REPORT

"How can expanded plastics fit into the Circular Economy?"

First Participative Session

London, United Kingdom

OCEAN WISE

Reducing EPS marine litter in the North East Atlantic

Interreg Atlantic Area
European Regional Development Fund

EUROPEAN UNION

Technical Information

Session Moderator

Umberto Binetti

Methodology

NOVA FCT: Lia Vasconcelos (Coordination); Flávia Silva; Ricardo Resende

Organization and Logistics

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Elaboration of the Report

Josie Russell

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1. Introduction

OceanWise is an Interreg project that deals with marine litter in the perspective of the **Circular Economy**, focusing solely on products composed of Expanded and Extruded Polystyrene (EPS/XPS), commonly called Styrofoam, and has the purpose of developing recommendations for public policies and good practices for Industry. The OceanWise consortium includes partners from Portugal, Spain, France, Ireland and the United Kingdom, putting together a set of varied competences - management of marine environment, waste management, circular economy, innovation and development.

The **European Commission** identified the "**Action on Plastics**" as a **Priority** in its Circular Economy Action Plan. The transition to the Circular Economy is about to take place through various legislative acts, and OceanWise intends to **give voice to all interested**.

Thus, OceanWise intends to answer to the problem of marine waste related to the EPS/XPS in a broad way, by joining and listening to a sectoral platform that includes, among others, governmental entities responsible for the management of the marine environment, industry, waste management entities, designers, circular economy modelers, I&D specialists and final consumers.

In this context, hundreds of potential Stakeholders were identified in the different countries of this project, Stakeholders who were invited to participate in the 1st Participative Workshop of OceanWise.

In the UK, the 1st Workshop took place on 27th March 2019, at the Cumberland Hotel, and was dedicated to the exploitation of the relationship between the EPS/XPS and the Circular Economy.

The organization of this event was ensured by the UK partners of the OceanWise project, The Centre for Environment, Fisheries and Aquaculture Science (Cefas). All methodologies and activities were developed and closely accompanied by FCT NOVA (NOVA School of Science and Technology), partner of OceanWise from Portugal.

Sixteen Stakeholders participated on the event in the London, representing several sectors of activity related directly or indirectly to the life cycle of the EPS/XPS. Next OceanWise will organize workshops in the other partner countries, following the same motto and methodology, in order to measure the vision of the different Stakeholders broadly.

Acknowledgments

Thanks to all the participants for taking part in this workshop

2. Programme

Workshop Title: "How can expanded plastics fit into the Circular Economy?"

Date: 27th March 2019

Time: 13:00 – 17:00

Venue: The Cumberland Hotel, London

- **Registration and Buffer Activity** – Scenario Analysis
- **Ice Breaker Activity**
- **Scenario Setting** – 1st Group Activity
- **Main Constraints / Concerns & Benefits / New Opportunities** – 2nd Group Activity

Coffee Break

- **Priorities** – 3rd Group Activity
- **Closure and Conclusions**
- **Evaluation of the workshop by Participants**

3. Workshop

Throughout the workshop, several activities were developed with the participants of the session. Each of the methodologies used was developed to answer to issues related to the theme of the workshop, its participants, and the objectives of the OceanWise project.

During the registration, participants were separated into different categories of Stakeholders. This classification allowed the development of the first activities of the workshop in homogeneous working groups, sharing the elements of each group similar knowledge and base interests on the theme.

Thus, four categories of Stakeholders/Sectors were defined, to which different colours were assigned to facilitate the identification and organization of the work:

Colour	Stakeholder Category / Sector
	EPS Producers
	Marine Litter Policy Experts
	Researchers, retailers and alternative producers
	Waste Management

3.1 Buffer Activity – Scenario Analysis

Buffer Activities' purpose is to collect relevant information, both for the progression of the sessions or for future steps of the projects, in an individual and anonymous way. This allows participants to start reflecting on some of the themes and get to know opinions and views of other participants. These activities usually do not require the participation of all present, allowing them to respond to it in another phase of the session.

In this sense, the participants of the workshop were asked: ***"As an expert in your area, please carefully read each of the hypothetical scenarios presented, and give us your opinion for each of them"***.

Participants had 30 coloured points/votes, corresponding to the colour assigned by sector at the time of registration, to distribute in the various scenarios:

1. The industry incorporates the EPS / XPS residue as raw material in the production of EPS and XPS (waste from single-use products).
2. Identification of the industrial provenance, composition / additives and possible suitability of the products for food contact accompany the product even after discarding (traceability).

3. The use of single-use utensils made up of EPS and XPS, such as cups, plates and takeout boxes, are banned at public events and catering services, especially at beach bars and restaurants.
4. Incentives are created for the return of packaging and other consumer EPS / XPS applications.
5. Financial incentives are created to stimulate the recycling of EPS and XPS aboard ships, at auction, and in aquaculture.
6. EPS or XPS used for protection in the packaging of fragile but non-heat sensitive products is replaced by biodegradable or reusable materials.
7. The use of EPS and XPS in the fisheries sector (signal booms and other artefacts), as well as their use for tourist navigation, is abolished.

Figure 1. Buffer activity - Scenario Analysis.

8. All EPS and XPS products with the potential to become marine litter are replaced by other less impact materials (maintaining functionality and economic sustainability).
9. The use of XPS trays in fresh food packaging is replaced by PET or biodegradable materials.
10. The EPS or XPS for industrial use implies contracts or synergies for its collection for recycling or other use in a circular economy perspective.

The questions to be answered in each of the scenarios were the following:

- Time period for scenario accomplishment;
- Country / countries where there is already or there are conditions / knowledge / technology for the accomplishment of the scenario;
- The main constraints to the accomplishment of the scenario.

Activity Results – Scenario Analysis

The table that is presented below gathers the compilation of the votes of the participants in the scenarios. In the workshop, and in order to facilitate the activity, the participants voted on four posters that were distributed throughout the room - Figure 2. The results can be consulted with greater detail and resolution in annex 5.

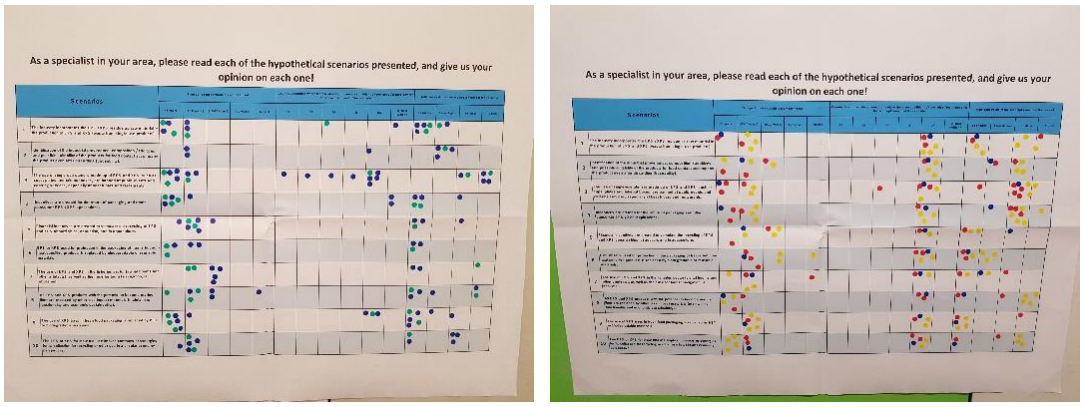

Figure 2. Scenario Analysis (final product).

Scenarios	Time period for scenario accomplishment					Country / countries where there is already or there are conditions / knowledge / technology for the accomplishment of the scenario						The main constraints to the accomplishment of the scenario			
	<3 years	[3-10 years]	[10-20 years]	>20 years	NEVER	PT	ES	FR	IE	UK	OTHER (Which?)	Economic	Techno-logical	Political	Social
1															
2															
3															
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10															

After voting scenarios, participants were invited to sit by groups depending on the colours assigned in the registration. Thus, seven work tables were formed, each consisting of Stakeholders of the same categories/sectors.

The Moderator welcomed participants and invited them to make a round of presentations at the tables so that everyone would meet. To this end, the participants answered, by table, the following questions: *Who are they, what do they do, where they come from?*

3.2 Ice Breaker Activity

This exercise aimed to be an icebreaker, and simultaneously alert/inform participants about the different types of foams that exist and their uses. This activity informalized the environment making easier the dialogue between participants.

Each group was invited to observe the foam items and identify their typology (EPS | XPS | Other foams) by filling the available form. Subsequently, the Moderator developed a dynamic where she asked the room the typology of each item (from 1 to 10), and each group simultaneously presented its response, using specific signage. After presenting the answers, the moderator revealed the correct solution for each of the items.

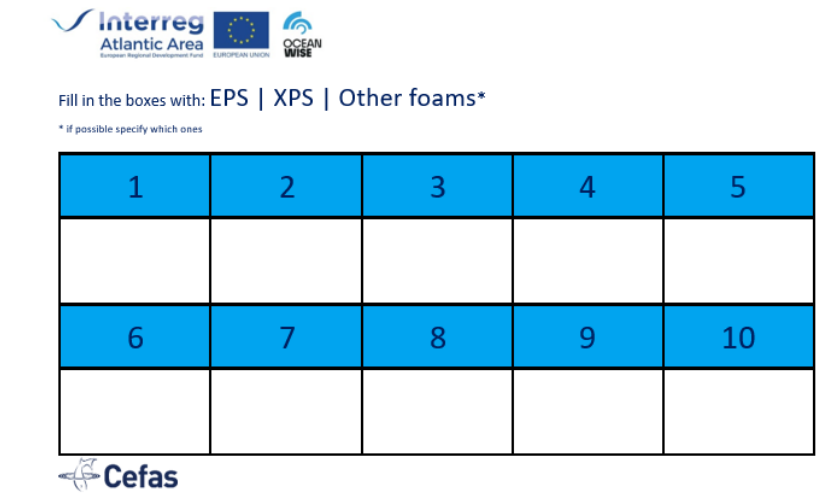

Figure 3. Ice Breaker Activity.

3.3 Scenarios setting – 1st Group Activity

In this activity, the participants were invited to develop in group Scenarios that answered the question: “Taking into account the current panorama, your intervention area and the example of the scenarios previously analysed, create / develop your own scenarios for EPS / XPS and other expanded foamed plastics in the short-medium-long term”.

For 15 minutes, and as a group, the participants developed the Scenarios, having as premise the fact that they are realistic events with probability of occurring in a short-medium-long term.

To this end, 5 categories were pre-defined for the definition of scenarios, having the group’s freedom to choose which categories to address or even to create other categories:

A) Manufacturers
B) Recyclers
C) Transport & Logistics
D) Fishing Industry
E) Food Industry
F) Others

Figure 4. Definition of Scenarios.

Activity Results

Each Group appointed a spokesman to present the most relevant scenario developed by the group, and to clarify it to the assembly in a brief intervention.

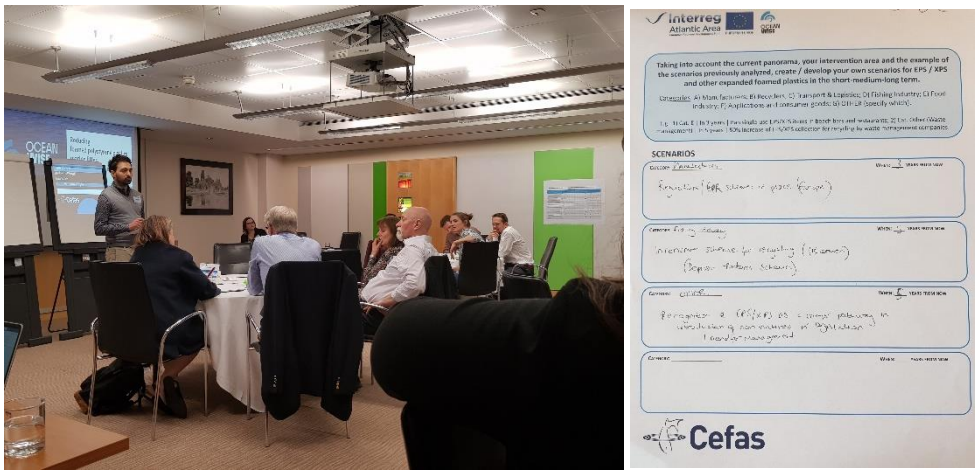

Figure 5. Presentation of Scenarios by the groups.

Category	Table	Timeframe	Scenario
A) Manufacturers	2	3	Regulations- EPR Schemes in place (Europe)
	3	3	Changing EPS to PP
B) Recyclers	4	10	Instead of being incinerated make sure it is effectively recycled
C) Transport & Logistics	1		Infrastructure to be put in place for recycling
D) Fishing Industry	2	5	Incentive scheme for recycling (fishermen DRS)
	1		Collection points for fish boxes
E) Food Industry	4	3	Ban single-use containers in the food and drink industry
	1		Collection points for fish boxes
	3	3	Working on a circular economy
F) Others	2	5	Recognition of EPS/ XPS as a major pathway in introduction of non-natives in legislation and need for management
	1	Immediate	Financial incentive scheme
		Immediate	Awareness across all market areas of recycling technologies, collection methods

3.4 Main Constraints/Concerns and Benefits/New Opportunities - 2nd Group Activity

In this group activity, participants were invited to collectively identify the main Benefits and New Opportunities, as well as the main Constraints and Concerns related to the EPS/XPS for their sector of activity.

> ***"The European Commission has identified 'Action on Plastics' as a priority in the Circular Economy Action Plan, to help European businesses and consumers to use resources in a more sustainable way. Taking into account the current panorama, what are the Main Constraints /Concerns and Benefits / New Opportunities that these policies bring to the EPS/XPS?"***

The groups were asked to use green post-its to identify the Benefits and New opportunities, and yellow post-its for the Constraints and Concerns, and to order them by ascending (- to +) in the form provided for this purpose.

Once again, on a randomly order, the groups presented the results of the exercise to the room.

Figure 6. Definition and Presentation of Constraints/Concerns and Benefits/New opportunities.

Activity Results

Benefits & New Opportunities		
- +	• Develop HWRC policies and infrastructure to support recycling • Improve public awareness of recycling opportunities • Science over emotion • Efficiently protects high value goods and minimises food waste • 100% Recyclable and >54% of used EPS packaging is recycled as it is a valuable resource	Table 1
- +	• Changing consumer choice and behaviour i.e. resources • Increase R&D efforts into finding alternatives • Changing consumer behaviour i.e. eating behaviour fast foods? • Wider environmental benefits possible	Table 2
- +	• UK Government meeting recycling target by making intervention (e.g. alternative materials) requires policies that make that feasible • Local recycling creates local employment • Reduce carbon footprint - including not exporting the waste • Use different material which can be recycled into a pure product for new manufacture	Table 3
- +	• Greater efficiencies/ productivity • More business opportunities/ new developments • Reduced plastic pollution - good for marine life, tourism and health • Using less new materials i.e. Fossil fuels	Table 4

Constraints & Concerns		
- +	• Not enough collection infrastructure • No legislation to enforce it • Local authorities don't collect • Waste managers don’t collect • Lack of public awareness	Table 1
- +	• Enough suitable alternatives? • Filter through to all consumers • Sustainable economies on global level • Waste management not changed with new alternatives i.e. need to change behaviour • Behaviour change	Table 2
- +	• Cost of recycling - potential for policy change • Bulky and expensive to collect. Carbon footprint and budget • Re- worked EPS only has low value applications e.g. picture frames and park benches (secondary market) • Easily broken to small pieces and gets into environment • Lack of EPS recycling experts in UK. Willingness o waste management to invest in sorting and reprocessing a material of low value. More coordination is needed.	Table 3

Constraints & Concerns		
- +	• Insufficient investment from consumers • Cost to Local Authorities to manage waste • Cost to businesses • insufficient progress globally despite what happens in Europe • No sufficient incentives for recycling	Table 4

3.5 Priorities – 3rd Group Activity

For this activity, a restructuring of the groups was carried out, so that the participants were distributed heterogeneously by the tables. A new round of presentations was held per table so that everyone in the group could get to know each other.

To initiate the identification of priorities, participants were asked to register individually (in small yellow post-its), two priorities that they considered to be more relevant/urgent to adapt the use of the EPS/XPS to the Circular Economy.

After this first phase, each member of the group presented their priorities to the table and the group initiated a debate to define the 3 priorities to be presented by the group to the room, these could be selected from the individual priorities or be a combination of several, as well as new priorities set jointly by the group after the debate.

All individual contributions developed were registered and are presented in annex 3 of this report.

Figure 7. Individual activity of setting Priorities and setting Priorities of the groups.

Cloud Structuring

After completing the previous phase, the Moderator asked the various groups to present, one by one, their Priorities. The priorities, with the involvement and agreement of all participants, were structured in "Clouds". This activity allowed to identify the priorities of the assembly, contributing to the construction of a collective agenda that will constitute the structuring of the participatory process.

Each "Cloud" consisted on a group of priorities considered similar by the participants, and to each one was assigned a "title" that reflected the central question expressed.

Participants were subsequently asked to vote on the Priorities/"Clouds" that they considered to be the most relevant/urgent to adapt the use of the EPS/XPS to the Circular Economy. Each participant was entitled to 3 votes, and could have them distributed as best they understood-1 vote per priority, 3 votes in the same priority, etc.

The counting of the votes was made, and the results announced to the room.

Figure 8. Cloud Structuring Exercise and priorities voting.

Collective Agenda Setting

After voting on the priorities, those who had the most votes were selected, and the participants / groups invited to answer the following questions:

- Key actors to engage;
- Information to collect / clarify / transmit;
- Synergies to create.

After the task, a spokesman for each group presented the results of the work performed.

Figure 9. Construction of the Collective Agenda.

Results Presentation – Cloud Structuring and Prioritization

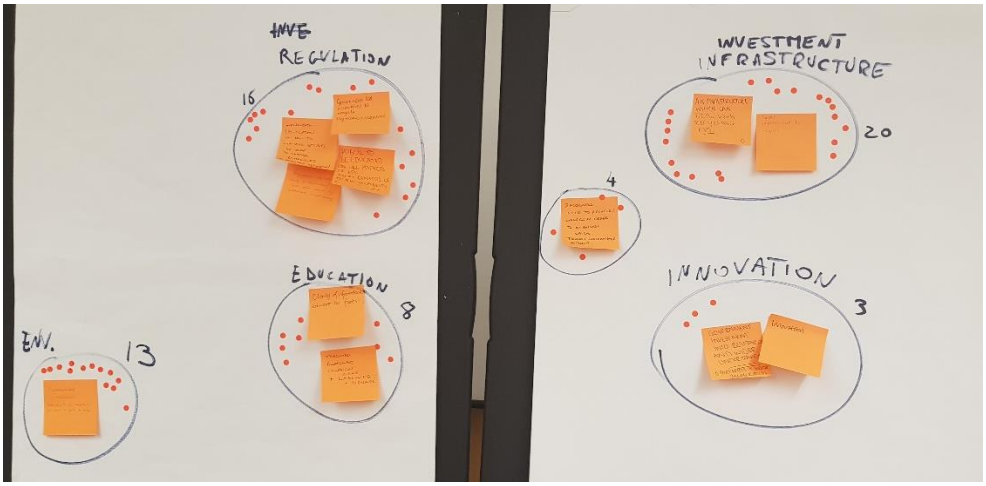

Figure 10. Overview of Cloud Structuring activity results.

Votes	Priority	Post-its
20	Investment Infrastructure	An infrastructure which can deal with recycling EPS
		Local infrastructure to recycle
16	Regulation	Government led incentives to recycle. Regulation required
		Public to be educated on all aspects of EPS - from benefits to recyclability
		Regulation at all levels of production/ consumption driven by evidence-based policy
		Implement legislation on how to manage EPS/ XPS in order to change behaviours i.e. penalties at household level
13	Environment	Environment protection. Individuals to companies all have a part to play
8	Education	Clarity of information - Educate with facts
		Targeted awareness campaign: with clear labelling and signage

Votes	Priority	Post-its
4	Co-ordination	Recognise the need to recycle/ manage in order to maximise value through coordinated efforts
3	Innovation	Innovation
		Government investment into research and wider understanding. Government plus industry collaboration

Presentation of Results – Consolidation of the Collective Agenda

Priority	Key issues to address
Investment/ Infrastructure	**Actors to involve:** Local government/ authorities, Manufacturers (raw materials, converters, users, recyclers, retailers), public
	Information to collect/ clarify/ to transmit: What is available? Where is it? What can it be used for? Education of the facts (energy, water usage, transport) Benefits to all parties
	Synergies: Local Government Authorities, Trade associations
Regulation	**Actors to involve:** OSPAR, DEFRA, Environment Agency, Local Authorities, Waste managers, EU, CEFAS, Water companies, Manufacturers (industry), retailers
	Information to collect/ clarify/ to transmit: Quantities of EPS in ocean Points of release and activities related Barriers to circularity and recyclability
	Synergies: Circular between manufacturers/ industry, recycling industry, research and development, law makers, public support and understanding
Environment Protection	**Actors to involve:** Industry, government, consumers, industry, business, public, researchers

Priority	Key issues to address
	Information to collect/ clarify/ to transmit: Risk based approach to management in the UK Where problem is in which area Social influences affecting misuse of EPS/XPS Which industries are biggest problem? Hotspots Targeted awareness/ education
	Synergies: Government and industry to push behaviour change

4. Debate and Closing Remarks

At the end of the session, the coordination of the OceanWise Project made a brief intervention, where the main objectives and next phases of the project, in the short term, were presented.

The participants of the session were encouraged to freely raise questions, which allowed an open and interesting debate, reinforcing the positive mood that has been created throughout the session. It was highlighted the importance that an event of this nature has for the definition of common objectives, as well as the added value of being able to join in a common working space Stakeholders from various areas of interest.

Finally, the team thanked the presence and contribution of all and reinforced the interest and importance of being able to rely on the involvement of all throughout the project.

Figure 11. Closing remarks and open debate.

5. Session Evaluation

At the end of the session, participants were asked to perform a synoptic evaluation of the workshop, giving suggestions and noting what they liked most and less.

An analysis was made of the main issues identified by the participants in the different components of the evaluation, having the data been treated to generate a word cloud (www.wordclouds.com). These images - Figures 12 and 13 - allow a quick visual reading of the key points/keywords mentioned most frequently by the participants.

Figure 12. What they liked MOST.

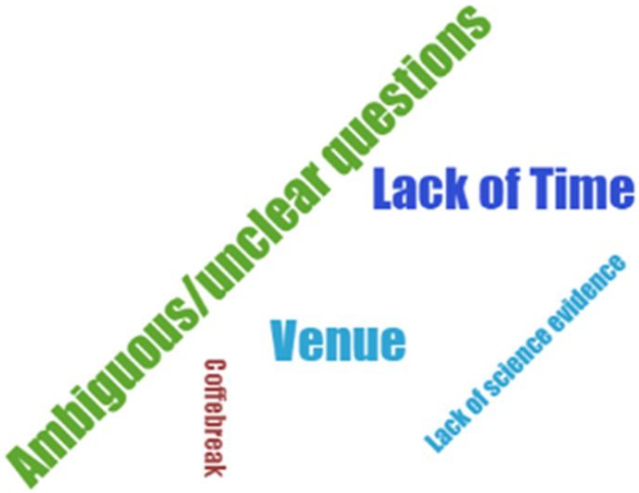

Figure 13. What they liked LEAST.

6. Conclusions

This event was the first of a round of international participative workshops organised under the OceanWise project (a total of five are planned: Portugal, Spain, United Kingdom, Ireland and France) and involved stakeholders from various areas and sectors of activity related to the life cycle of the EPS/XPS, which allowed a differentiated sharing of knowledge among all stakeholders.

In this first phase, the objective was not to deepen the theme, but to collect contributions to establish the collective agenda that will serve as a basis for structuring the next phases of the participatory process that lead to the elaboration of the final proposals.

The establishment of replicable methodologies in the various partner countries involved in the project will enable comparable results to be obtained, which will lead to a broader common view of the perspectives of the different Stakeholders.

Annexes

1. List of Participants

NAME	ENTITY / ORGANIZATION
Ava Wain	Cefas
David Emes	BPF - EPS Group
Eleni Lacovodou	Brunel University
Emma Mofatt	Seachill
Hubby Stubbings	Vita Cellular Foams (UK) Limited trading as kay-metzeler
James Brown	Defra
Juliette Blythe	Jablite
Louisa wood	Cefas
Nicki Hunt-Davison	BPF
Olwenn Martin	Brunel University
Pedro Sepulveda	OSPAR
Rima Hussain	Defra
Sandra Squire	Norfolk County Council
Stephen Clarke	CoolSeal
Thomas Pye	Defra
Tom Tangye	JNCC

2. List of Organizers – OceanWise Team

NAME	ENTITY / ORGANIZATION
Adil Bakir	Cefas
Umberto Binetti	Cefas
Fiona Preston-Whyte	Cefas
Flavia Silva	MARE-FCT NOVA
Josie Russell	Cefas
Lia Vasconcelos	MARE-FCT NOVA
Ricardo Resende	MARE-FCT NOVA
Sandra Moutinho	DGRM

3. Individual Contributions for “Priorities – 3rd Group Activity”

Individual Post-its
Having an infrastructure which can recycle EPS
Chemicals migrating from food contact materials (understanding human health risks)
Have different versions of EPS which are easily recyclable
How do you deal with contamination of EPS
More recycling and better infrastructure
Further recognising need to manage EPS/XPS legislation
Easier mainstream recycling
More public awareness if EPS uses and benefits
Reducing EPS/EPS in marine environment
Encourage 100% EPS recycling
Develop products with recycled content
Clearer understanding of benefits of EPS
Better recycling options
Less marine litter
Increase recyclability
Alternatives for non-recyclable options
Science based decisions
Increase EPS recycling
Most difficult to recycle are eliminated from use
Engage local authorities to separate EPS
DRS
Recycling is economically incentivised
Develop exciting opportunities
Comparing life cycle sustainability of alternatives
Investing in new technology
Clarify the recycling facts

4. Results of the *Buffer Activity*

Scenarios		Time period for scenario accomplishment					Country / countries where there is already or there are conditions / knowledge / technology for the accomplishment of the scenario						The main constraints to the accomplishment of the scenario			
		<3 years	[3-10 years]	[10-20 years]	>20 years	NEVER	PT	ES	FR	IE	UK	OTHER (Which?)	Economic	Techno-logical	Political	Social
1	The industry incorporates the EPS / XPS residue as raw material in the production of EPS and XPS (waste from single-use products).															
2	Identification of the industrial provenance, composition / additives and possible suitability of the products for food contact accompany the product even after discarding (traceability).															
3	The use of single-use utensils made up of EPS and XPS, such as cups, plates and takeout boxes, are banned at public events and catering services, especially at beach bars and restaurants.															
4	Incentives are created for the return of packaging and other consumer EPS / XPS applications.															
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7	The use of EPS and XPS in the fisheries sector (signal booms and other artefacts), as well as their use for tourist navigation, is abolished.															
8	All EPS and XPS products with the potential to become marine litter are replaced by other less impact materials (maintaining functionality and economic sustainability).															
9	The use of XPS trays in fresh food packaging is replaced by PET or biodegradable materials.															
10	The EPS or XPS for industrial use implies contracts or synergies for its collection for recycling or other use in a circular economy perspective.