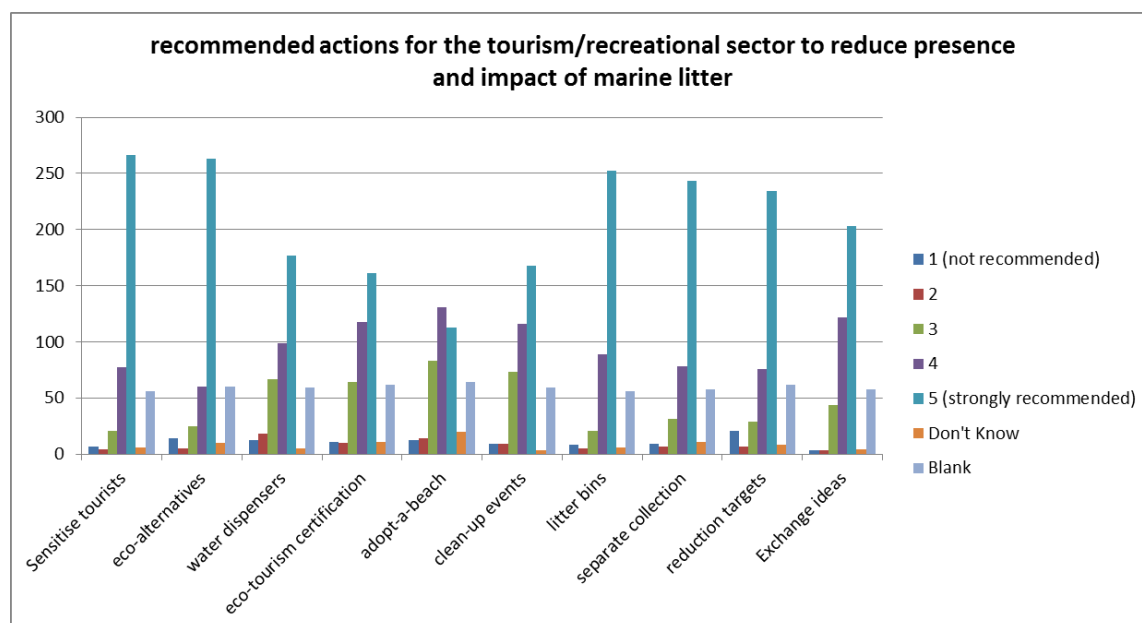


Figure 22: Division of answers on recommended actions for the tourism and recreational sector

**Figure 23** shows the weighted answers. After weighting, the sensitisation of tourists is indicated as the most strongly recommended action, while promoting stewardship initiatives is the least recommended

<sup>5</sup> For example, the adopt-a-beach initiative in the Netherlands enables a school, beach-front business or other interested party to “adopt” a stretch of beach, and take responsibility for ensuring it is clean. For more information, see: <http://www.mybeach.info/eigen-mybeach>

action. The expected values differ significantly from the observed ( $\chi^2=60$ ;  $df=9$ ;  $p<0.005$ ), meaning there is a significant difference between the answers.

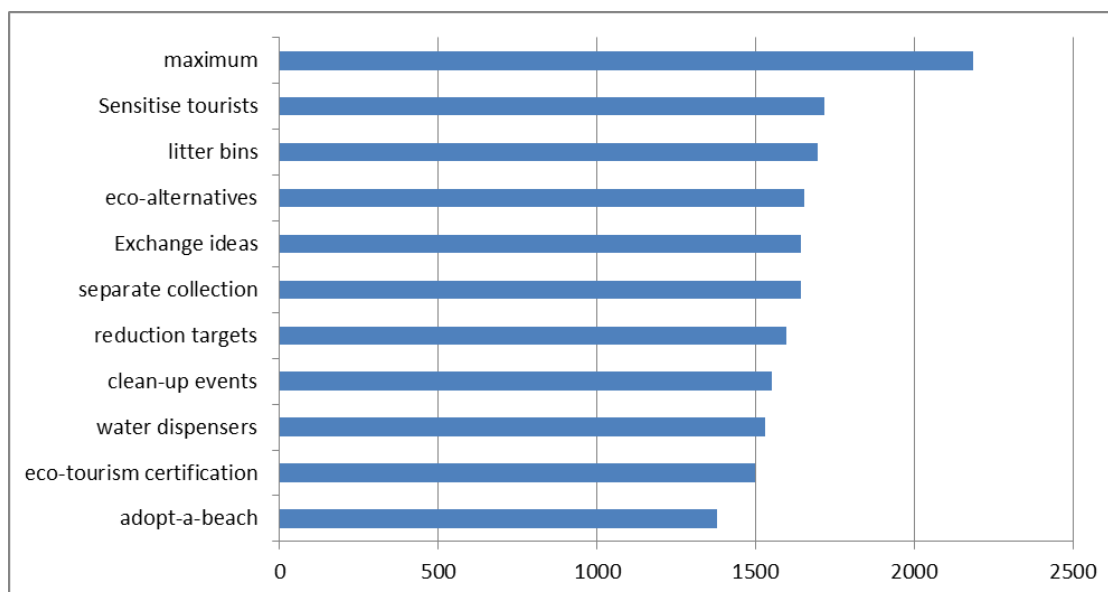


Figure 23: Ranking of weighted answers on actions for the tourism and recreational sector.

***Are there other actions which could be undertaken by the tourism/recreational sector to reduce marine litter?***

72 respondents answered this question, resulting in 81 suggestions across 41 categories. The most frequently mentioned suggestion was for the tourism/recreational sector to organise awareness-raising campaigns (8), as well as to avoid single-use plastics in the industry (7) and to promote separate waste collection (7). Other suggestions for the tourism/recreational sector were to attend/organise clean-up events (6), collaborate with local authorities (4), support local initiatives (3), support a plastic bag ban, levy or tax system (3), charge for plastic cutlery (2), create a "clean area label" (2), encourage the public not to litter (2), make eco-friendly options more economically attractive (2), promote availability and emptying of bins (2), promote deposit refund systems (2), provide an example role (2), provide free items in non-plastic packaging (2) and use eco-friendly materials as much as possible (2). Actions suggested only once for the tourism/recreational sector were to avoid practices using plastic as much as possible, be guided by strong economically incentivised regulation, better enforce the current legislation, control garbage log book for pleasure boats, cooperate with hotels and shops to reduce plastic packaging, cooperate with NGOs, divide different types of "coastal tourism" and act accordingly, distribute waste collection "baskets", not provide microplastic-containing products to guests in hotels, empower resort managers to become civil enforcers, facilitate exchange of best practices between countries, provide reusable bottles and drink water tap in hotels, make hotels responsible for cleaning more than their own beach, not operate in polluted areas, optimise sustainability in the whole industry, promote areas in which best practice marine litter reduction is employed, promote water bottles with filter, promote the decrease of packaging materials, promote/finance recycling initiatives, recycle abandoned ships, regulate single-use plastics around tourist food hot-spots, set targets toward no-waste touristic projects, supply cigarette-butt collection systems, support award programmes against marine litter and target smokers to prevent littering.

### 2.2.13 WASTE MANAGEMENT SECTOR

*Which actions can be undertaken by the waste management sector with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Inform, motivate and encourage citizens to improve source separation
- Organise training for professionals in waste operations
- Develop techniques for more efficient recycling of a wider range of waste streams
- Exchange ideas and best practices with other waste professionals, municipalities and other stakeholders

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 24** shows the response to the question divided over the possible answers. The figure shows ‘source separation’ is the most strongly recommended action (284), as well as the least recommended action (6).

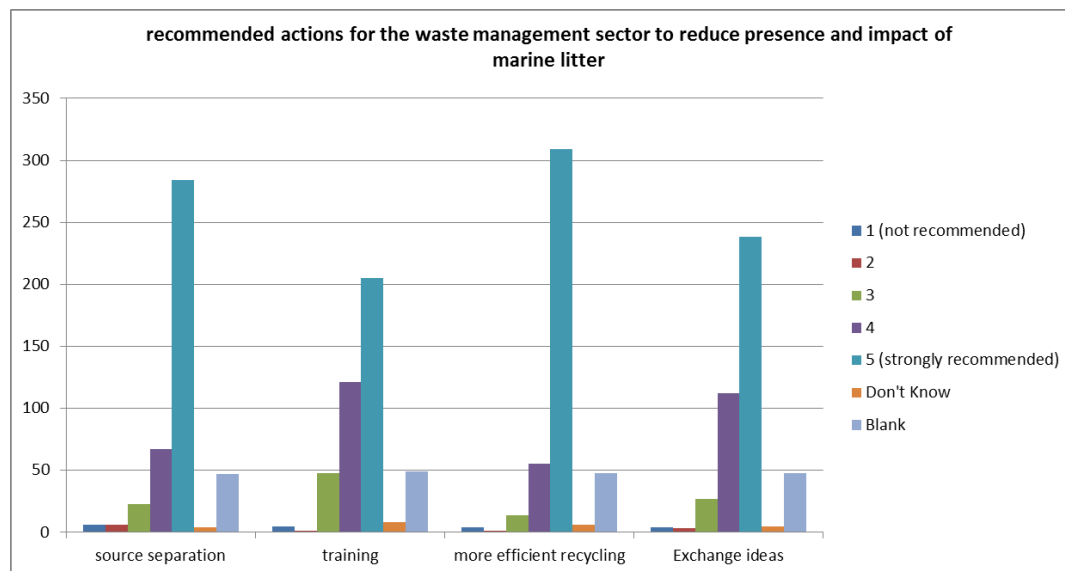


Figure 24: Division of answers on recommended actions for the waste management sector

**Figure 25** shows the weighted answers. After weighting, more efficient recycling is indicated as the most strongly recommended action, while training for waste professionals is the least recommended action. However, the expected values do not differ significantly from the observed ( $\chi^2=7$ ;  $df=4$ ;  $p>0.05$ ), meaning there is no significant difference between the answers.

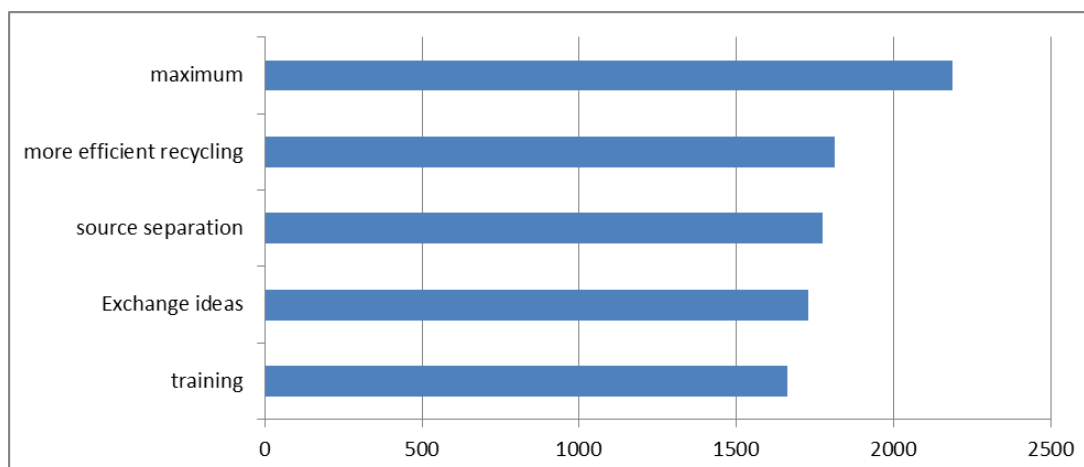


Figure 25: Ranking of weighted answers on actions for the waste management sector.

***Are there other actions which could be undertaken by the waste management sector to reduce marine litter?***

65 respondents gave an answer to this question, resulting in 74 suggestions across 34 categories. The main suggestions were for the waste management sector to raise awareness and educate on prevention, recycling, separation and reuse (9) and to improve management throughout the processing to prevent losses (8). Other suggestions for the waste management sector were to invest in optimising waste separation and recycling (5), promote deposit refund systems (5), increase recycling where possible (4), promote optimal product design for recycling (4), cooperate with other sectors for innovative solutions (3), retrieve floating marine litter for further processing (3), ban plastics in landfills (2), find markets for recycled materials (2), implement EPR schemes (2), manage waste processing from ports and ships (2), reduce incineration to a minimum (2), support a ban, levy or tax on plastic bags (2) and to support the development of waste water treatments targeting microplastics (2). Suggestions for the waste management mentioned only once included the dismantling of abandoned ships in Europe instead of elsewhere, to ensure full implementation of current legislation, implement quality management with ISO standards, invest in a circular economy, minimise export of waste outside of Europe, optimise mechanical waste separation, optimise waste water management to minimise overflow, promote alternative materials to plastic, provide free waste collection services after coastal clean ups, make lifecycle assessments when choosing appropriate processing paths, provide more options for source separation, record urban solid waste, reduce landfilling to a minimum, review waste management practices for improvement, separate plastic waste, share best practices throughout Europe, support a European-wide management of waste separation, support mechanical and organic recycling for bio plastics and to support the design of technical solutions.

## 2.2.14 FISHERIES SECTOR

*Which actions can be undertaken by the fisheries sector with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Train crew members on waste regulation and practices on board ships
- Cooperate in initiatives to promote fisheries professionals as 'Guardians of the Sea', including monitoring and fishing for litter activities (collecting litter in large bags while fishing)<sup>6</sup>
- Cooperate in special trips to collect litter from identified hot spots
- Retrieve abandoned or lost fishing gear
- Notify authorities about lost fishing gear
- Ensure adequate waste separation, minimisation and management on board ships, including adequate storage space for garbage

The answers varied between 1 (not recommended) to 5 (strongly recommended) or "don't know". There was also the possibility to leave the answer blank.

Figure 26 shows the response to the question divided across the possible answers. The figure shows ensuring adequate waste separation is the most strongly recommended action (294). Eight peoples indicated Promoting initiatives such as 'Guardians of the Sea' as "not recommended" while eight respondents also indicated special litter collection trips as "not recommended".

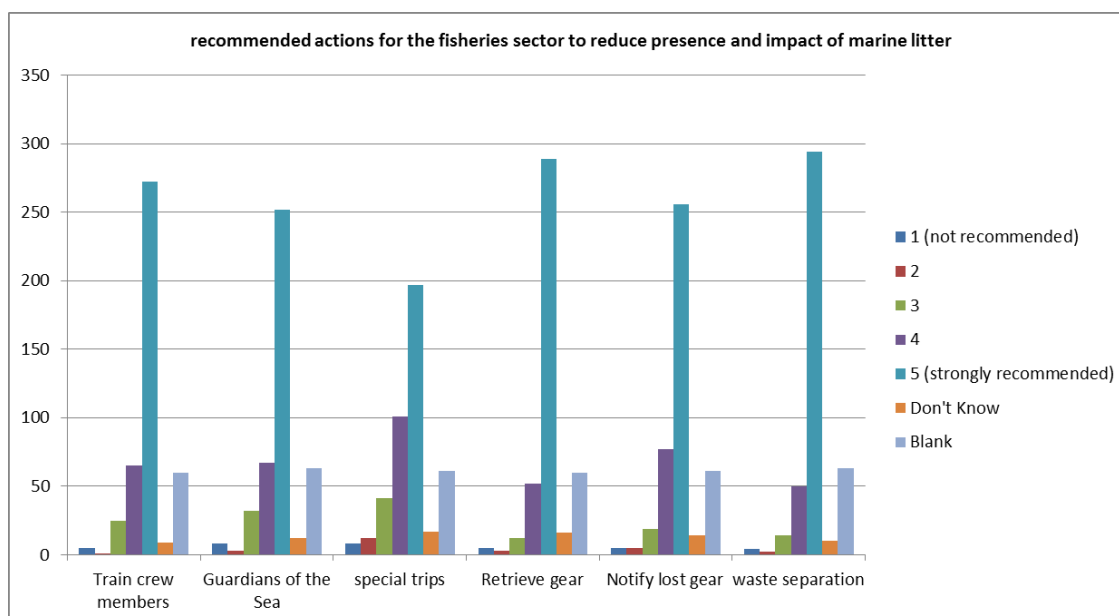


Figure 26: Division of answers on recommended actions for the fisheries sector

Figure 27 shows the weighted answers. After weighting, ensuring adequate waste separation is the most recommended action while making special litter removal trips is the least recommended action. The expected values differ significantly from the observed ( $\chi^2=12.6$ ;  $df=5$ ;  $p>0.025 \wedge p<0.05$ ), meaning there is a significant difference between the answers.

<sup>6</sup> For more information on the Guardians of the Sea initiative, see:

[http://ec.europa.eu/dgs/maritimeaffairs\\_fisheries/contracts\\_and\\_funding/calls\\_for\\_proposals/2013\\_09/index\\_en.htm](http://ec.europa.eu/dgs/maritimeaffairs_fisheries/contracts_and_funding/calls_for_proposals/2013_09/index_en.htm)

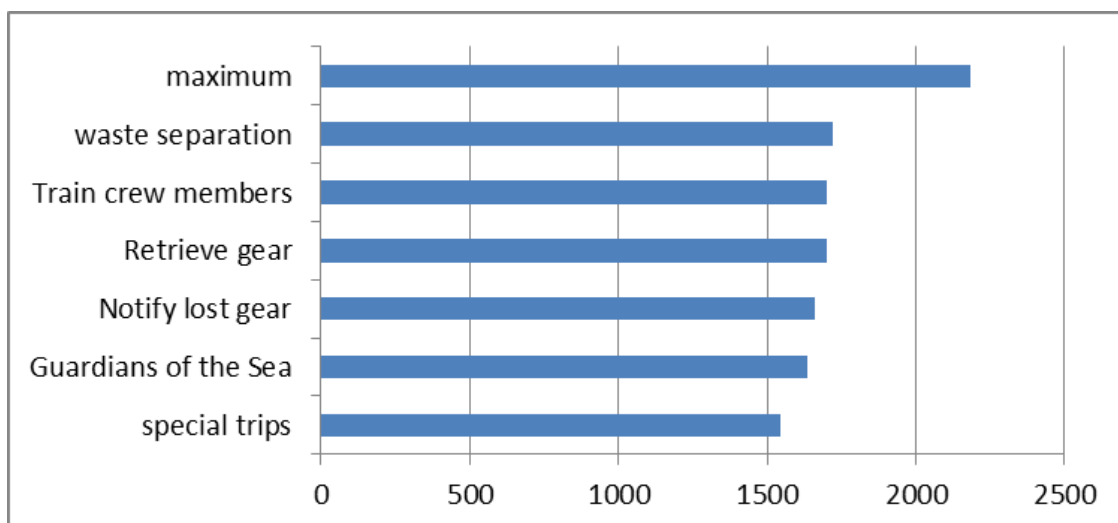


Figure 27: Ranking of weighted answers on actions for the fisheries sector.

***Are there other actions which could be undertaken by the fisheries sector to reduce marine litter?***

72 respondents gave an answer to this question, resulting in 72 suggestions across 31 categories. The most frequently suggested action for the fisheries sector to undertake is to raise awareness through education (6). It was also suggested for the sector to participate in monitoring activities (5), promote adequate waste facilities in ports (5), commit to properly dispose of by-caught marine litter (4), better implement current legislation (4), establish a no-blame report system for environmental offences (4), implement fines for environmental offences (4), label or geo-tag fishing gear (4), use biodegradable fishing gear (4), cooperate with other sectors to optimise clean-up activities (3), increase responsibility of the industry (3), minimise loss of material in sea (3), ban the use of micro-fibre releasing objects to protect trawl nets and develop alternative (2), become an ambassador for zero waste in the oceans (2), ensure proper disposal of fishing gear and waste (2) and to give preference to alternative materials to plastic in fishing gear that can be easily lost (2). Suggestions made only once for actions which could be undertaken by the fisheries sector were to cooperate with the recycling industry by supplying collected marine litter, not to use styrofoam containers, to fully collaborate in marine litter collection projects, help protect marine life, incorporate marine litter best practice into MSC guidelines, isolate fisheries professionals who repeatedly fail to comply with regulations, improve waste disposal of local aquaculture, only use marine biodegradable materials on board, provide shellfish pots with escape hatches, provide storage on board for by-caught litter during regular activities, reduce the amount of active vessels, reuse recovered gear from the sea, support 'fishing for litter' initiatives and pay for waste management and the impacts of any pollution. A last suggestion for the sector is to work with FAO and RFMOs on appropriate management of the abandoned, lost or otherwise discarded fishing gear.

## 2.2.15 SHIPPING SECTOR

*Which actions can be undertaken by the shipping sector with a view to reducing the presence and impact of marine litter?*

The options put forward in the questionnaire were:

- Train crew members on waste regulations and practices on board ships
- Cooperate in an efficient waste notification system
- Ensure that there are no disincentives for vessels to bring their litter ashore rather than dumping it at sea
- Ensure adequate waste separation, minimisation and management on board ships, including adequate storage space for garbage

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

Figure 28 shows the response to the question divided over the possible answers. The figure shows that ensuring that there are no disincentives to bring litter ashore is the most strongly recommended action (330). Four people indicated training crew members as “not recommended” and four people also indicated ensuring there are no disincentives as “not recommended”.

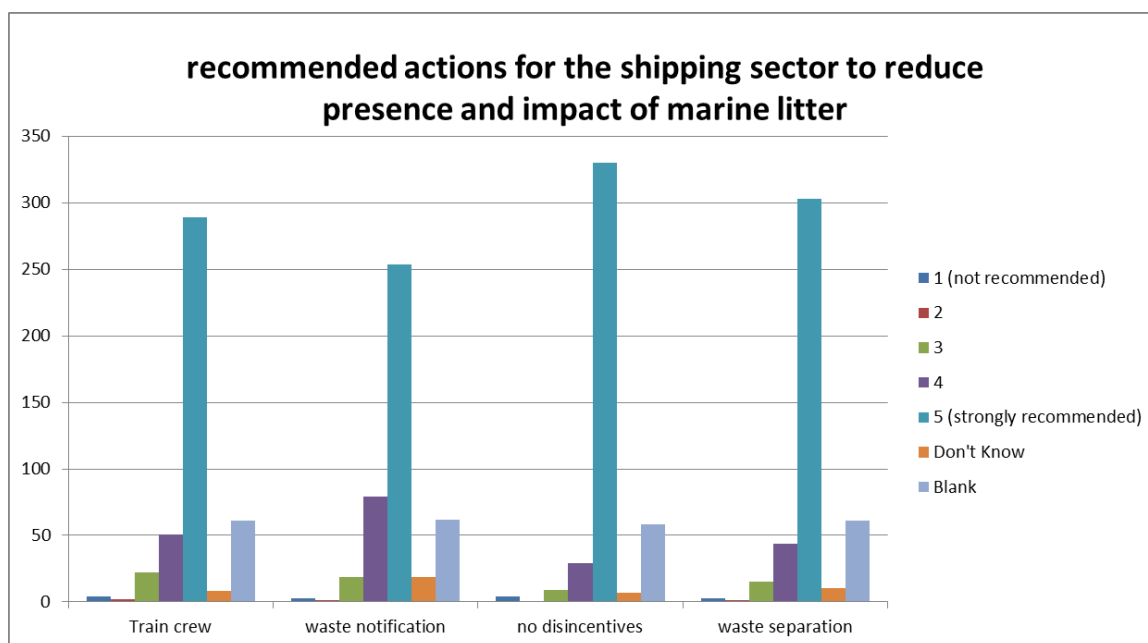


Figure 28: Division of answers on recommended actions for the shipping sector

Figure 29 shows the weighted answers. After weighting, the most recommended action is to ensure there are no disincentives to bring litter ashore while the least recommended actions is cooperation within a waste notification system. The expected values do not differ significantly from the observed ( $\chi^2=6.6$ ;  $df=4$ ;  $p>0.05$ ), meaning there is no significant difference between the answers.



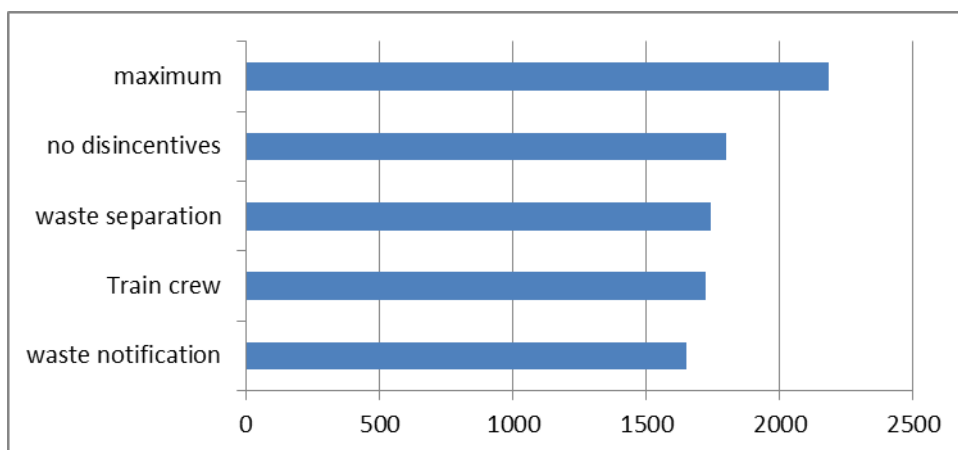


Figure 29: Ranking of weighted answers on actions for the shipping sector.

***Are there other actions which could be undertaken by the shipping sector to reduce marine litter?***

57 respondents answered this question, resulting in 66 suggestions across 26 categories. The respondents suggested for the shipping sector to participate in mandatory education on marine litter (8) and to promote proper waste disposal facilities in ports, preferably free of charge and internationally harmonised (7). They also suggested for the shipping sector to commit to implement current legislation (6), pay fines and taxes for environmental offences (5), participate in monitoring activities (4), support a no-blame report system of environmental offences (4), commit to collect marine litter when possible (3), introduce a voluntary sustainability certification (3), minimise the loss of containers during transport (3), allow an observer on board concerning proper waste disposal (2), organise/facilitate clean-up events (2), promote and finance marine litter initiatives (2), reduce potential waste on board, secure everything, minimise plastics and use biodegradable materials (3) and it was also suggested to design new vessels with a proper waste system, preferably a zero emission one (2). Other actions suggested for the shipping sector included to commit to a heavier control on pollution from shipping, commit to discharge waste at European ports before leaving European waters, cooperate with other sectors, educate guests/passengers as well as staff, implement ISO standard waste management on board of vessels, keep waste logs and allow for check-ups, pay harbour fees including waste management fees, promote and finance recycling initiatives, share and promote best practices, dismantle ships when not entirely environmentally friendly anymore, support local authorities and it was also suggested for the shipping sector to become an ambassador for zero waste in the oceans.

### 2.2.16 PORT AUTHORITIES

*Which actions can be undertaken by the with a view to reducing the presence and impact of marine litter?*

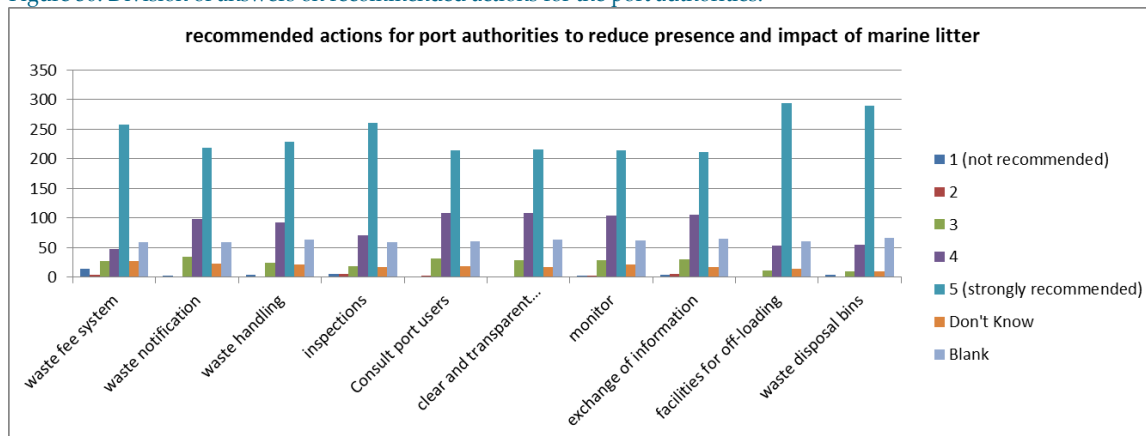
The options put forward in the questionnaire were:

- Apply a waste fee system aimed at a maximum delivery of waste from ships
- Apply an efficient waste notification system
- Improve the waste handling system including procedures, conditions, management of fees, payment of operators, etc.
- Strengthen the inspection regime regarding waste delivery
- Consult port users on the adequacy of port waste reception facilities
- Provide clear and transparent information about the fee system in place
- Record and monitor the amounts of ships' waste delivered in ports
- Implement systematic exchange of information between enforcement authorities
- Ensure that ports have access to facilities for off-loading and correct disposal of hazardous waste
- Provide waste disposal bins and ensure that waste is not left in locations where it can be blown into the sea

The answers varied between 1 (not recommended) to 5 (strongly recommended) or “don’t know”. There was also the possibility to leave the answer blank.

**Figure 30** shows the response to the question divided over the possible answers. The figure shows that ensuring adequate facilities for off-loading (294) as the most strongly recommended action. Fourteen people indicated a waste fee system as “not recommended”.

Figure 30: Division of answers on recommended actions for the port authorities.



**Figure 31** shows the weighted answers. After weighting ensuring adequate facilities for off-loading is the most recommended action, while systematic information exchange between authorities is the least recommended action. The expected values do not differ significantly from the observed ( $\chi^2=15.6$ ;  $df=9$ ;  $p>0.05$ ), meaning there is no significant difference between the answers.

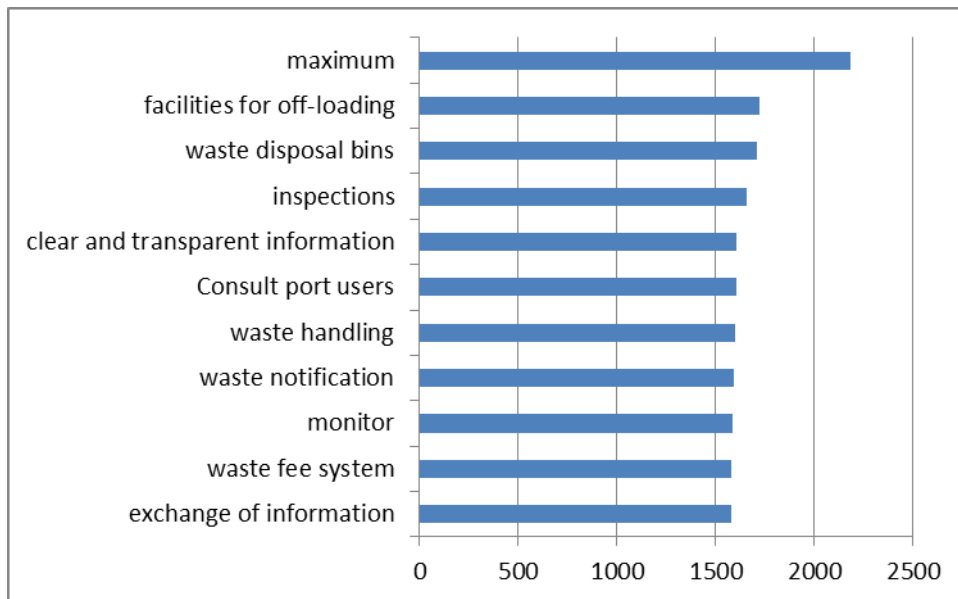


Figure 31: Ranking of weighted answers on actions for the shipping sector.

***Are there other actions which could be undertaken by port authorities to reduce marine litter?***

59 respondents gave an answer to this question, resulting in 80 suggestions across 30 categories. The suggestions mentioned most for port authorities were about identifying and implementing measures to increase compliance and enforce breaches with (higher) penalties (7), as well as implementing a “no-special-fee-system” for onshore disposal of waste (6) and harmonising a port waste reception facilities fee system across the EU (5). It was also suggested to determine certain values of waste generation on board to be used as bases for enforcement (5), for port authorities to promote and finance marine litter (collection) initiatives (5) and to make it possible to dispose of waste in any EU port free of charge (5). Other suggested actions for the port authorities included to commit to implement current legislation (4), to develop optimal waste handling systems (4), to oblige vessels to deliver their waste in each port (3), to incentivise ships to collect, separate and properly dispose of waste (3), to build facilities to handle fisheries waste such as derelict nets and fishing gear (3), to take on a larger role in waste management as a central manager (3), to construct debris catchment areas (2), to cooperate with other sectors, such as the industry, to promote a circular economy (2), to exempt vessels from waste fees when bringing in marine litter (2), to give clear guidance to inspection authorities on how to conduct and report on inspections (2), to make port waste reception facilities easily identifiable and accessible (2), to promote and finance recycling and reusing initiatives (2), to send out “waste-observers” on ships (2), to stimulate separate waste delivery (2), to strengthen inspection regimes regarding illegal discharges (2) and to establish fee systems that stimulate using bio-degradable materials (2). Single suggestions towards the port authorities included: assist local authorities in identifying target groups responsible for littering; educate staff and raise awareness; ensure adequate mooring facilities to reduce anchor damage; exchange best practices; financially aid less developed ports to comply to European standards; implement mechanisms for exchanging services or factors that facilitate cost-reduction and review rules for loading/unloading cargo to minimise losses.

## 2.3 CONCLUSIONS

437 people responded to the public consultation. Most of them (62%) are interested individuals and/or consumers. A third of the respondents (33%) consider themselves very well informed on the subject while over half of them (55%) consider themselves fairly well informed.

The most relevant criteria on actions to be taken are considered to be the effectiveness and feasibility of the actions. Cost and the stakeholder impact are considered less relevant (the difference is significant).

On the impact side, ingestion and entanglement are considered the most negative impact, while beach clean-up and damage to vessels are considered the least negative (the difference is significant).

The public consultation focuses on twelve sectors or groups which can take actions to reduce the presence and impact of marine litter. The results for each of these groups are summarised in [Table 2](#). For each group, different sets of possible actions are given, which are ranked according to the frequency/intensity of support which they received from the consultation responses. The second column of the table states whether there was a significant difference in the level of support for these actions. If so, the top 2 are mentioned in the third column. In the last column, the top 2 most popular types of action mentioned in the open questions is described.

In total, 91 actions have been suggested in this consultation for different groups. All of these except one were scored as 'strongly recommended', often with a large and significant difference from the second highest score. This means that over all sectors and all measures, large public support can be observed. [Table 1](#), where respondents could tick different options, is very illustrative. It gives the highest support for marine litter targets, and high scores for transition towards circular economy, general waste management and waste management enforcement measures.

Table 2: groups which might take actions against the marine litter problem, including whether or not the action differ significantly from each other and the top 1 preferred actions.

Group	Difference between recommended actions?	Top 2 preferred actions	Top 2 recommended actions not listed
consumers	Yes ( $p < 0.005$ )	Avoid littering Bags and bottles	Education / raise awareness Avoid microbeads
Local and subnational authorities	Yes ( $p < 0.005$ )	Awareness raising Enforcement public littering rules	Better legislation and control Education
National authorities	No		Better legislation and enforcement Education
EU policy makers	Yes ( $p < 0.01 \wedge p > 0.005$ )	Producer responsibility Harmonised EU monitoring strategy	Enforce and improve existing legislations and directives Ban single-use plastic bags
NGO's	Yes ( $p < 0.005$ )	Awareness raising campaigns Clean up events	Educate and raise awareness Cooperate to form networks with authorities, communities and others
Plastic industry	Yes ( $p < 0.025 \wedge p > 0.01$ )	Producer responsibility Innovative materials	Optimise design for reduce, reuse, recycle Promote sustainable materials
Retail sector	No		Commit to end the use of single-use plastic bags Promote deposit-refund schemes
Tourism and recreational sector	Yes ( $p < 0.005$ )	Sensitise tourists Litter bins	Organise awareness campaigns Avoid single-use plastics
Waste management sector	No		Raise awareness and educate on prevention and reuse Improve management throughout the processing to prevent losses
Fisheries sector	Yes ( $p < 0.05 \wedge p > 0.025$ )	Waste separation Train crew members	Raise awareness through education Participate in monitoring activities
Shipping sector	No		Participate in mandatory education on marine litter Promote proper waste disposal facilities in ports, preferably free of charge and internationally harmonized
Port authorities	No		Implement a harmonised "no-special-fee-system" for the onshore disposal of all ships waste Determine certain values of waste generation on board to be used as bases for enforcement

# Colophon

## PUBLIC CONSULTATION ON MARINE LITTER- AN ANALYSIS

### **CLIENT:**

European Commision

### **STATUS:**

Final

### **AUTHOR:**

drs. B.J. Kater  
Eline van Onselen  
Linde Raport

### **CHECKED BY:**

Mike Van Acoleyen

### **RELEASED BY:**

31 January 2014

ARCADIS NEDERLAND BV  
Hanzelaan 286  
P.O. Box 137  
8000 AC Zwolle  
The Netherlands  
Tel +31 38 7777 700  
Fax +31 38 7777 710  
[www.arcadis.nl](http://www.arcadis.nl)  
Dutch Trade Register 09036504

©ARCADIS. All rights reserved. Apart from certain exceptions allowed by the law, no part of this document may be copied and/or made public by means of printing, reprographics or digital reproduction or by any other means without the written permission of the copyright owners