RESPONSEABLE

An interactive internet guidance for supporting the development of cost-effective ocean-focused awareness raising strategies

Work Package 4

Deliverable 4.5

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Project coordinator:

Project beneficiaries:

Consolidating recommendations with stakeholders for developing a logical framework for effective Ocean Literacy

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Introduction

WP4 of the ResponSEAble project comprised of many multifacet activities targeting Ocean Literacy issues at the regional scale, including the framework and the first activities already presented and discussed in the project's deliverables D4.1, D4.2, D4.3. It helped: (1) to establish links between the work carried out under WP1, WP2 and WP3; (2) to connect with products developed under WP5; and, (3) to contribute to the dissemination of recommendations and results relevant to regional marine policy and challenges in WP6 and 7.

While initially seen as a WP focusing only on "regional sea basin" issues, WP4 covered a much wider set of issues and activities addressing the potential role and effectiveness of OL initiatives for different scales, thematic issues/marine challenges and target groups. These have been used for supporting the development of the interactive guide (or interactive platform) for ocean literacy practitioners (further described in D7.3 – as the interactive guide has been merged with the web.doc proposed under WP7), in particular by framing recommendations on how to enhance the effectiveness of ocean literacy initiatives.

The present report specifies first the main issues and recommendations that have emerged for different components of Ocean Literacy:

- Ocean literacy for different **target groups** – identification of priority areas, and where OL can play a role in supporting change of perception, attitude and behavior;
- Ocean literacy and **assessing success** – lessons from the developments made in assessing effectiveness of products developed under WP5;
- Recommendations for **effective Ocean literacy** workshop, as derived from different participatory events/workshops (Burgas EMD workshop, recommendations from workshops at the 2019 Ocean dialogues, discussion at the European Parliament workshop in Brussels, input into the UNESCO Decade of Ocean Science….)

It then combines some of the key recommendations into a logical framework or narrative for effective Ocean Literacy, these elements been used as basis for the development of the WebDoc presented in Deliverable D7.3.

How to ensure effective ocean literacy for different target groups?

An overarching objective of the WP4 was to give recommendation on how to make effective ocean literacy for different target groups. It was decided to carry out six webinars to target different audiences of practitioners involved in the ocean literacy, namely.

- Educators (from schools/outreach programs; etc..) EMSEA community
- Scientists (including social scientists, behavioural psychology)
- Professional economic actors' groups
- Policy makers (including regional conventions), local authorities;
- Consumer associations
- NGOs

Webinars were carried out between June 2018-January 2019. Each webinar lasted about 1 hour, had live polls and spaces for questions, as well as an ex-post evaluation. Webinars were recorded and main recommendations were consolidated and uploaded on the webpage: https://www.responseable.eu/news/the-responseable-webinars

The main questions tackled by speakers in the webinars were: what are challenges in doing ocean literacy with each target group? What works best – building on ResponSEABle and other initiatives? What are opportunities for OL – or more effective OL? How to best support OL and to make it work in the future?

Each webinars gathered around 60-100 people who joined live, and also the recordings were disseminated after and have about 150 additional views. Post webinar surveys showed that the participants appreciated the format, questions discussed and content and rated their experience as 'very positive'.

The sections below summarise the main recommendations that emerged from the webinars for different each target groups .

Children

Ocean literacy initiatives need to mobilise a wide diversity of knowledge! It is important to make children understand the importance and the state of the ocean, but also what human interactions with the ocean. Furthermore, giving a practical sense to the concept of sustainability can clearly help.

Even though our children grow up in an 'technological era', traditional ways of sharing and discussing work very well, such as drawing and talking together, field trips, simple board games… They lack the "virtual environment" attraction, but they do provide "human environment" reality.

Do let children doing something by themselves – for example as illustrated by the initiative named 'Young reporters of science and art' developed by Oceanopolis in France. This gives them the sense of responsibility and empowerment.

Bringing an Art perspective can help. Creativeness and art is another way to engage younger children to nudge their sense of wonder and appreciation, to get emotional connection: we protect what we love. With the help of a narrative, visuals and arts can make children feel inspired and create excitement and admiration. Arts can address many emotional connections, which is missing in a lot of environmental education. And children like creative activities like drawing, meanwhile chatting about serious issues (see the example of the Zaza workshop developed under ResponSEAble).

To get student use authentic ocean data – and make them feel like scientists, researchers and professionals. They will also feel empowered by analyzing and interpreting scientific data. There are many resources that allow them to do so online (see e.g. the STEM program), and to as scientists engaged with ocean data (see e.g. www.signalsofspring.net/aces)

In some cases, do mobilise networks and existing institutions. The experience of the network of Blue schools (initiative put forward by the SeaChange project) to encourage formal education to teach about the oceans has proven a successful way to integrate ocean issues into culture and to receive support from relevant ministries in case of Portugal.

Food for thought for future initiatives

The list can be too long to be exhaustive. Here are a few ideas that have emerged from Ocean Literacy initiatives carried out within and outside ResponSEAble:
- Social media – a valuable channel for educators, if the capacity to critically use it is provided
- Do let children make discoveries on their own
- Ensure flexible school curriculum, and provide dedicated training to teachers
- Be mindful of the diversity of communities we are working with in each country. There is no one solution that works for everyone, be creative and adapted to specific challenges.
- Do benefit from others such as non-governmental organisations, other teachers, scientists, professionals that are keen to share their experiences
- As educator, do go beyond teaching about problems to teach about (multiple) solutions that can be done by each of us, including children, to fix the problem

- Education policy can support and create opportunities to teach outside of the classrooms/campaigns
- Forget ready-made teaching solutions. Do ensure children feel empowered and want to find on their own, giving incentives to adults to do differently

Consumers

Reaching consumers and clarifying how consumption habits impact – directly or indirectly – the ocean is a clear challenge. It touches all aspects of our life, our living model, our habits….

What catch consumers' eyes and thinking? How to share information – and what to share - so consumers progressively consider consumption choices from an ocean's perspective? How to arouse interest of consumers on such issues – including all those (the majority) that live far from the sea? Which alternatives to offer so there is real consumption choice accounting for other characteristics of products?

Challenges/issues when working with and for consumers

- Consumers are not 'evil', most of them don't have an intention to harm the nature. They often **do not understand the consequences of their consumption habits**.
- Even when people are aware about the issues as consumers, **making a smart consumer's choice is challenging**.
- To inspire change and catch the eyes, we need **simple positive examples** and guides, paired with digital tools that can support (swift) consumers choices – easy to use, **making consumers feel they contribute to making a difference**
- One consumer? Clearly not: many **different types of consumers**. We need to find a smart combination of ocean literacy initiatives targeting all and specific groups
- But providing a solution that is custom-tailored for different groups is challenging. Of importance though: to find mechanisms for providing rapidly **feedbacks on impacts resulting from their efforts**. This contributes to continuous engagement.

Best practices and pre-conditions for success

Inspiring change requires summing up and combining different parts of the puzzle (e.g. microplastics and fish).

Developing **mobile applications** for supporting consumers' choice

Information is key! But **repetition of the information is needed**, as it takes time to change consumers' choices.

We need **to target social circles of target groups** – to ensure the full group is engaged in peer support - for example, awareness campaigns for children and mothers are good doors to encourage behaviour change.

Partnerships between schools and businesses/professionals (e.g. bringing chefs to schools) can illustrate the reality of our link to the sea. And it is fun!

Food for thoughts for future initiatives

1. Do not underestimate the **work of bloggers and volonteers**

2. **Make the problem/impact a personal one to each group** (show the smokers the impact of cigarette butts, etc..)

3. Literacy/awareness raising campaigns should be **positive processes** –bring people together to explore and feel (e.g. taste) sustainable solutions!

Policy makers

Improving Ocean Literacy in all components of European society to support transformation so as to contribute to healthy marine ecosystems and the achievement of the Sustainable Development Goal (SDG) 14 dealing with the ocean, is a major challenge.

In addition to supporting changes in traditional maritime sectors, it requires giving attention to new sectors that will make Blue Growth a reality, such as Marine Renewable Energy or biotechnology. More generally, the **Blue economy** is named the 7th economy of the world. Although traditional activities such as fishing and shipbuilding still employ over 5 million people, the fastest growth is in emerging new sectors are offshore renewable energy, coastal protection, aquaculture and marine biotechnology.

These emerging sectors help to meet EU goals such as emissions reduction, circular economy, energy transition and food security. But we need to *change their narrative to focus on sustainability and the smart use of the ocean*. We need **to move away from being sector specific to include all sectors and being trans-sectoral**, as blue economy does not concern only the ocean – but many land-based sectors. Thus, re-writing the narrative together to demonstrate that clean and healthy oceans are a pre-requisite to development.

Challenges/issues when focusing on decision makers

- Develop **large-scale visible success stories** that can demonstrate the added value of doing differently, and the role policies have in supporting success
- Widen the knowledge base to connect to their own interest: bring knowledge and understanding about governance and social processes, financing and regulation
- Facilitate regulatory and social licencing for industries to operate sustainably – support the ones taking responsibility to care about the ocean!

How ocean knowledge can support the development of Blue economy?

- **o**cean literacy has its role on policy development, raising public awareness as well as police-maker's perception of the benefits derived from smart ocean resources uses.
- Work on how to use common resources collectively with many economic activities / by many sectors (example of MSP) taking into consideration cumulative impacts at specific sites.
- Make use of common platforms (for example, the Common knowledge foundation in Norway or the European Maritime Spatial (MSP) Planning Platform) to facilitate sharing of experience, benchmarking, learning.
- Practice and communicate about cumulative impacts and Integrated ocean management, including in the context of MSP.

Food for thoughts for future initiatives

- Work with sectors and coastal communities, mainly at local and regional levels

- Develop coordination and dialogue between a diversity of actors (industries, NGOs and policy makers) at different decision making and sea-related levels/scales;
- Target individual policies and sectors with specific messages and content that relates to their focus and practice
- Raise the awareness of the wider public, and of elected people, about the **trans-sectoral benefits** of integrated ocean management

Professionals

Ocean literacy is an **issue for everyone** beyond groups that are traditionally referred to such as educators, scientists, aquariums… It is relevant to **professionals** from marine sectors (like fishing, maritime transport, marine renewable energy…) but also land-based sectors who impose pressures on marine ecosystems (e.g. agriculture, industry…). Developing ocean literacy initiatives, with and for professionals such as fishermen or ship-owners that go beyond private interests addressing wider social, economic and environmental issues, is challenging but clearly rewarding. Perhaps because it touches directly societal, economic and emotional issues and values.

Professionals that are relevant to ocean literacy are many! You can think of…

- Economic actors **working at or with the sea** with many different skills and practices that have nothing in common one with each other. In many cases, these professionals have experiences drastic changes in their practice and profession in the last decades. Also, the economic operators of **sea product values chains**, such as retailers, sea food processing, technology developers…
- Rarely referred to in relation to ocean literacy, **land-based professionals** which activities are impacting the health of marine ecosystems: agriculture (eutrophication), industry (microplastics, chemicals), communication (cables)…

To contribute to the sustainable management of the sea while seizing the development opportunities the ocean offers, professionals need **different knowledge and skills**. However, it is important to first establish sound working relationships (partnerships) recognising the value and richness of the experience and knowledge professionals provide. – to **build trust**! Challenge is not to accuse professionals which practice can be driven by many factors.

Professionals do play a **substantial role** in the sustainable development of the maritime sector and more widely the management of the ocean. For that, they need to be aware of the **impact of their actions** and have **options for doing differently**, being **aware of her/his ability to make a change**.

Best practices, examples from and pre-conditions for success

When working with maritime professionals, be clear and honest, be curious and ensure you understand their practice, **do connect** where you can with their activities.

*It is better to **agree to disagree and have a dialogue**,* instead of defending your own opinion. When you do that, you can move on to respect each other's perspective, build trust and find solutions together.

Be aware of the **values and perceptions** of your target group and how it might differ from your own ones. Ask to clarify and show respect for everybody's knowledge and opinions/perceptions.

Ocean Literacy & Communication need to **reach individuals** at **all levels of an organisation** to provide **accurate, relevant, credible and up-to-date** information and identify **clear incentives** of the long-term effect of the actions and how they will be rewarded if they change it. Also, inform about issues and processes of a **scale larger** than what professionals are used, to illustrate macro-implications and connections that are not always visible. This is especially important when working with actors who have contradicting interests.

An effective communicator needs to create **acceptance** – of the role of the communicator, the knowledge shared – and how it is shared, the communication channel used…. This requires finding keys to connect to professional groups, building on their own passions, priorities and what drivers them (individually and collectively).

S*uccess formula from ProSea: Effectivity = knowledge X acceptance. If your organization, communicator and/or story is not accepted by your professional target group, the effectivity of your communication will be low, no matter how high the quality of your knowledge is)*

Food for thoughts for future initiatives

Make people **feel 'powerful'** – having the ability to make the change and to make a difference

Business leaders should offer **learning opportunities** to the people within the company to build a culture in which **learning and changing behaviour is the norm and** to create **opportunities for peer to peer learning** where people share views and perceptions and e**stablish platforms** where business knowledge can contribute to the wider collective knowledge base on the ocean and opportunities that business development offer. This accelerates the sustainable development of a business and sector.

Measuring success and effectiveness: transversal issue

When implementing an Ocean Literacy initiative, we all hope that it will be successful. We might have however very different ideas of what we mean by that. *Better understanding how important the sea is for each of us and for society as a whole? Ensuring everyone captures how she/he is connected to the sea? Contributing to changes in perceptions and attitude? Hoping that target groups will understand how they can act better? Imagining that practices and behaviour will change as a result of our initiative?*

What can "better knowledge" (or different knowledge) deliver has been at the heart of ResponSEAble's debates and activities. Indeed, becoming ocean literate implies that you understand the ocean's influence on us and how we influence the ocean. It also puts you in a position to act responsibly. However, we all know the dilemma ' I know, still I don't act' that we all

experience in our daily life. Social and behavioural sciences offer us insight on factors (such as emotional, economic drivers, or social pressure) that contribute to change of behaviour, especially when dealing with environmental challenges and issues. Thus, we put specific efforts in framing and measuring the impacts and effectiveness of ocean literacy initiatives.

What is important when aiming at behaviour change with ocean literacy?

- The **level of ocean literacy** depends on **an individual understanding the system** –so that they can reflect on how their decisions and actions affect marine environment. Ocean literacy should focus on training for 'systems thinking'. **We need to bring people closer to the ocean, and establish personal connections. If there is something fashionable and trendy, seize the opportunity to connect it to the ocean!**
- The **type of knowledge** that is shared in Ocean Literacy initiatives is key to the type of change one might expect. If you aim at putting your target group in a position to act, you will need to provide **knowledge on actio**ns that can be taken (or avoided) to aid behaviour change. You will also need to **make expected (individual and collective) benefits explicit**, providing knowledge on benefits that go beyond the improvement of the health of the ocean. Often, such knowledge is missing in Ocean Literacy initiatives. We do not need to focus on problems, but on solutions, on their expected benefits, on expected direct visible impacts….
- **Messages should be tailored and very specific**, and not 'general' (as illustrated by the Marlisco project www.marlisco.eu and the SeaChange project www.seachangeproject.eu). '*What will be in this for me'* or '*How my life will improve?'* were pointed out to be one of the top drivers of behaviour change.   *Jon Par (SeaChange project).* The "right information" depends on the target group and on what you expect as a change: **changes in knowledge & understanding, attitude or behaviour.** This impacts on what should be done, and how to assess impacts and effectiveness.
- **Ocean Literacy is a collective process that changes social norms!** Behaviour change is driven by many factors – attitude e.g. emotion and environmental connectedness were recognised to be important driving factors. In real life situations, these many factors are interacting. Assessing the effectiveness of ocean literacy initiatives benefits from collecting perceptions and frequency of self –reported behaviours. This can (should) be done before and after the Ocean Literacy initiative, or based on the comparison with a "control group" that has not been involved in such initiative. Following up with a group that has been involved in an Ocean Literacy Initiative is often overlooked beyond an immediate 'after' survey. It is important to think of mechanisms that can help assessing if changes have taken place – or have been made sustainable.
- **From a policy perspective, ocean literacy should be part of all components of marine and maritime policie**s. Facilitating the access to knowledge provided by different groups (scientists, professionals, civil society…) require the **establishment of common platforms. Supporting strategic partnerships around innovations**, with actors with resources driving innovation and contributing to its dissemination, are mechanisms that can contribute to enhanced Ocean Literacy.
- **Engage the private sector** in Ocean Literacy initiatives is challenging. Governance and economic incentives exist and need to help building capacity to support change of behaviour and practices. Interest and trust are essential when working with the private sector, so as to deliver a shared ocean optimism! One example of capacity building that DG MARE is supporting are 'Blue schools' and Blue Skills initiative that contribute to make the ocean trendy. More efforts are required for supporting Youth and Young professionals Ocean Literacy initiatives.

To support good practices at the global scale, we need the global **mapping of successful stories and capacity building are components of success.**

Conditions for performing better: tailoring Ocean Literacy initiatives; adapting them to the local context and the specific target group; giving space for (and resources to) the assessment of effectiveness and the continuous evaluation of changes - so we understand what works and delivers long term benefits…

Co-building recommendations on Ocean Literacy: results of workshops/events

A series of events were organised for presenting and discussing the first results and recommendations that emerged from the ResponSEAble activities. These event further helped strengthening these recommendations, putting them in a wider context such as (a) the development of an Ocean Knowledge System for supporting effective Ocean Governance, and (b) the preparation of the UNESCO/IOC Decade of Ocean Science. The following paragraphs summarises the output and recommendations that emerged from two events in particular, a dedicated Ocean Literacy workshop organised by responSEAble at the European Maritime Day (EMD) in Burgas (2018) and the Ocean Dialogues co-organised with the H2020 Marina project that represented the final event of ResponSEAble.

Recommendations from the workshop on ocean literacy at EMD – Burgas

ResponSEAble organised and facilitated an Ocean Literacy workshop in Burgas (EMD) for co-building recommendations with different stakeholders on the factors that are expected to enhance the role and effectiveness of OC. Key recommendations that emerged from the workshop include:

- **Ocean Literacy (OL) is only at its start!** Despite that, there are already **many initiatives and good practice** out there, that can be used as source of inspiration by **ALL sectors of society** (professionals, NGOs, scientists, decision makers...). OL for **"financial investors" and for consumers/visiting tourists, and mobilising the media,** have been mentioned as areas requiring further attention.
- **However, more (lasting) support to OL**, soft measures and strengthening human capital, **is required in policies** connected to the sea to support their implementation and to contribute to Blue Growth
- **Common platforms involving the private sector** (building on its knowledge, recognising its challenges, ensuring common understanding/ trust/agenda and building on positive messages) is the starting point of **co-developed and effective OL that deliver change in mindset and change in practice/behaviour**.
- Success needs to **combine local initiatives** adapted to local contexts with the **involvement of "big players"** of sectors as part of **strategic partnerships** – as they can be "role models" and multipliers. Incentives to get involved relate to economic interest (e.g. development of new sustainable business models), having clear benefits, image and access to markets, capacity/interest in spreading innovation...

Recommendations from the Ocean Dialogues and Policy workshop at the European Parliament

The final event of ResponSEAble – the 2019 Ocean dialogues (www.oceandialogues.eu) co-organized with another H2020 project Marina, had the objective to disseminate ResponSEAble results to the wide audience and to identify solutions for supporting the development of a sound ocean knowledge system (in which Ocean Literacy is part) that can support effective ocean governance. Diffent workshops and panel discussions provided important contributions to the discussion about opportunities and challenges of ocean literacy and how these opportunities can be seized (see the panelists' reactions and interventions captured in interviews [https://www.youtube.com/results?search_query=responseable). The main recommendations of the thematic workshops are presented below.](https://www.youtube.com/results?search_query=responseable)

Workshop 1 - Sustainable coastal tourism

Needs and demands
Coastal & marine tourism planning and management to reconcile/balance conflicting needs and demands
Co-creating and sharing knowledge
Gamification could be a tool to relate decisions and needs, costs & benefits and different actors
Initiate/ Contributing for change
Value chain co-creation to produce constructive positive outcomes
Pre conditions for success
Need to provide a system knowledge & governance to support system thinking because everything is interconnected
Constraints and opportunities in current EU Policies
Blue Society for Blue Growth. Integrate the social dimension into the Blue Growth policy and economy discourse

Workshop 2 - Citizens of today and tomorrow

Needs and demands
Framing the narrative right, logical order, positive message, banalance between audiences and how to pitch messages. What is the message you want to tell people and how

Co-creating and sharing knowledge
Social media as a challenge but also as an opportunity (dialogue). Can use to co-create ideas
Initiate/ Contributing for change
Emotions, image, text, celebrities, events… get it right!
Self-evolving/self running
Pre -conditions for success
Need to get the right people/expertise (media/marketing)
Monitor and track and evaluation as you go (resources required)
Constraints and opportunities in current EU Policies
Time & resources allocated, scientists' reluctance (get beyond your fascination…)
Do not make « behaviour change » as pre-conditions/compulsory objective…. When working with citizens

Workshop 3 - Maritime transport

Needs and demands
- "Market and economic understanding"
- Port economics drive the vessels from port to port
- Monitoring facilities, port inception facilities
- Need EU port standards
- Costs should be shared between port and ship owners
- Open access info sites

Co-creating and sharing knowledge
- Specific call to create a test of protocols (toolkit) standardized with a TRL of quality equipment of BWT
- Create a focal point w/ administration and experts from the above bodies (port authorities, MoH, MoE, MoTr)
- Citizens' science observatories (coastal waters' testing and reporting, standardization of practices - SoP)

Initiate/ Contributing for change

Institutions are not interested in change ➔ change to be initiated by public

Preconditions for success
- Estimate and communicate the costs of restoration of sites and the cost of mitigation measures of the impact of ballast water in EU member states
- Material flow analysis on a socioeconomic point of view ("pain analysis")
- Test BWTS effectiveness of board, operational readiness of the technology
- Crew training and crew rotation, standardization of practices (SoPs)
- Feedback from crew operators of the BWTS to the makers on their effectiveness during voyage and problems encountered
- Collaboration PPP
- Make science simple for crew
- Fines if ballast water is unsuitable
- Port standardization, and equipment standards (SoPs)
- Open access of data
- Monitoring programmes for ports and open dissemination of this data

Constraints and opportunities in current EU Policies
- MSFD on IAS (it mentions IAS, yet limited scope) ➔ bridge towards a Ballast Water Management Directive, or standards of EU ports
- EU policy/ regulation for port monitoring are not in place
- Marine Spatial Planning MSP (conflict resolution)
- H2020 specific calls for this issues
- DG ENV, DG MARE calls (for impact assessment of IAS, for technology and treatment quality standardization)

Workshop 4 - Food from the sea

Needs and demands
- RRI and OL should contribute to raise awareness about the role and value of fishers, including their knowledge, particularly the social and economic importance of small scale fisheries
- RRI and OL should contribute to address the needs for knowledge so that all individuals along the value chain become actors of sustainable seafood supply

Co-creation and sharing

Ensure to agree with all actors on channels for transversal collaboration and communication and harness knowledge through vertical and horizontal interactions

Make a Change

Ocean Literacy and RRI should provide people not only with knowledge and awareness but also with understanding of the actions they can take.

Preconditions for success

Include positive messages when communicating and create trust between stakeholders

Policy opportunities

Start fully implementing current policies before designing new ones

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Workshop 5 - Marine litter

Needs and demands
- Need for a systemyc change;
- reflect on and change
  production and consumption patterns
  towards a circular economy where « waste is an exception »
- Ensure to agree with all actors on channels for transversal collaboration and communication and harness knowledge through vertical and horizontal interactions
- No one size fits all approaches:
- Different types of litter = Different types of stakeholders

- Bringing in all stakeholders <u>and</u> nature

Co-creation and sharing
Local based inclusive processes
Meaningful knowledge = scientifically underpinned + customized to stakeholders

Making Change
New product design.
How to foster behaviour change? Information isn't enough, ACTION is required

Preconditions for success
- Codesigning arenas for open dialogue bringing together all stakeholders
- Sharing relevant knowledge by mingling people from different backgrounds
- Working at relevant « level », for instance water catchment: where pressures stem from + where we can act

Policy opportunities
- EU initiatives : no plastic, circular economy
And their national adaptations
- UN Decade of Ocean Science for Sustainable Development

The recommendations of the ResponSEAble projects, the summaries of the workshop and the outcome of discussions during plenaries of the Ocean Dialogue conference – including contributions from the Young Professionals that participated in a specific workshop, were summarized into a **Manifesto** presented at a policy workshop organized at the European parliament (http://www.searica.eu/documents/category/50-documents-of-the-event-20-march-2019). The following box presents the main messages carried out by the Manifesto.

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Manifesto for building an effective Ocean Knowledge System (draft[1])
The role of Responsible Research and Innovation (RRI) and Ocean Literacy (OL)

The starting point: A **wide mobilization** of all components of society is required for addressing today and future ocean challenges, and for seizing in a sustainable manner the development opportunities that the ocean offers.

Our working assumption: An **ocean knowledge system** associating all stakeholders who are (1) **producing**, (2) **translating** and (3) **using** knowledge, is a prerequisite to **effective ocean governance** and to support wide mobilization and engagement. Such an ocean knowledge system needs to cover **all aspects of the human-ocean connections**, and bring together **different types of knowledge**, from empirical knowledge to science and innovation.

Key principles for the ocean knowledge system to support effective ocean governance

- Gain a sound understanding of (evolving and dynamic) **societal needs & demands** for ocean knowledge
- **Co-build ocean knowledge**, mobilising knowledge produced by all parties involved, opening science and innovation to all, mobilising citizens from today and from tomorrow in knowledge co-creation
- Establish shared and transparent mechanisms that ensure the **quality** and **credibility** (saliency and legitimacy) of both (1) the knowledge produced and (2) the processes that contribute to producing, translating and using ocean knowledge
- Develop protocols and rules that deliver **open access** and put the conditions right for ensuring **accessibility** to data, information and knowledge to all, accounting for the diversity of ocean knowledge "use contexts"
- Develop fit-to-purpose mechanisms for ensuring the right knowledge reaches the right target group, so as to strengthen **ocean literacy** and **research & Innovation** for all – including citizens, consumers, business and value chains actors, decision makers, scientists, media…
- Ensure **accountability** & **responsibility** of all involved in the ocean knowledge system, including knowledge end-users that have the responsibility to make effective and transparent use of the co-built knowledge and which commitments need to be monitored in a transparent manner

To translate these principles to reality and contribute to make a change

Provide **new skills** to widen the perspective of all involved

Give more attention to **human sciences** (in particular sociology, psychology, anthropology, media, marketing, economics, social processes…) to capture « **what drives** » all involved and the connections between **knowledge, perception, attitude and behaviour**. This will help making initiatives from the local to the global scale "fit for purpose" and effective
Mobilise **new actors**, in particular **media specialists**, science & **knowledge brokers** and **multipliers** which job is to contribute to knowledge sharing. Bring also **land-based stakeholders** connected (directly or indirectly) to the ocean that are very absent from today's debate on the ocean

Establish **new bridges** facilitating exchanges and links between existing **knowledge platforms** and **communities** mobilized in different building blocks of the ocean knowledge system
Develop **new governance, management** and **strategic plans** for (research) organisations to define long-term strategies that strengthen the ocean knowledge system and give the **right incentives** to knowledge producers, knowledge brokers, and knowledge (end-) users

Make **sound** and **transparent evaluation** (of Responsible Research & Innovation, of Ocean Literacy initiatives, of new knowledge …) a requirement for all to monitor progress and learn from experience. Allocate sufficient resources (human, financial, time…) to deliver robust evaluations.
Seize opportunities offered by **all policies** – including policies supporting business development, environmental protection, education, communication… both maritime and land-based, to support the (rapid) development of a sound ocean knowledge system that contribute to knowledge-base management and public decision building

In combining our resources and efforts to make things happen, bring a clear forward-looking perspective so the ocean knowledge system supports the adaptive capacity of ocean governance to respond to future challenges.

Support **forward looking exercises (vision building)** at different scales and for different sea basins for shedding lights on emerging ocean challenges and sectors in a context of global change –thus anticipating future needs for, and roles of, the ocean knowledge system

Recognise the importance of the **Youth** and **Young professionals** as being part of the solution, and their capacity to drive changes - if **associated from the onset** on **equitable grounds** to the social and policy debates on the development of the ocean knowledge system and the wider sustainable management of the ocean

Do not separate Responsible Research and Innovation (RRI) and Ocean Literacy (OL): these are complementary components of the same Ocean Knowledge System

Keep the attention to the ocean, making explicit the role of ocean in the earth system. The ocean needs a voice to be heard.

Let's put our **heads out of the ocean**, lets' **bring the ocean to the streets**.

In addition, the Ocean Dialogues also contributed to the UNESCO Decade of Ocean Science. The table below summarises the implications of Manifesto's messages for the Decade. :

Message from the manifesto	Possible implications for the preparatory activities of the Decade
Give more attention to human sciences (in particular sociology, psychology, anthropology, media, marketing, economics, social processes…) to capture « what drives » all involved and the connections between knowledge, perception, attitude and behaviour. This will help making initiatives from the local to the global scale "fit for purpose" and effective	Find opportunities for bringing researchers from human science, media, processes… into the Decade => e.g. organize dedicated workshop ensuring the key research areas linked to these disciplines in relation to the ocean are developed and prioritised
Mobilise new actors, in particular media specialists, science & knowledge brokers and multipliers which job is to contribute to knowledge sharing. Bring also land-based stakeholders connected (directly or indirectly) to the ocean that are very absent from today's debate on the ocean	Develop links and synergies with media specialists, science and knowledge brokers – so as to establish the basis for sustainable working relationships that ensure they contribute in the longer term to the implementation of the decade and to the dissemination and "translation" of knowledge that the decade will deliver
Establish new bridges facilitating exchanges and links between existing knowledge platforms and communities mobilized in different building blocks of the ocean knowledge system	Develop specific action on the development and management of the Ocean Knowledge System – supporting initiatives that can put the right management, governance and strategic conditions in place in different countries/regions/regional seas so to support the effective use of the knowledge that the Ocean decade will deliver
Develop new governance, management and strategic plans for (research) organisations to define long-term strategies that strengthen the ocean knowledge system and give the right incentives to knowledge producers, knowledge brokers, and knowledge (end-) users	
Make sound and transparent evaluation (of Responsible Research & Innovation, of Ocean Literacy initiatives, of new knowledge …) a requirement for all to monitor progress and learn from experience. Allocate sufficient resources (human, financial, time…) to deliver robust evaluations.	Give attention to monitoring and evaluation of all initiatives linked to the Ocean Knowledge System (from the production of knowledge to its final use) – ensure adequate resources are allocated to the "monitoring and evaluation" of the implementation and success of the Decade of Ocean science

From recommendations to a logical framework for addressing OL

Building on the recommendations presented above, a logical framework/narrative for supporting the development of effective Ocean Literacy was developed and used as basis for structuring the web.doc developed under WP7 (see Deliverable 7.3). Traveling through the web.doc, users will reach recommendations emerging from ResponSEAble, with browsing and watching videos, or providing direct access to deliverables and OL products developed under WP5 illustrating the different steps of the narrative.

What we have learned in the project about how to do more effective ocean literacy is shown in the few steps:

1. It is important to **choose the area (narrow down subject)** in which an ocean literacy practitioner would like to develop a new ocean literacy campaign/tool. ResponSEAble gives the examples of 6 Key Stories – why and how they were chosen, as complexity and amount of knowledge that already exist is huge, and often the issue is structure existing information and tools.

2. **To be effective one doesn't need to re-invent the wheel**, thus the second step is to **collect knowledge that exist about the issue and to analyse where are the gaps and set up realistic objectives**. The ResponSEAble proposes an approach – framework for that – DAPSIwR provides a way to structure knowledge and analyse existing gaps, while identifying actors who should be targeted in priority with OL initiatives, and the main channels that they use for acquiring knowledge. The user has an example of 6 key stories, which were analysed in this matter. The 6 documentary films and additional materials allow the user to dive into each story and within 5 min better understand the issue.

3. **Accepting change and the need for new (sustainable) practices is challenging**. It is difficult to find a balance between financial, environmental and societal demands. **An Ocean Literacy tool should have specific, realistic, achievable objectives** in terms of the OL dimensions. It is extremely useful to develop a Theory of Change model for Ocean Literacy tools, as we must be clear of the journey from awareness to behaviour change that we would like our intervention to engender in the target audience. This also allows us to specify measurable objectives and measurement instruments.

> ➢ *Objectives should be active and formulated in terms that indicate what the learner/participant should be able to be aware of, know or do after he or she participates in the course (and not in terms of what the OL tool should do).*
> ➢ *Realistic objectives take into account the target group, their pre-existing levels of Ocean Literacy, and a good analysis of what is achievable.*
> ➢ *Consideration should be given to providing feedback to the users on how they perform (where relevant), so that they are invited to reflect on their experiences.*

> *We need understand better means of conveying complexity to different audiences. Individuals with improved knowledge of a system are better positioned to make positive behavioural choices, but also more likely to communicate actively (and knowledgeably) on the subject, thereby influencing others.*

4. Before embarking on actually developing a new ocean literacy tool – be it a new social media campaign, video, educational programme, game, platform etc… an ocean literacy practitioner needs to **select the target audience**, for the tool to be effective. In this step, it is important to take the analysis of the step 1 further – and look (map) all the economic activities that are involved in putting the pressure, and actors in the value chain, using value chain approach:

   a. The description of the value chains connected to the marine challenges investigated stressed the **diversity of the activities that directly or indirectly are connected to these challenges**.

   b. **Value chain approach** allows to widen the target groups from what is usually done in 'general public' to include economic actors, professionals, service producers, etc..) .

   c. Value chain approach helps to **identify the priority areas for "behavior change"**, i.e. the activities and actors which "change of behavior" are essential for the activities of the value chain to shift to more "marine-friendly" practices and behavior (or to capture potential benefits offered by marine ecosystems and thus contribute to Blue Growth).

> *Engage the private sector in Ocean Literacy initiatives is challenging. Governance and economic incentives exist and need to help building capacity to support change of behaviour and practices.*
>
> *Interest and trust are essential when working with the private sector, so as to deliver a shared ocean optimism!*
>
> *Capacity building (such as DG MARE support of 'Blue schools' and Blue Skills initiative) that contribute to make the ocean trendy plays a very important role.*
>
> *More efforts are required for supporting Youth and Young professionals Ocean Literacy initiatives.*

It is important to keep in mind that:

- **Individual actors** are likely to take a big part in mobilizing other groups to react to a marine or environmental problem, including other individuals. In their function as individuals they are less likely to inform other groups on complex issues, but may pass information on to other individuals. Also, Individual actors play a key role in expressing continuity aspects with each other, as well as other groups.

- **Social actors** usually play an important role in informing other actors from all spheres on marine or environmental challenges, as well as in explaining relevant issues. They also play a role in mobilizing individuals and other social actors.

- **Regulative actors** inform others and maintain or forge a common cultural practice between all groups.

- **Professional actors** inform others on their practices and new developments. They also support the maintenance of development of professional practices.

5. **Engaging with target audience:**
    a. Once the actors are identified, ocean literacy practitioners need to go one step further – to engage with this group (to understand what drives them, where do they get the knowledge, etc..what knowledge interests them).
    b. It is important to learn about why actors act the way they do and how they communicate and take information / knowledge on board. We must learn about which communication channels specific actors listen to and trust most.
    c. The language of communication varies enormously, and we must **strive to understand the language of our target audiences.** Equally, we must strive to understand the filters which we / they use both in transmitting and receiving information and knowledge. These filters potentially bias and even block out information which is unwelcome or difficult to accept.

Each target group has its specifics: ResponSEAble considered 4 target audiences: children, consumers, policy makers and marine professionals, analysed challenges and best practices on how to best do ocean literacy with this group (results are in webinars, policy briefs): https://www.responseable.eu/news/the-responseable-webinars

In addition, the following recommendations can be made:

> ➤ *A target group must have the potential to be targeted by something that they have in common. Therefore, the general public is not a good target group for an OL tool. Better would be to use consumers, or better yet consumers of beauty products that contain microplastics. The better your target group is defined, the more effective your tool will be, because the tool can target the group by what they have in common. The age and existing competence level of the target audience must be taken into account.*
> ➤ *The objective of the OL tool should influence the identification of your target group. The OL tool and communication channel that you choose should fit your target group.*
> ➤ *The context in which the tool will be used is a very big factor in its effectiveness. For example, using a video in a teaching setting versus a noise, crowded exhibition.*

2. **Which tools to develop?** Ocean literacy practitioners have a wide range – depending on their area of expertise (educators, activists, communication officers, etc..). Knowing the audience allows to choose the methods. For the ResponSEAble experience – best practices is to use the media (documentary, cartons, portraits of actors, games, quizzes) to make the audience engage with a tool. The gamification is a powerful tool with all audiences! Examples:
    a. The policy makers, and fishermen in the academies equally enjoyed the 'spoons' game (made by ResponSEAble partner – ProSea) – part of the educational package for maritime professionals
    b. a 'board game' – is both popular with teachers, children, and their parents (made by Oceanopolis-UBO).

      c. Computer games (made by CSP) – the spectre here is very wide….one will navigate the archipelago and meet several challenges to solve, related to the health of our ocean and the connected value chain.

      d. Questions and answers in a form of fun quiz (Cahoot/or other platform) are proved to be success at all levels! ResponSEAble developed also *'literacy bubbles'* (collection of over 300 questions about the Ocean forms an original approach to Ocean Literacy by answering to questions people already have about the ocean. The database is provided in an Excel spreadsheet to navigate the document easily) or *a question center* - this application will help you design questions to isolate the information you need in your research. We have split the types of questionnaires into Quizzes and Surveys. The primary purpose of a quiz is test the knowledge of the quiz taker and not to gather feedback or opinion like a survey/poll. Quizzes are typically used in teaching, training and learning to build and test knowledge.

3. **Co- creation of the tools –** the ocean literacy campaigns /materials are most effective if in their production the users are being involved at different part of the process 6in ResponSEAble we have used living lab…

      a. At the start – it allows to engage with the audience (for example in ResponSEAble the questionnaires, short interviews and group discussions were carried out to understand what issues/questions are of interest and collect visions/ideas of users before embarking on a tool development. Once the first prototype is created – it is a good point during the process to engage the small group of users to tests it.

      b. Also, It is important **to understand the motivations and behavioural models of** OL target audiences. This understanding is needed **to inspire people to change** the way they think and act in relation to ocean matters.

> ➤ *The Living Lab approach guarantees (if done well) that we take the target group's knowledge and interests into account. It ensures we do not approach the project with an already fixed idea.*
> ➤ *If it is not possible or effective to work with the target group in a living lab setting, it might be possible to work with an intermediary or influencer to act as a proxy / sounding board. Some target groups might be highly resistant to change and might not be effective partners in the living lab process.*
> ➤ *The effort involved in developing content (e.g. game questions) must not be underestimated. Translation adds another level of complexity.*
> ➤ *Look and feel (usability, attractiveness) are highly important, and must be given sufficient attention and resources.*
> ➤ *It is important that a tool has flow, that it "tells a story".*
> ➤ *Important design decisions made early in the process will have impacts throughout the rest of the tool life cycle, and must be made carefully.*

4. Before embarking on a lengthy and costly OL initiative, it is important to reflect **how to define effectiveness ?** What is the desired output after a person (or a group we target) has seen a movie, played a game, read the book, got involved in a workshop, etc…? There have been already many campaigns, books published or films made… Why do we need another one? How it should be different? Should it target a different audience? Should it target an issue from a perspective that has not been done before?

ResponSEAble adapted the **Environmental Literacy Ladder**[1] which describes the evolution of literacy from basic awareness of a concept, through to changes in attitude and behaviour, and potentially active engagement activism for change. The following were considered:

- **Awareness:** Being aware that something (e.g. problem, concept,…) exists.
- **Knowledge**: What you know about a topic or links between topics.
- **Attitude**: Agreement with a particular position, for example, agreement that a change in 'behaviour' is important / is effective.
- **Communication**: Actively engaging in communication around issues.
- **Behaviour**: Decisions / Choices / Actions / Habits relating to specific situation / activity (in the context of the KS / DAPSIR) in everyday life. The activity of a person as an actor.
- **Activism**: Actively campaigning to bring about political or social change.

5. Moving up the 'literacy ladder', ResponSEAble partner UPM UOP hase developed a methodology for the application of Behaviour Change Model. A step-by-step planning and evaluation model has been created and initial trials carried out in collaboration with the Education for Professionals and Children's ocean literacy tools / workshops. This model was originally aimed at directing change/behaviour change processes in health promotion, and has been widely adapted in environmental awareness programmes. A systematic approach applies a behavior change model within a "Theory of Change" framework, to establish objectives, and indicators of success, for each of the ELL steps, and stages in the behaviour change model.
   a. **Knowing does not always lead to doing** – cognitive dissonance is a significant challenge in overcoming this inertia. Therefore before embarking on a lengthy and costly OL initiative, it is important to develop a Theory of Change - a comprehensive description of how and why the change desired by the OL initiative will actually come about. Effectively a set of desired outcomes and the causal understanding of how these will be achieved through the activities we will undertake.
   b. Attention !: **not all audiences are equally "sea-blind"** (levels of literacy will vary), so it is dangerous to apply the same theory of change to disparate groups.
   c. We make assumptions on the important of knowledge and awareness in changing attitudes and behaviour, but it is important to test our hypotheses with proper statistical analysis.

> ➢ *We would incorporate test-instruments into the tool or course. This would make the testing process less intrusive and diminish the impact on the course process.*
> ➢ *It is important but very difficult to develop methods to monitor if intended behaviour has been carried out and what has enabled it.*

[1] http://www.fundee.org/facts/envlit/whatisenvlit.htm

> ➢ *Future projects could identify objective indicators of actual behaviour – increase or decrease in use of recycling facilities or increase or decrease in purchase or use of products containing microplastics or sustainable sourced seafood.*
> ➢ *Although we can get a general impression of the effectiveness of a tool by looking at the data collected, thorough analysis is required to be done by a specialist, following a specific protocol.*

Recommendations for specific marine challenges (Key stories)

Below are the **main gaps found in the communicated knowledge and target groups**:

- **Microplastic in Cosmetics:** The key story is **lowly covered in terms of different target groups, the variety of messages,** and in terms of content, but bears a high value to illustrate the human-ocean relationship. Therefore, it would be beneficial to support an expansion of the thematic focus on all areas of concern, including the **value chain of cosmetic production, the interrelationship or ecosystem components, political, economic and social responses.**

- **Sustainable Fisheries:** The key story is highly covered in terms of different target groups and the variety of messages. The coverage of content varies between different countries and target groups. **Focusing on consumption related messages is not recommended** as these are mostly covered by existing resources and campaigns. **Retailers and especially retailers** that are willing to support sustainable fisheries **might be targeted** to deepen their understanding of ecological relationships and economic challenges.

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- **Marine Renewable Energy:** The key story is highly covered in terms of different target groups. The variety of messages varies in different countries, especially regarding the public in general. **The coverage of content is low, especially on the ecosystem state components, welfare and responses**. A broad increase of the understanding of relations between the technology and ecosystem components, the potential impacts also in regard to other ecosystem components and stories might be useful. Also, a clear systemized view on **responses of the public, citizens and consumers can be supported**.

- **Agriculture and Eutrophication:** The key story is lowly covered in terms of different target groups, the variety of messages, and in terms of the content. The effect of the pressure eutrophication is barely explained, the actual ecosystem effects as well as welfare effects are not explained. The key story has a **huge potential** to broaden the understanding of the relation between a globalized economic segment and a local environmental feature, the Baltic Sea, with its complex ecological relations. A broad increase of the **understanding of relations between the globalized segment of the economy and ecosystem components, the impacts on the environment and welfare aspects is recommended.** A clear and systemized view on the **responsibilities of citizens and consumers can be supported**.

- **Ballast Water and Invasive Species:** The key story is **highly covered in terms of different target groups**. The variety of messages is relatively low. The coverage of content is activity and pressure focused, also welfare aspects are covered. **Responses are limited to regulative and economic aspects. Social responses are absent.** The key story has the potential to connect a highly-globalized segment of the economy to very local environmental and welfare impacts. Local information campaign connecting the two dimensions would be a welcome step to bridge a very distant pressure exerting activity with the local environment of people near to the sea.

- Analysis and classification of types of knowledge that need to be communicated to increase ocean literacy in Europe showed that a move beyond the classic 'scientific' ocean literacy principles as developed in the USA is needed. In order to support a behavior change in Europe we must move towards **<u>responsible ocean literacy</u>, which includes knowledge on individual, social and political responsibility as well as reflections, emotions and actions in addition to the environmental and economic knowledge.**

Conclusions

Implementing these recommendations, and strengthening Ocean Literacy in Europe, will require that some common principles are put in place in the way knowledge on the ocean is produced, transformed and disseminated to different target audiences. In particular (building on discussions that took place at the final 2019 Ocean Dialogues co-organised by ResponSEAble):

> We need to gain a sounder understanding of (evolving and dynamic) **societal needs & demands** for ocean knowledge. Today, significant improvements in the way stakeholders are involved in research projects are taking place. But there is still some room for progression.

> **Co-build ocean knowledge**, mobilising knowledge produced by all parties involved, opening science and innovation to all, mobilising citizens from today and from tomorrow in knowledge co-creation is essential for facilitating access by different target groups to knowledge. This will also help bridging the gap between science and policy/management

> We need to establish shared and transparent mechanisms that ensure the **quality** and **credibility** (saliency and legitimacy) of the processes that contribute to producing, translating and using ocean knowledge. Indeed, it is important to understand the quality of the knowledge mobilised for developing OL products and initiatives, but also

> Fit-to-purpose mechanisms and channels need to be established for ensuring the right knowledge reaches the right target group, so as to strengthen **ocean literacy** for all – including citizens, consumers, business and value chains actors, decision makers, scientists, media… In particular, it is important that media literacy is enhanced to enable all actors involve to assess the soundness of messages and knowledge received.

To make these principles operational, it is important that we:

> Give more attention to **human sciences** (in particular sociology, psychology, anthropology, media, marketing, economics, social processes…) to capture « **what drives** » all involved and the connections between **knowledge, perception, attitude and behaviour**. This will help making initiatives from the local to the global scale "fit for purpose" and effective

> Mobilise **new actors**, in particular **media specialists**, science & **knowledge brokers** and **multipliers** which job is to contribute to knowledge sharing. Bring also **land-based stakeholders** connected (directly or indirectly) to the ocean that are very absent from today's debate on the ocean

> Establish **new bridges** facilitating exchanges and links between existing **knowledge platforms** and **communities** mobilized in different building blocks of the ocean knowledge system

> Develop **new governance, management** and **strategic plans** for (research) organisations to define long-term strategies that strengthen the ocean knowledge system and give the **right incentives** to knowledge producers, knowledge brokers, and knowledge (end-) users

Make **sound** and **transparent evaluation** (of Responsible Research & Innovation, of Ocean Literacy initiatives, of new knowledge …) a requirement for all to monitor progress and learn from experience. Allocate sufficient resources (human, financial, time…) to deliver robust evaluations.

Seize opportunities offered by **all policies** – including policies supporting business development, environmental protection, education, communication… both maritime and land-based, to support the (rapid) development of a sound ocean knowledge system that contribute to knowledge-base management and public decision building

It is important also that the **Youth** and **Young professionals are recognised as** being part of the OL solution, as they have clear capacity to drive changes - if **associated from the onset** on **equitable grounds** to the social and policy debates on the development of the ocean knowledge system and the wider sustainable management of the ocean. Indeed, while the Youth is often considered as a target group of OL initiatives, they can also be « contributors » and drive OL activities using social media and innovative ways of sharing knowledge.

Finally, while many research initiatives do focus on **Responsible Research and Innovation (RRI)** or on **Ocean Literacy (OL),** it seems essential to **combine them more closely** as these are complementary components of the same Ocean Knowledge System.