

Authors Note: This paper, as it was presented at the MEDCOAST 2013 conference held in Marmaris, Turkey between 30 October and 03 November 2013, describes the process of evaluating the collected practices and selecting those that have been defined as ‘best’. A revised version of this paper has been published in Marine Pollution Bulletin and can be accessed here:

Xenia I. Loizidou, Michael I. Loizides, Demetra L. Orthodoxou, A novel best practices approach: The MARLISCO case, Marine Pollution Bulletin, Available online 26 September 2014, ISSN 0025-326X, <http://dx.doi.org/10.1016/j.marpolbul.2014.09.015>.

A Novel Best Practices Approach: the MARLISCO Case

Xenia I. Loizidou⁽¹⁾, Michael I. Loizides^(1,2) and Demetra L. Orthodoxou^(1,3)

- ⁽¹⁾ *ISOTECH Ltd Environmental Research and Consultancy*
1 Kalliopis Str. & Larnakos Ave., Apt. 401,2102 Aglantzia, Nicosia, Cyprus
www.isotech.com.cy
Tel: +357 22452727, Fax: +357 22458486
E-mail: xenia@isotech.com.cy
- ⁽²⁾ *E-mail: michael@isotech.com.cy*
- ⁽³⁾ *E-mail: project@isotech.com.cy*

Abstract

MARLISCO ‘Marine Litter in Europe Seas: Social Awareness and Co-Responsibility’, is an FP-7 funded project that aims to develop and evaluate an approach that can be used to address the problems associated with marine litter and that can be applied more widely to other societal challenges. Considering that marine litter is a key threat to marine habitats, MARLISCO aims to achieve substantial benefits through better integration among researchers, stakeholders and society.

One of the project aims is to identify best practices that can effectively minimise the amount of marine litter in European Seas. In MARLISCO, best practices were approached in a novel and smart way, trying to get the most impacts and added value for the innovative character of the project. Best practices served as a tool to identify the most implementable practices to be promoted, and also to enhance the active participation and capacity building of key actors through the implementation of an innovative decision support method.

In the framework of the MARLISCO project, each partner was tasked with identifying best practices for the reduction of marine litter. Thus a dedicated template was developed, which also served as a way of recognising and emphasising the key characteristics of a successful practice, and those attributes that are necessary for making any practice a ‘best’ practice. The 72 best practices proposed by the MARLISCO partnership have been evaluated through the DeCyDe-4-Marlisco decision support tool.

The process for the evaluation and analysis of best practices and the involvement of key actors, took place in Cyprus from February 2013 to May 2013. A detailed mapping of marine litter stakeholders took place, and the dedicated decision support tool DeCyDe-4-Marlisco was developed and implemented. The key actors and stakeholder panel was set up, the evaluation criteria were defined, DeCyDe-4-Marlisco

matrices were prepared and the evaluation process took place with the participation of the key actors, which demanded the achievement of consensus for each decision. The method uses a numerical approach that quantifies the results, rather than simply providing qualitative indications, so that at the end of the assessment, each best practice is assigned an overall score. This means that the user can easily check what would happen if the scoring of a best practice is changed for one or more of the criteria. The evaluation of the MARLISCO best practices, implementing the DeCyDe-4-Marlisco tool, identified five interesting attributes, as “preferences” for a successful marine litter management practice:

- Preference in preventative measures rather than mitigating actions
- Preference in practices with high degree of social responsibility
- Preference in initiatives that involve the public and promote active citizenship
- The support of the local administration has been considered as indication for sustainability
- Monitoring of the implementation of each practice is crucial. It is important to have data/information in order to record and document the impact of a best practice, which otherwise is hard to assess.

The paper also presents a snapshot of the key attributes of the recorded best practices as a means of helping the reader, and particularly decision makers, recognise the characteristics that will make their marine litter management efforts more successful.

Introduction

MARLISCO ‘Marine Litter in Europe Seas: Social Awareness and Co-Responsibility’, is an FP-7 funded project that aims to develop and evaluate an approach that can be used to address the problems associated with marine litter and that can be applied more widely to other societal challenges. Considering that marine litter is a key threat to marine habitats, MARLISCO aims to achieve substantial benefits through better integration among researchers, stakeholders and society.

One of the project aims is to identify best practices that can effectively minimise the amount of marine litter in European Seas. This paper discusses the double effect of best practices: as a tool to enhance active participation and involvement of key actors and stakeholders, by implementing a novel method of decision support and including on-the-job capacity building and skills development, and at the same time an efficient method to identify implementable practices. It also presents a snapshot of the key attributes of the recorded best practices as a means of helping the reader, and particularly decision makers, recognise the characteristics that will make their marine litter management efforts more successful.

Method

Enhancing co-responsibility is one of MARLISCO's main aims and one that is particularly important to the issue of marine litter, since its causes and effects concern and should involve a large variety of key actors, ranging from the general public to the decision makers and the informed scientists. Therefore, any approach to identify solutions to the marine litter problem should be truly participatory and should give ownership, of both the problem and the solution, to key actors on all levels of society. This is what influenced the decision for the identification and evaluation methods of the MARLISCO best practices.

Identifying and recording best practices

MARLISCO's consortium representing 15 European countries was tasked with identifying best practices for the reduction of marine litter, implemented in their country or region (or even more broadly). Two needs/challenges have been treated at this preliminary stage:

- Reporting of best practices should be consistent among partners. Thus a dedicated template was developed, which also served as a way of recognising and emphasising the key characteristics of a successful practice, and those attributes that are necessary for making any practice a 'best' practice.
- The process of identifying practices from each of the participating countries is a means of stakeholder participation in itself, since it ensures that each national partner creates a network of organisations/authorities that are active in the area of marine litter. Furthermore, through the use of the standardised template, anyone providing information on a practice should also be informed about other possible types of initiatives and best practice themes.

Based on the above needs, the template included the following fields:

- 1- Scale of implementation of the practice
 - a. Global
 - b. European
 - c. Regional (across one or more European Regional Sea)
 - d. National
 - e. Sub-national
- 2- Initiating body
 - a. National government
 - b. Local authority
 - c. Other public body
 - d. EU
 - e. NGO/Charity/Foundation
 - f. Private company
- 3- Practice theme
 - a. Prevention
 - b. Mitigation

- c. Awareness
- 4- Type of initiative
 - a. Policy/Regulation implementation; aiming to capture best practices that were implemented in response to European, national or even local policies and regulations;
 - b. Economic and market based instrument; includes practices whose implementation would be in response to an economic or market measure or would result in an economic or market advantage for the implementing party;
 - c. Campaign
 - d. Practice/Activity/Action; aiming to capture any practices not qualifying as campaigns.
 - e. Other; aiming to capture any practices not falling within any of the above categories.
- 5- Source of funding
 - a. EU
 - b. National government
 - c. Local authority
 - d. Other public
 - e. NGO/Charity/Foundation
 - f. Private company
 - g. Other

Evaluation of the best practices – A novel decision support method

The DeCyDe-4 decision support method developed by Loizides and Loizidou (2012) was adapted to create the DeCyDe-4-Marlisco tool for the evaluation of the best practices. DeCyDe-4 is a spreadsheet-based decision support method that incorporates principles from multi-criteria analysis, public policy approaches, gamification principles and even basic logic principles from Fuzzy theory (the theory of graded concepts, where everything is a matter of degree). What gives DeCyDe-4-Marlisco its innovative nature is that it enhances co-responsibility through the highly participatory nature of its implementation, making it a tool for stakeholder involvement and a means of assisting in building the skills-set and capacities of key decision makers in a specific situation. The method for the evaluation of best practices and key actors involvement, took place in Cyprus from February 2013 to May 2013.

Mapping of key actor/stakeholder involvement

Marine litter is an issue that requires the involvement of a large group of stakeholders, from government officials entrusted with the implementation of key European and national legislation regarding this issue, to the tourism industry that is faced with the practical side of the problem, to civil society and local interest groups. Therefore, the first step to securing stakeholder involvement is to carry out a mapping exercise to identify the experts and stakeholders that would comprise the key actors group.

The mapping of key actors was achieved through extensive bilateral discussions and communication with a large variety of stakeholders in the marine environment and specifically marine litter. The list of the key actors was structured in 10 major groups.

In order to form the evaluation Panel, which is the “core” of stakeholders, 10 key actors have been identified as the most representatives, according to the criterion of major social impact: three non-governmental organisations (NGO) with expertise in the area of marine and coastal development and protection, representing the opinions and views of civil society and local interest groups, a national tourism organisation representing the interests and views of the tourism industry and coastal local authorities, national government officials from the departments of ‘Environment’, ‘Fisheries and Marine Research’ and ‘Merchant Shipping’ representing all the competent authorities for implementing European and national legislation, and scientists with expertise in waste management and integrated coastal zone management. The participation of these key actors, experts and stakeholders on the panel, ensured that the views of all the involved parties would be expressed and incorporated into the evaluation process. In turn, this ensured that the final list of best practices would address the problem from each of its multifaceted, multidisciplinary perspectives.

The involvement of these experts and stakeholders also had a more ‘strategic role’: it ensured that they would become familiar with the available/existing best practices from across Europe and the globe and they would be trained in a novel and user-friendly method of evaluation and decision support. Thus, apart from enhancing participation, this method supports decision makers’ capacity building, which is a very important factor to support the optimum decision making.

The evaluation criteria

An important factor contributing to the success of any evaluation method is setting a comprehensive but yet concise set of criteria. In the case of the MARLISCO best practices evaluation, four criteria were considered pertinent and sufficient by the key actors group:

- 1- ‘Impact’ was the first criterion to be chosen since the selected best practices had to be capable of bringing about significant reductions in the amount of marine litter in European seas. However, a best practice could have significant impact when applied in one country or region, but the diverse nature of Europe, local factors, and even cultural differences, could render it less effective when implemented elsewhere. Therefore,
- 2- ‘Applicability-Exploitability Potential’ was also added to the list of criteria.
- 3- The degree of sustainability of the best practices was also an important consideration since it was paramount to ensure the longevity of the selected best practices. Economic, environmental and social aspects were taken into account when evaluating across the ‘Sustainability’ criterion.
- 4- ‘Data/Info Availability’, criterion was chosen because of the importance of such information to the determination of the impact of the best practices, but also due

to reasons specifically linked to the MARLISCO project, since further data and information on the selected practices was necessary for their more detailed description.

Preparing the DeCyDe-4-Marlisco tool

With the evaluation criteria and the Evaluation Panel ready, the DeCyDe-4-Marlisco tool could be set up. The method implemented in DeCyDe-4 tools is one where the items to be evaluated, in this case the 72 MARLISCO best practices, are arranged in matrices in such a way that each best practice is compared against all other best practices using a predetermined scoring scale (Table 1). Apart from its structure, what is innovative in the DeCyDe-4 method is that it transforms measurable indicators into decision criteria. Each criterion had a “number”, or could be assessed based on each best practice recording template.

Evaluating all 72 of the MARLISCO best practices at once would result in a matrix with 72 columns and 72 rows, which would be unmanageable. Therefore, the best practices were evaluated in groups based on their area of implementation, i.e. in each of the four Regional Seas (North East Atlantic, Mediterranean, Black Sea and Baltic Sea) and global or European level. In addition to making the process more efficient, this grouping of best practices also gave the Evaluation Panel a view of what is happening in each Regional Sea, and showcased the similarities and differences in the practices implemented in each of these areas. For illustration purposes, Fig. 1 shows the matrix for the Data/Information Availability criterion for the Baltic Sea best practices (only three best practices were recorded for this Regional Sea).

Table 1: The DeCyDe-4-Marlisco scoring scale. When practices were inevitably compared against themselves a score of 1 was assigned. The same applies when two different practices that are considered equal are compared against each other.

1/9	1/7	1/5	1/3	1	3	5	7	9	
←Less important						More important→			

Where:

1/9 and 9	(extremely)
1/7 and 7	(very strongly)
1/5 and 5	(strongly)
1/3 and 3	(moderately)
1	(equally)

DATA/INFO AVAILABILITY								
		Rostock Harbor BP33/11A		Clean Beach BP70/18A		Recycling Fishing Nets BP72/18C		Weight Coef
		score		score		score		
Rostock Harbor BP33/11A	1	0.1	1/3	0.1	1/7	1/9	0.08	
Clean Beach BP70/18A	3	0.3	1	0.2	1/5	0.1	0.19	
Recycling Fishing Nets BP72/18C	7	0.6	5	0.8	1	0.7	0.72	
Total		11.00		6.33		1.34	1.00	
Total check		1.00		1.00		1.00		

Fig. 1: The matrix for the criterion Data/Info Availability for the Baltic Sea best practices. The ‘Weight Coef.’ Column shows the final score for each best practice for the ‘Data/Info Availability’ criterion. Practice ‘Recycling Fishing Nets’ with code BP72/18C scored the highest (0.72) for this criterion.

Results

Best practice panel evaluation

The Panel of experts and stakeholders used the DeCyDe-4-Marlisco tool to evaluate the best practices within each of the geographical areas of implementation. The task of the evaluation panel was to identify the 10-12 most representative best practices. The practices have been evaluated for each regional sea. One important innovation of the DeCyDe-4 method is that it transforms measurable indicators into decision criteria. This is very supportive for the decision maker. The “score” for each criterion for each best practice pair was introduced in the DeCyDe-4-Marlisco matrix as soon as the evaluators achieved consensus. The total scores were automatically calculated and graphically presented (Fig. 2). After going through all the geographical areas/regions of implementation, the tool produced a visual representation of the final results (Fig. 3). This gave a clear indication of the Panel’s selection of the best practices with the greatest potential to minimise marine litter. The top best practices of each regional sea were then selected.

Within the selected best practices, there is a good representation of practices across all themes and initiative types and a good pan-European representation.

It is interesting to record the Panel’s preference for:

- preventative measures rather than mitigating actions
- practices that had a high degree of social responsibility
- initiatives that involve the public and promote active citizenship

- practices that had the support of the local administration as they were considered more sustainable.
- practices with a proven track record, as well as practices that took an integrated approach to solving the marine litter problem. The lack of data/information availability often resulted in some otherwise very good practices scoring lower than expected, but the panel strongly believed that where data/information is lacking, the impact of a best practice is hard to assess.

Best practice analysis

While the evaluation process identified the 11 best practices that have the potential to bring about significant reductions to the amount of marine litter in European Seas, an analysis of all the 72 best practices recorded within MARLISCO offers a useful snapshot into what is happening around Europe to address the issue of marine litter. Although, in far relative terms, this is a very small sample of all the practices that are being carried out across Europe, their analysis still allows the identification of some key characteristics.

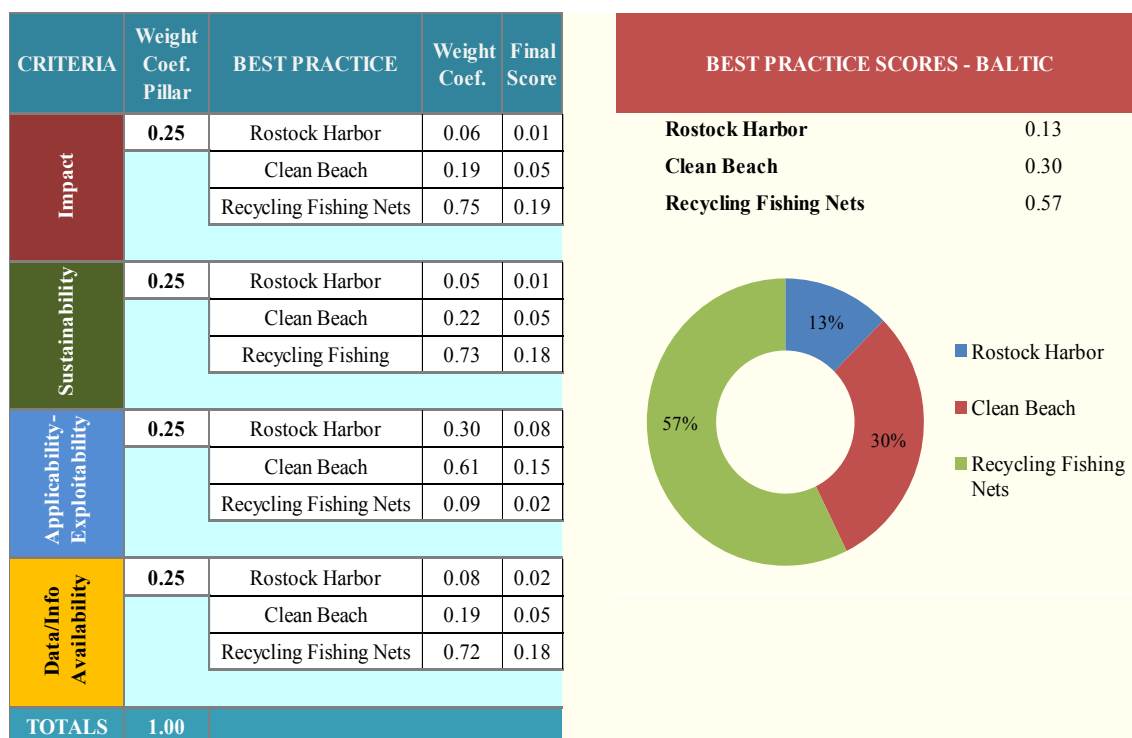


Fig. 2: The complete scores for the Baltic best practices. The table on the left shows the individual scores for each best practice across each criterion with and without attributing a weight to each criterion (‘Final Score’ Column and ‘Weigh Coef.’ Column, respectively). In the case of DeCyDe-4-MARLISCO equal weights (Criterion Weight = 0.25) were attributed to each of the criteria. The doughnut on the right shows the overall scores for each of the three Baltic Sea best practices.

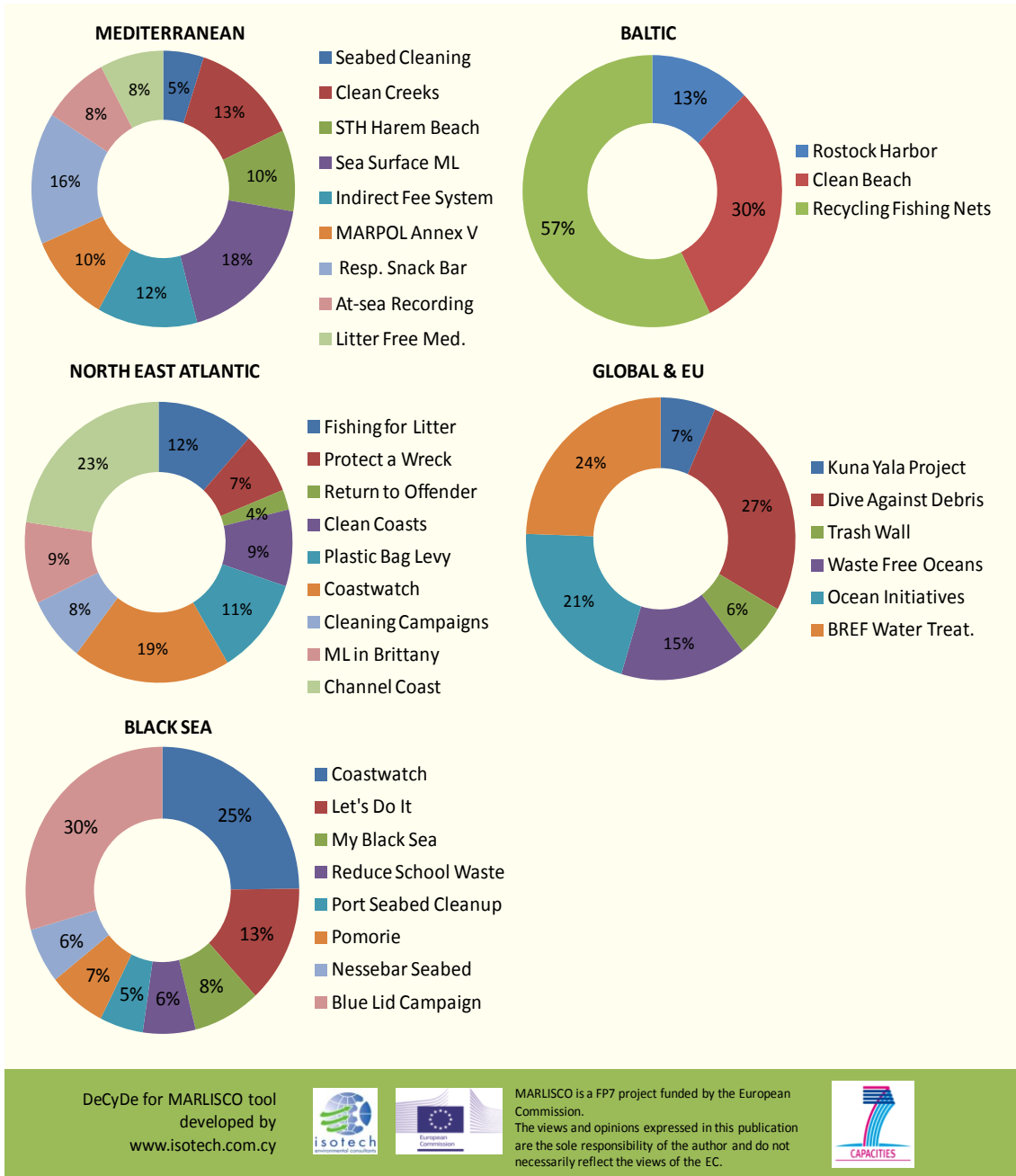


Fig. 3: The scores for all the best practices across all regions of implementation.

There was a generally equal representation of prevention, mitigation and awareness themes in the 72 MARLISCO best practices (Fig. 4). Interestingly, in many cases awareness was recorded together with mitigation, demonstrating the complementary nature of these best practice themes. Similarly, Practice/Activity/Action initiatives were often combined with Campaigns. Surprisingly, very few practices involving Policy/Regulation Implementation were recorded, of these some were implemented on a national scale by a national government and others implemented sub-nationally by a local authority (Fig. 5). Most of these practices were initiated directly in response to EU directive requirements (e.g. the Marine Strategy Framework Directive).

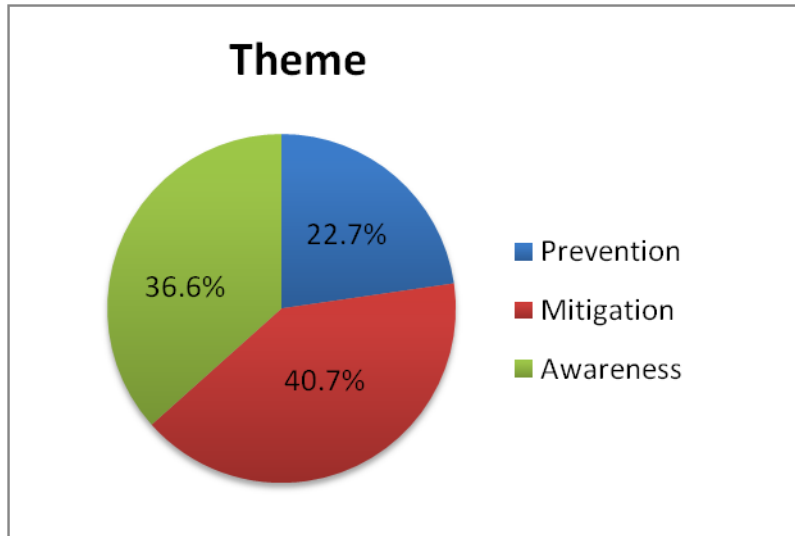


Fig. 4: Percentage occurrence of each theme in the 72 best practices.

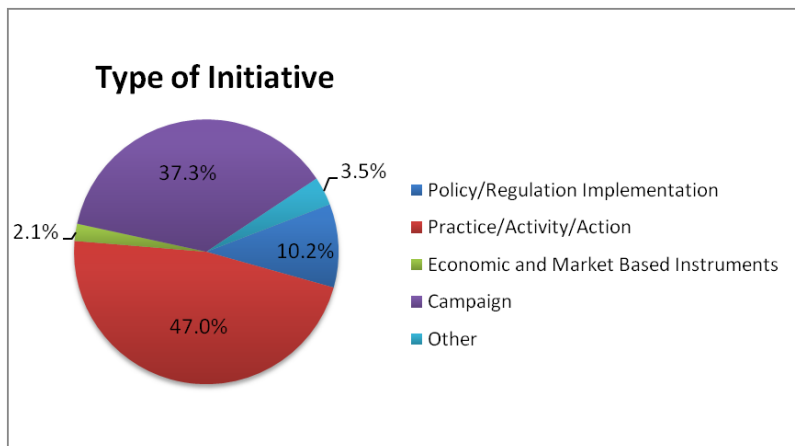


Fig. 5: Representation of initiative types in the 72 best practice examples

The smallest number of initiatives recorded was in the Economic and Market Based Instrument category. This is quite surprising since, giving an economic or market incentive for companies or individuals to take certain actions seems to work well. However, this often requires an investment from the national government or other implementing body, so perhaps a lack of funds is a limiting factor. Although it is difficult to carry out further analysis and identify correlations and patterns between themes and types of initiatives, due to the arbitrary way that these best practices have been recorded, it is interesting to note that eight of the nine recorded Policy/Regulation Implementation initiatives, and both Economic and Market Based Instruments, had prevention as one of their main themes.

Finally, it should be noted that NGOs, charities and other foundations seem to have the most active role when it comes to initiating best practices for the reduction of marine litter, across all the regional seas (Fig. 6). Overall, it also seems that nationally implemented best practices are likely to be initiated by national governments. The most important initiating body for sub-nationally implemented best practices are local authorities.

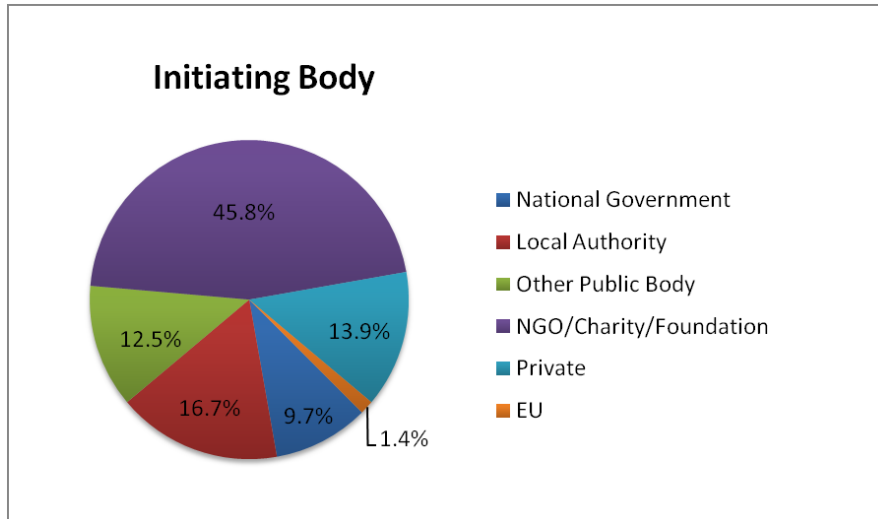


Fig. 6: The initiating bodies of the 72 best practices.

Conclusions

MARLISCO is a project that includes several innovation attributes. One of them is the multiple ways of ‘using’ best practices:

- The need was to collect the most effective and representative best practices and create a data bank. In order to achieve this, a novel method has been introduced in the process of recording and analysing, that is presented in this paper. A flexible decision support method was implemented to better support MARLISCO best practices evaluation, the DeCyDe-4-Marlisco
- Through the implementation of the DeCyDe-4-Marlisco tool, the enhancement of key actor’s and stakeholder’s participation was effectively achieved. The involvement method included a detailed mapping of stakeholders and a well structured capacity building through on-the-job training on novel tools and concepts, through the implementation of the DeCyDe-4-Marlisco tool in the evaluation process.
- Through the familiarisation with best practices around the globe, key actors, which are also decision makers, have been better informed for a multidisciplinary, yet not very familiar to general public, issue, such as marine litter. Co-responsibility is thus promoted, through knowledge.

The paper also gives a snapshot into the current marine litter minimization efforts that are taking place around Europe through the MARLISCO best practices. It is important to acknowledge the limitations of the approach to collect, evaluate and analyse the MARLISCO best practices: it was left up to the discretion of each partner to choose which practices to submit. The reader should consider the group of MARLISCO best practices recorded with this limitation in mind, since they are not necessarily representative of the European/Global situation. However, they provide a very useful

snapshot of the types of activities that can take place to address marine litter, the groups of stakeholders that can be involved and the novel method to support their decisions and enhance their active participation.

MARLISCO is a FP7 project funded by the European Commission. The views and opinions expressed in this publication are the sole responsibility of the authors and do not necessarily reflect the views of the European Commission.

References

Loizidou, X.I. and Loizides, M.I. (2012), “DeCyDe: A participatory method for ‘measuring’ sustainability through a friendly, flexible and adjustable [self-assessment?] tool”, In: Belpaeme, K., McMeel, O., Vanagt, T. and Mees, J. (Eds), *Book of abstracts, VLIZ special publication 61: International conference Littoral 2012: Coasts of tomorrow*, November 2012, Oostende, Belgium, p. 41-44.

MARLISCO Project, www.marlisco.eu