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## From public engagement to Citizen Science - Black Sea model

Common borders. Common solutions.

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# From Public Engagement to Citizen Science - Black Sea model



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# Content

Executive summary .....	8
1 Responsible Research and Innovation.....	9
2 Public Engagement in Responsible Research and Innovation .....	11
3 Role of Public Engagement in science: Citizen Science .....	13
4 Public Engagement in ANEMONE project .....	16
4.1 ANEMONE workshops .....	17
4.2 Citizens involved in ANEMONE workshops .....	19
4.3 ANEMONE workshops implementation.....	26
4.4 ANEMONE workshops results.....	32
4.5 Engaging workshops participants in ANEMONE activities .....	34
5 Lessons Learned from ANEMONE workshops .....	36
6 How to turn Public Engagement in Citizen Science .....	38
7 Conclusions.....	40
References .....	41

## List of figures

Figure 1.1 - RRI dimensions .....	9
Figure 2.1 - Public Engagement in RR I .....	12
Figure 3.1 - Citizen Science in RRI .....	13
Figure 3.2 - Three main pillars of citizen science in the policy cycle: scientific excellence, citizen engagement, and policy-relevance.....	14
Figure 4.1 - ANEMONE public engagement workshops overview .....	16
Figure 4.2 - Place of workshops in the Black Sea country partners.....	18
Figure 4.3 - Total number of participants .....	19
Figure 4.4 - Number of participants at each workshop.....	19
Figure 4.5 - Total number of participants according to workshop topic .....	20
Figure 4.6 - Total number of participants according to gender .....	20
Figure 4.7 - Total number of participants according to gender at each workshop .....	21
Figure 4.8 - Participant by activity sectors .....	22
Figure 4.9 - Participant by activity sectors at each workshop .....	23
Figure 4.10 - Participant activity sectors from each country .....	24
Figure 4.11 - ANEMONE project workshops.....	26
Figure 4.12 - World Café .....	27
Figure 4.13 - Marine litter workshop in Romania.....	28
Figure 4.14 - Cetaceans workshop in Romania.....	28
Figure 4.15 - Workshops in Bulgaria .....	29
Figure 4.16 - Marine litter workshop in Turkey .....	30
Figure 4.17 - Cetaceans workshop in Turkey .....	30
Figure 4.18 - Marine litter workshop in Ukraine.....	31
Figure 4.19 - Cetaceans workshop in Ukraine .....	31
Figure 4.20 - Training during cetacean workshop in Romania .....	32
Figure 4.21 - Working groups.....	33
Figure 4.22 - Marine litter case studies.....	34
Figure 4.23 - Training in schools .....	35
Figure 5.1 - Lessons Learned .....	36
Figure 6.1 - Public events and campaigns .....	38
Figure 6.2 - Workshops organized by Mare Nostrum .....	39
Figure 6.3 - Public engagement activities for students .....	39
Figure 7.1 - ANEMONE workshops highlights .....	40

## List of tables

Table 4.1 - ANEMONE public engagement workshops schedule.....	17
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## Acronyms

<b>NGO</b>	Non-governmental organization
<b>NIRMD</b>	National Institute for Marine Research and Development “Grigore Antipa”
<b>IO-BAS</b>	Institute of Oceanology “Fridtjof Nansen”, Bulgarian Academy of Sciences
<b>UkrSCES</b>	Ukrainian Scientific Centre of Ecology of the Sea
<b>TUDAV</b>	Turkish Marine Research Foundation
<b>RRI</b>	Responsible Research and Innovation
<b>PE</b>	Public Engagement
<b>SME</b>	Small and medium-sized enterprises
<b>CS</b>	Citizen Science

## Executive summary

The present document represents the workshops integrated reports, which summarize the activities developed, results and conclusions of 8 workshops organized within ANEMONE project, in 2019, in four Black Sea riparian countries. Each partner organized in its country (Bulgaria, Romania, Turkey and Ukraine) two workshops, approaching two important topics for the Black Sea: marine litter and cetaceans.

This report presents the steps and methods used for organization and implementation for the workshops, participants profile and how each representative of different activity sectors can influence public engagement for several activities, how the partners involved the participants in projects activities and lessons learned. Specific information related to each event, discussed topics and results can be consulted in the workshops individual reports, available on ANEMONE project website<sup>1</sup>.

This document can be used as a tool in developing activities to engage the public and represents a stepping stone for the research and development opinion leader for establishing further research and monitoring programs in which citizens can be the power help in data collection.

This workshops integrated report is part of the ANEMONE project (“Assessing the vulnerability of the Black Sea marine ecosystem to human pressures“), BSB-319, funded by the Joint Operational Programme Black Sea Basin 2014-2020.

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<sup>1</sup> Source: <http://anemoneproject.eu/>

# 1 Responsible Research and Innovation

Responsible Research and Innovation (RRI) means that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society. RRI is an ambitious challenge for the creation of a research and innovation policy driven by the needs of society and engaging all societal actors via inclusive participatory approaches (European Commission, 2012).

In practice, RRI is implemented as an action that includes multi-actor and public engagement in research and innovation, enabling easier access to scientific results, the take up of gender and ethics in the research and innovation content and process, and formal and informal science education (MARINAPROJECT, n.d.).

The Responsible Research and Innovation framework is composed by six dimensions (Figure 1.1):

1. Multi-actor and public engagement: researchers and innovators, industry and SMEs, academia, policy-makers, non-governmental organizations (NGOs), civil society and citizens interact among them in a two-way, iterative, inclusive and participatory process of exchanges and dialogues on science and technology issues. This process will plan an agenda aligned with societal needs and will produce more acceptable outcomes.
2. Gender equality: this engagement has to address the under-representation of women and gender issues must be integrated in research and innovation content.
3. Science education: to allow the engagement and the dialogue, science language must be available and understandable to everyone; that means changes in the education systems in order to ease the process.
4. Open Science: the EC, according to the 3Os policy (Open Innovation, Open Science, Open to the World), requires the freely accessibility of scientific research and data collected, in order to stimulate the research and innovation process.
5. Ethics: research and innovation must respect fundamental rights and the highest ethical standards, in order to increase relevance and acceptability of its outcomes.
6. Harmonious Governance models: policy-makers have to anticipate societal expectations on research and innovation and develop new governance models including all previous dimensions (MARINAPROJECT, n.d.).

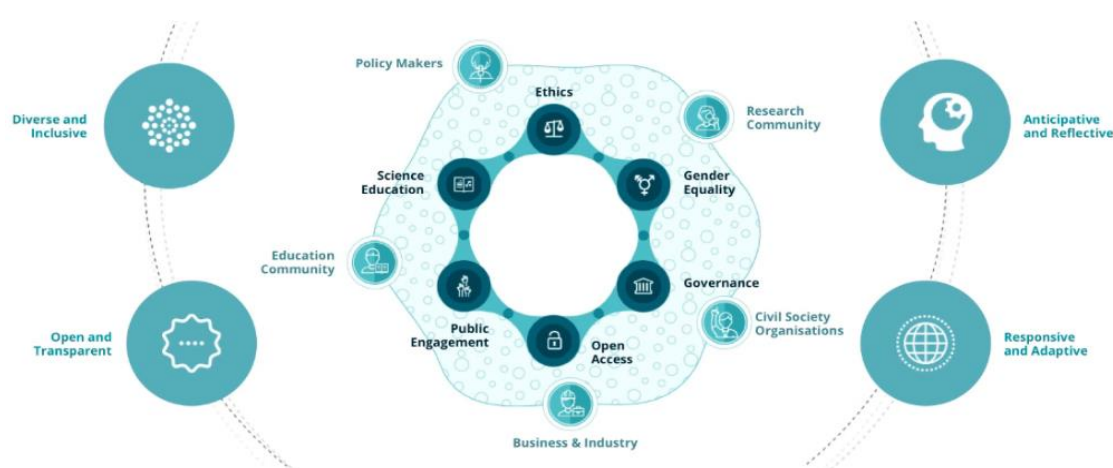


Figure 1.1 - RRI dimensions<sup>2</sup>

<sup>2</sup> Source: <https://rri-tools.eu/>

Science and technology are transformative forces that have granted humans the capacity to alter ecosystems, the Earth's climate, even the building blocks of matter and life itself. R&I have improved our world and our lives in many ways and will most likely continue to do so.

Over the last decades many efforts have tried to reduce the distance between science and society, leading to a European-wide approach in HORIZON 2020 called Responsible Research and Innovation. RRI seeks to bring issues related to research and innovation into the open, to anticipate their consequences, and to involve society in discussing how science and technology can help create the kind of world and society we want for generations to come (RRI-Tools, n.d.).

## 2 Public Engagement in Responsible Research and Innovation

Public engagement (PE) in RRI is about co-creating the future by bringing together the widest possible diversity of actors, including researchers and innovators, industry and SME, policymakers, non-governmental organisations (NGOs), civil society organisations and citizens, that would not normally interact with each other, on matters of science and technology, in particular to tackle the grand societal challenges that lie before us. PE implies a two-way, iterative, inclusive and participatory process of multi-actor exchanges and dialogues (also involving minorities, considering gender and multiple generations). Public engagement in research and innovation fosters more societal relevant, desirable, and creative research and innovation actions and policy agenda, leading to wider acceptability (MARINAPROJECT, n.d.).

The practice and politics of multi-stakeholder engagement, or PE, with science has been evolving over the last two decades. It started with a willingness to promote public understanding of science through one-way communication of scientific findings. This followed a deficit model that assumed an ignorant public had to be educated about science (RRI-Tools, n.d.).

In the Innovative PE report 2020<sup>3</sup> are presented five main categories of public engagement:

- Public communication - One-way communication to inform and educate citizens. No mechanisms for handling public feedback. Using methods such as public meetings and hearings, awareness raising activities.
- Public consultation - One-way communication to inform decision makers of public opinions on certain topics. Decision makers may or may not act upon the information. Are used methods such as focus group, planning for real, citizen's advisory panels.
- Public deliberation - Two-way communication to facilitate group deliberation on policy issues. Outcomes may have an impact on decision making. Dialogue is facilitated. Using methods like deliberative opinion polling.
- Public participation - Two-way communication to assign part or full decision-making power to citizens. Dialogue is facilitated. Methods used here are co-governance, direct democracy mechanisms - youth parliaments, citizen's assembly.
- Public activism - One-way communication to inform decision makers and create awareness in order to influence decision-making processes. Demonstrations, protest, awareness raising activities, public meetings are the methods used in this case.

Public engagement purposes:

- gauging public opinion on a particular science project/issue or a new technology;
- assessing a new technological application;
- helping researchers gather data for a given project;
- having a representative sample of people make judgments or decisions that might inform policy making;
- getting the public and experts to co-create knowledge or co-produce innovation (RRI-Tools, n.d.).

Public engagement leads to multiple benefits:

- it contributes to building a more scientifically literate society able to actively participate in and support democratic processes, and science and technology developments;
- it injects differing perspectives and creativity in research design and results;
- it contributes to fostering more societal relevant and desirable research and innovation outcomes to help us tackle societal challenges(Sallman et al., 2015).

Public engagement implies:

- the establishment of iterative and inclusive participatory multi-actor dialogues between researchers, policy makers, industry and civil society organisations, NGOs, and citizens;

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<sup>3</sup> Source: <https://cordis.europa.eu/project/id/611826/reporting/de>



- to foster mutual understanding and co-create research and innovation outcomes and policy agendas effective in tackling societal challenges;
- to foster wider acceptability of results (Sallman et al., 2015).

Engaging with the public was also seen as a significant obstacle to implementing RRI for two reasons. Firstly, the public was problematical - workshop participants described the public as not being interested in science, not knowing enough about it, being too passive, and not wanting to get involved; participants also expressed concern that the discussion won't be useful. Secondly, the process of PE was seen as a problem: it is difficult to get a representative public; methodologies to manage participation aren't available; the target groups are difficult to reach; RRI topics aren't present in educational curricula; citizens' place in the decision-making process is not always taken into account (Sallman et al., 2015).

Public engagement (Figure 2.1) in RRI can help in bringing decisions closer to society, making them more focused on the needs of society, guaranteeing a transparent and trans-disciplinary approach. The effects of public engagement in research and decision-making are not necessarily with immediate results. They are seen over time and contribute to the development of the quality of life of the current generation, but most important of future generations.

Researchers, research institutions and public authorities have traditionally led public engagement activities. However, the third sector, or social sector, has been increasingly involved at different levels of R&I and policy making, giving access to their interests, viewpoints and experiential knowledge. The current trend is to also engage the fourth sector, an emerging sector composed of actors or groups of societal actors that cooperate through hybrid networking. Depending on whether public engagement focuses on the third or fourth sector, it is often labelled as stakeholder engagement or citizen engagement, respectively. In either case, public engagement activities are evolving from linear and bilateral collaborations towards dynamic, networked, multi-collaborative innovation ecosystems (RRI-Tools, n.d.).



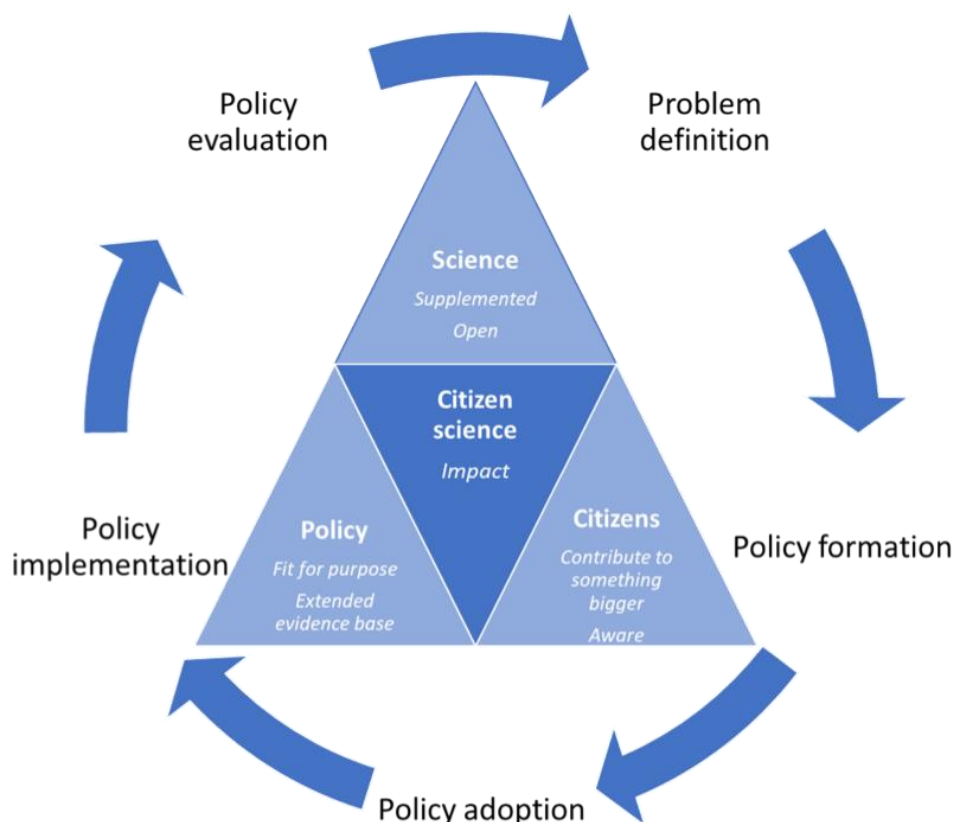
Figure 2.1 - Public Engagement in RR I<sup>4</sup>

<sup>4</sup> Source: <https://phullstop.files.wordpress.com/2012/11/public-engagement.jpg>



Observing sightings of birds, identifying galaxies, or working out how to fold proteins, providing resources by lending computer time or direct financing as in crowd funding of scientific projects (*Citizen Science*, n.d.).

Citizen science can contribute to realizing three important goals (Figure 3.2): generating new knowledge for science and society, increasing science literacy, and democratizing decision-making and scientific processes (Bio Innovation Service, 2018).



**Figure 3.2 - Three main pillars of citizen science in the policy cycle: scientific excellence, citizen engagement, and policy-relevance<sup>6</sup>**

However, significant gaps remain in our understanding of the actual impacts of citizen science on each of these dimensions, and more specifically on the potential tradeoffs between them. Harnessing the three-fold potential of citizen science also requires an in-depth understanding of the best-practices in environmental citizen science in order to identify which conditions are the most conducive (Bio Innovation Service, 2018).

The study “Citizen Science for environmental policy: development of an EU-wide inventory and analysis of selected practices” provided to European Commission an evidence base of citizen science activities that can support environmental policies in the European Union (EU). It forms part of the work of the Environment Knowledge Community (EKC) on citizen science. Specifically, provide inputs for guidelines to promote a wider use of citizen science to complement environmental reporting, as well as for recommendations on the integration of citizen science in the EU environmental policy cycle (Bio Innovation Service, 2018).

Through this study three salient features were found:

- Government support, not only in the funding, but also through active participation in the design and implementation of the project appears to be a key factor for the successful uptake of citizen science in environmental policy.

<sup>6</sup> Source: <https://ec.europa.eu/jrc/en/science-update/eu-wide-inventory-citizen-science-environmental-policy>

- When there is easy engagement process for the citizens, that is, with projects requiring limited efforts and a priori skills, this facilitates their policy uptake.
- Scientific aspects on the other hand did not appear to affect the policy uptake of the analyzed projects, but they were a strong determinant of how well the project could serve policy: projects with high scientific standards and endorsed by scientists served more phases of the environmental policy cycle (Bio Innovation Service, 2018).

This study demonstrates that citizen science has the potential to be a cost-effective way to contribute to policy and highlights the importance of fostering a diversity of citizen science activities and their innovativeness (Bio Innovation Service, 2018).

The value of citizen science thus spans across the scientific, social and political dimensions. Citizen science projects can pursue basic or applied science, and be a cost-effective way to collect evidence, fill in knowledge gaps, monitor environmental baselines, respond to crises and inform management actions. They can tackle issues at local, regional or global scales. Volunteers can participate in scientific processes and feel invigorated by the fact that they can make a difference through their contributions. Citizen science encourages engagement between members of the public and decision-makers and may help to enhance the debate around the science policy interface. The role of science in policy-making has changed over time, and coproduction of knowledge by technical experts and members of the public is likely to be very important in future decision-making and can help develop trust. It is a great tool to implement more adaptive forms of management. The process of engaging many actors in the collection of monitoring data could also enhance public engagement in addressing global concerns, and transform international agreements to instruments of change (Bio Innovation Service, 2018).

## 4 Public Engagement in ANEMONE project

Within ANEMONE project, 8 public engagement workshops (Figure 4.1) were organized in four countries around the Black Sea, involving citizens from different activity sectors (students, teachers, volunteers, policy makers, etc.). These created the framework for participants to interact and to find out more about two major topics related to marine litter and cetaceans. Also, it offered the opportunity to understand how they can get involved in case studies addressing these topics, how their data are used and how their involvement is quantified. Such events and studies provided the opportunity for scientists and non-scientists to interact, share knowledge and collaborate.

All workshops considered Public Engagement - dimension of Responsible Research and Innovation - to ensure that the research and innovation meet citizen needs, values and expectations.

These public engagement workshops carried out in ANEMONE project were an essential activity to have the public engaged in monitoring activities and public awareness on marine environmental issues.



Figure 4.1 - ANEMONE public engagement workshops overview

## 4.1 ANEMONE workshops

Project partners organized two workshops in each participating country (Figure 4.2):

- one about the marine litter situation and its impact on the marine environment, held in spring 2019 and after its end the participants were part of the marine litter case study, included in the deliverable DT4.2.1 Marine litter status on Black Sea shore through citizen science, and
- the other one in autumn 2019, approached aspects related to the conservation of the Black Sea cetaceans (Table 4.1).

The topics selected by partners to be discussed during the workshops represent two important and timely subjects for all Black Sea countries: Marine Litter and Cetaceans.

*Table 4.1 - ANEMONE public engagement workshops schedule*

Partner Name	Workshop Round (1 or 2)	Workshop Topic	Date	Country	City
UkrSCES	1	Marine Litter	9-Apr-19	Ukraine	Odessa
	2	Cetaceans	21-Nov-19	Ukraine	Odessa
Mare Nostrum NGO	1	Marine Litter	27-Mar-19	Romania	Constanta
	2	Cetaceans	17-Oct-19	Romania	Constanta
IO-BAS	1	Marine Litter	17-Apr-19	Bulgaria	Varna
	2	Cetaceans	25-Oct-19	Bulgaria	Varna
TUDAV	1	Marine Litter	24-Apr-19	Turkey	Istanbul
	2	Cetaceans	2-Dec-19	Turkey	Istanbul

Marine litter is closely linked to major problems of public health, conservation of the environment and sustainable development in the Black Sea region. Marine litter comes mainly from various land and sea-based sources as a result of diverse human activities, and evidently causes a wide variety of negative impacts on the human population, wildlife, landscape and some sectors of the economy.

Floating litter and items suspended in the water column are transported by currents and winds across maritime borders and throughout the sea to become a basin-wide problem.

Most of this marine litter is produced by tourists, economic activities undertaken in the beach area, but also by the harbor activities and heavy traffic of ships on the coastal area. Marine debris left on beaches for a long time is a danger to birds and other animals that can ingest it. Moreover, there is a risk that its decomposition will release harmful pollutants for human health. Pieces of litter such as syringes, diapers, pads are carriers of pathogens.

Unless appropriate measures are undertaken to address this problem, the abundance of marine litter in the area is likely to increase. Just as multiple initiatives are needed to tackle the marine litter problem, diverse approaches are required to monitor its abundance and how it affects marine environments (Alampei et al., 2014).





**Figure 4.2 - Place of workshops in the Black Sea country partners**

The problem of the conservation of Black Sea cetaceans is closely linked to major problems of biodiversity and environment conservation and sustainable development in the Black Sea region.

There are only three cetacean subspecies in the Black Sea fauna that include three cetacean species: the Black Sea harbour porpoise (*Phocoena phocoena relicta*), the Black Sea common dolphin (*Delphinus delphis ponticus*) and the Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*). The quality of the Black Sea ecosystem is dependent, in particular, on the survival and welfare of these top predator populations (Paiu et al., 2018). The present state of Black Sea cetacean populations is a continuous concern and data collection is continuously needed. Two essential instruments have been adopted in 1996: the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) and the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea (BS SAP). The Marine Strategy Framework Directive (2008/56/EC) establishes the basis of integrated marine management taking into account the state of biological elements and corresponding pressures. In the case of marine mammals, the assessment of conservation status of the species shall be based on the information on status and trends of species populations and on the information on main pressures and threats on their populations (BSC, 2008).

## 4.2 Citizens involved in ANEMONE workshops

### a) Workshops participants

All workshops were attended by a total of 352 participants from four Black Sea riparian countries, according to the Figure 4.3. The ones organized in Ukraine were attended by most people (110 participants), followed by Bulgaria (92 participants), Romania (81 participants) and Turkey (69 participants).

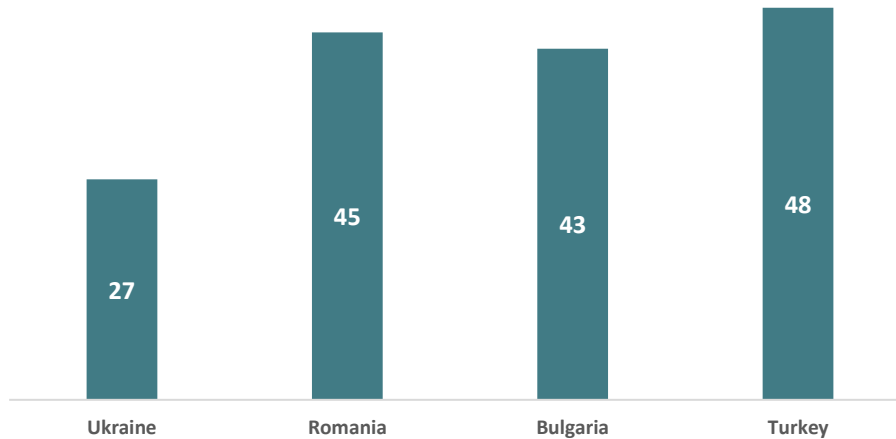


Figure 4.3 - Total number of participants

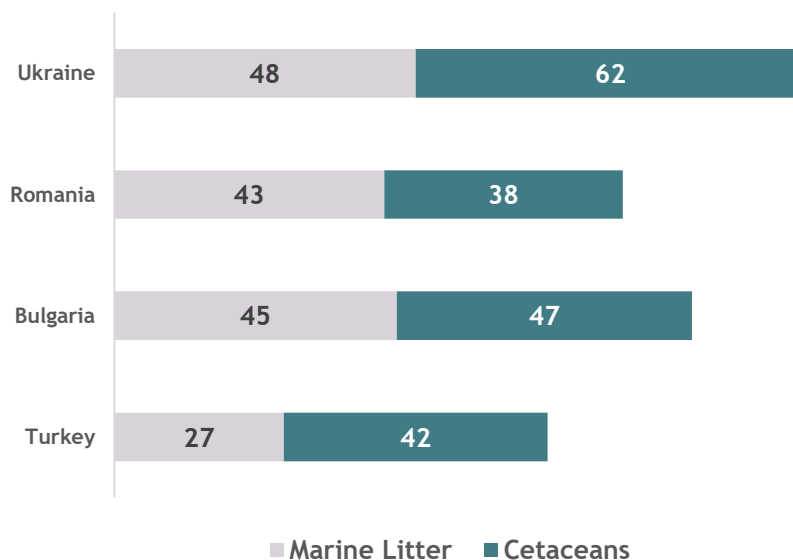
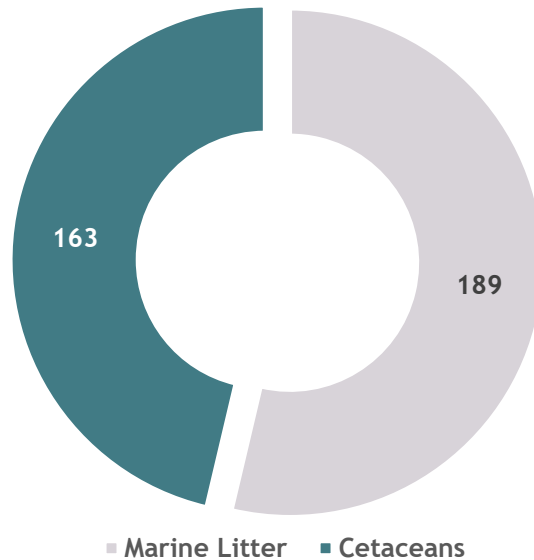


Figure 4.4 - Number of participants at each workshop

In Figure 4.4 is presented the number of participants at each workshop. This figure correlated with Figure 4.5, shows that the most were interested in workshops dedicated to marine litter: 189 participants, 54% of the total, and 163 participants attended the workshops related to the cetaceans, 46%. There is a slightly increased interest for the marine litter topic, due to the fact that is more visible and present around us, easy to determine and close to people's day-by-day life.



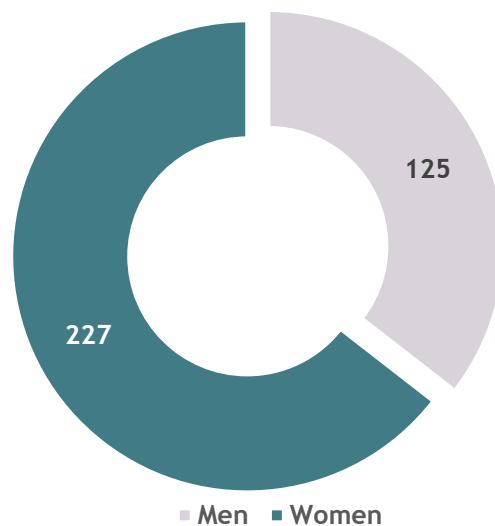
If we analyze separately each country (Figure 4.4), we can see that only in Romania the number of participants was higher at the workshop about cetaceans, due to the existing Stranding Monitoring Network (with 10 years of continuous functioning), whose representatives were present. In Bulgaria, the number of participants was approximately the same at both workshops, and in Ukraine and Turkey, the events about marine litter were attended by the most participants, with a considerable difference compared to the one dedicated to cetaceans.



*Figure 4.5 - Total number of participants according to workshop topic*

b) Participants by gender

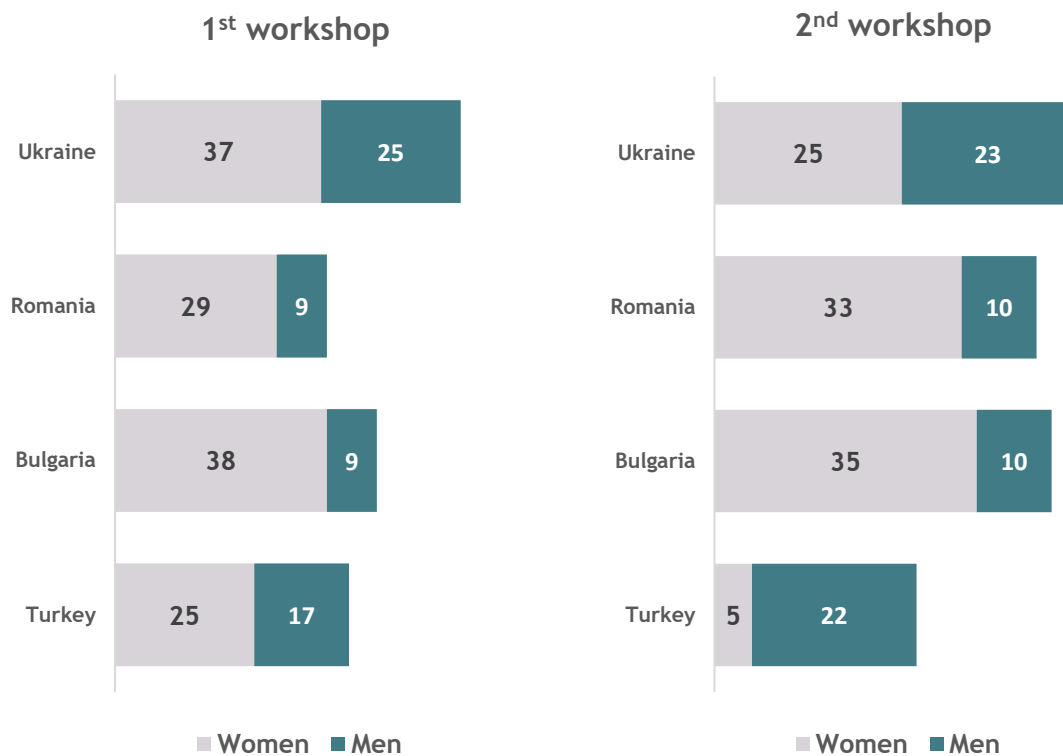
In terms of the gender of the participants (gender equality represents one of the RRI dimensions), it can be observed in Figure 4.6 that the majority is represented by women (227 participants), 64% of the total, and 36% by men (125 participants), just a little more than half of the number of women.



*Figure 4.6 - Total number of participants according to gender*

Figure 4.7 reveals the gender proportion of the participants for each workshop. In Romania and Bulgaria, the most participants were women, while in Ukraine the gender numbers are more balanced. Marine litter workshop was attended by more females, but for the one related to cetaceans the gender of participants was about the same. In Turkey, for the first workshop, the trend is the

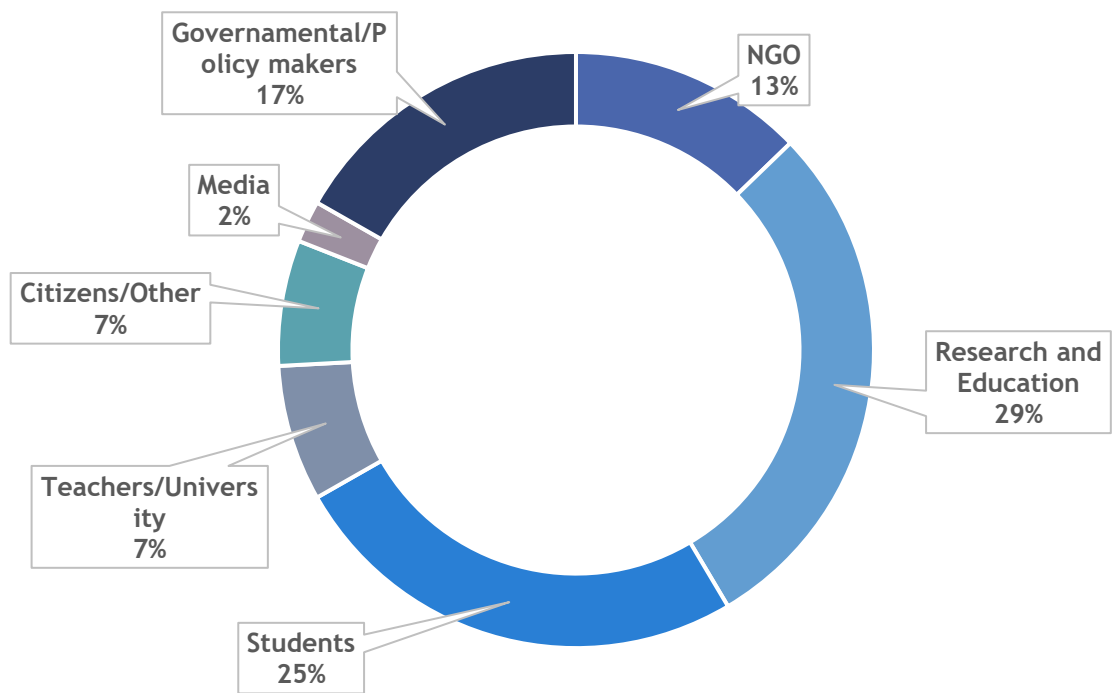
same, women predominate, but a different situation is met at the workshop related to cetaceans, where 81 % of the participants were men.



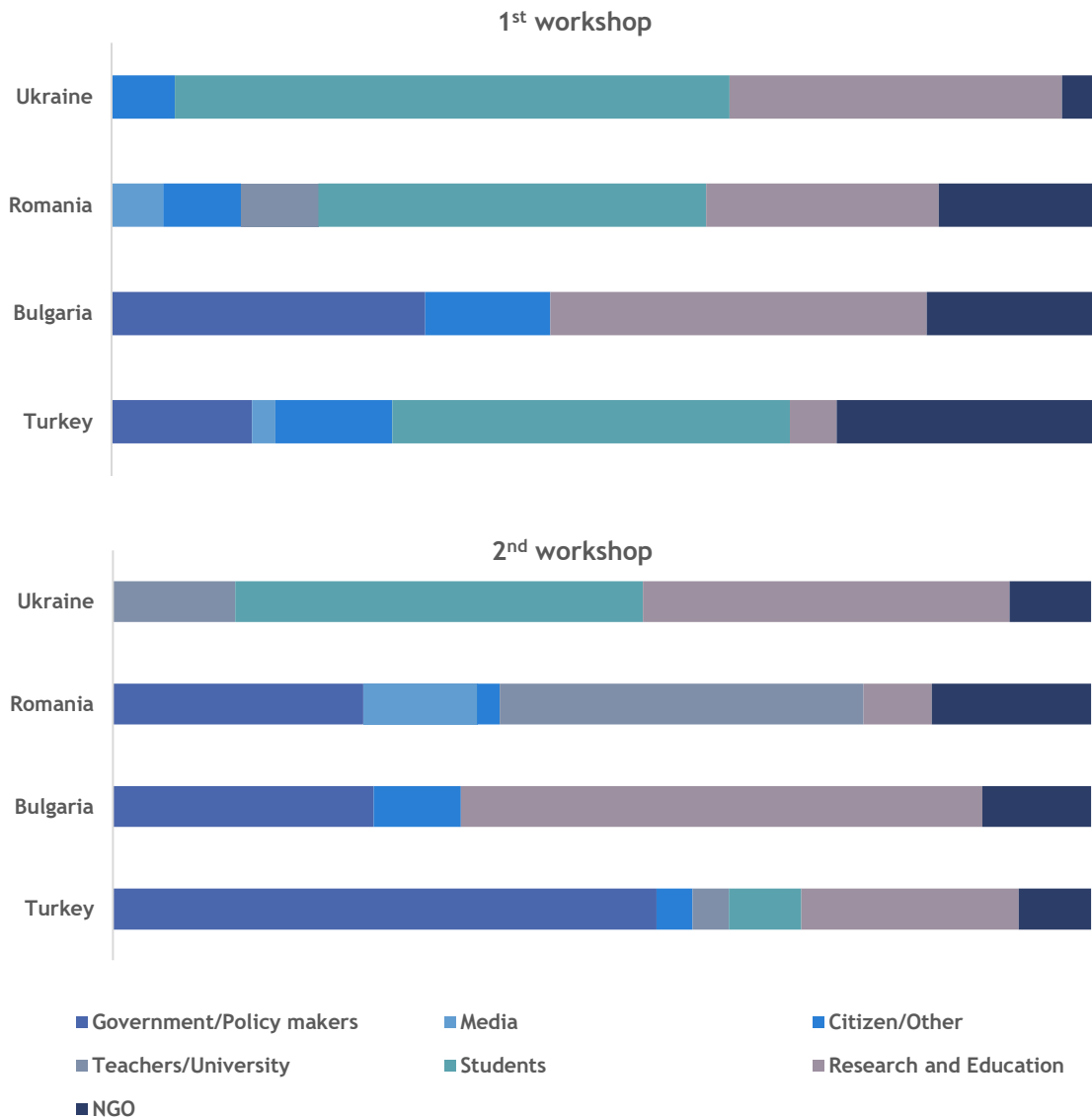
**Figure 4.7 - Total number of participants according to gender at each workshop**

c) Participants by activity sectors

The 352 participants represent citizens coming from 7 activity sectors, as shown in Figure 4.8. Most of them are part of the “Research and Education” sector (101), followed by “Students” (89). The high involvement of the representatives of these two sectors shows the fact that researchers and students are concerned about these topics. They can work together to find the best solutions and exchange knowledge, students being the key point to continue the work started in research area. “Policy makers” sector was represented by 59 participants coming from various public institutions responsible with laws and policy development and application. Then, the “NGO” sector follows (45), represented by volunteers dedicated and involved in various activities, and “Teachers” (26) from different education levels. The last two categories are “Citizens/Other” (24), participants from others activity sectors grouped here, and “Media” (*Citizen Science*, n.d.).

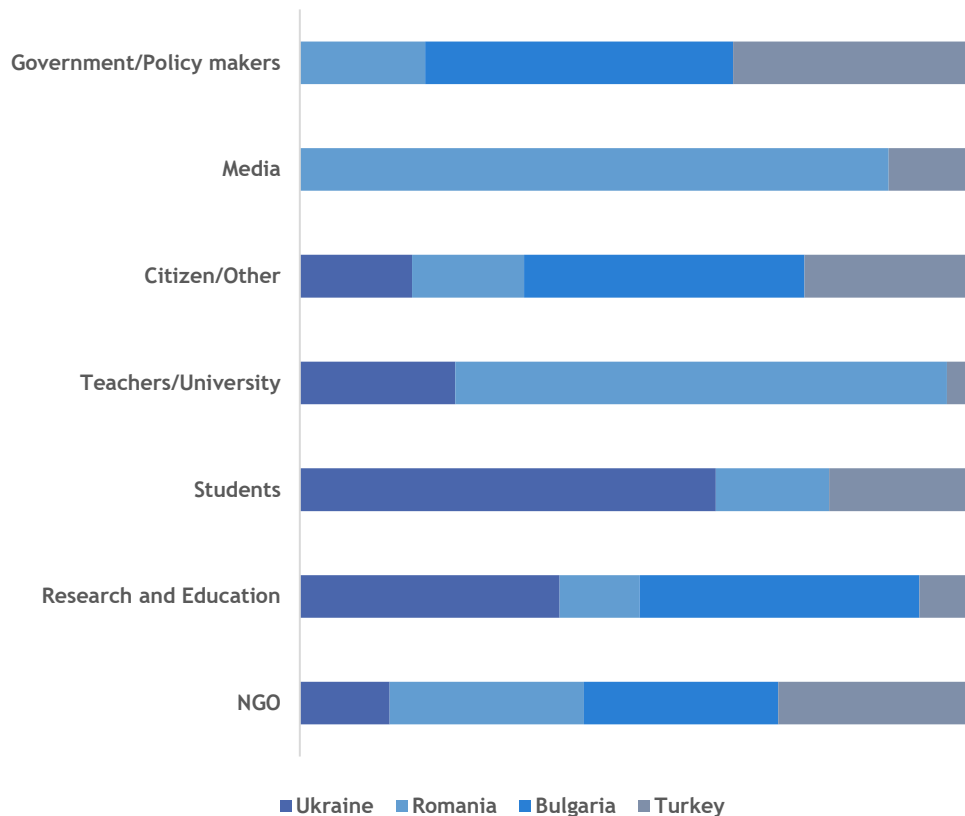


*Figure 4.8 - Participant by activity sectors*



**Figure 4.9 - Participant by activity sectors at each workshop**

Analyzing the activity sectors of the participants from each country (Figure 4.10) and workshop topics (Figure 4.9), the “Research and Innovation” sector was well represented, having in mind also the profile and activity history of the organizer/partners. Moreover, full representation had the “NGO” and “Other” sectors. “Students” had a very good representation in Ukraine, followed by Turkey and Romania, but with no representatives in Bulgaria. Another sector with no representation in Bulgaria was “Teachers/University”, sector which was well represented in Romania. Looking at the “Policy makers” sector, this one was well represented in Bulgaria, followed by Turkey and Romania, but with no representatives in Ukraine. “Media” was the sector more attracted on the topics discussed in Romania.



**Figure 4.10 - Participant activity sectors from each country**

The interpretation gives the organizers an overview of the citizen engagement and what compromises can be made in such activities. The use of RRI and public engagement in these 8 workshops, bringing together representatives from different sectors, was just a first step and an example to be followed.

### How can these groups influence Public Engagement?

Research and Education is the sector that can involve citizens in more scientific activities. Specific tasks from more complex research programs (e.g. marine litter monitoring) can be implemented with the engagement of public (e.g. collecting, sorting the litter). Before engaging in the activity, the citizens need a short training in order to understand correctly the methodology used and to make sure that the data collected can be easily used in the scientific process. Also, scientists are responsible for giving back to citizens the result of the work, in order to clearly show their contribution.

Policy makers can engage citizens in policy making and testing, through public debates, discovering the issues that play an important role for citizens, hot topics, and introduce adequate laws that meet citizen needs and expectations.

Teachers have the most important role in educating young people, being a model for different generations. Their presence in youngsters' daily life, showing them good examples influence them in becoming responsible citizens, contributes to the development of their sustainable behaviors.

Students are the easiest to involve in various activities, being in constant search of new activities that contribute to their personal and professional development. By being actively engaged in community life they learn new skills and discover new professional orientations. Also students can be a model for their family and friends, helping with disseminating the new opportunities.

NGO is the sector that works with volunteers, people passionate about specificity of a topic and the desire to be useful. A volunteer can influence and become a model for society.

Media is the sector that raises awareness among citizens about a subject, but also the main channel for disseminating an event or an engagement opportunity for citizens. They have the necessary channels (offline and online) to transmit a message and to ask for engagement and also has the power to mobilize a huge number of citizens for a good cause that requires attention.

### 4.3 ANEMONE workshops implementation

If in the past few years it became common to hold meetings and discussions with various stakeholders, these workshops represented the opportunity for citizens to discuss with other stakeholders the two major topics, marine litter and cetaceans. ANEMONE project offered the occasion for scientists and non-scientists to interact, share knowledge and collaborate. Citizens did not represent a target group and stakeholder in the past, but through these workshops (Figure 4.11), they become a focus group from the Black Sea countries, for the topics addressed.



*Figure 4.11 - ANEMONE project workshops*

In the development of these events, the organizers made use of various methods for involving participants and keeping them focused on the subject. These methods are active, creative and interactive. They have a participatory and experiential character, are innovative and develop all kinds of skills, having clear learning objectives. There were used methods like World Café (Figure 4.12), Science Café, adapted to participants stakeholders groups. More similar methods can be consulted on <http://actioncatalogue.eu>. It is advised to change the way in which the event takes place every time, in order to surprise and keep the audience connected to the meeting.



Figure 4.12 - World Café<sup>7</sup>

Each workshop has an introductory part dedicated to getting to know the participants, presenting the ANEMONE project and, most important, presenting the topics of the workshops. The topic presentation is an important key point because it is essential to have a unique and common understanding of the meeting objectives, and also to introduce participants in the topic, having in mind that maybe not all the ones present in the room are familiar with these aspects. The presentation included general aspects and the situation in each country, correlated with workshop expectations. After these presentations, the workshops continued with the implementation of the chosen methods for involving participants.

a) Romania

In Romania, at the first workshop related to marine litter (Figure 4.13), the participants were informed about the type of marine litter found on the Romanian beaches and with the monitoring procedure. For this exercise, they were divided in 3 groups. Each group received 50 samples of marine litter and a monitoring sheet. They had to identify each item and write it in the monitoring sheet.

The samples were identified and classified into litter groups, according to the sheet. After this, attendees received information about how the data is centralized and analyzed, using the quantities of marine litter identified by them previously.

The objective of this workshop was to present the marine litter monitoring method used by Mare Nostrum, in Romania, showing the fact that a complex methodology can be easily applied with citizens, without influencing the results and observations, if the correct protocol is applied.

<sup>7</sup> Source: <https://waagdesignresearch.files.wordpress.com/2012/02/worldcafe1-7118621.jpg>





**Figure 4.13 - Marine litter workshop in Romania**

The second workshop in Romania, dedicated to cetaceans (Figure 4.14) was divided in two parts. The first one focused on discussions with authorities on issues related to the monitoring activities of the Black Sea dolphins and legislative aspects regarding their conservation. The second part was dedicated to the training of the Stranding Monitoring Network members, represented by teachers from different schools, from Constanta County.

For the first session, participants had to work in 2 groups and to discuss the availability of data by referring to which institution collect them, with what purpose and their availability. Another discussed aspect was related to Black Sea cetacean conservation measures implemented and the ones that need to be faced, what each institution did already and what needs to be done in the future. The aim of these working groups was to create a diagram for Inter-institutional cooperation, for the development of cetacean monitoring program in the Black Sea Romanian waters.



**Figure 4.14 - Cetaceans workshop in Romania**

The second part of the workshop consisted in a training for the Stranding Monitoring Network members. The Network involves different schools, institutions and other partners located along Romania's seashore which has to perform land surveys with the purpose of collecting data or

maximizing the number of stranding events reported.

During the session, the teachers were trained about the Black Sea cetaceans, how to identify each species, how to make the measurements and how to find out the gender. They worked in pairs, and they had first to identify the species and the gender of the dolphin, using a provided picture, and then they learnt how to measure the dimension of one individual by using an inflatable dolphin. After this training, teachers will train the students which will be involved in the monitoring network.

#### b) Bulgaria

Both workshops organized in Bulgaria (Figure 4.15) were dedicated to presentations and free discussions related to marine litter and cetaceans. Different invited stakeholders presented their projects and activities related to the topic.

For the marine litter topic, there were presented the monitoring activities in Bulgaria, the projects within the Black Sea region dealing with this issue and a movie, presented by Black Sea Basin Directorate - Varna, which activated the interest of participants and opened the discussion on marine litter problems. The main subjects addressed were: the availability of marine debris data, the ways of data collection and modeling, steps in organizing beach litter sessions and proper channels, different media channels, to disseminate the activity and results. The most interactive part was the drone demonstration, participants being able to visualize the situation of the beach as a whole and learn about how this method is applied for the beach litter monitoring.



*Figure 4.15 - Workshops in Bulgaria*

During the workshop addressing cetacean topic, the discussions covered monitoring efforts in Bulgaria as well as presentations of projects within the Black Sea region dealing with marine mammals. There took place discussions related to the by-catch of cetaceans, and monitoring activities. Furthermore, the obtained results from the First Monitoring campaign on marine litter were presented, closing the loop for the citizen science method.

#### c) Turkey

The workshop about marine litter, in Turkey (Figure 4.16), was organized according to the World Café method. The participants were divided into 5 groups and each group was coordinated by a moderator. Participants exchanged ideas about marine litter and identified three most important problems and solutions, which were presented later to the whole participants. The members of the groups were actively involved in the discussions, trying to give their best solutions to the problems. The method used was interactive and facilitated the interaction between participants, giving them the opportunity to express their idea. The main problems identified were: improper solid waste management, user unconsciousness and lack of education. The generated solutions refer to different national and international institutions that should come together and cooperate, apply penalties, and to media which should give more attention to this issue, as well as to individual responsibility that should be taken.





*Figure 4.16 - Marine litter workshop in Turkey*

The second workshop (Figure 4.17) was focused on cetaceans (cetacean stranding in particular), which are considered as indicator species for the healthy status of the sea. The objective was to encourage the participants to work more actively on stranding in their regions. During the workshop, the current status of cetacean stranding monitoring on the Black Sea coasts of Turkey was also reported and evaluated. This evaluation was made with the help of participants working at the regional offices of the Ministry of Agriculture and Forestry from all 11 regions on the Turkish Black Sea area, which presented the current status on cetaceans and their stranding at a regional level.

Moreover, the vet-expert presented the cases of stranding, how to handle those stranded animals which are still alive and how to gather data on dead animals. He also showed handling techniques using an inflatable harbour porpoise.



*Figure 4.17 - Cetaceans workshop in Turkey*

#### d) Ukraine

In Ukraine, for the organization of the workshop about marine litter (Figure 4.18), the World Café method was used. The participants were distributed around 5 tables, each one having its own subject for discussion. The work for one round table lasted no more than 10 minutes and then the participants went to the next table and discussed the following topic. Each table discussion was hosted by one person, which remained at that specific addressed subject during the whole process. Each participant had the opportunity to express their opinion on the topics presented, as well as in the process of discussion.

The aspects addressed were: ways of litter entering to the marine environment, impact of marine litter, the effect of plastic on human (including micro-plastics), possibilities to solve the problem of litter pollution, cooperation and communication between the authorities and the public to solving these issues. After working in small groups, the participants were invited to share results with the whole audience. These were reflected visually in a variety of ways, most often using graphic recorders in the front of the room.



*Figure 4.18 - Marine litter workshop in Ukraine*

For the second workshop related to cetaceans (Figure 4.19), the method used was Focus group. Within a focus group, a moderator poses a series of questions intended to gain insight about the way the group views the topic. The moderators ask questions in a way that does not lead group members to provide desired responses, but rather honest and insightful responses.

Cetaceans aspects addressed during the workshops were represented by: causes of death, dolphin's biology and keeping dolphins in captivity. The participants were divided around 3 tables, one subject per table and one moderator. The discussions lasted no more than 45 minutes and then the participants were invited to share results with the whole group.



*Figure 4.19 - Cetaceans workshop in Ukraine*

Information for each workshop in particular, discussed aspects and results can be consulted in workshops individual reports, available on the ANEMONE project website<sup>8</sup>.

<sup>8</sup> Source: <http://anemoneproject.eu/>

## 4.4 ANEMONE workshops results

The main objective of these workshops was to raise awareness of the general public about marine litter and cetaceans in all four Black Sea countries and also to present initiatives and activities in which citizens can get involved or organize themselves.

Each project partner had the opportunity to use the workshops in a manner that suits them best, by defining those activities in which the participants can be involved after. The workshops were adapted to local needs and interests, building a bridge between scientists, community and policy makers, with the purpose of promoting public engagement and citizen science benefits for local environmental issues.

Workshops results:

- In Bulgaria, both workshops targeted to increase the awareness of the institutions and the general public on ongoing initiatives related to marine litter and cetacean.
- In Romania, during the first workshop, on marine litter, were trained over 30 citizens in using the methodology, centralizing and analyzing data. The participants gained new skills in identifying litter and coding it according to the European methodology. From cetaceans' workshop resulted a database showing what institutions collect and have data, implemented measures and the ones that need to be address. Also, there was identified the way to communicate the information about cetaceans in the Black Sea Romanian waters in the future. 13 teachers were trained (Figure 4.20) about how to perform land surveys in order to collect data about cetaceans and stranding events. These teachers will pass the information to students that will be part of the monitoring network.



*Figure 4.20 - Training during cetacean workshop in Romania*

- In Turkey, during the first workshop were discussed solutions for marine litter issue and some institutions have established networks for raising awareness in schools. Teachers will share knowledge with their students and engage them in activities meant to protect the marine environment. The second one addressed the cetacean topic, being discussed relevant aspects related to the Black Sea cetaceans, legislation and activities needed for their conservation (Figure 4.20).
- In Ukraine, through these workshops, the participants had the chance to discover important information about the problem of marine environment pollution with litter and about cetacean conservation issue in the Black Sea region and they arched possible ways of solving these problems for the Black Sea. At the first workshop, they also explored existing tools for



monitoring river and marine litter, the available online specialized apps and offline (paper forms) methods for monitoring (Figure 4.21).



*Figure 4.21 - Working groups*

These workshops helped project partners to engage people in various field activities and help them understand that they can join different initiatives, even the ones more scientific, in order to solve environmental problems, because small actions create big differences.

## 4.5 Engaging workshops participants in ANEMONE activities

These workshops have been an essential activity for involving citizens in finding and applying solutions to the marine litter problem and public awareness of marine environment issues. But the activities planned and carried out after these workshops represented the real opportunities to practice citizen engagement.

After the workshop related to marine litter, all partners developed in their countries, marine litter case studies, following the methodology included in the “Guidance on Monitoring of Marine Litter in European Seas”, a guidance document within the Common Implementation Strategy for Marine Strategy Framework Directive, for Descriptor 10 - Marine Litter. These studies were realized with the engagement of the workshop trained participants, in two sessions, in 2019, in spring and fall, representing an essential public engagement example (Figure 4.22). Their implementation and results are presented in the deliverable “DT4.2.1 Marine litter status on Black Sea shore through citizen science”.



*Figure 4.22 - Marine litter case studies*

In Romania, after the cetaceans workshop was developed the diagram information with clear indications on inter-institutional communication regarding cetacean monitoring program in the Black Sea Romanian waters. Furthermore, there was formed the Stranding Monitoring Network for the school year 2019-2020. In addition to schools, part of this network are also other stakeholders along Romania’s seashore, coordinated by Mare Nostrum. Following the workshop, the trained teachers organized trainings in the schools (Figure 4.23), for their colleagues and students, recruiting members for the network, which is formed by 85 teachers and 360 students from Constanta County.



*Figure 4.23 - Training in schools*

The results from the discussions carried out during the workshops and the one from the marine litter case studies were shared and will continue to be disseminated during various meetings, news, articles by project partners. Participants at these workshops will be kept updated with information and activities planned for the future.

In order to attract people to our work and activities, they will receive information on a regular base about ANEMONE project through various communication channels like social media, e-mail, and mass media. In case of authorities, official letters will ask for their support.



## 5 Lessons Learned from ANEMONE workshops

Lessons learned represent the knowledge accumulated during the process of mobilizing marine stakeholders and citizens in marine societal issues such as overfishing, the need for clean energy, overdevelopment of coasts due to urbanization and tourism, marine litter etc. The purpose of documenting lessons learned (Project Management Institute (PMI), n.d.) is to share and use knowledge derived from experience to:

- Promote the recurrence of desirable outcomes, and
- Preclude the recurrence of undesirable outcomes.

Lessons learned are generalizations based on evaluation experiences with projects, programs, or policies that abstract from the specific circumstances to broader situations. Frequently, lessons learned highlight strengths or weaknesses in preparation, design and implementation that affect performance, outcome, and impact (OECD, 2002).

When speaking about Lessons Learned (Figure 5.1), we definitely speak about knowledge or understanding gained by experience from a project or activity that should be actively taken into account in future projects or actions. The experience can be positive or negative, but a lesson must be significant, with a real impact, valid and applicable, reducing the potential for failures, or reinforce a positive results (Gheorghe & Schneider, 2019).



*Figure 5.1 - Lessons Learned<sup>9</sup>*

By organizing and implementing ANEMONE workshops and the activities in which partners involved citizens, we learned some important lessons that help us to develop better actions in the future.

Lessons learned from the organization process for the workshop:

- Make the registration form easier for the participants in order to be less time consuming and attractive.

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<sup>9</sup> Source: <https://www.imlaak.com/lessons-learned-during-real-estate-downtrend/>

- Dedicate enough time for debates and discussions, because people need time to feel comfortable and courageous enough to share their own views.
- Ensure practical experience for participants, in order to help them understand and test the methodology.
- Invite key speakers to present relevant aspects related to the topic discussed, because it will help to establish a common ground between the heterogeneous participants (e.g. authorities to present legal aspects).
- Make sure that the field of interest of the invited persons is related to the workshop topic; in this way they will pay more attention and stay engaged.
- Double-check the location and clarify the ordered services the day before your workshop, in this way the organizers and the participants as well can focus only on the agenda.
- Reconfirm the participation of registered people and remind them about the workshop with 2-3 days before the workshop. In a world full of meetings, people tend to forget some of them.

Lessons learned from the implementation of the workshops:

- Give concrete and clear examples about the discussed topic, to make sure all participants have a common understanding.
- Using non-formal methods for the workshop running are effective for engaging participants in a live discussion.
- Methods like World Cafe help participants engage in dialogue, to quickly and easily establish communication in the group.
- Informal workshop place has a positive effect on the dialog between participants.
- Try to find some ways to keep the participants engaged and active during the entire workshop.

## 6 How to turn Public Engagement in Citizen Science

### Ways to engage public in activities - examples from Mare Nostrum activities

Mare Nostrum NGO has over 25 years of experience in engaging the public in its activities, as the public is the main actor in changing behaviours. Involvement of various actors (researchers, policy-makers, teachers, students, non-governmental organisations, civil society, citizens) in local and national awareness activities like campaigns and public events and workshops on various topics dedicated to all stakeholder categories that create a bridge between research area and the needs and expectations of the civil society in the Black Sea coastal area. Also, beach litter monitoring and activities to protect the marine environment and coastal areas in particular dolphins and promoting issues facing cetaceans among the local population, fishermen and tourists at the Romanian seaside of Black Sea, represent a participatory process of exchanges and dialogues between all stakeholders, contributing to sustainable development in the coastal area.

Awareness activities represent one of the most effective ways to engage public participation and to involve them in various activities. Over the years, Mare Nostrum, involved over 100.000 persons in public activities like public events, educational activities, workshops, involving in this way various actors (researchers, policy-makers, teachers, students, non-governmental organisations, civil society, citizens).

A very important factor of public engagement is the involvement of the young generation in diverse and educative activities that will increase their interest and participation in research and sustainable development activities. Over the years Mare Nostrum organized activities for students and teachers, in order to present them the need of the society, with focus on environment issues, and to encourage them to take action in order to protect the environment.

Public events and campaigns (Figure 6.1) represent the channel to inform and educate citizens. Through these activities, we present to them the problems and they can contribute with solutions and proposals to improve the quality of life. In this way, the citizens participate at the development of the actions which must be taken, in order to meet the needs of population development and involvement in joint actions.



*Figure 6.1 - Public events and campaigns*

Mare Nostrum organizes annually several public and educational events with the occasion of the days with relevance for the environment, like Earth Hour, Green Week and Black Sea Action Day.

Workshops represent the best way to attract and involve different stakeholders in making decisions and shaping actions to implement them. In the last years, Mare Nostrum organized several workshops (Figure 6.2), which generated concrete actions for the reduction of marine waste and protection of the Black Sea coastal area.



**Figure 6.2 - Workshops organized by Mare Nostrum**

Another activity which implies public engagement (Figure 6.3) is represented by beach litter monitoring. From 1994 to 2016, Mare Nostrum developed several activities regarding marine litter. Starting with the Coastwatch activity, Mare Nostrum, with the help of volunteers and educational institutions, identified and catalogued the types of waste present on the beach. Mainly, the human impact is analyzed, emphasizing the numerical inventory of waste. Coastwatch is not the only method used to monitor the beach litter. In the latest years, Mare Nostrum organized twice a year, starting from 2016, in April and October, the monitoring according to the methodology proposed in the „Guidance on Monitoring of Marine Litter in Europe Seas”. This methodology implies identifying 100 m long fixed sections of the beach, covering the whole area between the water edges (where possible and safe) or from the strandline to the back of the beach.



**Figure 6.3 - Public engagement activities for students**

Activities to protect, in particular dolphins and promoting issues facing cetaceans among the local population, fishermen and tourists, are organized every year as information and awareness campaign, to inform the local community and tourists, about the problems faced by dolphins. Also, during the entire year there are conducted systematic observations activities on the Romanian seaside, through the Stranding monitoring network. This program provides annually the collection of data on the occurrence of dolphins in the Romanian coastal waters, catches and stranding in the Romanian seaside area.

These activities to protect the marine environment and coastal areas at the Romanian seaside of Black Sea represent a participatory process of exchanges and dialogues between all stakeholders, contributing to sustainable development in the coastal area, with the public involvement and engagement (Gheorghe et al., 2017).

## 7 Conclusions

Public engagement in Responsible Research and Innovation can help in bringing decisions closer to society, making them more focused on the needs of society, ensuring a transparent and trans-disciplinary approach. Activities carried out in ANEMONE project proved that citizen involvement has an increase ownership of actions leading to a better implementation of environmental measures.

From the 8 workshops organized in ANEMONE project, in four countries around Black Sea we conclude the following:

- Even if the partners had the freedom to pick what topic they want, they preferred to discuss the same ones: marine litter for the first round of workshops and cetaceans for the second one. These conclude that both problems are common for Black Sea riparian countries.
- ANEMONE workshops were the first ones totally addressed for citizens.
- The methods helped the group dynamic and offered the space for the non-experts participants to express free their opinion.
- These workshops represented an effective way to involve citizens in research, by providing them details, technical information, actually building a common ground, from which citizens learn how to contribute to marine litter and cetaceans monitoring.
- These types of activities build networks between people with common interest.
- A very important aspect is to keep the network active, informed, engaged, to continue the activities and implement common activities for all the members.
- Public engagements workshops are a safe way for citizens to be properly informed and receive clear information and detailed from officials, researchers that are directly in contact with the problem, reducing the effect of fake news.
- Demonstratives activities used during the workshop help citizens to understand that data collection work is accessible to all, does not require experience and very specific information.
- Workshops created the space for interaction between citizens and experts, demonstrating to researchers the fact that their work can be simplified by involving citizens in different activities, being a useful and benefic resources for research work.
- Within these workshops were created initiatives groups that represented resources, for ANEMONE project partners, for the work done in AT4.2 - Conducting the case study on citizen science in beach litter surveys in partner countries and AT4.3 - Case study on cetacean stranding and sighting surveys.

ANEMONE workshops (Figure 7.1) represented the opportunity for participants to learn how to get involved in different activities at the Romanian Black Sea coast and raised their awareness in the issues of pollution of the marine environment. These activities are recommended to be implemented periodically in order to keep the citizens engaged and involve more people in research work and also, organized between countries, in order to create the opportunity for experience exchange for the participants.



Figure 7.1 - ANEMONE workshops highlights

The effects of public engagement in research and decision-making are not necessarily with immediate results. They are seen over time and contribute to the development of the quality of life of the current generation, but most important of future generations.



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