



# RISC-KIT

## Resilience-Increasing Strategies for Coasts – Toolkit

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## Evaluation of DRR plans

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## Publishable Summary

The Resilience-Increasing Strategies for Coasts – Toolkit (RISC-KIT) FP7 EU project (2013-2017) aims to produce a set of innovative and EU-coherent open-source and open-access methods, tools and management approaches (the RISC-KIT) in support of coastal managers, decision-makers and policy makers to reduce risk and increase resilience to low-frequency, high impact hydro-meteorological events.

The Multi-Criteria Analysis (MCA) is one of the five tools used to assess the proposed measures in each of the RISC-KIT case studies with respect to criteria that capture the key dimensions of the decision-making process. The analysis is based on a one-time workshop with key stakeholders in each of the cases. In this workshop, stakeholders systematically score and weigh out options against three selected criteria (feasibility, acceptability, and sustainability).

MCA methodologies have been widely applied in environmental studies as they have proven useful tools when assessing performance of options against criteria that are difficult to quantify and involve qualitative aspects. In RISC-KIT, MCA is used in three ways: 1) as a way facilitate the communication and presentation of project results in a coherent and contextualized manner to relevant local stakeholders and decision-makers; 2) as a way to capture other types of knowledge, such as local every-day experiences, socio-economic and political factors that might affect how the proposed measures are perceived; and 3) as a way of facilitating interaction between local stakeholders and raising awareness of risks and potential measures.

Results from the implementation of the MCA in 8 RISC-KIT cases highlights several key lessons for future DRR projects with regards to a) the importance of sufficient preparation for participatory sessions; b) stakeholder interaction and inclusion in the DRR projects; c) the way research results are presented to non-research communities; d) and the challenges of implementing single-approaches to diverse contexts.

## Executive Summary

The Resilience-Increasing Strategies for Coasts – Toolkit (RISC-KIT) FP7 EU project (2013-2017) aims to produce a set of innovative and EU-coherent open-source and open-access methods, tools and management approaches (the RISC-KIT) in support of coastal managers, decision-makers and policy makers to reduce risk and increase resilience to low-frequency, high impact hydro-meteorological events.

The Multi-Criteria Analysis (MCA) is one of the five tools used to assess the proposed measures in each of the RISC-KIT case studies with respect to criteria that capture the key dimensions of the decision-making process. The analysis is based on a one-time workshop with key stakeholders in each of the cases. In this workshop, stakeholders systematically score and weigh out options against four selected criteria (feasibility, acceptability, sustainability, and suitability).

The aim of the MCA in RISC-KIT is to map the diversity of perspectives that may be taken on a particular set of measures, to highlight the key features underlying the differences in opinions and to provide a framework for debate. The outcomes of this

exercise should not be interpreted as providing the basis for decision-making, but rather they should be understood as a way of facilitating constructive discussion.

While RISC-KIT is not attempting to plan, finance or implement measures, we do work from a scenario perspective built upon assumptions. We assume that certain hazards are linked to certain risks, and that these risks could be mitigated through particular measures, regardless of whether these risks will take place today or in fifty years, and regardless of whether the measures will ever be implemented. Similarly, this MCA departs from a hypothetical scenario where DRR measures may be contemplated as an option to reduce risk regardless of whether these measures might ever be implemented or only be used to inform the debate.

The report is based on the MCA Guide and associated templated provided to Case Study Coordinators (CSOs) in July 2016.

# 1 Introduction

Recent and historic low-frequency, high-impact events such as Xynthia (impacting France in 2010), the 2011 Liguria (Italy) Flash Floods and the 1953 North Sea storm surge which inundated parts of the Netherlands, Belgium and the UK have demonstrated the flood risks faced by exposed coastal areas in Europe. Typhoons in Asia (such as Typhoon Haiyan in the Philippines in November 2013), hurricanes in the Caribbean and Gulf of Mexico, and Superstorm Sandy, impacting the northeastern U.S.A. in October 2012, have demonstrated how even larger flooding events pose a significant risk and can devastate and immobilize large cities and countries.

These coastal zone risks are likely to increase in the future (IPPC, AR5) which requires a re-evaluation of coastal disaster risk reduction (DRR) strategies and a new mix of prevention (e.g. dike protection), mitigation (e.g. limiting construction in flood-prone areas; eco-system based solutions) and preparedness (e.g. Early Warning Systems, EWS) (PMP) measures. Even without a change in risk due to climate or socio-economic changes, a re-evaluation is necessary in the light of a growing appreciation of ecological and natural values which drive ecosystem-based or Nature-based flood defense approaches. In addition, as free space is becoming sparse, coastal DRR plans need to be spatially efficient, allowing for multi-functionality.

## 1.1 Project objectives

In response to these challenges, the RISC-KIT project aims to deliver a set of open-source and open-access methods, tools and management approaches to reduce risk and increase resilience to low-frequency, high-impact hydro-meteorological events in the coastal zone. These products will enhance forecasting, prediction and early warning capabilities, improve the assessment of long-term coastal risk and optimise the mix of PMP-measures. Specific objectives are:

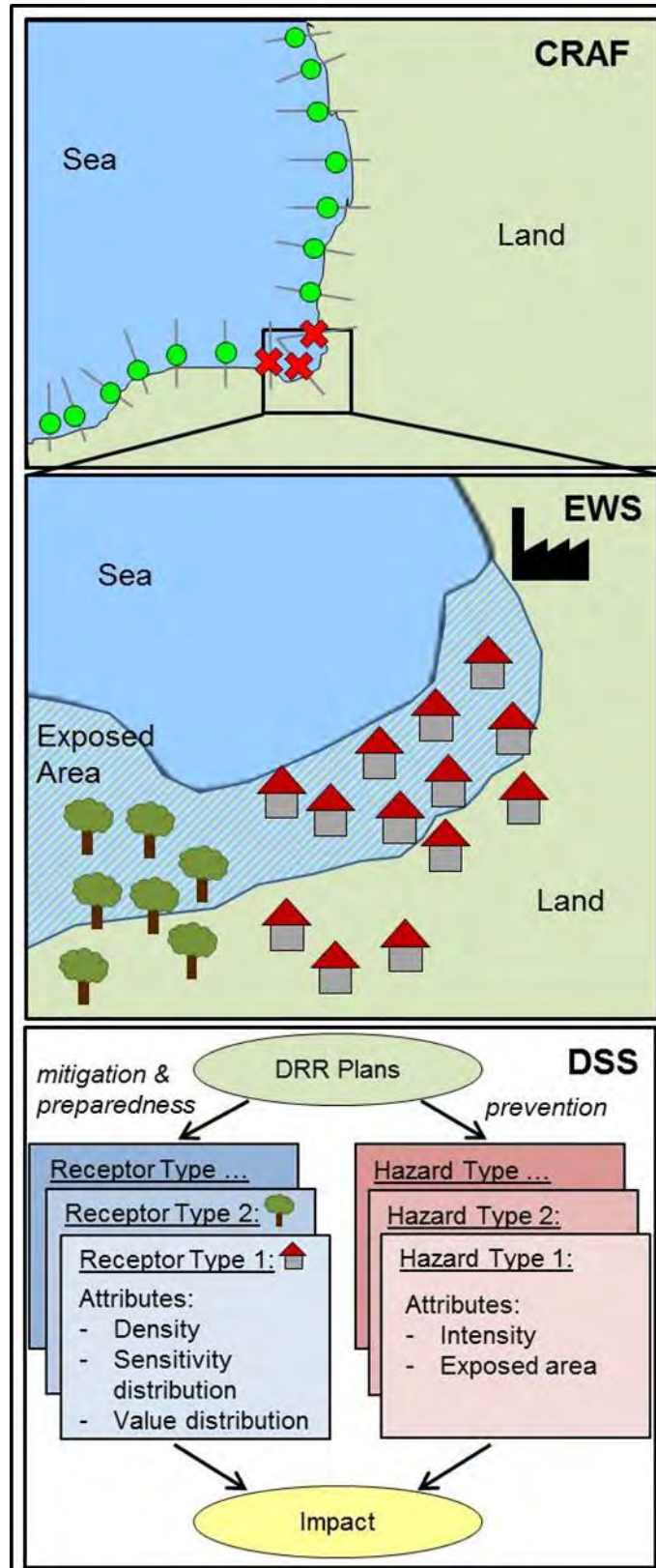
1. Review and analysis of current-practice coastal risk management plans and lessons-learned of historical large-scale events;
2. Collection of local socio-cultural-economic and physical data at case study sites through end-user and stakeholder consultation to be stored in an impact-oriented coastal risk database;
3. Development of a regional-scale coastal risk assessment framework (CRAF) to assess present and future risk due to multi-hazards (**Figure 1.1**, top panel);
4. Development of an impact-oriented Early Warning and Decision Support System (EWS/DSS) for hot spot areas consisting of: i) a free-ware system to predict hazard intensities using coupled hydro-meteo and morphological models and ii) a Bayesian-based Decision Support System which integrates hazards and socio-economic, cultural and environmental consequences (**Figure 1.1**, centre panel);
5. Development of potential DRR measures and the design of ecosystem-based and cost-effective, (non-)technological DRR plans in close cooperation with end-users for a diverse set of case study sites on all European regional seas and on one tropical coast (**Figure 1.1**; bottom panel);

6. Application of CRAF and EWS/DSS tools at the case study sites to test the DRR plans for a combination of scenarios of climate-related hazard and socio-economic vulnerability change and demonstration of the operational mode;
7. Development of a web-based management guide for developing integrated DRR plans along Europe's coasts and beyond and provide a synthesis of lessons learned in RISC-KIT in the form of policy guidance and recommendations at the national and EU level.

The tools are to be demonstrated on case study sites on a range of EU coasts in the North- and Baltic Sea Region, Atlantic Ocean, Black Sea and Mediterranean Sea, and one site in Bangladesh, see Figure 1.2. These sites constitute diverse geomorphic settings, land use, forcing, hazard types and socio-economic, cultural and environmental characteristics. All selected regions are most frequently affected by storm surges and coastal erosion. A management guide of PMP measures and management approaches will be developed. The toolkit will benefit forecasting and civil protection agencies, coastal managers, local government, community members, NGOs, the general public and scientists.

## 1.2 Project structure

The project is structured into seven Work Packages (WP) starting with WP1 on 'Data collection, review and historical analysis'; WP2-4 will create the components of the RISC-toolKIT containing an 'Improved method for regional scale vulnerability and risk assessment' (WP2), 'Enhanced early warning and scenario evaluation capabilities for hot spots' (WP3) as well as 'New management and policy approaches to increase coastal resilience' (WP4). The toolkit will be tested through 'Application at case study sites' (WP5). WP6 will be responsible for 'Dissemination, knowledge transfer and exploitation' and 'Coordination and Management' are handled in WP7.



**Figure 1.1:** Conceptual drawing of the CRAF (top panel), the EWS (middle panel) and the DSS (bottom panel)



**Figure 1.2:** Case study sites (stars), RISC-KIT case study site partners (blue solid dots) and non-case study site partners (red open circles).

### 1.3 Deliverable context and objective

The current deliverable 4.2 is part of WP 4. The objectives of WP 4 are to: develop potential DRR measures; design site-specific DRR strategic alternatives and evaluate their effectiveness and feasibility after their application and scenario testing at case study sites in WP5; create a web-based management guide for developing integrated risk-reduction plans in other locations; and synthesise findings and provide recommendations for management and policy guidance.

This deliverable 4.2 reports on the evaluation of DRR strategic alternatives in each case study site. The scope of this report is defined in the Description of Work, Task 4.2

“Task 4.2 will work in close conjunction with WP5 taking the results of Tasks 5.3 in which the site-specific DRR measures and Strategic Alternatives (SAs) will be tested in the light of various hydro-meteo event scenarios using the EWS/DSS that were set up at each site in Task 5.2 (see description of WP5). Based on the results of these scenario simulations the proposed SAs for each case study site will be evaluated through a multi-criteria analysis (MCA) that will capture key criteria of the decision-making process including (physical, political, technical and economic) feasibility, sustainability

and (social) acceptability of SAs. The MCA process will take on some of the principles from soft systems methodology so that criteria are assessed by end-users and stakeholders at each case-study site through participatory consultation sessions. The outcome of the MCA coupled with results from Task 4.1 will generate local qualitative data that can improve the assessment of DRR measures and SAs in the EWS/DSS and allow us to build DRR Strategies (including objectives and the preferred SA). Findings will be described in an evaluation report presenting the outcomes of the task and highlighting both similarities of, and differences between, DRR strategies across all case study sites (D4.2)”.

Specifically, this deliverable reports on the implementation of the Multi-Criteria Analysis (MCA) in each of the case study sites, and presents individual results from all cases as well as a summary and analysis of all results.

This deliverable addresses the second objective of WP 4 to “design site-specific DRR strategic alternatives and evaluate their effectiveness and feasibility after their application and scenario testing at case study sites in WP5”; and Project Objective 5.

## 1.4 Approach

The approach followed in this deliverable departs from the MCA methodology designed in the project and made available to Case Study Coordinators (CSOs) through a Guide that followed the structure of a manual. The aim of this guide was to provide CSOs with all steps involved in the implementation of the MCA. The goal of the MCA in RISC-KIT is to assess the strategic alternatives (SAs) (i.e. combinations of DRR measures) in each of the RISC-KIT case studies with respect to criteria that capture the key dimensions of the decision-making process. MCA is about determining the extent to which options create value by achieving objectives, identify the areas of greater and lesser opportunity, prioritize the options, clarify the differences between the options, and help the key players involved in the assessment to understand the situation better (Van Ierland, de Bruin, & Watkiss, 2013)

Participatory MCA methodologies have been identified as suitable decision support tools for the prioritization of adaptation options, and their application is growing particularly in projects addressing environmental issues (Saarikoski et al., 2015). These methods are meant to help decision makers to evaluate and choose among alternative options that are ranked based on multiple criteria and stakeholder preferences (Munaretto, Siciliano, & Turvani, 2014).

MCA is an approach that allows for the consideration of both qualitative and quantitative data in the ranking of alternative options. The approach provides a systematic method for assessing and scoring options against different pre-selected criteria. These criteria are then weighted to provide an overall ranking of options. In RISC-KIT these steps are carried out by selected stakeholders representing one of the pre-identified groups in the project (see Section 2 for a description of stakeholders’ groups) and facilitated by a leader involved in the project.

## 1.5 Outline of the report

Section 2 summarizes the Multi-Criteria Analysis methodology implemented in 8 out of 10 cases in RISC-KIT. The section is divided into two subsections, one of which

discusses the selection of criteria, and other one summarizes and steps followed in the MCA exercise. Thereafter, sections 3-10 include the reports from each of the case study sites. Each of these sections has two sub-sections, the first outlining descriptive information from the MCA workshops, and the second outlining reflective information. The data reported in these sections is based on prepared templates included in the MCA Guide that all CSOs received prior to their MCA workshops. The last section (11) highlights major results and observations from all cases. The section is divided into several subsections that emphasize different aspects of the feedback received from each of the cases: logistical issues, stakeholders, cards strategic alternatives, implementation of methodology and reporting, and surveys.

## 2 Multi-Criteria Analysis for assessing strategic alternatives in DRR

MCAs have been widely applied in environmental studies as they have proven useful tools when assessing performance of options against criteria that are difficult to quantify and involve qualitative aspects. MCA provides a systematic method for assessing and scoring options against a range of decision criteria, some of which are expressed in physical units and some which are qualitative. These criteria can then be weighted to provide an overall ranking of options. These steps are undertaken using stakeholder consultation (Van Ierland et al. 2013). Through a matrix, stakeholders identify alternative options, select criteria and score options against these, then assign weights to each criterion to provide a weighted sum that is used to rank options (Janssen and Van Herwijnen, 2006). The process allows the weights (for each criterion) to reflect the preferences of the decision-makers and the weighted sum of the different criteria is used to rank the options.

In RISC-KIT MCAs are used to decide, among many options, which is the most convenient for most stakeholders in terms of a set of criteria (i.e. in flood and coastal risk management decisions can involve the construction of a flood alleviation channel or dredging a river, or harder engineering solution like the construction of barriers or dams). Across the 10 RISC-Kit cases, an own MCA methodology is used to evaluate DRR strategies with respect to criteria that capture the key dimensions of the decision-making problem, involving human judgment and preferences (Saarikoski et al. 2015). MCA is about determining the extent to which options create value by achieving objectives, identify the areas of greater and lesser opportunity, prioritize the options, clarify the differences between the options, and help the key players to understand the situation better. Ultimately the use of the MCA in the project would allow each case study to test assumptions on the dynamics between DRR measures, between these measures and the specific social contexts, as reaction and responses from local actors to these measures. Outweighing different DRR measures in different contexts implies that different criteria need to be considered in order to assess which option is the best, for whom, for what, and when. Below is a description for inclusion of criteria in the MCA.



## 2.1 Selection of criteria

Criteria have been selected based on a literature review of the most important factors when contemplating, planning, financing, and implementing DRR measures. Studies identify factors such as social acceptance, political will, availability of financial resources and technological know-how, as crucial for increased investments in DRR measures (Davis et al. 2015). Particularly, social acceptance seems to be the most crucial factor when planning DRR measures. Governments are accountable to voters and tax-payers, whom either support or not investments in DRR. Investments in DRM, particularly preventive measures, are often difficult to grasp unless disasters occur. But acceptance can be created through information dissemination and by presenting costs and benefits of measures for different groups, in different sectors, throughout time. However, benefits and tradeoffs of measures need to be grounded in context (Shreve & Kelman 2014), because the applicability and relevance of a measure will not only depend on foreseen gains or losses, but on whether the measure is likely to be accepted, prioritized, and supported (in a given cultural and political landscape) to begin with. Some measures might make perfect sense when looking at the physical conditions, but will never be implemented because of strong local opposition; other measures might initially seem adequate to prevent infrastructural losses, until outweighing investments versus short and long-term gains.

In order to map the social and political landscape of localities, participatory assessments and stakeholder inclusion for understanding risks and measures are gaining prominence in the DRR literature (Adger 2009; Pahl-Wostl 2009; Pelling 2007). For instance, Rød et al. (Rød et al. 2012) argue for a combination of top-down and bottom-up vulnerability assessments in order for the study to be reliable. Their study shows the importance of taking into account the perceptions of local-level authorities for raising awareness, achieving local acceptance of scientific studies, and integrating local knowledge in scientific research. Such assessment could then be used to support decision-making as to where necessary adaptive and preventive measures to climate change-related hazards should be carried out. Naess et al. (2006) similarly argue that open-dialogue and participation and cooperation can facilitate proactive local adaptation to climate change effects. Even more, local ownership can lay the foundations for increased cooperation between research and policy, making policy more science-informed and research more policy relevant.

Initially, the MCA would cover 4 categories of criteria, however after the implementation of the first MCA workshop in Kiel, the methodology was re-adapted to address some of the problems experienced with understanding the criteria. Thus, besides from Kiel, all other cases weighted 3 main categories of criteria: Feasibility, Acceptability, and Sustainability. Feasibility refers to that (human, technical, time, and financial) resources required to implement the SA are available or can be acquired, whether the proposed measures address underlying concerns in society, whether the proposed location for implementing the SA is suitable for local needs and plans, and whether the proposed measure could have positive or negative impacts (e.g economic) to society at large. Acceptability refers to the expectations of stakeholders and recipients in the case studies sites. These actors may include civil society, interest groups, and influential individuals in society. Sustainability addresses the relevance of the SA in the present and future, its impact upon human activity and ecosystems, and the resilience of the measures to future changes.

While it is common to allow stakeholders to identify criteria, the MCA methodology developed in the project needed to be applicable throughout the 10 cases in RISC-KIT. Thus, criteria needed to be generic and broad in order to accommodate contextual interpretations. In order to do this, when defining criteria, the selection was made so that relevant and broadly defined criteria have been included; that each option can be judged against each criterion; that criteria are mutually independent; and so that criteria contain no double counting and are consistent with effects occurring over time (Bruin et al. 2009). Under each criterion we outline 3 key issues to keep in mind when thinking about the criteria. These issues would be weighted or scored, but would help further define the criteria.

## 2.2 MCA Steps




The MCA Matrix followed the steps below:

1. **Interactively present preliminary DRR measures from BN results and agree on SAs:** The MCA session will start of by facilitators reminding stakeholders (or get more input on) the problem analysis, the objectives, the proposed long list of measures and selected measures (from task 4.1). Next, facilitators show the results from their respective case-study by handing out the pre-prepared cards to each stakeholder. The cards will display a picture and a short description of the measure and qualitative estimate of cost, the hazard (inundation, erosion) results, the impact results (damage reduction, loss of life) and other relevant information (e.g. map, assumptions of the operator/uptake factors). One card should be made for the “zero alternative” i.e. current situation with no measures, which can be used for comparison. Depending on the size of the group, it can be split in two. Stakeholders are given some time to digest the cards individually and compare results to the zero-alternative. The web-viewer can be used to show stakeholders additional supporting information that is not presented in the cards e.g. with climate change, results for different areas. The stakeholders will then be asked to select their preferred DRR measures individually and then as a group by placing the cards on a flipchart. The BN results for these combinations of DRR measures i.e. SAs will be explained interactively using the pre-prepared cards (for each SA). Using the webviewer, they will have the possibility to “turn on and off” different measures and discuss the impacts of SAs, and some blank cards should be available in case stakeholders define SAs that were not pre-prepared and results can be taken from the web-viewer. Stakeholders can discuss these results and prioritize four SAs that will be used for further evaluation in the MCA analysis. These four SAs will be stuck on the MCA flipchart.
2. **Score measures against criteria:** In this step, stakeholders will assess the performance of each SA against criteria (e.g. how feasible, sustainable, acceptable, suitable are sand dunes as a measure to prevent coastal erosion in your area?). Facilitators will explain the different criteria (according to provided Template in the MCA Guide). Heron stakeholders will assign a value individually, ranging between -2 and +2, to each criterion per SA. The individual scores will be first recorded in the Scoring Matrix for Stakeholders (provided in MCA Guide). Once stakeholders have assigned all scores, they will write them up in colored post-ist. CSOs will pre-assign a color per score

previous to the session so that all stakeholders use the same color to the same corresponding score (the purpose of the post-it's is to make the exercise more visually accessible and to more easily identify the values when looking at the flip chart). At the workshop, stakeholders will use these colored post-it's to write their individual scores that will be pasted in the MCA flip chart (e.g pink post-it corresponds to -2, yellow to -1, orange to 0, blue to +1, and green to +2). The facilitator will initiate a group discussion and get the group to agree on one score per criteria. If consensus is not reached, scores can be averaged.

3. **Weigh criteria:** to indicate criteria's importance relative to the objective of the process (e.g., what criterion is most important to consider if sand dunes were to be implemented to reduce coastal erosion?). This will be done through 2 main steps: first, stakeholders will be handed out 8 stickers. These stickers should be distributed individually and used on the "Weighting Matrix for Stakeholders" (provided in the MCA Guide) to assign a weight per criterion. The more stickers a criterion receives the higher its weight will be. More stickers indicate a criterion is perceived as very important to take into consideration when implementing measures, while fewer stickers indicate the criterion is perceived as less relevant. The second step is once stakeholders have assigned individual weights, a group discussion to agree on a weight per criteria will follow. First, stakeholders will agree on the most important criterion. The same procedure should be repeated for the second, third, and fourth criteria. Equal weights can be given to more than one criterion; however, it is common in MCA to give different weightings to different options, reflecting their importance in the overall objectives. Keep in mind that you a limited amount of stickers (8). If consensus is not reached, scores can be averaged. Criteria will only be weighted once, as it is assumed that their importance will be constant across all SAs.
4. **Calculate weighted scores of criteria:** for each measure by multiplying scores times the weight for each criterion for all measures.
5. **Generate sums** per measure by adding the weighted scores for all criteria per SA and entering the total value in the row titled "SUMS" at the end of the MCA Matrix. The SA will the highest weighted scores will be stakeholders' preferred alternative.

**Table 1** Example of MCA Chart

CRITERIA	Weights	SA1		SA3		SA3		SA4		SA5	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility		-2	-8	0	0	2	8	0	0	1	1
Acceptability		-2	-6	0	0	2	6	1	3	1	3
Sustainability		-2	-2	0	0	1	1	0	0	0	0
<b>SUM</b>		<b>-16</b>		<b>0</b>		<b>15</b>		<b>3</b>		<b>4</b>	

**Step 1:** Choose composition of SAs from Bayesian model

**Step 2:** Score criteria using a -2 (probably no) to +2 (probably yes) scale

**Step 3:** assign weights using stickers. Each stakeholder will be given 8 stickers to distribute in between criteria, to indicate criteria's importance relative to the objective of the process. Once all stakeholders have assigned their individual weights, a group discussion will follow and the group will agree on only one weight per criteria.

**Step 4:** Calculate weighted score by multiplying the score (-2) times the weight (1). In this case, a high negative value indicates that the SA will probably not comply with the outlined criteria (-2) and that the criterion is regarded as not very relevant to consider (1). This weighted score reflects that SA1 is perceived as probably not effective in addressing sustainability, and that sustainability is perceived as not very important when considering DRR

**Step 5:** Calculate SUMS by adding the five weighted scores. Results reflect people's perception and can give an indication as to which SAs might potentially be well received by local actors and which SAs might face greater opposition. The SA with the highest positive SUM indicates that local actors regard this option as the one most probable in addressing the four outlined criteria. Conversely, a high negative SUM indicates that the proposed SA is regarded as the least probably option for addressing the criteria. Thus, a high positive number can be interpreted as the most favored option, whilst the highest negative number as the least favored option.

## 3 Kiel Fjord, Germany

### 3.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Guntram Seiß
<b>FACILITATOR:</b>	Nico Stelljes
<b>CO-FACILITATOR:</b>	Katriona McGlade
<b>DATE OF THE WORKSHOP:</b>	8 <sup>th</sup> September 2016
<b>START TIME OF WORKSHOP:</b>	14:00
<b>END TIME OF WORKSHOP:</b>	17:00

**Table 2** Flip Chart for Stakeholder Groups in Kiel Fjord

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal manager	Member of Authority for Coastal Protection, Nature Reserves and Protection of the Seas (LKN)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Member of SH-Ministry of Inner Affairs, Department Disaster Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planners	Member of SH-Ministry of Inner Affairs, Department Disaster Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Member of Authority for Coastal Protection, Nature Reserves and Protection of the Seas (LKN)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Member of Stadt Kiel, Environmental Authority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/disaster management agency	Member of S-H ministry of Inner Affairs, Department Disaster Management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SH4: academic working in coastal zone	Professor of University Kiel, Geography Dep.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Student of University Kiel, Dep. of Agriculture and Environmental Sciences	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	Professor of University Kiel, Department Geography	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Sailing Club Member WSV Mönkeberg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SH7: Chairperson of local active citizen groups	Member of Naturschutzbund Deutschland, Ortsgruppe Wendtorf	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Harbour Master of community Laboe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Marina Manager Sporthafen Kiel GmbH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	Marina Manager Sporthafen Kiel GmbH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Sailing Club Member WSV Mönkeberg	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Table 3** MCA Results "Marina Group A" Kiel Fjord

Kriterien	Gewichte	SA1 Flood proof mooring System		SA2 Evacuation of marina assets		SA3 Flood Proof Mooring + Training of sailors and marina stuff	
		Score	Gewichteter Score	Score	Gewichteter Score	Score	Gewichteter Score
Durchführbarkeit	3	0,4	1,20	-2	-6,00	1	3,00
Akzeptierbarkeit	2	0	0,00	0	0,00	0	0,00
Eignung	4	1	4,00	-2	-8,00	1	4,00
Nachhaltigkeit	2	1	2,00	0	0,00	1	2,00
<b>SUMME</b>	<b>0</b>		<b>7,20</b>		<b>-14,00</b>		<b>9,00</b>

**Table 4** MCA Results "Beach Group 1B" Kiel Fjord

Kriterien	Gewichte	SA1 Optimization of Camping Sites		SA2 Evacuation of Camping Site		SA3 Optimization + Evacuation of Camping Sites	
		Score	Gewichteter Score	Score	Gewichteter Score	Score	Gewichteter Score
Durchführbarkeit	3	1	3,00	-2	-6,00	1	3,00
Akzeptierbarkeit	2	0	0,00	0	0,00	1	2,00
Eignung	4	1	4,00	1	4,00	1	4,00
Nachhaltigkeit	2	-1	-2,00	-1	-2,00	0	0,00
<b>SUMME</b>	<b>0</b>		<b>5,00</b>		<b>-4,00</b>		<b>9,00</b>

**Table 5** MCA Results "Beach Group 2B" Kiel Fjord

Kriterien	Gewichte	SA1 Flood proof mooring System		SA2 Evacuation of marina assets		SA3 Training of sailors and marina staff	
		Score	Gewichteter Score	Score	Gewichteter Score	Score	Gewichteter Score
Durchführbarkeit	3	1	3,00	-2	-6,00	2	6,00
Akzeptierbarkeit	2	1	2,00	0	0,00	0	0,00
Eignung	4	1	4,00	2	8,00	1	4,00
Nachhaltigkeit	2	1	2,00	-2	-4,00	2	4,00
<b>SUMME</b>	<b>0</b>	<b>11,00</b>		<b>-2,00</b>		<b>14,00</b>	

**How would you describe the atmosphere and context of the workshop?**

Atmosphere was relatively stiff at the beginning, probably due to the set-up of the room: people entered and sat down at a 'boardroom' seat and waited until the session began. In general, however, the atmosphere was friendly and relatively relaxed from some members. People were interested and generally paying attention and were cooperative; however, there was something of a teacher student dynamic which made the situation a little too controlled.

**What were the main issues raised by the respondents during the workshop?**

MAIN ISSUE	NOTES
<b>Methodological issues</b>	
Weights	What do you do when you have two values the same? We decided to allocate the same (higher) weight. i.e. both groups had lists with 4/3/2/2



Evaluation of criteria needs to be much clearer.	It is very difficult to categorize and separate out the different aspects of the measures.  The middle option of 0 (no effect) in the rating process was not always clearly understood in relation to rating of the measures and was difficult for the project staff to explain.
Evaluation of measures separately	Seems to be a useful and important prerequisite to have evaluated measures as individual measures before considering their use in combination in a SA.
<b>Content Issues</b>	
Content of measures were not clear enough. You have to be very specific about the hazard, the location, the measure itself.	People asked: “Do we assume that this is any kind of marina? Of any size?” “What kind of hazard/level of impact are we talking about?” e.g. an evacuation plan – is it a plan that is carried out every year or not? (this directly affects the estimation of the sustainability of the SA).
Insurance can pay for the damages	Why bother having any measures if the insurance pays? Facilitator highlighted that damages are still present, even if their costs are “socialized” (avoid them is better than distribute their consequences to more shoulders).
People wanted to have more information about the products and outputs from the project.	Wanted to have questions answered and find out more about the FEWS.
People seem to have problem with abstract ideas when thinking about risk minimization. SHs wanted more detailed information about the measure and its costs and a real existing, functioning prototype at least, before giving the measure higher rates	“Everything is possible, but the costs may be too high for larger boats?” For example, marina owners found that option of flood proofing was structurally too weak for bigger boats. Only up to 7m boats possible with the option presented. The pressure and weight put on the construction would be too high. You would need to anchor at back etc. There are of course other options. E.g. place weights on the boardwalk.
Evacuation depends on lead time and availability of cranes	SH from administration thought it was a good idea. But found out from marina managers that this is not so easy. In fancy marinas you have a crane on site. In smaller marinas you don’t. If we are good we can move 70 ships in one day. Even with EWS you have only 3 hours. You wouldn’t have the possibility to rent a crane – you need to know half a year ahead.

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

- The choice and setup of the room is important: too small room didn't allow for participants to walk around the room
- People thought it was not very valuable to first feel up the individual papers and then paste the stickers in the group chart.
- The selection of SAs did not go so well. We asked participants to make a very informed decision right at the beginning of the session. It is too messy and demands too much from participants.
- In the end, people felt generally satisfied. The interactions were appreciated. For the marina and officials it was interesting to hear the opinions of local people.

No.	Highlighted quote or argument during the MCA
1	"I found it interesting to use 'swarm' intelligence" – refers to brainstorming and learning within the group.
2	"Since having my teaching/training I have a different score" people changed opinions after they heard insights from practitioners.
3	"Methodologically it would be better to evaluate the measures separately rather than together in the SAs" (several people nodded).
4	"Should be doable though. If you look at it on paper." – Comment from authority representative who was explaining why she had given a measure a high feasibility and suitability rating.
5	"Feasibility and suitability are almost the same – need/should have them together" Participant from Wassersportverein.

### 3.2 Reflective Information

**How would you describe stakeholders' cooperation during the workshop?**

In group A (Marina group) it was difficult to find consensus initially on which SAs to talk about. The scoring in group A was relatively democratic with a frequently dissonant voice from one of the Marina managers. On more than one occasion, the 'practitioners' from the Marina provided insights that made the 'officials' from the authorities and NGOs question their original ratings, causing them to change their evaluation. Atmosphere was one of practitioners as knowledgeable teachers who were pleased – but polite – in their 'corrections' of the officials world view. In group B two MCAs were carried out and the decision was made more easily. The scoring in this group was led by 2 or 3 participants and others mainly agreed.

**Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

In group A (Marina group) there were issues in relation to the feasibility of SA1 (mooring). People couldn't seem to separate it from suitability. A lot of the discussion was focused on how to define and categorize. In groups 1 and 2 B there was a lack of clarity with regards to the measures and the criteria.

It was interesting to see how people who did not understand the measures tended to value them more positively than stakeholders with practical experience who tended to be more pessimistic about their implementation and appeared to see less opportunity for trying new ideas. There were also other more cautious participants with more knowledge of the area who had a difficult time assigning a score to a measure they did not fully understand. This is particularly true for ideas that have not been tried out. This was the case with the representative of the Wassersportverein who expressed the need to see a concrete example of something that works. Since he did not feel he had enough evidence, he tended to score lower than the rest of the group. However, his low scores often merged into a group consensus. This mean that his opinion was washed over by the average score as there was no other option for taking this dissonance into account (e.g. with accompanying notes) to matrix.

**Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?**

One (female) participant in group A kept slightly out of the group discussions initially. After changing places the situation improved and her participation in the discussion was better. Seating is important and keeping the group together is crucial.

**Table 6** Survey for CSOs in Kiel Fjord

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>guide and training provided previous to the workshop</b>					
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>It was clear what was expected of me as facilitator</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11</b>	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### **Was there anything surprising to you?**

Even with very little time, we were able to carry out an additional MCA within 10 mins.

### **Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

More guidance would help: where/how should facilitator and co-facilitator stand in relation to participants. More guidance on how to explain what an MCA is, why we are carrying it out and how it will be carried out in the session. There could be a powerpoint slide or some key features to mention. A centralized or common template for explaining the MCA Matrix would be good. All CSOs/assistants should have a practice run through in a group of colleagues actually doing the MCA for real e.g. practicing how to write up the answers, where to put the stickers, how to collect the results from the participants on the flip chart etc. More guidance on how to come to the consensus on the score – do you just take the median? It would be nice to have a pdf for all CSOs to just print out on A3 that they can use directly and that is the right size for adding stickers to for the weighting.

### **Were there any problems with the design of the workshop or the matrix?**

We guided the participants to go through the criteria across all SAs when filling out their own sheets so that they could keep the concept of each criterion in their mind.

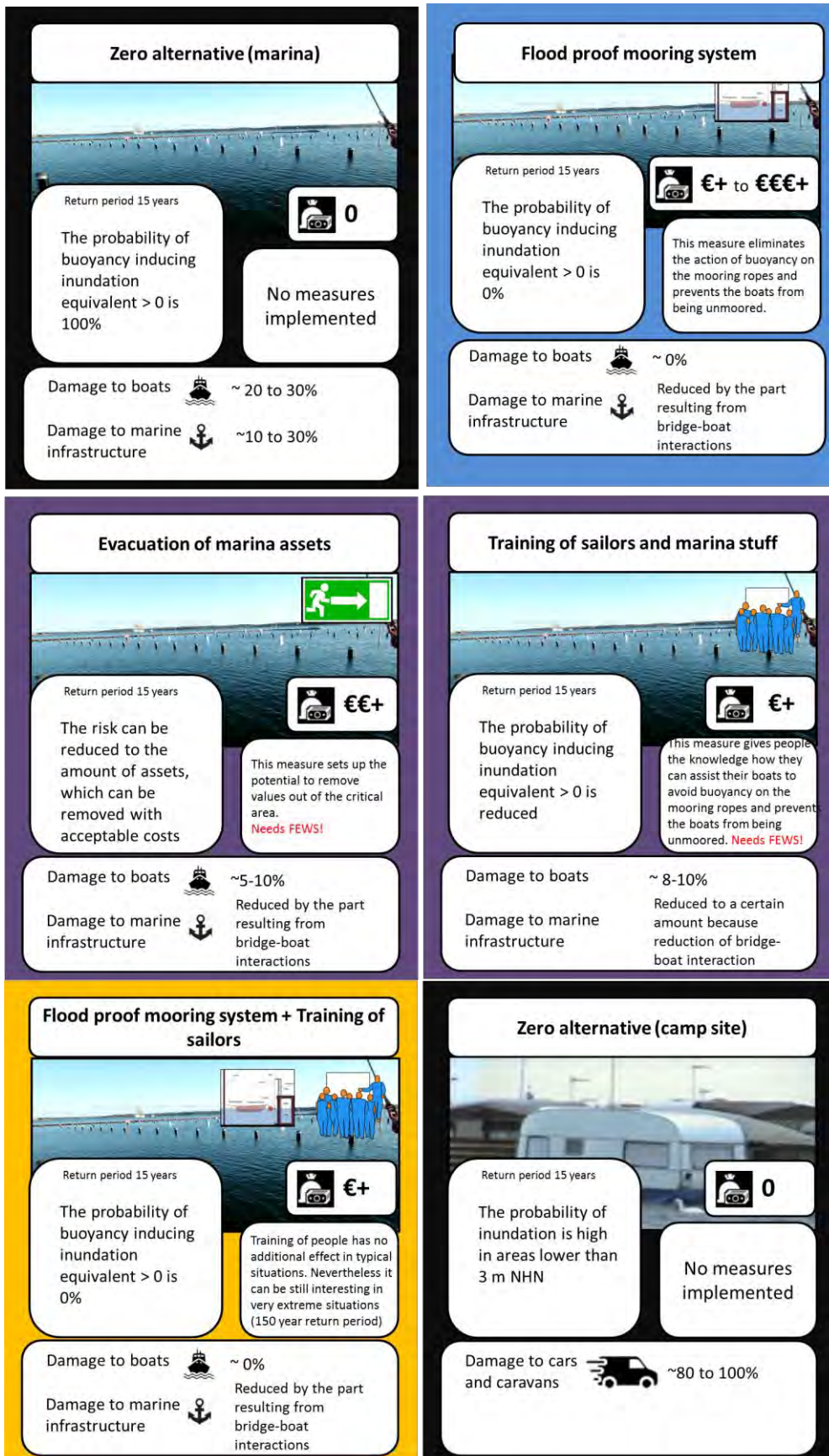
### **What was the most difficult part of holding the workshop?**

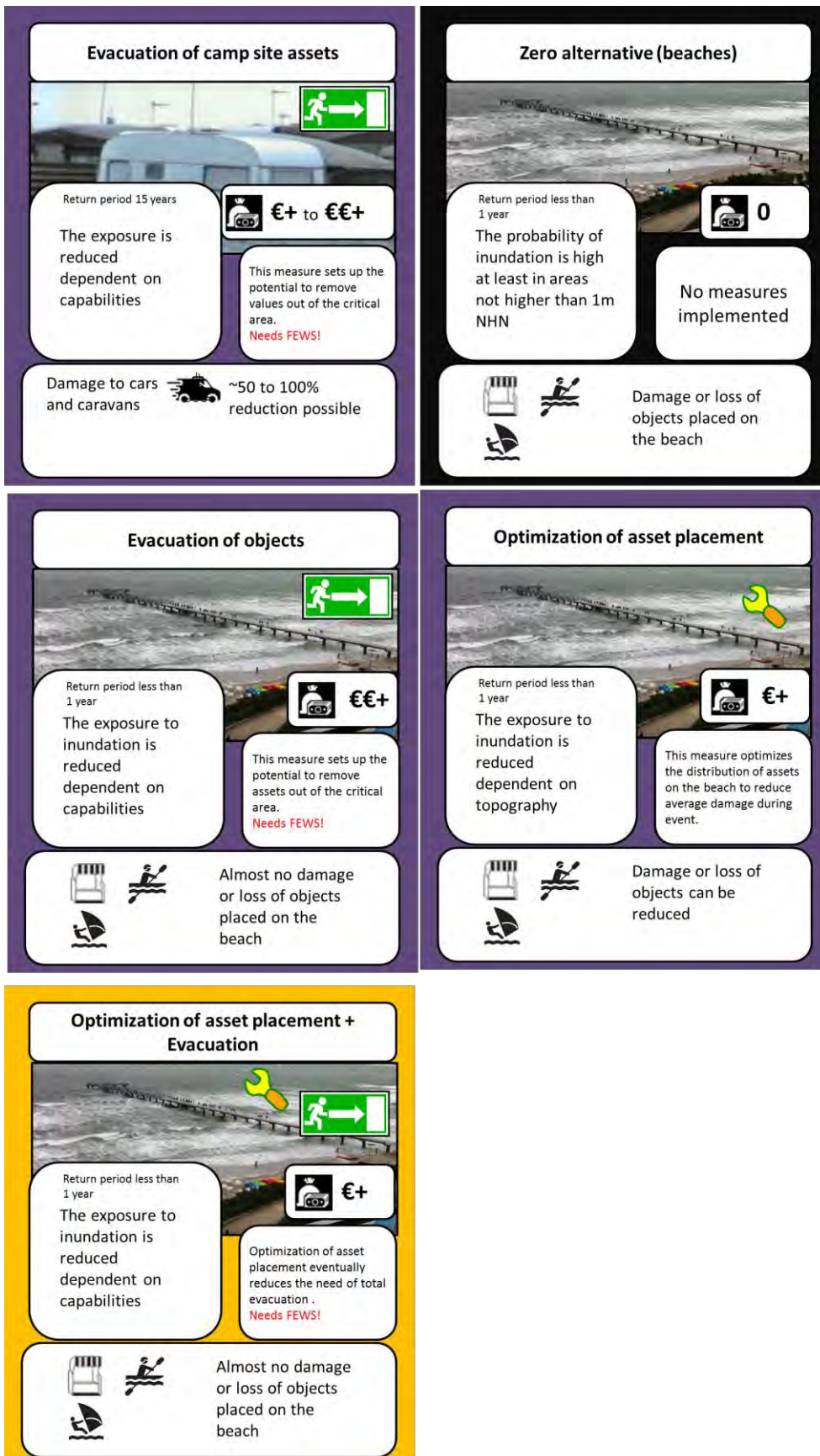
Keeping to the time limit, moderating excessive speakers, making a final decision on the scores where the group didn't/couldn't, being an 'Expert' in the MCA method despite not being so.

### **What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Leave enough room to discuss the measures and ask detailed questions after their initial presentation (before moving into the scoring).

### 3.2.1 Cards and Strategic Alternatives





**Table 7** Stakeholders' Evaluation of MCA in Kiel Fjord

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time		9	1		
2	The purpose of the workshop was clear	1	5	4		
3	The workshop was the right length of time	2	6	1	1	
	If you disagreed with the above question, was the workshop...	<input checked="" type="checkbox"/> Too long <span style="float: right;">3 Too short</span>				
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	2	5	3		
5	The format of the workshop was effective for achieving its aims.		8	1	1	
6	We engaged in a fruitful discussion	5	5			
7	I feel that the workshop contributed to the debate on DRR strategies	1	6	2	1	
8	The workshop was a good forum for discussion on DRR		8		2	
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	3	5	1		1
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	3	3	2	2	
11	I am satisfied with the outcomes of the workshop	1	7	1	1	

Were any of the results surprising to you, or did you expect these results?

- Which results?
- Like expected

**In your opinion, what was the most interesting part of the workshop?**

- exchange of experiences with Marina managers.

**In your opinion what was the least interesting part of the workshop?****OTHER COMMENTS:**

- The case studies on marina, campsites and beaches do not cover the highest risks along the coast. They are rather side issues
- Combination of the strategic alternatives is making the evaluation difficult.



## 4 North Norfolk, United Kingdom

### 4.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Cambridge Coastal Research Unit, University of Cambridge
<b>FACILITATOR:</b>	Professor Tom Spencer / Dr Elizabeth Christie
<b>CO-FACILITATOR:</b>	Richard Cook, Civil Contingencies, North Norfolk District Council
<b>DATE OF THE WORKSHOP:</b>	Tuesday, 20 September 2016
<b>START TIME OF WORKSHOP:</b>	09:00
<b>END TIME OF WORKSHOP:</b>	13:00

**Table 8** Flip Chart for Stakeholder Groups in Kiel Fjord

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	Coastal engineer (Norfolk & Suffolk), UK Environment Agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Lead Agri-environment and Conservation Adviser and Land Management Local Delivery, Norfolk, Natural England	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Reserves Officer, Reserves Officer for the Broads and Coast, Norfolk Wildlife Trust	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	Corporate Director, North Norfolk District Council	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/disaster management agency	Civil Contingencies Manager, North Norfolk District	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	Council Deputy Civil Contingencies Manager, North Norfolk District Council Flood Incident Management Team Leader, UK Environment Agency	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
SH4: academic working in coastal zone	Environmental Geographer working at the interfaces between knowledge, policy, and practice Lecturer in Climate Change	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Flood Warden, Co-author of Wells Flood Action Plan, local magazine and newspaper columnist engaged in raising awareness of coastal flooding	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SH7: Chairperson of local active citizen groups	Local politician (Wells Town Council), Flood Warden, Co-author of Wells Flood Action Plan, lobbyist for improved mobile phone coverage on the North Norfolk coast	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Head of Environmental Health, North Norfolk District Council, claims management following December 2013 storm surge Coastal Management Team Leader, previously Coastal Communities Project officer, North Norfolk District Council	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

SH9: Representative from private sector	N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
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**Table 9** MCA Results North Norfolk

CRITERIA	Weights	SA1 Zero Alternative		SA2 Raising Awareness		SA3 Extended Sea Wall + Raising Awareness		SA4 Higher Sea Wall + Raising Awareness	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	4	2	8	2	8	-1	-4	-1	-4
Acceptability	1	-1	-1	1	1	-1	-1	0	0
Sustainability	3	0	0	2	6	-1	-3	-1	-3
<b>SUM</b>	<b>44</b>	<b>7</b>		<b>15</b>		<b>-8</b>		<b>-7</b>	

### How would you describe the atmosphere and context of the workshop?

The Workshop took place in the Committee Room at the offices of the North Norfolk District Council (the local government authority), in Cromer, Norfolk, 15 km from the eastern boundary of our case study area. Participants signed in on arrival and were then escorted upstairs to the room which was modern, large and airy. The room was of a good size to allow free movement around the main tables and movement between the discussion tables, the display tables and the main display board. The room had been well set up for us by the Civil Contingencies section of the Council with two double tables for each of our two discussion groups, a table for the UCAM coordinators and a computer, data projector and screen. There were large tables along the side of the room where we were able to place large format versions of the flipchart for stakeholders, the scoring matrix and the weighting matrix for each discussion group. We were then able to pin these materials, and work on the final versions, on a continuous display board along one side of the room. At the front of the room there was a large table for refreshments. The local stakeholders arranged tea and coffee on arrival and this was replenished mid-morning from the adjacent canteen.

At the close of the meeting the local team provided an excellent buffet lunch which allowed for more casual, less-Workshop based interactions. In summary, the physical setting was excellent and very conducive to a productive meeting. The social environment was businesslike but relaxed. Some of the stakeholders are based in the building, and therefore were very familiar with the room, and many of the stakeholders knew one another from other interactions. We probably started a bit too early at 09:00. The local road network around Cromer is slow and three participants arrived slightly late. The finish time was good.

#### **What were the main issues raised by the respondents during the workshop?**

MAIN ISSUE	NOTES
Use of return periods - general	The use of return periods is not helpful. As one of our participants, with considerable experience of issuing flood warnings, these are meaningless to populations being warned about possible flood events. They ask 'how high is the water likely to get?' and can only visualize this in relation to past events that they may have directly experienced or where there are markers to indicate the height reached by past floods. Thus it is water levels that are important, not return periods.
Use of return periods – specific to North Norfolk	All the participants in the Workshop had experienced the most recent storm surge in North Norfolk, on 5 December 2013. The BN suggest that this event had a return period of 115 years and thus we used the 1 in 100 year event on the MCA cards. Published estimates of the return period for this event vary between 1 in 40 years and 1 in 200 years, with some site-specific return periods, considering the joint probability of High Water and wave height, being as high as the 1 in 1000 year event. There was a general view in the Workshop that the 2013 event was the 1 in 500 year event; we do not know where this figure comes from but it was accepted without debate by participants. This has considerable implications for the selection and scoring of the SAs. If this was the 1 in 500 year event and the existing coastal defences performed so well why upgrade the current defences? This led to a lot of support for the 'zero alternative'.
Climate change	We did not formally offer climate change in any of the SAs. Perhaps we should have done so. When we did introduce climate change into the discussion it changed the assessment of the SAs. Thus with no climate change there is no need to favour an SA that builds a higher flood defence whereas when sea level rise is introduced the higher flood defence option commands greater interest. And there are implications for the present day 'zero alternative'. The uncertainties surrounding the magnitude of future sea level rise, however, affected the degree of engagement with this topic.

Terminology – ‘zero alternative’	This was not felt to be helpful terminology. More a case of ‘doing what you are doing now’
Specificity of SAs	As a vulnerability/exposure influencing measure we put forward the idea of erecting display boards showing images of past shoreline positions and markers recording historic surge heights. Specifically, it was felt that tourists were more likely to engage with such boards than the local population. More generally, all participants were in agreement that ‘raising awareness’ of flooding, and its continued reinforcement in multiple ways, was the terms in which the measure should have been expressed
SAs not necessarily the product of additive measures	SAs may not necessarily be made up of measures which reinforce one another. It was pointed out that the adoption of a particular measure as part of an SA might have a negative effect on another Measure in the SA. Thus, for example the hazard influencing measure of extending a sea wall in front of properties previously unprotected by a wall might result in less uptake of property protection by flood gates (and thus greater flooding impact if the extended sea wall were to be overtopped)
Definition of ‘feasibility’	Is this technical? Or logistically? (i.e the deployment of a demountable barrier, the evacuation of vulnerable communities...). Or does it relate to financing? If the latter, does this simply mean the application of a cost/benefit model? If the funding landscape were to change then this makes the assessment of feasibility in financial terms very uncertain

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

The level of participation was excellent. The structuring of the Workshop into two groups – with careful pre-selection of the group compositions - produced good intra-group discussions. This was then followed by discussions amongst the whole group that took as their starting point the different outcomes generated by the two groups. This then led into a general resolution of differences into an agreed result, led by the facilitators. We did not resort to averaging.

The total length of the exercise (4 hours) was right; it would have been difficult to maintain interest over a longer session. Interest levels were high and no signs of boredom were detected.

No.	Highlighted quote or argument during the MCA
1	Interestingly, the Flood Wardens scored ‘acceptability’ (‘can I sell this SA to the local population?’) much higher than both ‘feasibility’ and ‘sustainability’. However, for the coastal engineer the important criteria were ‘feasibility’ (‘can I build it?’) and ‘sustainability’ (‘can I maintain it?’) with ‘acceptability’

	being of no consequence.
2	There was interest in what happens next (specific to the MCA) and in the duration of the project as a whole and likely outcomes (related to Risc-Kit in general). There were concerns that whilst the Risc-Kit presentation and the MCA exercise were entirely appropriate for the group assembled it would be difficult to see how a similar exercise would be successful – ‘you would be shouted down’ - with local residents in Wells
3	North Norfolk already has a very well-tuned flood warning and crisis management system. Therefore, what Risc0Kit offers is interesting but not vital / would not make a significant difference to present practice

## 4.2 Reflective Information

### How would you describe stakeholders’ cooperation during the workshop?

There was some slight initial friction between one of the Flood Wardens (Marie Strong) and one of the Environment Agency representatives (David Kemp) but this passed after the initial exchanges. Discussions were never heated and attitudes were always positive throughout. Everyone seemed engaged and we did not need to work too hard to get people engaged in the workshop. This was a bit unexpected, as we thought the exercise would be too difficult and demanding but people became immediately interested in the cards.

Stakeholders were split into two groups. These groups were mixed carefully so that similar stakeholders were split.

Group A:

- Corporate Director, North Norfolk District Council. A very senior figure in local government, just one below the Chief Executive. Able to stay for RISC-KIT briefing but not able to stay for all of MCA Workshop. Very supportive.
- Head of Civil Contingencies and responsible for emergency planning in North Norfolk. Unable to attend the Workshop due to slow recovery from a major operation but was critical in the planning phase of the Workshop.
- Representative for Natural England, an executive non-departmental public body, sponsored by the UK Government’s Department for Environment, Food & Rural Affairs, and the UK Government’s adviser on nature protection of the natural environment. Interests in wetland management on the western margins of the Wells ‘hotspot’.
- Coastal engineer with the UK Environment Agency in Norfolk and Suffolk who is highly knowledgeable on existing flood barrier at Wells.
- Local politician (Wells town council) and Flood Warden (responsible for on the ground implementation of evacuation orders and other actions in time of storm surge flooding in Wells). Author of Wells Flood Action Plan. Local magazine columnist and lobbyist, and active in improvements to local mobile phone coverage in North Norfolk.

- University of Cambridge postdoctoral research associate in Departments of Zoology and Geography with interests in decision support tools, particularly in agricultural settings

Group B:

- Responsible for room set-up and welcome of UCAM team but unable to stay for the meeting itself due to other commitments. Replaced by Head of Environmental Health, NNDC.
- Member of Coastal Management Team at North Norfolk District Council and key member of emerging Norfolk and Suffolk Coastal Network.
- Norfolk Wildlife Trust, Reserves Officer for the Norfolk Broads and Coast.
- Former (2015) responsible for implementation of the Flood Warning Service for the Environment Agency in North Norfolk.
- Wells Flood Warden, local magazine columnist and lobbyist for raising awareness of flood risk.
- Social scientist from the University of East Anglia who has carried out research on the impacts of the December 2013 surge in the villages of Blakeney and Cley on the North Norfolk coast.
- Head of Environmental Health, North Norfolk District Council. Although not on the original list of stakeholders, he proved to be a very effective participant. He had been involved in assessing claims for flood protection after the 2013 storm surge and provided useful insights into the varying disruption, and uptake of government funding, by different social classes after the storm surge.

Throughout the exercise, cooperation was excellent. There was very strong interest and engagement with the MCA cards, although there was some comment on the text being very small. There were good discussions in the sub-groups, and then in the group as a whole to arrive at the agreed 4 SAs. There was an understanding that we were working to a pan-European template and that results would need to be fed into a common analytical framework. It was recognized therefore that we were working from a project-determined exercise structure. There were difficulties at the stage of scoring the SAs (see below). By comparison, the sub-group and group decisions on the weightings were very straightforward and arrived at very quickly

**Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

During the weighting part of the MCA, there were differences in opinion within the groups, but in the end groups weighted the same. There was a bias towards engineering solutions and less interest in “acceptability” because stakeholders argued that it was not their job to judge this. If we would have had a group of only local residents it would have been harder to agree on the criteria. We expect the discussions to be more political, more aggressive, and more confrontational. Results would have been very different. Towards the end of the exercise people were surprised about how clear raising awareness was valued. Raising awareness could be seen as part of reaching acceptability. When asked whether they were happy with results, stakeholders responded positively.

The most difficult part of the exercise was the scoring of the Strategic Alternatives. There were multiple problems:

- A. The social scientists present felt that the wording of many of the questions on the scoring guide were too imprecise
- B. Because there were three questions asked under each of 'feasibility', 'acceptability' and 'sustainability' initially most participants thought that they were being asked to provide three scores per section (i.e. 3 x 3 x 4 SAs = 36 scores) rather than one score per section (i.e. 1 x 3 x 4 = 12 scores). When we told participants that they just needed to provide one score to the three questions, this led to further difficulties. If the three questions had been scored differently how was a single score to be arrived at? By some kind of averaging? Or by deciding which of the three questions was the most important?
- C. The use of the post-it notes was not a success. Participants found it difficult to remember which color related to which score and even though we had a very large grid on which to place the post-it notes they both overwhelmed the grid and did not give a clear visual impression. Participants struggled with why we needed to use the post-its at all. In the end, we abandoned the post-it notes, pinned up the two grids from each sub-group and then read out the scores per cell as the basis for the discussion of what the agreed score should be.
- D. There was a bit of a tension between leading the discussion on the agreed score v. allowing the discussion to meander with no decision being reached. I think as facilitators we maintained a reasonable balance between allowing discussion to take place v. keeping the Workshop moving.

**Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?**

One of the Flood Wardens had a very strong presence. Also, at times, the Coastal Engineer expressed very strong views from a coastal engineering perspective. But no stakeholder disrupted the progression of the Workshop at any point and there was no sense that discussion in the sub-groups or the group as a whole was being closed off by a particular stakeholder/holders

**Table 10** Survey for CSOs in North Norfolk

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	<b>employed during the workshops</b>					
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>It was clear what was expected of me as facilitator</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11</b>	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Was there anything surprising to you?**

How non-confrontational the whole process was and the genuine interest of the stakeholders

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

See issues with scoring SAs discussed above

**Were there any problems with the design of the workshop or the matrix?**

We had to list the SAs above the scores. Participants cannot remember what SA1-4 were.

**What was the most difficult part of holding the workshop?**

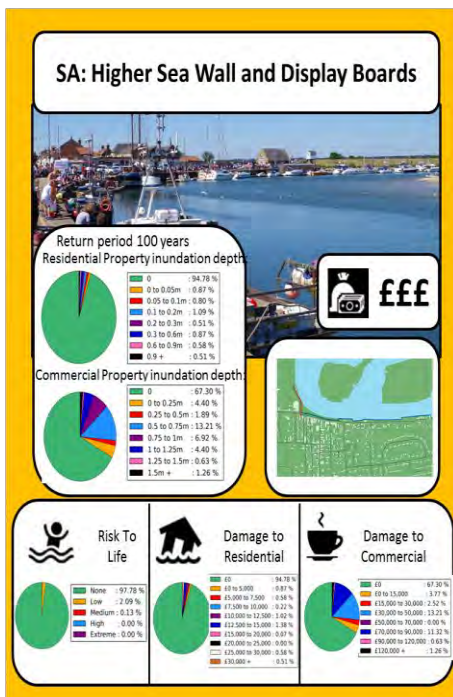
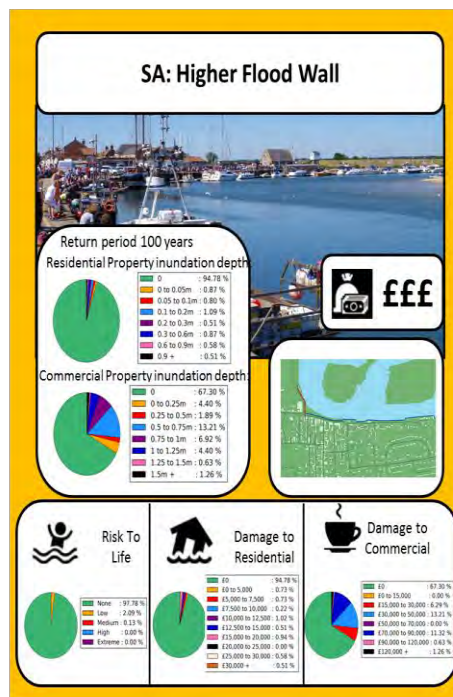
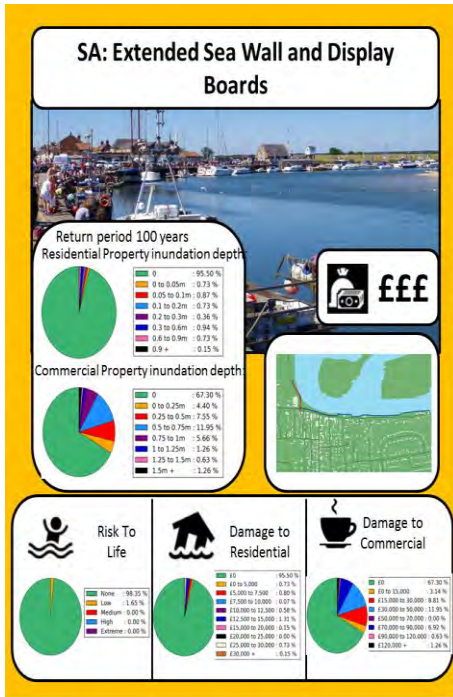
Preparing the BN and webviewer, and finalizing the MCA cards, ahead of the Workshop

**What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Good basic structure

### 4.2.1 Cards and Strategic Alternatives





**Table 11** Stakeholders' Evaluation of MCA in North Norfolk

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time	1	6	1		
2	The purpose of the workshop was clear	1	6	1		
3	The workshop was the right length of time	1	7			
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long		<input type="checkbox"/> Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	1	4	3		
5	The format of the workshop was effective for achieving its aims.	1	4	3		
6	We engaged in a fruitful discussion	3	5			
7	I feel that the workshop contributed to the debate on DRR strategies	1	6	1		
8	The workshop was a good forum for discussion on DRR	1	7			
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	2	5	1		
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives		6	2		
11	I am satisfied with the outcomes of the workshop	1	7			

**Were any of the results surprising to you, or did you expect these results?**

- The results are normal for all stakeholders taking into account that effectiveness was not evaluated since there was no specific parameter regarding it. The results represent the diversity of stakeholders present at the MCA.
- I fully expected a sea wall to be the preferred option despite my preference for “no action”
- Surprised that “zero alternative” scored 2nd highest
- The outcome of the modelling and MCA was indicative not a prediction/decision, so I don't put much weight on the outcome

- Expected
- Surprised of the consensus in the room. Technically I agree with the outcome and the ranking of the results
- I expected these results. However, I was surprised by the clarity of the margins. A product of the weighting systems

**In your opinion, what was the most interesting part of the workshop?**

- The discussions generated by the process
- The process and discussion/exchange of ideas
- The cards modelling how the SAs affected the outcomes
- The discussions regarding feasibility and acceptability

**In your opinion what was the least interesting part of the workshop?**

- No poor bets!
- All interesting

**OTHER COMMENTS:**

- I think care should be taken to remember this is a perception exercise, rather than an objective calculation of feasibility, accessibility, and sustainability. The range of scores within such a small group may ???
- Will neighboring impacts of improving flood defenses be considered? If a high risk area is targeted, the pressure may be passed on to a nearby, unprotected area which could then itself be high risk. Consider sacrificial areas, etc.
- I found myself judging my responses upon the effects of the 2013 surge and found it difficult to narrow down to a 1:100 effect

## 5 Porto Garibaldi, Italy

### 5.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Paolo Ciavola
<b>FACILITATOR:</b>	Enrico Duo
<b>CO-FACILITATOR:</b>	Clara Armaroli / Karina Barquet
<b>DATE OF THE WORKSHOP:</b>	23rd September 2016
<b>START TIME OF WORKSHOP:</b>	13:00
<b>END TIME OF WORKSHOP:</b>	17:00

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	<b>Luisa Perini</b> Coordinator Coastal Group Geological Service, Regione Emilia-Romagna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<b>Carlo Albertazzi</b> Land and Coast Protection Service, Regione Emilia-Romagna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	<b>Claudio Fedozzi</b> Planning Office Comacchio Municipality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	<b>Giampiero Gozza</b> , Regional Civil Protection Regione Emilia-Romagna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	Thomas Veronese, Consultant of the Comacchio Municipality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Andrea Peretti, formerly Head of Coastal Office of Ferrara, Regione Emilia-Romagna	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Giovanni Nobili Forest Ranger, National Forestry Commission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Table 12** MCA Results Porto Garibaldi

CRITERIA	Weights	SA1 Retreat		SA2 Education + Winter Dune		SA3 Winter Dune + Flood Resilience + Education + Strategic Retreat		SA4 Winter Dune + Flood Resilience + Education	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	13	-1	-13	2	26	1	13	2	26
Acceptability	12	-2	-24	1	12	1	12	2	24
Sustainability	19	1	19	0	0	2	38	1	19
<b>SUM</b>	<b>44</b>	<b>-18</b>		<b>38</b>		<b>63</b>		<b>69</b>	

### How would you describe the atmosphere and context of the workshop?

The session started with a 1-hour mingle with snacks. The room was very warm, the atmosphere was relaxed. Stakeholders interacted with the team. Some people were delayed so the session started 15 minutes late. The room had no tables. People were sitting in a “classroom- like” way with chairs facing the projector. The material was not provided from the beginning so that stakeholders wouldn’t get distracted.

Stakeholders knew each other since before and CSOs had a history of collaboration with the end-user. The workshop was held during the REMTECH event in the city of Ferrara to increase chances of assistance and participation. Out of 8 SHs invited (and confirmed) one couldn't show up in the end. Two SHs needed to leave earlier. Towards the end of the session, SHs seem satisfied with the workshop and even suggested having a future follow-up meeting in a different city.

### What were the main issues raised by the respondents during the workshop?

MAIN ISSUE	NOTES
More information on the technicalities and specificities of the measures	SHs felt they needed to be better informed of what each of the measures actually involved.
More information on costs of implementation as well as cost-benefit analyses of measures	Because of lack of data on costs as well as lack of technical data (point above) SHs had some difficulties at the beginning of the workshop to build the SAs.
Design of cards a bit confusing	The different colors on the SAs didn't help, they rather created some confusion.
Weights	Weights generated an interesting discussion. People weighted according to what should –in principle- be most important. But when reflecting upon the given weights they agreed that public opinion (i.e., acceptability) - the lowest weighted criteria- might be most important and would probably affect feasibility.
Assessment of the measures	Confusion over whether they should judge the measure according to what in principle should be more important for the common good, versus assessing the measures judging from their own roles. They were told to do the latter, but the discussion often turned abstract and framed as what was needed to be done, rather than how it would happen in reality. One aspect to highlight here is that SHs participating in the MCA are generally very engaged in the question of disaster risk reduction, and therefore have clear ideas about what should be done.
No local residents/restaurants owners in MCA	Locally-affected people (locals) did not attend the MCA. This probably impacted the choice of SAs and made the discussion less polemic and confrontational.

### Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety

Most SHs participated actively in the discussion. There were a couple of more predominant SHs who often influenced the group. Generally all participants engaged in the discussion. There seemed to be a common understanding in the room of what the problems were and what the potential solutions (measures) should be. While scores differed somewhat between SHs, the discussions following the scoring exercise changed some of the SHs perceptions, especially when it comes to sustainability. When



it comes to the implementation of the MCA, SHs were a bit puzzled at the beginning and asked many clarifying questions, particularly during the first scoring round (when scoring the first SA). The exercise became clearer afterwards

No.	Highlighted quote or argument during the MCA
1	You have to show people with a pilot example that the measure works. Convince them with evidence and practical examples that things can work
2	Raising awareness is crucial to create acceptance and inform people.
3	Something that would help us create awareness and increase acceptability would be to show that the measures have also an immediate economic return of the investments and decrease economic damage. People need to see tangible benefits and incentives to for instance remove buildings. People will have to invest, but if they can get a return, they might be more willing to do it.
4	“There is a very strong sense of belonging and identity...how can you ask people to move?” (translated from Italian)
5	“It is always the same places and the same problems all over the coast, regardless of the specific stretch of beach. We go to the meeting but in the end we say ‘what the hell?’ it is always the same problems, the same questions. I always thought of the retreat of the building area as a possibility, even though I know is not feasible but we should talk about it. It is also a measure included in the EU as a possible strategy, so we are not saying anything new. If it was our land we probably would share the costs but it is a very complex issue” (translated from Italian)

## 5.2 Reflective Information

### How would you describe stakeholders’ cooperation during the workshop?

Good cooperation and almost too much agreement between SHs, probably because SHs with competing or contrasting views were not present in the room. SHs pasted their post its –very orderly- one by one. Probably the size of the MCA prevented people from pasting their post it’s at the same time. This reduced somewhat the interaction between stakeholders and prolonged the time for scoring.

### Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?

When scoring the criteria “Feasibility” on SA3, commercial establishments were brought up as a major obstructing factor for implementing the strategic alternative. “When will the beach be so eroded that it will destroy the establishments? The area will eventually become an island if erosion continues!”. SA 3 is deemed a “dream alternative” but with considerable difficulties for potential implementation. Despite this, SHs were ready to assign a high positive value. The value didn’t seem to given based on the actual feasibility of implementing the measure, but rather on its’ perceived importance. Facilitator then questioned the decision and tried to problematize the decision: why if the SA is deemed so feasible it has not been implemented? One SH explains that he voted high because he considers this measure in the long run as a one-strategy with several steps. Another SH says that while this is a very positive measure we need to take into account the difficulty of convincing people to implement the SA. People engage in a discussion. A third SH brings back the

discussion to the actual criteria. Stakeholders mix up criteria and judge them in relation to each other. It became difficult to stop and redirect the discussion. Due to lack of time, facilitator suggests scores based on the individually assigned scores.

**Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?**

Two SHs were particularly influential, both of them holding a public position. The representative from the National Forestry Commission, had marginal influence upon the decision-making process in the area is, compared to other SHs. Despite this, his opinions and strong preference for sustainable solutions were very influential upon the rest of the group.

**Table 13** Survey for CSOs in Porto Garibaldi

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>communication with WP4 package leaders</b>					
<b>10</b>	<b>It was clear what was expected of me as facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11</b>	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Was there anything surprising to you?**

I was surprised by the strong interaction achieved during the workshop.

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

Not really

**Were there any problems with the design of the workshop or the matrix?**

Problems were only related to our inexperience and were easily addressed through the team cooperation and the support of WP4 partners

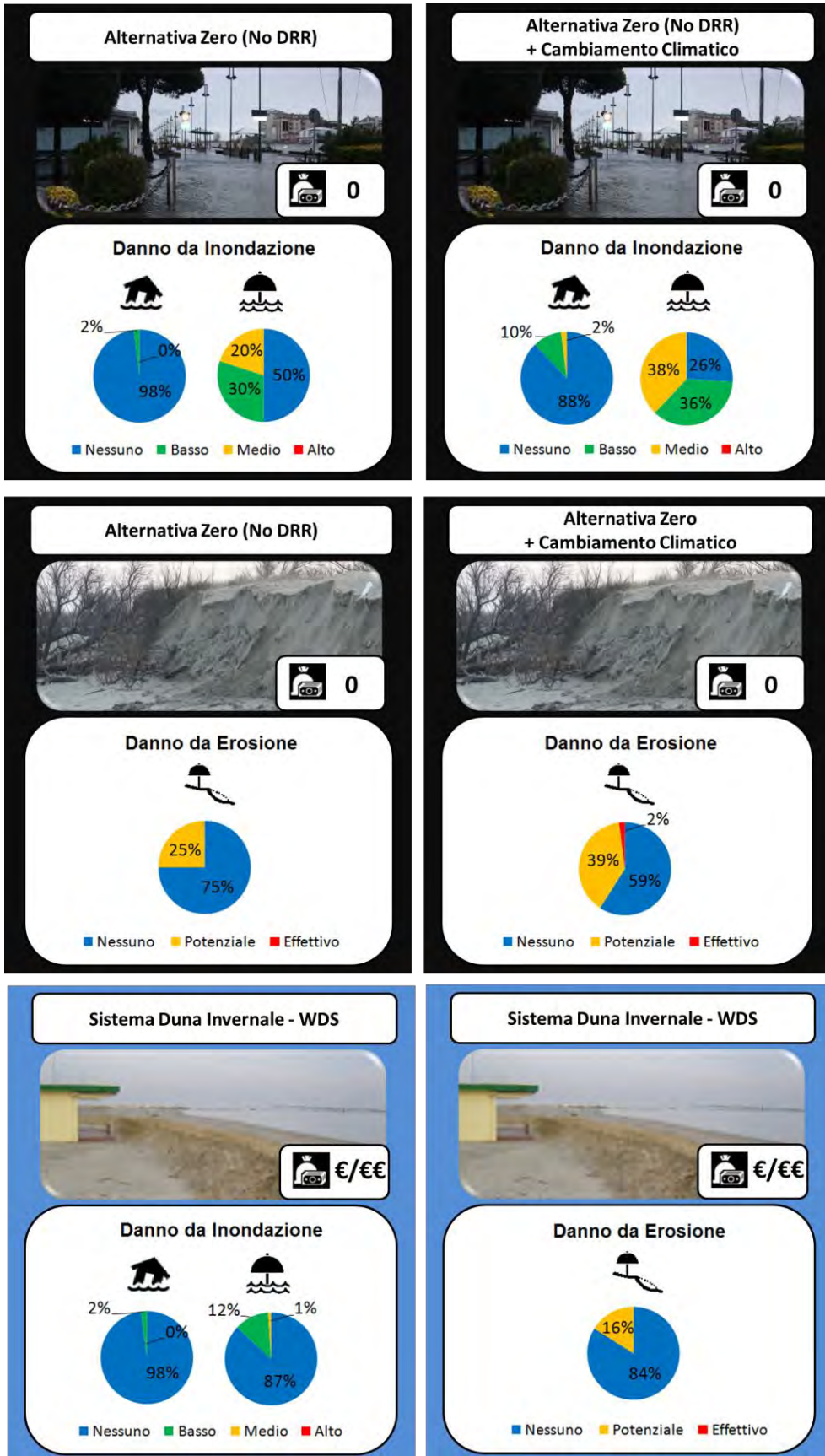
**What was the most difficult part of holding the workshop?**

The main difficult was to ensure the presence of all stakeholders.

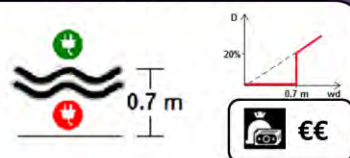
**What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Given the allocated time to the task we did a very good job and we would not change anything.

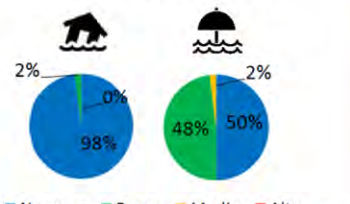
### 5.2.1 Cards and Strategic Alternatives



**Misure di Incremento della Resilienza (per strutture private)**



**Danno da Inondazione**



■ Nessuno ■ Basso ■ Medio ■ Alto

**Arretramento Strategico**

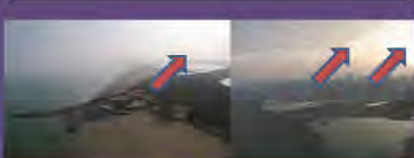


**Danno da Inondazione**



■ Nessuno ■ Basso ■ Medio ■ Alto

**Arretramento Strategico**



**Danno da Erosione**



■ Nessuno ■ Potenziale ■ Effettivo


**Alternativa Strategica Nr. 1**



**Alternativa Strategica Nr. 2**



**Alternativa Strategica Nr. 3**



**Table 14** Stakeholders' Evaluation of MCA in Porto Garibaldi

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time	2	3			
2	The purpose of the workshop was clear	4	1			
3	The workshop was the right length of time		4	1		
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long		1 Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	1	4			
5	The format of the workshop was effective for achieving its aims.	1	3	1		
6	We engaged in a fruitful discussion	2	3			
7	I feel that the workshop contributed to the debate on DRR strategies	1	3	1		
8	The workshop was a good forum for discussion on DRR		5			
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	2	2	1		
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives		4		1	
11	I am satisfied with the outcomes of the workshop	1	4			

**Were any of the results surprising to you, or did you expect these results?**

**In your opinion, what was the most interesting part of the workshop?**

The discussion on the measures and methods

**In your opinion what was the least interesting part of the workshop?**

**OTHER COMMENTS:**

## 6 Praia de Faro – Ria Formosa, Portugal

### 6.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	University of Algarve
<b>FACILITATOR:</b>	Oscar Ferreira
<b>CO-FACILITATOR:</b>	Susana Costas / Theocharis Plomaritis
<b>DATE OF THE WORKSHOP:</b>	16 September 2016
<b>START TIME OF WORKSHOP:</b>	14:00
<b>END TIME OF WORKSHOP:</b>	18:15

**Table 15** Flip Chart for Stakeholder Groups in Praia de Faro - Ria Formosa

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Decision-maker	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	City Council Manager- Environment Agency and Institute for Nature Conservation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Regional Coastal Manager - Environment Agency and Institute for Nature Conservation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	Representative from Portuguese Atmosphere and Ocean Institute	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	Academic with background on Ecology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Academic with background on morphodynamics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Owner of summer house located in the frontal dune facing the sea	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Local Coastal manager- Environment Agency and Institute for Nature Conservation	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SH9: Representative from private sector	N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**Table 16** MCA Results in Praia de Faro

CRITERIA	Weights	SA1 Dune and beach nourishments		SA2 House Removal		SA3 Communication channels (placing sandbags)		SA4 Dune and beach nourishment + House removal		SA5 Dune and beach nourishment + House removal + Communication channels
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	
Feasibility	19	1	19	0	0	2	38	1	19	1
Acceptability	19	2	38	0	0	2	38	1	9.5	1
Sustainability	18	1	18	2	36.	1	18	2	36	2
<b>SUM</b>	<b>56</b>	<b>75</b>		<b>36</b>		<b>94</b>		<b>64.5</b>		<b>93</b>



### How would you describe the atmosphere and context of the workshop?

The atmosphere was always relaxed and quite informal. It was also friendly for most of the time, even during the most heated discussions. That was mainly due to the previous knowledge that almost all intervenient already add one from the others (with few exceptions). The discussions were mainly between local and regional coastal managers and are already old and well known discussions, and therefore the participants were used to have them in a cordial and respectful way. That was mostly possible due to the absence of the most directly affected groups (fisherman and 1st house owners). Several participants agreed that discussion would most probably would be much more stressed and heated if those representatives would be present.

### What were the main issues raised by the respondents during the workshop?

MAIN ISSUE	NOTES
House removal	Main disagreement point between coastal managers
Cooperation/collaboration/information	Agreement point that can be done and can be improved, including communication and education with the population
Political will	Disagreement point between coastal managers. Local one stated that respects the political will of all parties that voted against house removal. Regional ones stated that the national and regional political will should overlap over the local one.
Relative importance of the coastal risk	Local manager and citizen accept this hotspot as having the most relevant risk for them. Regional managers and others state that in the regional context of the Algarve there are other priorities.
Money availability	Different perspectives on money availability to perform the measures. Positive perspective from local manager and not so positive from the regional ones.

### Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety

The group was always very dynamic on debating the SAs. That dynamic started in fact at the middle of the project presentations by making questions on the project results, methods, models, outputs, etc. It must be stated that this is a highly informed and highly educated group, with all participants having at least a 5 year degree (equivalent to a MSc currently) and 4 of them having a PhD (all of them on coastal and marine science). This is not common in Portugal, not even at the manager level. The level of participation was high from almost all participants with the exception of the end-user representative that was more passive (personal note: that is a result of her personality and do not at all means lack of interest). Everyone knew the facilitators and that helped to break barriers and to have the discussion in a less formal way. The most dominant participants were the coastal managers, namely the regional ones that made

a “group” of 2 that often acted “against” the local manager. It must be said that is a result of past interactions between them and also because the 2 regional coastal managers, although from different institutions nowadays, worked together and on direct dependency for more than 20 years. Criticisms were always very well accepted and the debate had always a very good level.

## 6.2 Reflective Information

### How would you describe stakeholders’ cooperation during the workshop?

Quite positive. They intended to reach a final value and for most of the times they intended to be reached by consensus and they enjoyed the discussion in order to try to reach consensus.

### Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?

Yes, namely on SA2 (House removal) where it was obvious the existence of 2 different groups with different opinions and votes. For that measure and for Feasibility and Acceptability there was no consensus. The ranks had two modes (a positive centered in 1 and a negative centered in -2). The negative values were attributed by the local manager + house owner while all other ones attributed positive values. The average of these results does not express at all any vote and is therefore not representative of the two groups.

### Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else’s?

No, although there was a group formed by 2 regional coastal managers that in some parts of the discussion took the leadership.

**Table 17** Survey for CSOs in Praia de Faro

	For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The matrix’s results reflect the diversity of opinions and interests amongst stakeholders.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	The workshop was a useful forum for evaluating DRR strategic alternatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Stakeholders were satisfied with the process and the methods employed during the workshops	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Stakeholders were satisfied with the outcomes of the workshop	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5	The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Overall I am satisfied with the workshop	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I am satisfied with the guide and training provided previous to the workshop	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	The format of the workshop was effective for achieving its aims.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	I am satisfied with the communication with WP4 package leaders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	It was clear what was expected of me as facilitator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	It was clear what was expected of me as co-facilitator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Was there anything surprising to you?**

Not really since the stakeholders that could provide more conflict on the discussion did not show up. It was also not a surprise that they preferred not to show up, since that could eventually put them into a position of compromising with some sort of measure or action, and they prefer not to do to it and contest by demonstrations, municipality assemblies or directly to the managers in a more private way.

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

Yes. There is a strong lack on the evaluation: Effectiveness/Efficiency. A measure cannot simply be evaluated by Feasibility/Acceptability/Sustainability since a measure can be great on all those parameters and not effective at all to solve the existing problem. All participants agree that they were not able to evaluate the Effectiveness of the measures and that is the result way the most voted measure was Channels of Communication. All intervenient also agree that this measure would be the less effective of all (which is well expressed at the cards).

**Were there any problems with the design of the workshop or the matrix?**

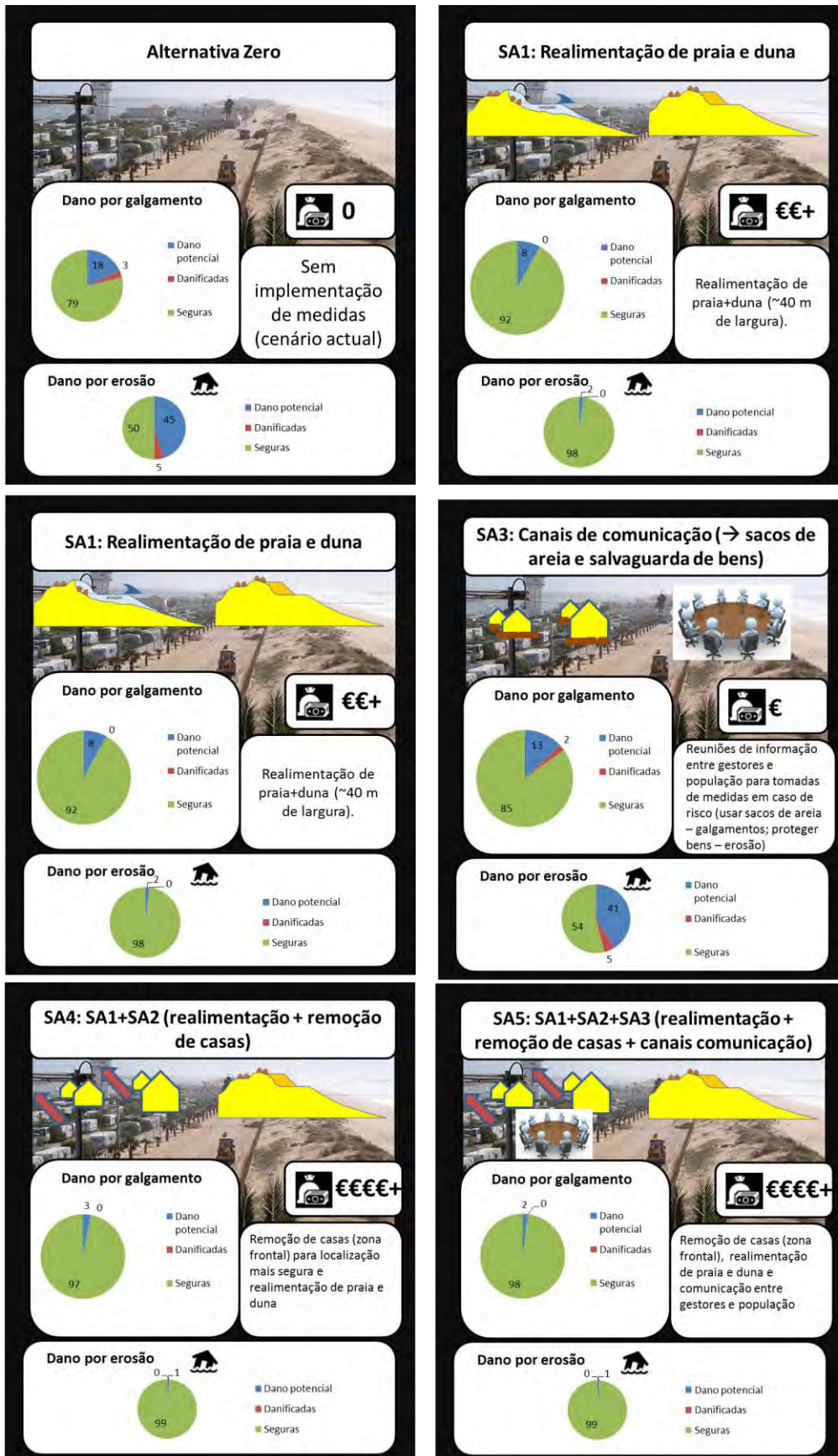
Not at all

**What was the most difficult part of holding the workshop?**

Guarantee that stakeholders would really come and some personal investment was needed to assure that. Just inviting and not reinforcing would probably not work

**What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Regarding the methodology please refer to point 5. The rest seemed appropriate. We could have contacted more house/restaurant owners in order to try to have at least one representative but that could also lead to an excess of representativity if several would show up.

**6.2.1 Cards and Strategic Alternatives**


**Table 18** Stakeholders' Evaluation of MCA in Praia de Faro

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time	2	5			
2	The purpose of the workshop was clear	3	3	1		
3	The workshop was the right length of time	3	4			
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long		<input type="checkbox"/> Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	3	3	1		
5	The format of the workshop was effective for achieving its aims.	3	4			
6	We engaged in a fruitful discussion	3	4			
7	I feel that the workshop contributed to the debate on DRR strategies	1	6			
8	The workshop was a good forum for discussion on DRR	3	4			
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	3	3			
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	3	3			
11	I am satisfied with the outcomes of the workshop	5	2			

**Were any of the results surprising to you, or did you expect these results?**

The results are normal for all stakeholders taking into account that effectiveness was not evaluated since there was no specific parameter regarding it. The results represent the diversity of stakeholders present at the MCA.

**In your opinion, what was the most interesting part of the workshop?**

The discussion was good and all stakeholders enjoyed it. Stakeholders also pointed that was good to see quantitative results from the project and to understand what was done along the project.

**In your opinion what was the least interesting part of the workshop?**

Nothing was pointed, although the stakeholders regret not to have the participation of the missing stakeholders, namely the house owners and fisherman.

**OTHER COMMENTS:**

- Need to introduce Effectiveness as an evaluation criteria.
- Need to state or define as criteria or initial information the Need of Implementation or “how necessary that measure is”. Some stakeholders stated that is paramount to evaluate the measure itself.
- Acceptance can be defined at different levels. Here it was used acceptance at local level, but acceptance at regional or national level can be very different, since a particular measure can have no relevance at regional/national level and therefore the measures are not acceptable. The inverse is also true. For instance, the house removal is not accepted at local level but is probably highly acceptable at regional/national level.

## 7 Kristianstad, Sweden

### 7.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Stockholm Environment Institute
<b>FACILITATOR:</b>	Karina Barquet
<b>CO-FACILITATOR:</b>	Jan Jaap Meijer
<b>DATE OF THE WORKSHOP:</b>	15 September 2016
<b>START TIME OF WORKSHOP:</b>	09:00
<b>END TIME OF WORKSHOP:</b>	12:30

**Table 19** Flip Chart for Stakeholder Groups in Kristianstad, Sweden

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	Coordinator Environment and Security, Åhus Port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	Environmental Communicator, Sustainable Development Management, Municipality of Kristianstad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Development Strategist, Project Coordinator, C4 Teknik, Kristianstad Municipality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	Fire Protection, Safety and Security, Emergency Services, Kristianstad Municipality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	Researcher, UN World Maritime University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Local inhabitant and property owner in Äspet	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



SH7: Chairperson of local active citizen groups	Chairperson, Eel Academy, Åhus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Member, Eel Academy, Åhus	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Plan Strategist, Environmental & Planning Management Department, Kristianstad Municipality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	Claims Manager, Claims Department, Länsförsäkringar Insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Table 20** MCA Results in Kristianstad

CRITERIA	Weights	SA1 Zero Alternative		SA2 Dune Nourishments		SA3 Beach Nourishments		SA4 Dune nourishments + Flood Proofing Houses		SA5 Beach Nourishments + Flood Proofing Houses
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	
Feasibility	3	-1	-3	1	3	1	3	-1	-3	-1
Acceptability	2	-2	-4	1	2	1	2	0	0	1
Sustainability	3	-2	-5	-1	-3	0	0	-1	-3	-1
<b>SUM</b>	<b>56</b>	<b>-12</b>		<b>2</b>		<b>5</b>		<b>-6</b>		<b>4</b>

### How would you describe the atmosphere and context of the workshop?

The atmosphere was generally good. Some people knew each other through their jobs previously, whilst others met through the RISC-KIT project, particularly during the pilot MCA that was carried out in March the same year. The presentation was partly done in English and partly in Swedish. The English content was immediately translated (and interpreted to normal less technical language) to Swedish. This contributed to better understanding of results and measures. One of the stakeholders was a high level decision-maker in the municipality. This contributed to a more “formal” atmosphere in the room (compared to last meeting). She took the discussions seriously and mentioned that the municipality is considering these issues.

### What were the main issues raised by the respondents during the workshop?

MAIN ISSUE	NOTES
How does a “likely” scenario look like?	The MCA was based on the “worst-case” scenario with climate change. People interpret this scenario as highly unlikely and would prefer to make an assessment of measures based on a likely scenario.
Problematic not to have more technical information about the measures	Most participants wanted more information before making decision on the MCA concerning what each of the measures entail in terms of technical requirements, whether it is a one-time investment or something that has to be done periodically.
Cost-benefit analysis was needed to be able to better assess criteria	The lack of information on investments, costs, returns, and benefits in relation to investments and costs, was problematic, as participants kept arguing they were not able to make an informed decision without this information.
Public versus private financing the measures	For the area of Äspet the problems of erosion and overwash directly affect house owners –private property- in the area. People owning property in Äspet are generally a more privileged group of society. While the problems of erosion could impact the width of the beach (and thus the public interest), Kristianstad has extensive beaches along the coast and visitors have other alternatives. Authorities argue that investing in measures in Äspet would not be well received by other tax-payers in the municipality because the coastal impacts primarily affect private property of the better-off group of society. Rather, house owners should find ways of investing in their own properties since it was them who built in the wrong place to being with. However, the municipality is partly responsible because all construction permits are granted by the municipality, including the houses located in Äspet. Local inhabitants in the MCA were not willing to pay for the measure that would entail private investment (flood proof), and the final MCA results reflect this.
Flood proofing measure is aesthetic	Local inhabitants (SH 6 and SH7) did not think the idea fit their houses or the concept of the area.

Time perspective: short vs long term	Assessment of measures varies depending on which time perspective one takes (short or long term), particularly due to the economic costs of implementing a measure against a risk that might not occur until in 100 years.
Another measure	Participants question the choice of measures. We explained the process for reaching the decision (interviews) and they understood but some of them (house owners) felt that they had a better alternative (some participants were new and did not participate in the interviews). The alternative was to place stones in the sea to break the waves and retain sand. We explained that this measure was likely to cause erosion somewhere else in the coast, but some of the participants did not seem to agree (or be concerned) with this.
Access to RISC-KIT tools and methods	Participants were interested in the results and in knowing whether the tools would be transferred to the municipality for own use.
Data access and openness in the municipality	After highlighting that data accessibility, availability and great hinder for reaching more accurate results, stakeholders engage in a discussion on ways to be more open with data and contribute to better research.

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

A majority of participants in the group were men, most of them with strong voices. Half (2) of the women spoke freely and often, while the other two did not say much. The oldest person (a local stakeholder) in the room felt at times overwhelmed by the amount of information presented. She felt she couldn't do a proper assessment of the measures and that she didn't understand enough. In the end she scored and weighted everything.

SH4 (researcher) was important to improve involvement from this participant in particular and of local inhabitants in general. The representative from the private sector was there mostly to listen although interested in what house owners thought about private investments of the measures. At the beginning of the MCA, some people (facially) expressed dissatisfaction with the exercise. It seemed like too much to think about, particularly when explaining the scores. Once they get going with the scores, it was no problem for them to understand what to do.

No.	Highlighted quote or argument during the MCA
1	The municipality can refrain itself from giving out constructions permits if people do not build according to safety rules. One such rule for newly built houses in potentially affected areas could be "flood proofing".
2	The SAs containing combinations of measures were treated very carefully and compared to the pilot MCA ran in March, stakeholders were not as positive as they initially were. An influencing factor might be that more local inhabitants were present compared to the last meeting. Generally the measure that required private investment got lower ranking. Dune nourishments got also

	lower scores compared to beach nourishments, despite people accepting these may be more sustainable. “people don’t want to obstruct the view from their house by building up a dune. They want a beach to walk and they want to be able to see the horizon”.
3	The criteria “acceptability” can impact “feasibility” if enough people demand solutions from their local politicians

## 7.2 Reflective Information

### **How would you describe stakeholders’ cooperation during the workshop?**

The discussion was generally friendly although a bit strained sometimes when local inhabitants did not agree with what municipality officials said things got a bit tense. Compared with the pilot MCA carried out earlier this year, the discussion was more balance between civil society interests and municipality’s interests. Some people discussed in smaller groups how they thought and whether this (the MCA) was the right way of assessing the measures. Generally many thought that they had too little information and knowledge on the measures to make a proper decision. We assured them that we were aware of this and that the point of the MCA was not get the “right” answer, but to understand how they viewed the measures. The fact that many were skeptical of assessing the measures without having proper knowledge of them, could indicate that they are open for suggestions and that they are interested in knowing more before making up their minds.

It was particularly useful to pair/group them when showing results (impact and measures) through the webviewer because they had a chance to discuss informally and openly and they could try out different scenarios. However this generated a series of comments on the actual Viewer (outside the scope of the project) and suggestions for making it more user-friendly as everyone was interested in being to access it and incorporate it into their work.

### **Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

Agreeing on weights was more difficult because more drastic decisions had to be taken which didn’t reflect everyone’s views. Because of lack of time we could not discuss in depth the points of disagreement. Also local inhabitants and municipality officials could not agree sometimes on what should be private investment and tax-financed.

### **Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else’s?**

No.

**Table 21** Survey for CSOs in Kristianstad

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix’s results reflect the diversity of</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>opinions and interests amongst stakeholders.</b>				
2	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<b>Overall I am satisfied with the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	<b>It was clear what was expected of me as facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### **Was there anything surprising to you?**

The MCA results: the SA that participants scored highest was not the most effective one. These results differed from the results during the MCA pilot where the most effective SA (Dune nourishments + Flood Proofing) was scored highest. During the final discussion participants were asked to reflect upon the results and motivate the results. Local inhabitants argued that Flood Proofing is a measure that would cost a lot of money and was aesthetic. Stakeholders representing the municipality, particularly the high-level decision-maker, reacted to these comments which triggered a discussion on costs and burdens that clearly nobody wanted to assume. With this in mind, it was surprising that the criteria sustainability got such high weights.

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

No. But we prepared the guide.

**Were there any problems with the design of the workshop or the matrix?**

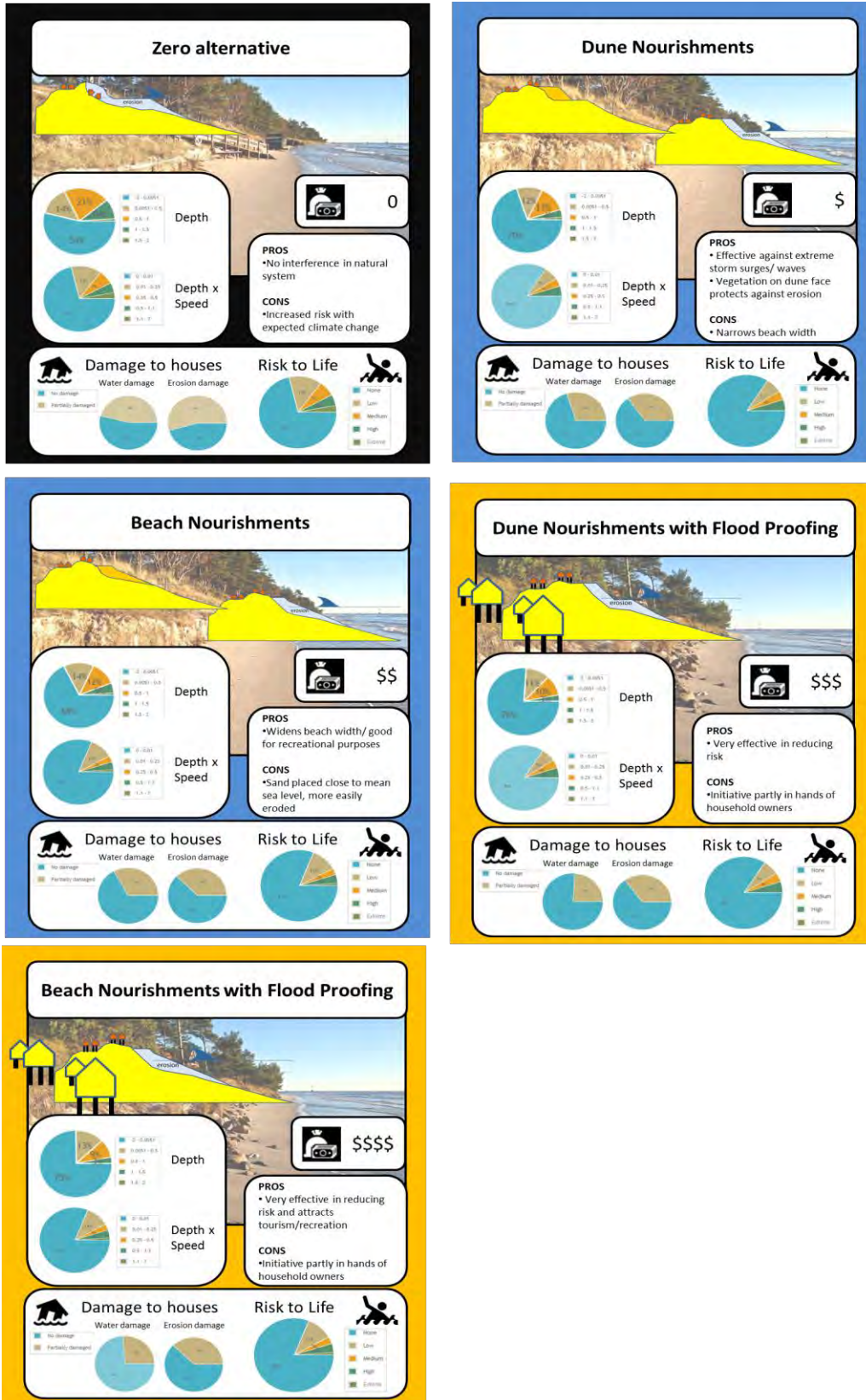
We realized before the meeting that there were at least two different ways of weighting: either by reaching consensus on the weights where the sum of the values was equal to 8, or to average the values given by each stakeholder. The choice was open for each CSO to use whichever method they preferred.

**What was the most difficult part of holding the workshop?**

Presenting very specialized and technical information to a very broad group of people was challenging. Preparing the workshop took considerable amounts of time.

**What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Design the cards a bit simpler with less information.

**7.2.1 Cards and Strategic Alternatives**


**Table 22** Stakeholders' Evaluation of MCA in Kristianstad

	<b>Please indicate the strength of your agreement with each statement below</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
1	The workshop was a valuable use of my time	2	5			
2	The purpose of the workshop was clear	4	3			
3	The workshop was the right length of time	1	5		1	
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long <span style="float: right;"><input checked="" type="checkbox"/> Too short</span>				
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	2	3	2		
5	The format of the workshop was effective for achieving its aims.	1	3	3		
6	We engaged in a fruitful discussion		5	2		
7	I feel that the workshop contributed to the debate on DRR strategies	1	5	1		
8	The workshop was a good forum for discussion on DRR	1	5	1		
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	3	4			
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	1	5	1		
11	I am satisfied with the outcomes of the workshop	1	4	2		

**Were any of the results surprising to you, or did you expect these results?**

- Focus on the issue
- Many different opinions, but that I was expecting due to many different eyes,



but more surprised when many actors agreed – which is positive. Would be interesting to dig deeper.

- It was quite expected, without having much knowledge
- That so few endorsed SA4
- Dune nourishments

**In your opinion, what was the most interesting part of the workshop?**

- To discuss openly
- To see the flood maps
- The discussion

**In your opinion what was the least interesting part of the workshop?**

I question the estimation of valuing the alternatives. Too few participants to say its statistically correct of the population/stakeholders + government, politicians

**OTHER COMMENTS:**

Good and clear presentation. Well done Karina and Jaap! Good use of my time

## 8 La Faute Sur Mer, France

### 8.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Xavier Bertin
<b>FACILITATOR:</b>	Xavier Bertin
<b>CO-FACILITATOR:</b>	Jean-Rémy Huguet
<b>DATE OF THE WORKSHOP:</b>	23 September 2016
<b>START TIME OF WORKSHOP:</b>	10:00
<b>END TIME OF WORKSHOP:</b>	13:00

**Table 23** Flip Chart for Stakeholder Groups in La Faute Sur Mer

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	Group 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	Group 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Group 3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Group 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### Groups Composition

- Group 1, La Faute sur Mer Townhall (Jean-François Etienne and Laurent Huger)
- Group 2, DDTM, the local services of the State (Patrick Martineau, Thierry Mazaury and Lionel Chartier)
- Group 3, an association of victims during Xynthia (François and Annette Anil)
- Group 4, LIENSs: Xavier Bertin and Jean-Rémy Huguet

**Table 24** MCA Results in La Faute Sur Mer

CRITERIA	Weights	SA1 Zero Alternative		SA2 Dune Nourishments		SA3 Beach Nourishments		SA4 Dune nourishments + Flood Proofing Houses	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	0,30	6	1,8	-4	-1,2	2	1,2	4	1,2
Acceptability	0,40	6	2,4	-6	-1,8	-1	-0,4	2	0,6
Sustainability	0,30	1	0,3	4	1,2	6	1,8	0	0
<b>SUM</b>	56	<b>4,5</b>		<b>-1,8</b>		<b>2,6</b>		<b>1,8</b>	

### How would you describe the atmosphere and context of the workshop?

The atmosphere was very cordial and constructive, mostly because the participant already knew each other. Also, due to the very sensitive situation in La Faute sur Mer (27 people died in 2010, a trial against the State is still in progress, etc.), we decided to restrict the workshop to people who were thought to be reasonable. Consequently, we didn't invite an association of victims known to be very virulent as well as farmers who can be against some of our DRR measures (namely buffer zones).

**What were the main issues raised by the respondents during the workshop?**

MAIN ISSUE	NOTES
We have not considered some measures such as resilient houses and cities.	We had to adapt our matrix In real time.
Some participant were frustrated that the workshop was not longer and/or we didn't enter enough in the details.	Others also thought that it was too long, hard to satisfy everybody...
Some got frustrated by the fact that the workshop will not result in rapid implementation of the proposed measures.	

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

No.	Highlighted quote or argument during the MCA
1	"Buffer zones could be interesting but what about the collapse of dikes" (local services of the State)
2	"These buffer zones look very promising" (La Faute sur Mer Townhall)
3	"Risk to life turns major for water depth > 1.0m, not 1.5 m"
4	"The deconstruction of houses cost 100 million euros, the best solution is to build resilient houses" (La Faute sur Mer Townhall)
5	"solutions such as strategic retreat are nowadays inaudible" (La Faute sur Mer Townhall)
6	"Mussel farming has a key role in wave reduction, but severe mussel mortality were reported over the last years, what would be the impacts on the evolution of the coastlines?" (local services of the State)
7	"the acceptability of a DRR measure greatly depends on who pays, if it is free, it will be easily accepted" (La Faute sur Mer Townhall)

## 8.2 Reflective Information

**How would you describe stakeholders' cooperation during the workshop?**

The stakeholder's cooperation was very good, a lot of constructive interactions occurred and some participant even proposed measures that we didn't considered before. However, one should note that, given the very sensitive situation in La Faute-sur-Mer (28 fatalities during Xynthia, a trial in progress against the former maïor), only "reasonable" stakeholders were invited.

**Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

The attribution of a weight for feasibility and acceptability in the evaluation matrix was a bit tough, namely because both parameters are not independent.

**Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?**

There was mostly two:(1) Laurent Huger, the deputy major of La Faute-sur-Mer townhall and (2) Patrick Martineau, the responsible for the regional services of the State.

**Table 25** Survey for CSOs in La Faute Sur Mer

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the communication with WP4 package leaders</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>It was clear what was</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>expected of me as facilitator</b>					
<b>11</b>	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Was there anything surprising to you?

Yes, it was surprising to see that the buffer zone DRR was so well accepted by the entire group while this DRR is supposed to be very “original” compared to the others DRR proposed.

### Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?

No problems with the topic guide but during the workshop and especially during the MCA we preferred to switch the order between step 3) and step 4). We choose together a total weight for each indicators and after that, they separately choose a weight according each DRR.

### Were there any problems with the design of the workshop or the matrix?

No, nothing particular

### What was the most difficult part of holding the workshop?

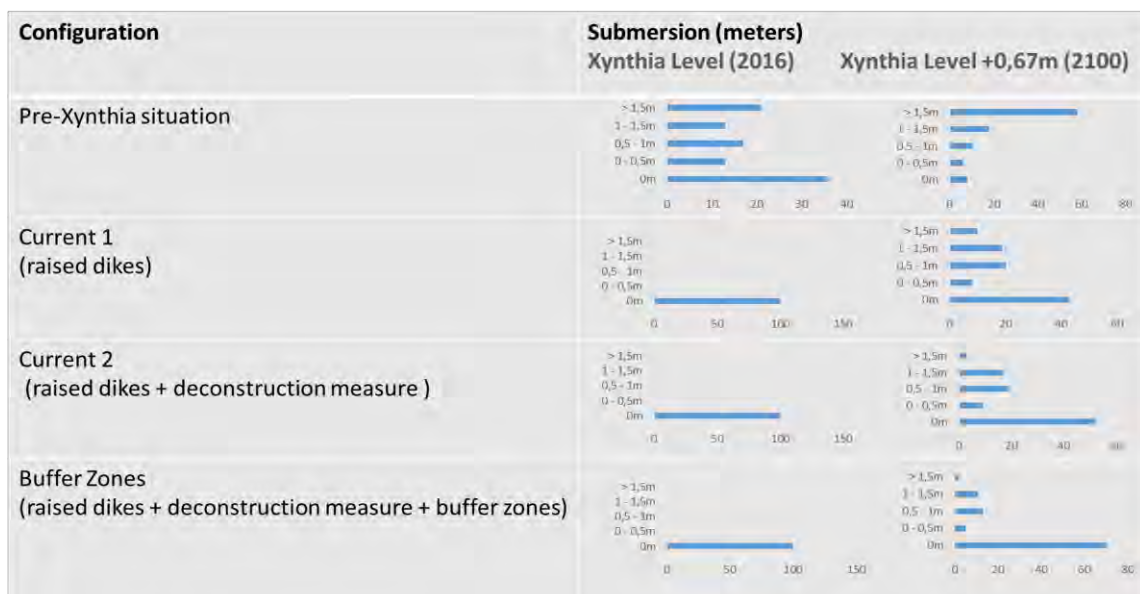
The most difficult part of holding the workshop was to gather all the stakeholders (some had to drive ~100 km). Also, due to the very sensitive situation in La Faute sur Mer, we had to pre-check in advance who we should not invite to maintain a constructive atmosphere.

### What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?

We didn't anticipate that resilient buildings and a resilient city could have been a very popular solution; We had to adapt our files in real-time.

## 8.2.1 Cards and Strategic Alternatives

### Cards



**Table 26** Stakeholders' Evaluation of MCA in La Faute Sur Mer

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time	2				
2	The purpose of the workshop was clear	1			1	
3	The workshop was the right length of time		1		1	
	If you disagreed with the above question, was the workshop...	<input checked="" type="checkbox"/> Too long		<input checked="" type="checkbox"/> Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives		1	1		
5	The format of the workshop was effective for achieving its aims.	1	1			
6	We engaged in a fruitful discussion	2				
7	I feel that the workshop contributed to the debate on DRR strategies	2				
8	The workshop was a good forum for discussion on DRR	2				
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	2				
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	2				
11	I am satisfied with the outcomes of the workshop	1	1			

Were any of the results surprising to you, or did you expect these results?

- Not surprised by the results because buffer zones and dikes are well known solutions.

- I was surprised by the water flooding reduction by buffer zones implementation. This kind of DRR is taboo in the PAPI (Flooding reduction Action-plan) steering committee or PPRL ( littoral risk prevention plan) . This kind of measure has never been quoted in a public presentation and by the way was never discussed nor debated by stakeholders.

**In your opinion, what was the most interesting part of the workshop?**

- Modelling presentation, because your work has been accepted by DDTM (Regional Direction of Maritime Territories) in the framework of the PPRL (Plans to Reduce Coastal Risks) Project
- Modelling results with the buffer zones measure that could deserve a communication/public presentation
- Exchanges with other participant and sharing different point of views.

**In your opinion what was the least interesting part of the workshop?**

- Everything was interesting but the workshop should have been longer.
- Some solutions (building resilience) were proposed by stakeholders during the workshop and so there was a lack of knowledge of this kind of solutions which was drawback during the MCA assessment.

**OTHER COMMENTS:**

- Interesting but frustrating because it will not result directly in measure implementation.
- Workshop results weren't totally coherent with the different exchanges we had during public meetings. Local populations always choose most protective measures both for psychologic and economic reasons. But buffer zone implementation has never been proposed before. Generally in public meetings the order for the measures are: 1) dikes 2) resilience 3) population displacement.
- Criteria evaluation should have deserved a clearer definition in order that the stakeholders could have defined better their weight.



## 9 Varna, Bulgaria

### 9.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	IO-BAS
<b>FACILITATOR:</b>	Nicolay Valchey
<b>CO-FACILITATOR:</b>	Petya Eftimova
<b>DATE OF THE WORKSHOP:</b>	26 September 2016
<b>START TIME OF WORKSHOP:</b>	10:00
<b>END TIME OF WORKSHOP:</b>	13:00

**Table 27** Flip Chart for Stakeholder Groups in Varna

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	Head of Department Strategic planning and coordination of regional development in the Northeastern Region	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	Senior Inspector at Sector "Prevention and control activities", Regional Fire Safety and Civil Protection, Ministry of Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	Assistant professor at Bulgarian Ship Hydrodynamics Centre (BSHC)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	Manager Ekoexpert Ltd.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SH6: Local resident previously affected by the hazard	Sport shop owner	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	Regional Administration – Varna	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Department of "Statistics, ecology and GK", Varna Directorate, Bulgarian Ports Infrastructure Company	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Black Sea Basin Directorate – Varna	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Expert ViK (local public water supply company)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### How would you describe the atmosphere and context of the workshop?

The atmosphere was quite tense at the beginning and people were quite closed and maybe a bit skeptical and not very enthusiastic. Slowly after showing the results and getting into discussion and clearing up what is expected of them the atmosphere improved a lot and the conversation flowed more easily. After the lady from the Basin Directive stood up to add her sticky notes to the MCA chart then everyone started to be more engaged and relaxed. The atmosphere was good in the coffee break which allowed people to talk to each other and ask more detailed questions to the facilitators.

### What were the main issues raised by the respondents during the workshop?

MAIN ISSUE	NOTES
New measure proposed	Coastal engineer suggested a new measure at the end of the beach on the north to make a new cross shore structure connected with the coast to stop the sand migrating. It was decided that we would not take into account this measure in the MCA because it was not modeled. Although he is an expert and it probably is a feasible measure.
Modification to the beach nourishment measure	The coastal engineer suggested a modification to the Beach Nourishment measure. He suggested redistribution instead of nourishment because it is very costly and difficult to implement (taking the correct sediments from other places). He proposed to take sand from the south beach and add to the north whereas our solution was planning to take beach from somewhere else. However, this redistribution could possibly result in higher risk in the south beach compared to the measure we defined because sand would be removed from there. However it was agreed that there are no sand provinces available to get sand from

	<p>other places. Therefore the coastal engineer influenced the decisions related to the Beach Nourishment as a single measure (had the same number of points as EWS but was then removed) but they still selected the EWS and BN combination – interesting that it is more acceptable when combined.</p>
Coastal early warning system	<p>Social acceptance of the measure was highlighted</p> <ul style="list-style-type: none"> <li>- Trusting in the authority that is disseminating the warning</li> <li>- Behavior of citizens “people don’t want to respond”</li> <li>- The accuracy of EWS results may not be good enough</li> </ul> <p>Some stakeholders were very interested in the EWS especially the yacht shop owner who wanted to see how it could connect to the operational system and was interested in seeing it online.</p>
Financial constraints	<p>Implement the beach nourishment would cost a lot of money.</p> <p>Money is more available for port wall construction (because the 2nd part) – strong political will and lobbying already in place for this measure.</p> <p>Some confusing comments on the financial aspects e.g. The lady from the aerodynamics institute was explaining that would be less expensive to construct nourishment vs. EWS and moving assets but her logic was not really clear.</p>
Harmonization with existing legislation and frameworks	<p>The implementing roles are not clear for different measures. It is difficult to know who to show the results to and how they can use it. Coordination is needed.</p> <p>Legislation issues with the Port Wall construction should be considered. There were representatives from the Port but they are not the ones with decision-making power.</p> <p>There is no harmonization between different sectors (water, beach management) making it difficult for measures to be applied and accepted.</p> <p>They want it to do something real and used for planning and not just science</p> <p>What changes should be done in the laws to apply these measures? Currently there is no management connected with the coastal zone and the state doesn’t put money into.</p> <p>Most measures are completed on a private basis e.g. concessioners.</p>

**Table 28** MCA Results in Varna

CRITERIA	Weights	SA1 Port Wall		SA2 Coastal Early Warning System		SA3 Port Wall + Coastal Early Warning System		SA4 Beach Nourishment + Coastal Early Warning System	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	3.67	1.25	0.57	0.75	0.34	1.125	0.52	-0.125	-0.06
Acceptability	1.56	1.375	0.27	1.00	0.19	1.00	0.19	0.75	0.15
Sustainability	2.78	1.625	0.56	0.5	0.17	1.25	0.43	0.5	0.17
<b>SUM</b>	<b>8</b>	<b>1.40</b>		<b>0.71</b>		<b>5</b>		<b>0.26</b>	

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

- Two ladies from the port infrastructure were bored and inactive, more than likely because they are working on statistics and ecology and not involved in this decision making process. Other people from that institution have been better involved and may have been better participants but were not selected to join.
- Regional administration was involuntarily included – another person was appointed but she canceled. He had very relevant input and good points but not very proactive.
- Civil protection agency rep was not proactive – she understood but she didn't provide opinions perhaps because she is not the head of the department and works with the fire brigade. Interviews were with 2 others who would have been better to attend but the other was proposed.
- The basin doctorate was skeptical and edgy but she warmed up when placing the sticky notes on the MCA. She asked if we can use their results and then she opened up.
- Sports shop owner – he was thinking a lot but not very active in the discussion but positive – he was in other interactive meetings and he liked this one a lot and he proposed that we make a website to present the results to show to the public (explore the results for data viewer – public).
- Ministry of regional development – local representative of Northeastern region – she was quite passive but positive – not her field of experience because they mainly deal with coordination. Not personally a decision maker.

- Water supply company in Varna was expecting results on infrastructure which has more implication on society (e.g. vertical erosion and would it affect the drainage system) – she was a bit reserved because the results are not very applicable to her. At Varna beach they have an outlet which can be affected by inundation but now she was discussing erosion as a problem.
- Coastal engineer was very proactive (sometimes dominant) he is very experienced and confident. He asked about the models and parameters and designed a lot of coastal structures in Varna bay. He is involved in the maintenance of the promenade.

## 9.2 Reflective Information

### How would you describe stakeholders' cooperation during the workshop?

- Negotiation went very smoothly and they were supportive. They raised some points that were in support of what was being negotiated. Nicolay proposed some reasoning and they agreed. They were willing to agree and they were influenced by Nikolay. Those with limited experience in modeling were more accepting of the knowledge proposed by others.
- If they were in groups it would have been even more difficult to promote interaction.
- Participants were cautious to state clear opinions and were happy to negotiate values but that made it quite “safe”.

### Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?

Two SAs got the same points and they had to agree but this didn't cause conflict.

### Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?

Coastal engineer had strong opinions about the beach nourishment and was dominating. He possibly influenced the others decisions/ preconceptions about beach nourishment as a measure. The coastal engineer made this project feel like it was not a “real” project as the private sector is operating differently.

**Table 29** Survey for CSOs in Varna

	For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The matrix's results reflect the diversity of opinions and interests amongst stakeholders.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	The workshop was a useful forum for evaluating DRR strategic alternatives	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Stakeholders were satisfied with the process and the methods employed during the workshops	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Stakeholders were satisfied with the outcomes of the workshop	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<b>Overall I am satisfied with the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<b>It was clear what was expected of me as facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<b>It was clear what was expected of me as co-facilitator</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### **Was there anything surprising to you?**

The facilitators didn't expect the stakeholders to engage in the interactive components of the workshop and were very surprised when they did because they are not used to a "free way of thinking". This really helped the overall atmosphere. Calling them and getting them here went better than expected. This was very difficult for the interviews.

#### **Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

Everything went smoothly. The participation was better than expected.

#### **Were there any problems with the design of the workshop or the matrix?**

No, although opinions were difficult to draw out even when individually asked – participants just passively agree. They were not confident enough with their opinions (working for state authority). It's not the MCA matrix but rather the general problem of effectively gathering the diversity of opinions.

#### **What was the most difficult part of holding the workshop?**


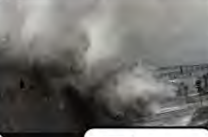
Getting participants "warmed up" and involved. Participants were soft and passive for the negotiation – they are used to top-down approach where people are not allowed to do anything outside the limits and don't need to think outside the box and assess things – internal fear.

#### **What could have done differently and why (e.g. in reference to the design of the workshop, the content of the matrix, the methodology, chosen stakeholders, etc)?**

Card design – remove impact and keep the damage reduction (see details below). Educate them better and build their awareness of the project and tools before the workshops and then invite. Also build more awareness about the institute (IO-BAS). Keep contact with the most important people and keep in touch instead of mixed people all the time. Add some interactive dynamic results but need to make sure not to give too much information. Maybe use the web-viewer more but this would take more time to get them more engaged they didn't seem very interested.

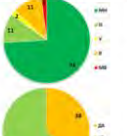
9.2.1 Cards and Strategic Alternatives

### Zero Alternative

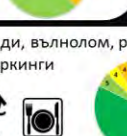



Повторяемост 100 години

Заливане


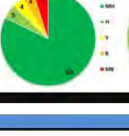


Ерозия

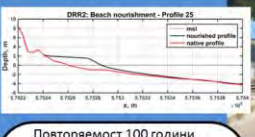



Настоящата ситуация без МНР

Щети на сгради, вълнолом, ресторанти, магазини, паркинги

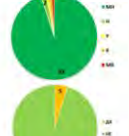



### Beach Nourishment

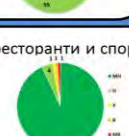



Повторяемост 100 години

Заливане


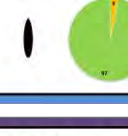


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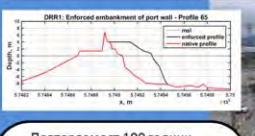



Подхранването на плажа намалява влиянието на вълните, като и степента на заливане и ерозия на плажа

Щети на ресторанти и спортни клубове


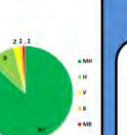



### Port wall enforcement



Повторяемост 100 години

Заливане






Укрепването ще елиминира преливането на вода над вълнолома и ще защити сградите и паркингите зад него

Щети на магазини и паркинги

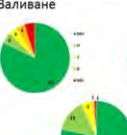
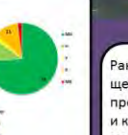



### Coastal Early Warning System -> moving assets and cars


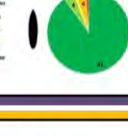
Повторяемост 100 години

Заливане






Ранното предупреждение ще позволи навременно преместване на инвентар и коли на безопасно място; ОР може да достигне до 65%.

Щети върху имущество и превозните средства






### SA: Port wall enforcement and coastal EWS



Повторяемост 100 години

Заливане






СРП ще засили ефекта от укрепването на вълнолом като намали риска за сградите и превозните средства

Щети на магазини и паркинги

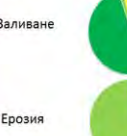



### SA: Beach nourishment and coastal EWS





Повторяемост 100 години

Заливане





Ерозия



СРП ще засили ефекта от подхранването на плажа като намали риска за ресторантите и превозните средства

Щети на ресторанти и паркинги

**Table 30** Stakeholders' Evaluation of MCA in Varna

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time	5	4			
2	The purpose of the workshop was clear	5	4			
3	The workshop was the right length of time	4	4	1		
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long		<input type="checkbox"/> Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives	4	5			
5	The format of the workshop was effective for achieving its aims.	5	4			
6	We engaged in a fruitful discussion	6	3			
7	I feel that the workshop contributed to the debate on DRR strategies	4	5			
8	The workshop was a good forum for discussion on DRR	4	5			
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	4	4	1		
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	2	6	1		
11	I am satisfied with the outcomes of the workshop	4	5			

**Were any of the results surprising to you, or did you expect these results?**

The workshop was as expected no surprises

**In your opinion, what was the most interesting part of the workshop?**

- Results from the measures and SAs and the interactive MCA part.
- Assessment of the effectiveness of the measures (x2)
- The presentation
- Summary of project results
- Procedure of measure evaluation
- Interactive part

**In your opinion what was the least interesting part of the workshop?**



**OTHER COMMENTS:**

- It would be interesting to see what result comes up if different people were invited. Should also include weighing factor to take into account that not all relevant stakeholders are present
- It would be good to have the possibility to add other opinions which could be considered or assessed during the meeting.
- It would be good to include information and measures in the flood risk management plan for Black Sea Basin Region and the national catalogue of measures for flood risk management available at the Basin Directorate site. The project results could be applicable during the second cycle of water directive application and we realize that we can use these results. It is necessary that the measures are in compliance with FRM plan and for implementing the national marine strategy.
- The project to be closely connect with the feasibility criteria and financial feasibility in particular.
- You shouldn't copy the foreign/external experience especially for the beach nourishment without taking into account our special features/ circumstances. You should pay attention that the problem with Varna beach is imbalanced redistribution of the sediments after the enforcement of the port wall. You should be more specific about model calibration and regarding natural conditions. A problem for me is the suitable sources for sediments for nourishments. You should discuss your results with the Flood Risk Management plan with the Basin Directorate. You should pay attention to field surveys to confirm the modeling results.

## 10 Bocca di Magra, Italy

### 10.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	CIMA Foundation
<b>FACILITATOR:</b>	Silvia de Angeli
<b>CO-FACILITATOR:</b>	Mirko D'Andrea
<b>DATE OF THE WORKSHOP:</b>	05 October 2016
<b>START TIME OF WORKSHOP:</b>	15:00
<b>END TIME OF WORKSHOP:</b>	17:30

**Table 31** Flip Chart for Stakeholder Groups in Bocca di Magra

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	Dott. Geol. Carlo Cavallo, Liguria Region	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Dott. Geol. Luca Redoano Coppedè, Liguria Region	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	Ing. Ulderica Parodi, Liguria Region	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH5: Consultant previously engaged in managing the coastal environment	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SH9: Representative from private sector	N/A	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
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**Table 32** MCA Results in Bocca di Magra

CRITERIA	Weights	SA1 Coastal flood resilience increasing measures (for residential and infrastructures) + Civil Protection Plan		SA2 Fluvial Dredging + Beach Nourishment		SA3 River embankments + Coastal and fluvial flood resilience increasing measures (for residential and infrastructures) + Civil Protection Plan		SA4 Fluvial Embankments + Beach Nourishment + Risk Awareness	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	4	1	4	1	4	0	0	0	0
Acceptability	2	2	4	1	2	1	2	1	2
Sustainability	4	2	8	2	8	0	0	0	0
<b>SUM</b>	10	<b>16</b>		<b>14</b>		<b>2</b>		<b>2</b>	

**How would you describe the atmosphere and context of the workshop?**

All the stakeholders knew each other and the facilitators since before. As a consequence the atmosphere has been relaxed and friendly since the beginning of the meeting. The discussion has been conducted without significant tensions and with a general consensus. Few disagreements surfaced during weights assignment, but most of them concluded reaching an agreement.

**What were the main issues raised by the respondents during the workshop?**

MAIN ISSUE	NOTES
Stakeholders did not agree on people acceptability level, regarding structural reduction measures.	
Sometimes political views and technical approaches are incompatible.	
Some measures are able to strongly affect risk perception among population.	Different views of the stakeholders on this aspect have been translated into different weights assignments.

**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

Despite the small number of participants, the discussion was fruitful and participated. One of the stakeholders had a slightly dominant role in shaping the discussion, helping in carrying on the discussion and stimulating other stakeholders participation.

No.	Highlighted quote or argument during the MCA
1	“Some measures seem to be not easily acceptable, but it strongly depends on the way in which are presented and communicated to population”
2	“The same measure is perceived differently from population according to the time in which it is implemented (immediately after a catastrophic event rather than in peace time)”
3	“People ask for safety but complain about the impact of the structural measures”
4	“It is dangerous to implement some structural measures because they allow people to forget the risk and not adopt self-protection measures”

## 10.2 Reflective Information

**How would you describe stakeholders’ cooperation during the workshop?**

The level of cooperation was quite high. One of the stakeholders had a dominant role, leading also the other stakeholders to find a final agreement in many of the discussions carried out. The discussions always represented a chance to share different viewpoints and experiences.

**Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

During the assignment of weights to criteria, a long discussion has been carried out on the weight of “feasibility” criterion. For one of the stakeholders the feasibility was a secondary aspect, subordinated to acceptability and sustainability, because without population agreement a measure becomes useless even if technically feasible. This is the only case in which agreement has not been reached and an average on the weights has been performed.

**Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else's?**

As already mentioned, one of the stakeholder was slightly leading the discussion.

**Table 33** Survey for CSOs in Bocca di Magra

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>It was clear what was expected of me as facilitator</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11</b>	<b>It was clear what was expected of me as co-facilitator</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Was there anything surprising to you?**

The stakeholders showed a proactive mindset. Three of the four strategic alternatives have been suggested by them during the initial phase of the MCA.

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

No. Everything was clear and exhaustive.

**Were there any problems with the design of the workshop or the matrix?**

No

**What was the most difficult part of holding the workshop?**

The main issue was on stakeholders involvement, in order to convince them to participate on the workshop. All the participants were technicians, with a short amount of time they could spend for the MCA

**Table 34** Stakeholders' Evaluation of MCA in Bocca di Magra

	Please indicate the strength of your agreement with each statement below	Strongly agree	Agree	Not Sure	Disagree	Strongly disagree
1	The workshop was a valuable use of my time		3			
2	The purpose of the workshop was clear	1	2			
3	The workshop was the right length of time		3			
	If you disagreed with the above question, was the workshop...	<input type="checkbox"/> Too long		<input type="checkbox"/> Too short		
4	The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives		2	1		
5	The format of the workshop was effective for achieving its aims.		2	1		
6	We engaged in a fruitful discussion	3				
7	I feel that the workshop contributed to the debate on DRR strategies		3			
8	The workshop was a good forum for discussion on DRR	1	2			
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives		1	2		
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives		1	2		
11	I am satisfied with the outcomes of the workshop		3			

**Were any of the results surprising to you, or did you expect these results?**

Not very surprising




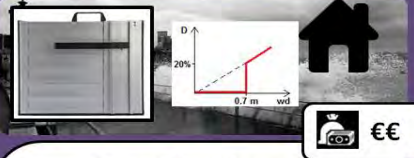
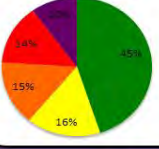
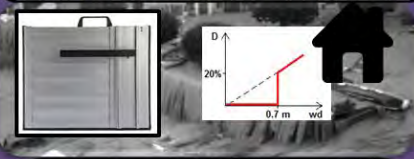
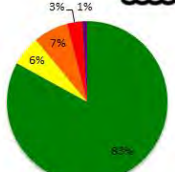
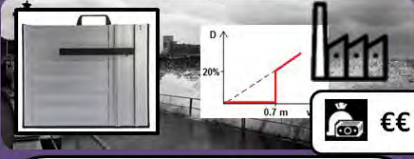
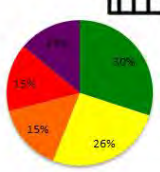
**In your opinion, what was the most interesting part of the workshop?**


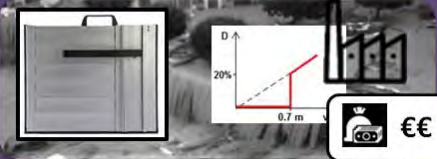
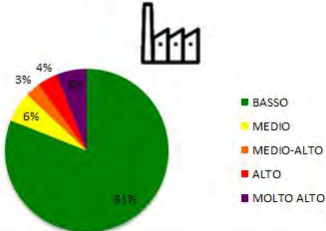




- Discussion on DRR alternatives
- Final discussion

**In your opinion what was the least interesting part of the workshop?**

Introduction

10.2.1 Cards and Strategic Alternatives

<p><b>COASTAL FLOOD</b> Beach nourishment</p>  <p>€/€€</p>	<p><b>FLUVIAL FLOOD</b> Dredging</p>  <p>€€€ / €€€€</p>																				
<p><b>FLUVIAL FLOOD</b> Fluvial embankments</p>  <p>€€€ / €€€€</p>	<p><b>COASTAL FLOOD</b> Coastal flood resilience increasing measures (for residential)</p>  <p>€€</p> <p><b>Coastal flood damage</b></p>  <table border="1"> <tr><td>■ BASSO</td><td>45%</td></tr> <tr><td>■ MEDIO</td><td>16%</td></tr> <tr><td>■ MEDIO-ALTO</td><td>15%</td></tr> <tr><td>■ ALTO</td><td>14%</td></tr> <tr><td>■ MOLTO ALTO</td><td>8%</td></tr> </table>	■ BASSO	45%	■ MEDIO	16%	■ MEDIO-ALTO	15%	■ ALTO	14%	■ MOLTO ALTO	8%										
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<p><b>FLUVIAL FLOOD</b> Fluvial flood resilience increasing measures (for residential)</p>  <p>€€</p> <p><b>Fluvial flood damage</b></p>  <table border="1"> <tr><td>■ BASSO</td><td>83%</td></tr> <tr><td>■ MEDIO</td><td>6%</td></tr> <tr><td>■ MEDIO-ALTO</td><td>7%</td></tr> <tr><td>■ ALTO</td><td>3%</td></tr> <tr><td>■ MOLTO ALTO</td><td>1%</td></tr> </table>	■ BASSO	83%	■ MEDIO	6%	■ MEDIO-ALTO	7%	■ ALTO	3%	■ MOLTO ALTO	1%	<p><b>COASTAL FLOOD</b> Resilience increasing measures (for infrastructures)</p>  <p>€€</p> <p><b>Coastal flood damage</b></p>  <table border="1"> <tr><td>■ BASSO</td><td>30%</td></tr> <tr><td>■ MEDIO</td><td>26%</td></tr> <tr><td>■ MEDIO-ALTO</td><td>15%</td></tr> <tr><td>■ ALTO</td><td>15%</td></tr> <tr><td>■ MOLTO ALTO</td><td>14%</td></tr> </table>	■ BASSO	30%	■ MEDIO	26%	■ MEDIO-ALTO	15%	■ ALTO	15%	■ MOLTO ALTO	14%
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<p><b>Civil Protection Plans</b></p> 	<p><b>FLUVIAL FLOOD</b> Fluvial flood resilience increasing measures (for infrastructures)</p>  <p><b>Fluvial flood damage</b></p>  <table border="1"> <thead> <tr> <th>Damage Level</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>BASSO</td> <td>81%</td> </tr> <tr> <td>MEDIO</td> <td>6%</td> </tr> <tr> <td>MEDIO-ALTO</td> <td>4%</td> </tr> <tr> <td>ALTO</td> <td>3%</td> </tr> <tr> <td>MOLTO ALTO</td> <td>4%</td> </tr> </tbody> </table>	Damage Level	Percentage	BASSO	81%	MEDIO	6%	MEDIO-ALTO	4%	ALTO	3%	MOLTO ALTO	4%
Damage Level	Percentage												
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MEDIO-ALTO	4%												
ALTO	3%												
MOLTO ALTO	4%												
<p><b>Risk awareness</b></p>  <p>€</p>	<p><b>Strategic Alternative Nr. 1</b> Coastal flood resilience increasing measures (for residential and infrastructures) + Civil Protection Plan</p>  <p>€€€ / €€€€</p>												
<p><b>Strategic Alternative Nr. 2</b> FLUVIAL DREDGING + BEACH NOURISHMENT</p>  <p>€€€ / €€€€</p>	<p><b>Strategic Alternative Nr. 3</b> River embankments + Coastal and fluvial flood resilience increasing measures (for residential and infrastructures) + Civil Protection Plan</p>  <p>€€€ / €€€€</p>												



Strategic Alternative Nr. 4

FLUVIAL EMBANKMENTS  
+  
BEACH NOURISHMENT  
+  
RISK AWARENESS



€€€ / €€€€

# 11 Tordera delta, Spain

## 11.1 Descriptive Information

<b>CASE STUDY OWNER:</b>	Laboratori d'Enginyeria Marítima Universitat Politècnica de Catalunya BarcelonaTech
<b>FACILITATOR:</b>	Prof. José A. Jiménez
<b>CO-FACILITATOR:</b>	Caridad Ballesteros and Uxia López-Doriga
<b>DATE OF THE WORKSHOP:</b>	05 December 2016
<b>START TIME OF WORKSHOP:</b>	10:00
<b>END TIME OF WORKSHOP:</b>	13:00

**Table 35.** Flip Chart for Stakeholder Groups in Tordera Delta

Stakeholder Group	Stakeholder in each case study	Role						
		Decision-maker	Lobbyist	Informed Receptor	Overseer	Implementer	Expert	Private Sector
SH1: Coastal managers	Head of the Catalonia Coastal Office Spanish Ministry of Agriculture, Food and Environment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH2: Land use planner	Engineer Department of Territory and Sustainability Government of Catalonia	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH3: Civil protection/ disaster management agency	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH4: academic working in coastal zone	Coastal Scientist, ICZM & Risk specialist Centre d'Estudis Avançats de Blanes, CSIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Ass. Professor of Coastal Engineering Dept of Civil & Environmental Engineering UPC-BarcelonaTech	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SH5: Consultant previously engaged in managing the coastal environment	Civil Engineer, Manager AKRONOS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SH6: Local resident previously affected by the hazard	Owner Camping La Tordera Malgrat de Mar	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SH7: Chairperson of local active citizen groups	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH8: Local authority (e.g. port, tourism board, fishing, housing)	N/A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SH9: Representative from private sector	Owner Camping Els Pins Malgrat de Mar	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Table 36** MCA results in Tordera Delta

CRITERIA	Weights	SA1 Protection with Infrastructure (beach nourishment + artificial dune)		SA2 Flood proofing (buildings + infrastructure)		SA3a Managed Retreat (25 m landwards)		SA3b Managed Retreat (50 m landwards)		SA3c Managed Retreat (75 m landwards)		SA4 Protection + Flood proofing (SA1+SA2)	
		Score	Weighted Score	Score	Score	Score	Weighted Score	Weighted Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Feasibility	3	2	6	0	0	1	3	0	0	-1	-3	2	6
Acceptability	1	1	1	0	0	1	1	0	0	0	0	0	0
Sustainability	4	1	4	-1	-4	0	0	0	0	0	0	1	4
<b>SUM</b>	<b>8</b>	<b>11</b>		<b>-4</b>		<b>4</b>		<b>0</b>		<b>-3</b>		<b>10</b>	

\* Note.- During the workshop, participants agreed to assign the overall score for each criteria to each alternative by simple averaging of individual scores. Values provided in this table have been rounded off by taking care that obtained results agree with those with decimals during the workshop (alternatives are equally ranked in both cases).

### **How would you describe the atmosphere and context of the workshop?**

The Workshop took place in a room in the Faculty of Civil Engineering of the Universitat Politècnica de Catalunya·BarcelonaTech at Barcelona. The room had space for 25 students and it was equipped with computer, projector, display board, whiteboard, wifi. Original distribution of tables in the room was arranged to have a big table permitting a parallel distribution of participants around the table. Moreover, the space between the table and display and whiteboard was large in such a way that participants could move freely without any restriction or obstacles. Participants were provided with agenda, coloured post-its, pens, white papers and a folder with SAs cards. The language used during the workshop was Spanish.

During the entire duration of the workshop there was a table with a Nesspresso coffee machine, tea, hot water, bottles of water and juices, sandwiches, pastries and fruit. Participants can access the table anytime during the meeting with independence that a specific break was done.

The atmosphere of the workshop was very relaxed from the beginning. Most of participants know each other prior to the meeting with the main exception of the Coastal Engineer specialist which was a UPC professor without previous contact with the site stakeholders. This atmosphere continued during all the duration of the meeting.

One of the participants (SH2: Land use planners) had to leave the meeting before the end due to an urgent call from the work requiring her presence to support the Director of the Service. She apologized for having to leave but she had no choice. In any case, she congratulated us for the initiative and she expressed her willingness to receive the results from the MCA exercise.

### **What were the main issues raised by the respondents during the workshop?**

<b>MAIN ISSUE</b>	<b>NOTES</b>
More information on the cost of proposed measures	Although everybody had a guess about the ranking of alternatives in terms of expected costs, it was mentioned that the inclusion of an estimation of costs would be desirable. Also, it was considered as important to put in relationship with the expected benefits of reducing damages.
Background erosion	The area is subjected to a background decadal-scale erosion and everybody is aware about the observed consequences (shoreline retreat). This has to be considered when considering alternatives, especially because they will be mostly temporary and requiring maintenance to cope with storms in the near future.
Climate change	Finally, we decided to not include climate change in any of

	<p>the SAs. This was due to the fact that current problems are so evident that stakeholders (especially those being affected) do not perceive climate change as a major short-term problem. On the other hand, some actors (especially those involved in planning) would like to also include it to use as an element to decide future long-term planning.</p>
<p>Managed Retreat</p>	<p>This SA was not considered as a solution for the problem by affected actors (campsite representatives). For them, any solution has to consider the maintenance of the activity in the area including their status-quo (location very close to the shoreline). This is also a consequence of the already mentioned shoreline retreat, i.e. they have been there for more than 40 years and, they have been losing installations and surface during the last 15 years. Due to this, when they refer to retreat they ask for how long? If erosion is not stopped, this will not be a solution because problems will migrate landwards.</p>

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**Describe the group dynamics during the workshop: general description – level of participation, dominant and passive participants, interest level, boredom, anxiety**

The level of participation was excellent. This was due to the selection of participants since most of SHs known before the meeting, and they have maintained previous

discussions on problems in the study area. This also includes UPC which has been involved in a project in the study area and has a large experience in interacting with local stakeholders. In this sense, everybody felt comfortable to discuss any topic without any restriction. Everybody participated in the discussion of the alternatives expressing their point of view. The dynamics was very good/smooth and the meeting was “very efficient” because everybody knows the problem very well. Moreover, the “offered” SAs did not suppose any problem for participants since they understood well from the beginning which were their characteristics and expected performance.

The structure of the workshop can be seen in **Error! Reference source not found.** The total length of the exercise (3 hours) was right. It was enough to properly discuss the problem and SAs without being in a hurry and to maintain the participants’ attention during all the process.

No.	Highlighted quote or argument during the MCA
1	The resultant matrix was very diverse due to the stakeholders had their own and strong opinion about the different criteria and SA. Final result was obtained by simple averaging (SH agreed on using this method since they did not reach consensus nor they try to do it).
2	Differences between feasibility and acceptability were not clear during the workshop. To help with this, cost-benefit analysis (or a guess/estimation) should be desirable.

## 11.2 Reflective Information

### **How would you describe stakeholders’ cooperation during the workshop?**

Good cooperation during the entire workshop. This is probably due to the fact that they know well each other and they have previously maintained discussion on the topic. Also, the heavy involvement of the SH representing the Coastal Administration in solving problems in the study area reduced the potential conflicts with private sector SHs. The SHs’ attitude was very good and they maintained “educated” discussions during the entire workshop.

### **Was there a particular moment (during the workshop) or particular issues in which stakeholders had a harder time agreeing or reaching consensus?**

There was a first point of discussion on understanding criteria to be scored (feasibility, acceptability and sustainability). There was a consensus (or general agreement) on that having a cost-benefit estimation of each SA should be desirable to properly score them. During the phase of aggregating individual scores to rank SAs, there was some discussion where some stakeholders explained their opinion about the different SA- criteria. However, they were unable to reach a dialogued consensus to select a preferred SA and they agree in selecting SA by simple averaging of individual scores (numerical consensus). Moreover, after the discussion nobody changed its vote despite the fact that different reasonable points of view (according to them) were presented.

### **Was there a clear leader amongst the stakeholders, whose ideas and voice predominated above everyone else’s?**

There was not a leader among the stakeholders participating in the Tordera delta MCA workshop. However, about the half of them were most active during the discussion on selecting SAs.

**Table 37** Survey for CSOs in Tordera Delta

	<b>For each of the statements below, chose whether you strongly agree, agree, not sure, disagree, or strongly disagree.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The matrix's results reflect the diversity of opinions and interests amongst stakeholders.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2</b>	<b>The workshop was a useful forum for evaluating DRR strategic alternatives</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3</b>	<b>Stakeholders were satisfied with the process and the methods employed during the workshops</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>4</b>	<b>Stakeholders were satisfied with the outcomes of the workshop</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5</b>	<b>The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>6</b>	<b>Overall I am satisfied with the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7</b>	<b>I am satisfied with the guide and training provided previous to the workshop</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>8</b>	<b>The format of the workshop was effective for achieving its aims.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>9</b>	<b>I am satisfied with the communication with WP4 package leaders</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10</b>	<b>It was clear what was expected of me as facilitator</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11</b>	<b>It was clear what was expected of me as co-</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	<b>facilitator</b>
--	--------------------

**Was there anything surprising to you?**

The process was very “smooth” with everybody giving own opinions, listen to the other ones and discussing and agreeing on final results. Sometime ago I would be surprised about this. However, probably, this reflects the past and present interaction of participants in the Tordera delta workshop on dealing with problems in the study area. This demonstrates the importance of public participation as a way to reduce conflicts in coastal management. Also, it stresses the importance of involving people with a good attitude for contrasting opinions.

**Were there any problems with the topic guide (e.g. wording, order of topics, missing topics) you experienced in the workshop?**

Although it was a clear presentation of the aim of the workshop at the beginning of the session (storm-induced damages in the short-term), private stakeholders put their emphasis on the parallel problem of the lack of sand (due to background erosion) which can affect the beach recreational carrying capacity during the tourist season (summer). However, we agreed to focus on storm induced problems as a part of the overall problem. There were some questions on which was the real meaning of the selected criteria (feasibility, acceptability and sustainability) (see quotes above, Table 5) and also, the difficulty to assign them without a cost estimation (including benefits).

**Were there any problems with the design of the workshop or the matrix?**

There wasn't any significant problem in the design of the workshop.

**What was the most difficult part of holding the workshop?**

The main difficulty was to ensure the presence of all stakeholders. This was due not to a lack of interest by them but due to find a good date for everybody including the facilitators.

**Table 38** Stakeholders evaluation of MCA in Tordera Delta

	<b>Please indicate the strength of your agreement with each statement below</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Not Sure</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>1</b>	<b>The workshop was a valuable use of my time</b>	<b>4</b>	<b>2</b>			
<b>2</b>	<b>The purpose of the workshop was clear</b>	<b>3</b>	<b>1</b>	<b>2</b>		
<b>3</b>	<b>The workshop was the right length of time</b>	<b>2</b>	<b>1</b>	<b>3</b>		
	<b>If you disagreed with the above question, was the workshop...</b>	<input type="checkbox"/> <b>Too long</b>		<input type="checkbox"/> <b>Too short</b>		
<b>4</b>	<b>The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives</b>	<b>1</b>	<b>4</b>	<b>1</b>		

5	The format of the workshop was effective for achieving its aims.	2	4			
6	We engaged in a fruitful discussion	3	2	1		
7	I feel that the workshop contributed to the debate on DRR strategies	2	1	3		
8	The workshop was a good forum for discussion on DRR	2	2	2		
9	Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives	2	3	1		
10	I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives	2	4			
11	I am satisfied with the outcomes of the workshop	4	2			

**Were any of the results surprising to you, or did you expect these results?**

- I expected a better acceptance of the Managed retreat alternative (SA3\_x) because it is a better solution for the long-term.
- I expected obtained results.
- Obtained results are the expected ones taking into account workshop participants. Other actors (conservationists) should be incorporated.

**In your opinion, what was the most interesting part of the workshop?**

- Discussion on the different alternatives (5 SHs).
- The fact that everyone is aware on the problem and the solution.

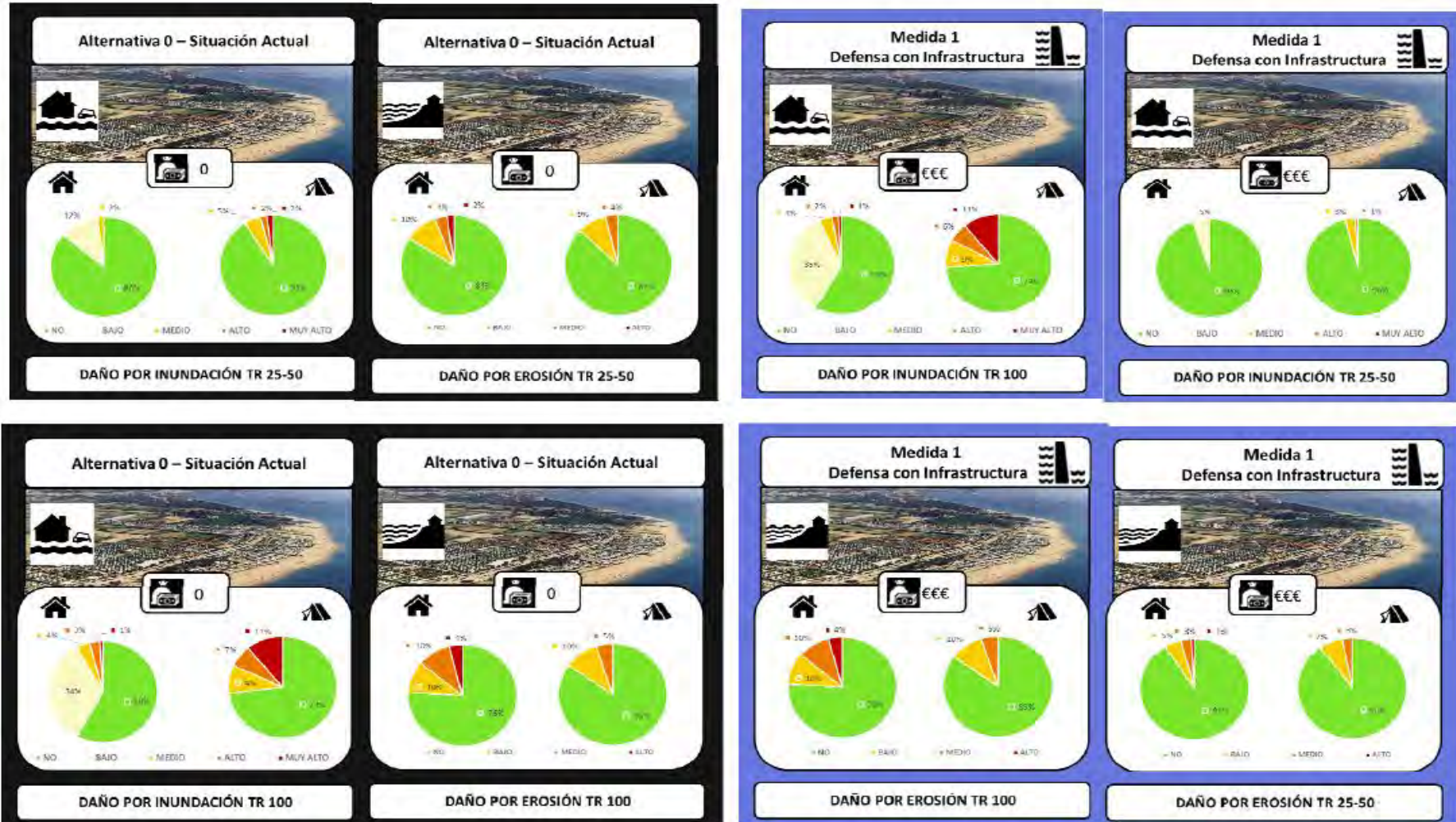
**In your opinion what was the least interesting part of the workshop?**

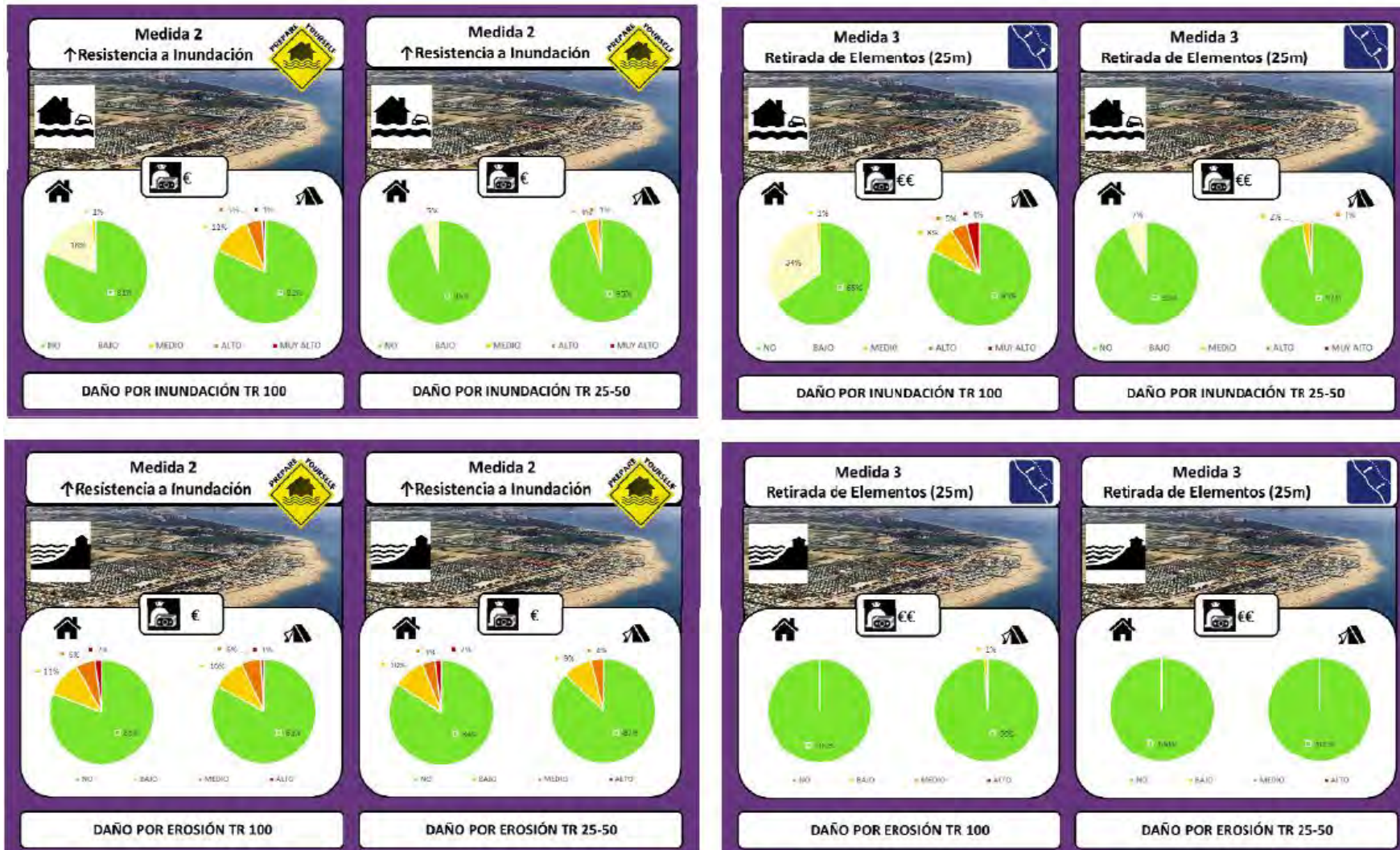
- Voting for alternatives.
- Everything was interesting.

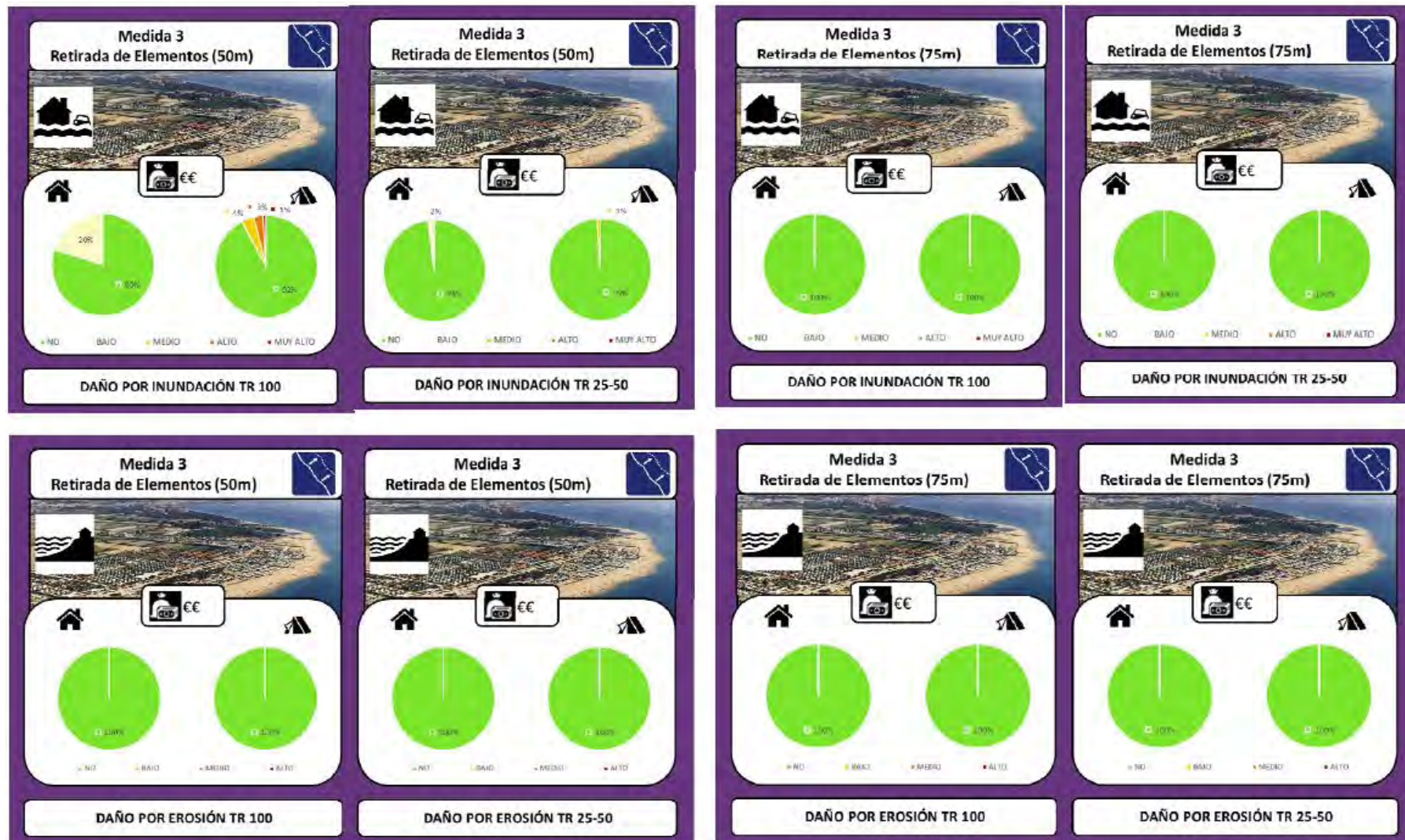
**Other comments**

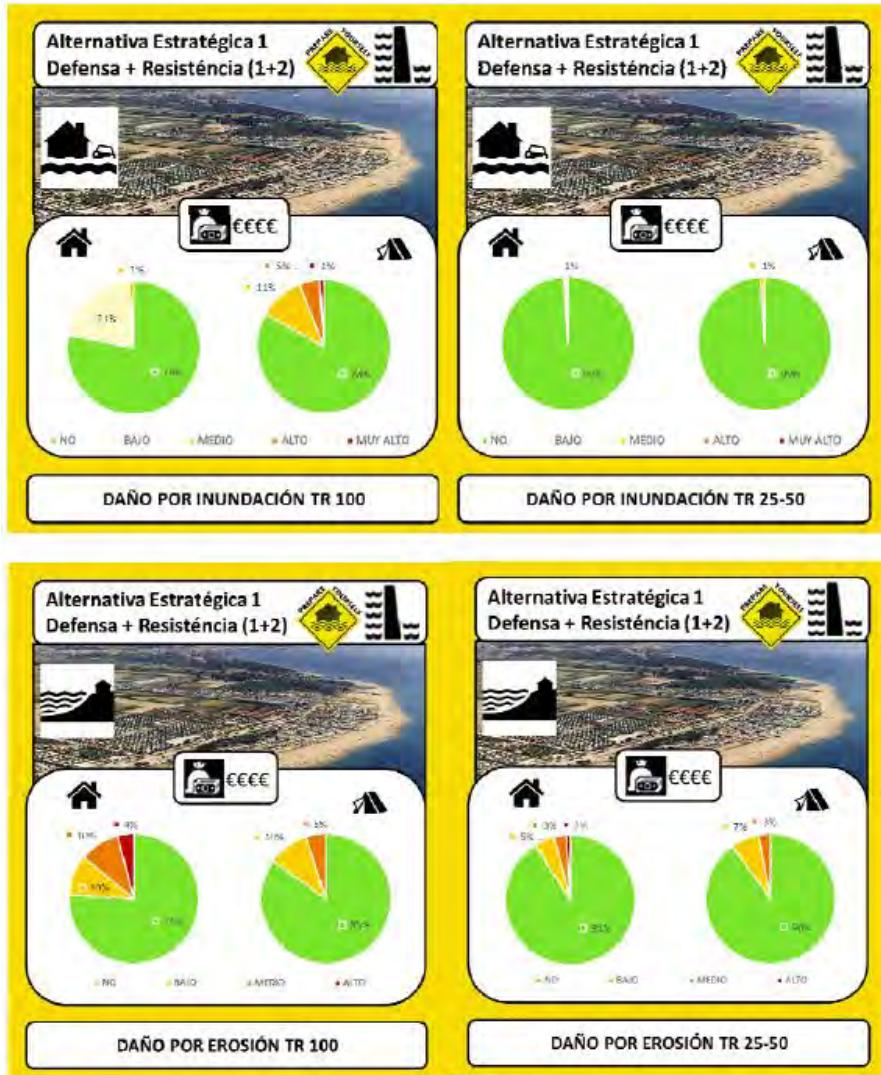
It is necessary to involve the Catalan Water Agency and political actors.

11.2.1 Cards and Strategic Alternatives









## 12 Analysis of Results from all cases

This section summarizes the results and experiences across the 8 case-studies that carried out the Multi-Criteria Analysis (MCA)<sup>1</sup>. The section is divided into “Logistical Issues”, that summarizes important aspects related to the organization of the meeting and how these aspects may have influenced stakeholder interactions and results; “Implementation of Methodology and Reporting”, which highlights how CSOs interpretation of the MCA Guide led to different implementations of the methodology across the cases; “Stakeholders”, which gives an overview of the composition of stakeholder (SH) groups in each case and across all cases; “The cards and strategic alternatives”, that describes how the cards were used and how the cards can be improved in the future to better present DRR measures and strategic alternatives (SAs); and “Surveys” that aggregates the results from all SHs and CSOs responses across cases to the evaluation surveys provided in the appendices.

### 12.1 Logistical Issues

#### 12.1.1 Room setup and preparation of material

The guide emphasized the importance of setting up the room in the right way in order to enable a neutral, comfortable, and open environment (see section 4). In reality, most CSOs cooperated with their local end-user when arranging the MCA meeting, and thus could only partly influence the room and available material. For example, many CSOs did not have access to the room previous to the session and some had not even seen the room before the meeting.

Through one-to-one interviews with CSOs and experience of having carried out 3 MCAs (1 pilot-test and one final MCA in Kristianstad, and one MCA in Porto Garibaldi), it became apparent that basic aspects like room size, room temperature, and the set-up of the room (e.g. U-Shape, rooms with or without tables, windows, doors) were crucial for maintaining participants engaged and awake throughout the MCA, which in most cases it lasted between 3-4 hours, and for creating a comfortable environment with enough visibility amongst participants and material, good sound, and undisturbed.

Because the exercise required a certain level of concentration, getting the right room set-up was crucial albeit underrated in some cases. Many of the cases that reported good SH interaction and a good flow during the MCA exercise were also the cases that had better room set-ups, for instance with enough space for SHs to walk around, with a whiteboard to hang the material or draw their charts, with tables that could be re-arranged to facilitate large and smaller group discussions. Besides room set-up, the MCA required a high degree of logistical arrangements and preparation of the material. It required as well rehearsing through the session and ensuring that facilitators and co-facilitators had a good understanding of how and when the material would be used. Some cases admitted underestimating the

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<sup>1</sup> Zebruge did not carry out the MCA due to concerns raised by local stakeholders. Tordera delayed the meeting with their stakeholders so results from this case could not be included in the report.

preparatory time that needed to be allocated for the session, resulting in for instance inadequate use of the material, lack of understanding on how the cards should be used, or the purpose of the post-it's and the different colors. This in turn had an impact on how SHs perceived and carried out the exercise.

The purpose of interaction (including colors and handy activities) is to enable a process of co-creation, where participants feel involved in the decision-making process rather than reproducing a “teacher-pupil” experience where communication only flows one-way (from the teacher to the pupil). While the MCA is an exercise and not a real-life situation where decisions will be made, the greater aim of the MCA was to create a safe environment that enabled open and friendly discussions, and where SHs could see the impact of a two-way communication process and how their voices could potentially impact others’ perceptions. Having activities, colors, and material gives discussions a structure and a focused purpose which are important aspects for engaging participants in long meetings, over issues they are well-aware of and have first-hand experience with, but where participants might lack understanding or knowledge of how others’ view the same issue. Without a clear structure and goal, discussions – particularly around polemic issues- can take the wrong turn, and become personal, and obstruct rather than enable a learning experience.

**Figure 3** Room Set-Up in North Norfolk, two smaller groups





**Figure 4** Room Set-Up in Porto Garibaldi

**Figure 5** Room Set-Up in Praia de Faro


### 12.1.2 Facilitation

One of the greatest challenges of carrying out a participatory MCA was the varied experience with participatory methodologies amongst CSOs (some having more and others less experience), and the lack of time to carry out a thorough training session to ensure a uniform understanding of the methodology and “rules of the game”. Despite this, most CSOs reported having had satisfactory consultations that resulted in “better than expected” exchanges with highly engaged participants.

Amongst some of the difficulties that CSOs faced during their MCA consultations were difficulties to moderate and keep the time limit; difficulty to find a balance between facilitating and leading (i.e., influencing) discussions; difficulties to tone down prominent speakers and give room to more quiet ones, particularly in cases with actors who had a great influence upon the group discussion; and challenges of ‘detaching’ themselves from the case study and act as facilitators rather than experts.

Based on the individual reports and meetings with CSOs, it is clear that the type of background data used, and the visualization tools used to facilitate the session are important to capture participants’ attention. For instance, some CSOs manage better than others to adapt the background information (on the project, the results, etc.) presented to SHs than others. Some cases had highly educated and well informed SHs, whilst others had

a larger number of local inhabitants that had first-hand experience with the problems addressed, but little knowledge of the jargon and technical aspects of the methods and models used in the project. Thus, adapting the content and how the content is presented depending on the type of participants was crucial to get SHs onboard from the beginning.

## 12.2 Stakeholders

Stakeholder selection for the MCA would follow the same structure previously used in the project (see section 2 in this report) plus one added SH group (private sector). In principle this meant that CSOs had previously identified and been in contact with the 8 stakeholder groups and carried out a round of interviews so that SHs invited to the MCA had some level of awareness about the project. However, since these stakeholders were identified at the beginning of the project, in some of the cases the identified actors were no longer relevant for the purpose of the project or may not have been available for the meeting. Thus, CSOs were given the option to select some new SH groups (option 2) or entirely new SH groups (option 3). Most CSOs chose option 2.

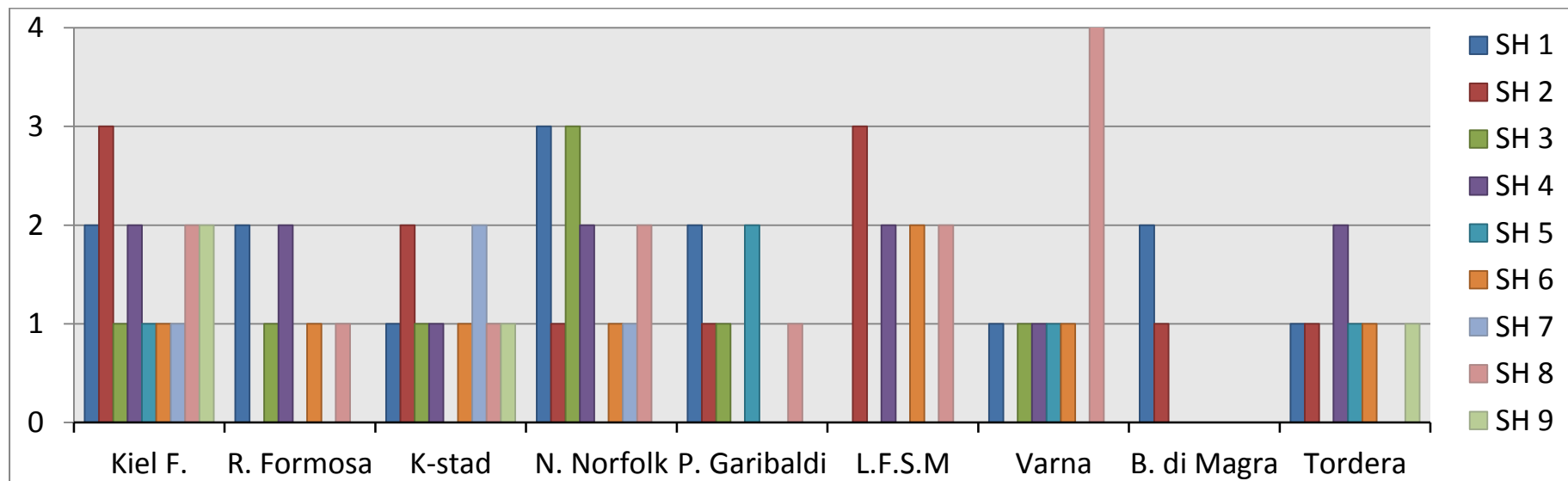
Ideally, all cases would have all SH groups evenly represented. In reality, some groups were overrepresented whilst others were not represented at all (see figures 5 and 6). In some of the cases, lack of representation was due to people's unavailability or late cancellations. But in other cases like in La Faute Sur Mer or Praia de Faro, some SH groups were not invited at all out of fear for confrontations. This was typically the case when inviting local stakeholders (SH 7 and SH 8). In North Norfolk SHs aired their concerns that whilst the RISC-KIT presentation and MCA exercise were entirely appropriate for the group assembled on the occasion, it would be difficult to see how a similar exercise would be successful – 'you would be shouted down' - with local residents in Wells.

Generally, there are three groups underrepresented: Consultants (SH 5), Citizen Groups (SH 7) and the Private Sector (SH 9). When it comes to SH 5 and SH 7, the categories might be unclear or too similar to other SH groups, with consultants playing a similar role to that of Academics (SH 4), and citizen groups also having the role of local residents (SH 6). Thus, for future SH classifications, groups need to be more clearly defined or differentiated. When it comes to the Private Sector, this was the last SH group added at a later stage in the project, thus it is possible that most CSOs had not had any contact with actors from this sector. However, this is surprising, particularly for the cases like North Norfolk where the involvement of insurance companies in DRR is more explicit than in other parts of the world. Thus, one would assume that getting in touch with this sector, even at a later stage in the project, would be easier than for cases where private sector involvement in decision-making in DRR is relatively new (like in Kristianstad). One factor affecting the involvement of stakeholders in general, and of the private sector in particular, could be due to stakeholder fatigue and the fact that in cases like North Norfolk, the discussions facilitated through the MCA are nothing new (again in contrast to cases where this is a more recent phenomena). Thus, one recommendation emerging from the experiences of RISC-KIT is to take into account the number and extent of SH involvement throughout the project, to plan activities where SHs are required well in advance, and to have a clear purpose with these activities, in order to avoid stakeholder fatigue.

Another potential factor influencing CSOs' (in) ability to invite or attract certain participants (for instance the private sector or local stakeholders) might be the extent of our own contacts and/or comfort zones. We should therefore be self-critical and ask ourselves whether we might be better at engaging with a particular type of stakeholders (like local decision-makers), and reflect upon the potential consequences of this on our own research and results, but also our ability to communicate with some portions of the population but not with others. In other words, what are the implications of our patterns of stakeholder engagement for producing results and communicating research findings? How can we be better at engaging different types of stakeholders?

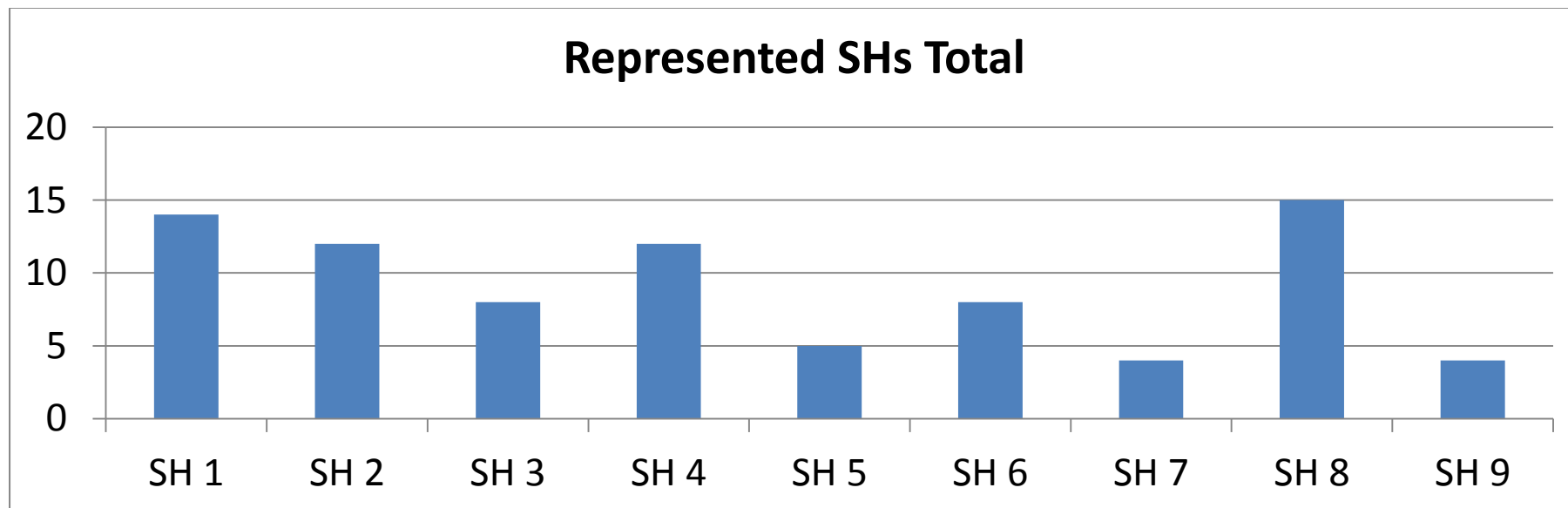
The results from the MCA workshops can only reflect the opinions of the represented groups. So higher or lower representation from one of the groups will inevitably affect which SA gets a higher value. This was clearly reflected in the case of Kristianstad, where two MCAs –a pilot and a final version– were carried out. Stakeholder representation in each of these MCAs was almost the same, so almost all stakeholders that attended the first MCA attended also the second one. The only exception is that by the time the second MCA was carried out, the project had awakened interest from civil society and more people were interested in taking part in the exercise. As a result of this, for the final MCA workshop there was three times higher representation of local inhabitants (SH 6 and SH7) who felt the municipality should take greater responsibility in finding and financing solutions. Thus, we obtained different MCA results for both workshops: in the first workshop the most effective solution “Dune Nourishment + House Flood Proof” received highest value (scores + weights); in the second workshop it was the least effective measure “Beach Nourishment” (only second after the 0 alternative) which received highest value.

- |             |                            |
|-------------|----------------------------|
| <b>SH 1</b> | Coastal Managers           |
| <b>SH 2</b> | Land Use Planners          |
| <b>SH 3</b> | Civil Protection           |
| <b>SH 4</b> | Academic                   |
| <b>SH 5</b> | Consultant                 |
| <b>SH 6</b> | Local Resident             |
| <b>SH 7</b> | Citizen group/organization |
| <b>SH 8</b> | Local Authority            |
| <b>SH 9</b> | Private Sector             |



**Figure 6** Stakeholders by case study

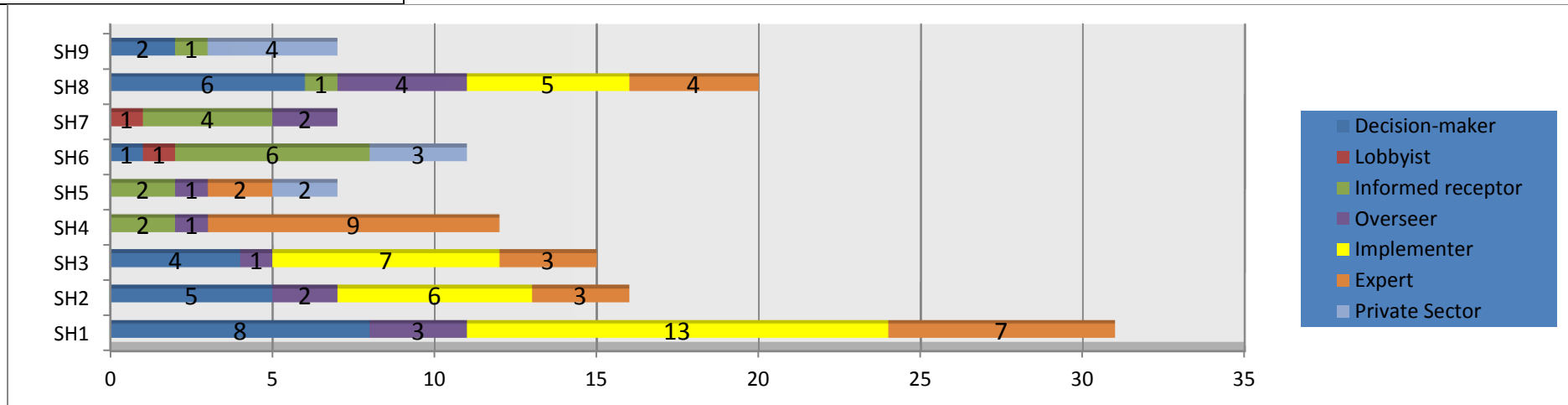
- |             |                            |
|-------------|----------------------------|
| <b>SH 1</b> | Coastal Managers           |
| <b>SH 2</b> | Land Use Planners          |
| <b>SH 3</b> | Civil Protection           |
| <b>SH 4</b> | Academic                   |
| <b>SH 5</b> | Consultant                 |
| <b>SH 6</b> | Local Resident             |
| <b>SH 7</b> | Citizen group/organization |
| <b>SH 8</b> | Local Authority            |
| <b>SH 9</b> | Private Sector             |



**Figure 7** Stakeholders by Group Total

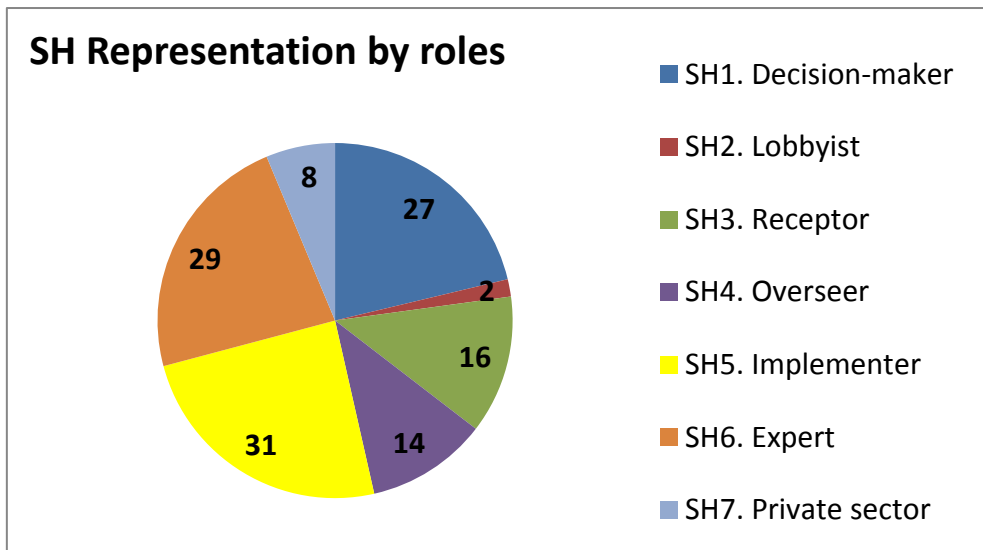
- SH 1** Coastal Managers
- SH 2** Land Use Planners
- SH 3** Civil Protection
- SH 4** Academic
- SH 5** Consultant
- SH 6** Local Resident
- SH 7** Citizen group/organization
- SH 8** Local Authority
- SH 9** Private Sector

SHs were also categorized according to their role (7 roles). While SHs could only represent one of the groups, it was possible to have several roles. Figure 7 shows the representation by roles by group across all cases. The graph shows for instance those actors representing SH 1 often had several roles, but most often they fulfilled the role of “Implementers”; whilst SH 9 and SH 5 are not only underrepresented (see figure 6 above), but also in both these groups, some SHs were associated with the role of the “Private Sector”, the most underrepresented role across all cases, as shown in Figure 8 (notice that “Private Sector” is both a role and a group). With regards to the gender and age composition of SHs, as expected, most groups were male dominated with very few participants below the age of 40 (figure 9). The age threshold was selected based on that most professionals might not reach a stable career before 40. Only two cases had a higher female representation of SHs: Varna and Ria Formosa (figure 10). Gender and age are important categories that influence institutional culture as well as the type of policies and strategies implemented.

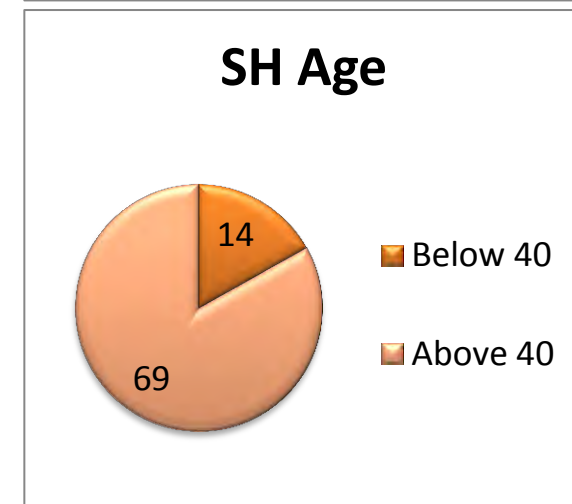
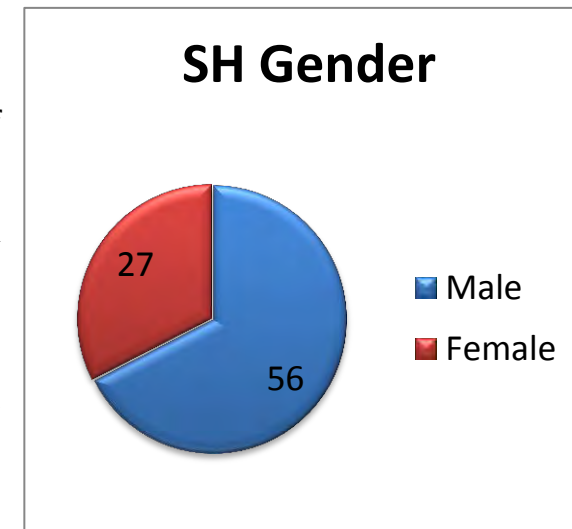


**Figure 8** SH Roles by group all cases

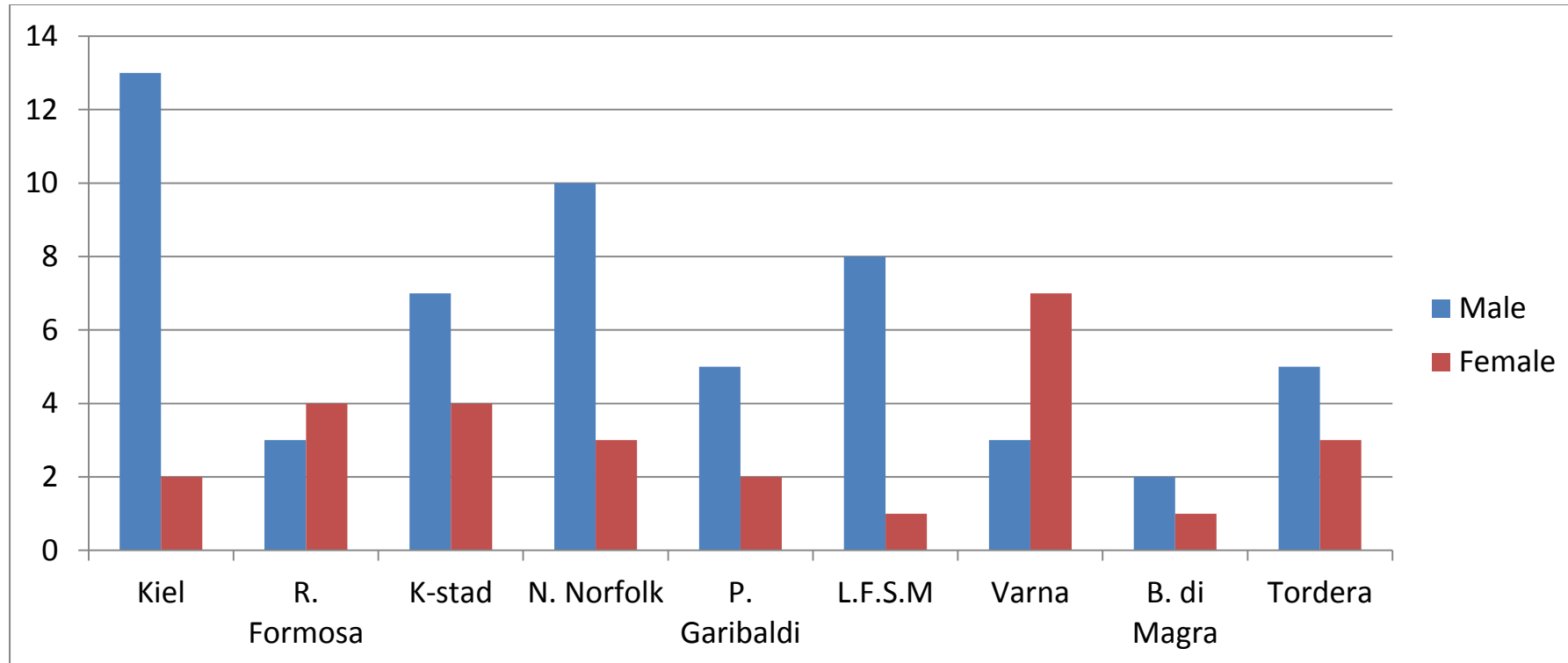
In many contexts disasters affect women and men differently. Women and girls are more likely to be affected disproportionately both because of contextual cultural norms but also because women’s accumulated skills, experiences and capabilities in times of natural catastrophes are often not adequately identified, recognized and promoted. Furthermore, the nature of the problems we deal with in DRR and the long-term analyses we work with, demands involvement of different generations. This was clearly reflected in some of the SHs’ remarks when presenting long-term unlikely storm scenarios. SHs of an older age felt that “some things need to be left for the next generations because we cannot care about everything” (Local SH in Kristianstad). Thus, achieving greater gender and age representation at all levels is crucial for diversifying the issues included in DRR agendas and which of these get prioritized.



**Figure 9** SH representation by roles all cases



**Figure 9** SH gender and age all cases



**Figure 10** SH gender by case study

While the aim of the MCA was not to achieve statistical representation of the population and or decision-makers, we all agree with the fact women's representation and participation in DRR is lower than men's at all levels, as has also been recognized in the Hyogo Framework for Action 2015. It is therefore not surprising to see the same unbalanced representation in most RISC-KIT cases.



## 12.3 Design and use of the cards to select Strategic Alternatives

The cards were designed as an interactive communication and decision supporting tool with the following objectives;

1. Communicate the selection of DRR measures to the stakeholders;
2. Communicate and visualize the impact reduction of each individual DRR measure and the combined DRR measures (i.e. SAs) to support comparison between measures;
3. Support the stakeholders to select combinations of measures to formulate SAs;
4. Support stakeholders to prioritize four SAs;
5. Promote interaction and communication between the different stakeholders.

The CSOs designed and used cards to facilitate their MCA process based on the guidelines and template provided. A brief analysis is made below to highlight the key similarities and differences in adapting the design and use of the cards to select the prioritized SAs. To evaluate the effectiveness of the design and use of the cards a short facilitator survey was conducted, see results presented in Figure X. The cards for each case study can be found in Section 7.

### 12.3.2 Designing the cards

Each set of cards included one card per DRR measure and/or combination of DRR measures and one zero alternative card for comparison. Colours were used to distinguish the zero alternative, hazard influencing DRR measures, vulnerability/exposure DRR influencing measures and the combined measures (i.e. SAs). However, this categorization was not found to be particularly useful for the stakeholders and some cases e.g. Ria Formosa decided to keep all cards the same colour.

In most cases a scenario was chosen whereby the effects of the measures could be clearly seen. Considering the limitations in size of the cards, it's unrealistic to squeeze more than one scenario on a card. The more experienced stakeholders were found to question this scenario and other scenarios should be available to retrieve results when needed, including climate change. The stakeholders also raised some issues about the terminology of the scenario i.e. 1/100 year event which is difficult to understand.

In the card template two sections of technical information were proposed for inclusion; hazard results e.g. flood inundation or erosion given a specific event/scenario and the impact results after implementing the DRR measure e.g. potential economic damages to houses. Some CSOs (e.g. Faro) chose only to include the impact results. This adjustment is welcomed, as many CSOs (e.g. Varna) found that the stakeholders were confused about which box to compare with the zero-alternative. However, in cases where the stakeholders were more experienced with reading this type of hazard information e.g. North Norfolk, this was not raised as an issue. The cards also included a qualitative estimate of costs for implementing the DRR measure or SA. Some stakeholders requested a more detailed Cost-Benefit

Analysis of the DRR measures which would support their selection of SAs but understood this was outside the scope of the project.

Most of the CSOs followed the template and used simplified pie charts displaying the results from the Bayesian Network impact assessment. Impact categories such as high/medium/low and user friendly colors were successfully used to simplify the scientific language in the graph legends. However, some CSOs e.g. Kiel Fiord chose to only include the range of damages to a particular receptor e.g. 20 to 10% of boats damaged instead of pie-charts. Based on the facilitators' feedback, using such simplified expressions of damages rather than pie charts would be useful for stakeholders with less technical knowledge. Furthermore, using language such as the percentage change in damages e.g. reduced by 20% was suggested to help stakeholders interpret the results. Many CSOs had multiple receptors e.g. cars, buildings and infrastructure in their impact results and caused overcrowding of information. This is difficult to avoid unless the least impacted receptors are removed.

### 12.3.3 Using the cards

The cards were used to compare the effectiveness of the different DRR measures against the zero alternative. As can be seen in Figure 12 the majority of cases agreed or strongly agreed that the cards helped them to communicate the model results to the stakeholders and aided their understanding and interpretation of the DRR measures. The cards were explained by the facilitators using a PowerPoint presentation whereby some cases went through each card one by one and others more explained the general components of the card. The facilitators found the cards useful for reiterating the modeled results and allowing the stakeholders to continuously refer back to them throughout the workshop.

Interaction and debate among the different stakeholder groups was strengthened through the cards. The guideline recommended that each stakeholder is given an individual set of cards. However, the Kiel Fjord case chose to have only one set causing complications for all the stakeholders to see the cards. Some cases divided the stakeholders into groups e.g. Kristianstad the cards were found to be particularly to stimulate discussion within the group.

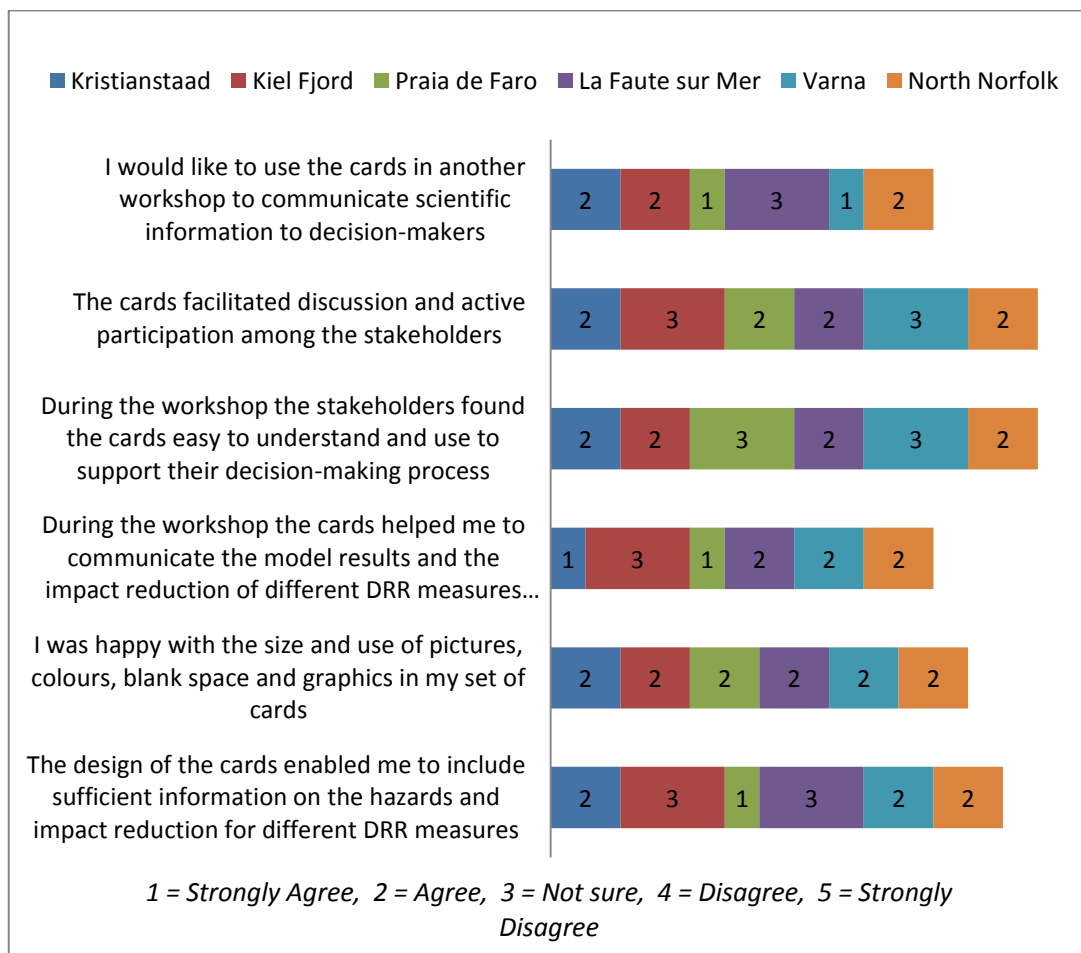
### 12.3.4 Selection of strategic alternatives

The guideline suggests that facilitators first allow the stakeholders to understand the individual DRR measures and then give them time to suggest possible combinations of measures to form SAs. After which the impact results of the combined measures can be presented on prepared cards or written into empty cards. Unfortunately most CSOs decided not to follow this process in full considering their time limitations and the limited number of possible combinations of DRR measures.

Both Varna and North Norfolk decided to show the stakeholders the individual DRR measures and a selected number of combinations at once and asked them to prioritize a selection of these instead of doing this in two stages. This process saved time but limited the stakeholder input on their preferences for combined measures. In contrast, Porto Garibaldi gave the stakeholders blank SA cards and allowed them to define their preferred combinations. This was found to be very successful in

stimulating interaction and discussion. However, the model results for the combinations chosen were not instantly available. In Ria Formosa, five fixed SA cards were presented without any input from stakeholders on possible combinations.

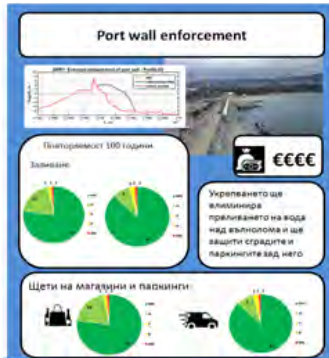
Overall, this process differed across cases but mainly due to time constraints. The process should ideally stimulate as much interaction with stakeholders in the selection and prioritization of the SAs as possible. This will support ownership of the selected SAs by the stakeholders. Furthermore, the final selected SAs were not only dependent on the information presented in cards but on their own or institutional perceptions of the measures and how effective they are or will be.



**Figure 11** Results of facilitator survey on the design and use of cards

Overall, the general feedback was very positive for using cards as a communication and visualization tool for decision-support. To do this effectively, it is very important to consider your target stakeholders and adapt the level of information based on their experience. Results should be simplified to show the most relevant and powerful information while removing as much of the technical jargon as possible. Where possible get some direct feedback from a close stakeholder or colleague on draft versions of cards with different levels of detail and graphical information. In terms of using the cards to select SAs it's recommended that the stakeholders are engaged as much as possible to promote ownership of the SAs.

### 12.3.5 Highest valued SAs



PM Varna



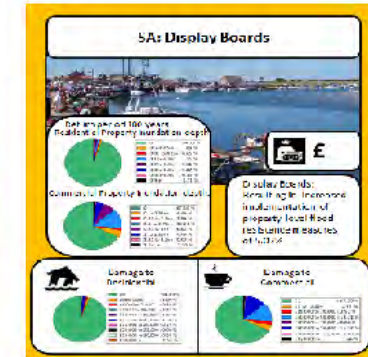
N-PM Ria Formosa/Praia de Faro



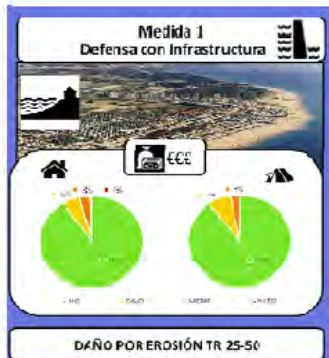
PM + 2 N-PMs Porto Garib.



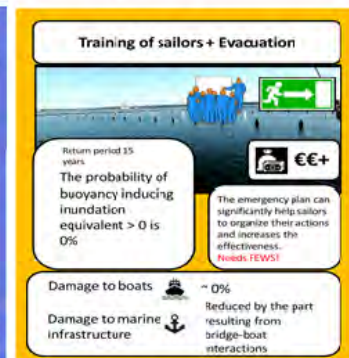
PM Kristianstad



N-PM North Norfolk



PM Tordera



PM + N-PM in Kiel



2 N-PMs Bocca di Magra



PM La Faute Sur Mer

### 12.3.6 Lowest valued SAs

CASE	SAs	Primary	Non-Primary
Kiel Fjord	Evacuation	X	
Ria Formosa	House/Buildings Removal	X	
Kristianstad	0 Alternative / Dune nourishment + Flood Proofing	X	
North Norfolk	Extended Sea Wall + Raising Awareness	X	X
Porto Garibaldi	House/Buildings Retreat	X	
La Faute Sur Mer	Deconstruction	X	
Varna	Beach Nourishment and EWS	X	X
Bocca di Magra	River embankments + Coastal and fluvial flood resilience increasing measures (for residential and infrastructures) + Civil Protection Plan	X	X
	Fluvial embankments + beach nourishment + risk awareness	X	X
Tordera Delta	Flood proofing (buildings + infrastructure)	X	

## 12.4 Implementation of methodology and reporting

Implementing the MCA methodology implied a great amount of preparatory work to have all material ready; ensure the (more or less) balanced participation of stakeholders; allocating sufficient time for the MCA session to allow for a short presentation; carrying out the scoring and weighting exercises and still have time for discussion; and finally reporting on the workshop. Carrying out all of the steps demanded facilitation skills, and a social science background was of great benefit for addressing stakeholders, knowing when and what questions to ask, understand the groups dynamics and interpret them, and knowing how and what to report.

While the MCA Guide included templates for everything (including reporting sheets, possible questions to ask, examples of agendas, etc), and the methodology was introduced and explained during a Consortium Meeting, there were deviations as to how CSOs interpreted the methodology. In contrast to other RISC-KIT tasks, the MCA takes place at a specific point in time and questions can only be answered previous to the session. Most CSOs did not have a run-through of the methodology and there was no time for providing a training session. Therefore, many questions and problems were only realized during the actual MCA workshops.

Below is a summary of the experiences that CSOs reported from the scoring and weighting exercises.

### 12.4.1 Scores

There were three types of challenges during the scoring part of the workshop. The first was related to the logistical aspects of the scoring exercise. For instance, some cases decided not to use the material indicated in the guide because they had not prepared for it or had not understood the use of it (for instance the colored post-it and stickers) and instead opted for a strongly led discussion. For some cases this caused a 'teacher-pupil' feeling where CSOs ended up talking, writing, and doing all of the steps of the exercises by themselves. This naturally defied the purpose of the exercise which was to give a sense of interaction and ownership. Other CSOs used the material but did not come up with a strategy to keep the material in order. "It was tricky with all the post-it's and the different colors. People forgot what each color represented", argued one CSO. It should be noted that the MCA Guide did not specify this, as it was assumed that some of the steps would require a degree of flexibility to adapt them to the local context, the room setup, etc. Some CSOs felt that the method needed some "expert knowledge" on communication (how to!) and that scoring needed strong facilitation. In general, however, CSOs reported having initial trouble with getting stakeholders on track, but once they scored the first SA, stakeholders felt more confident and, in most cases, the exercise ran smoothly.

The second type of challenges was related to people's perceptions to the measures. For instance, some CSOs reported that in their cases "measures, which were not standard already, were scored negative in tendency" and that "it's easier to rank introduced measures"; or that "people, who were involved in marinas were more skeptical concerning feasibility of marina measures than people with no marina background"; or that "complex measures (evacuation) were seen as less feasible". Several CSOs reported that stakeholders did not base their judgement of the SAs upon the results presented during the first part of the workshop (results from the project's Bayesian analysis). Rather, stakeholders seem to rely on their own values, knowledge,

and experience, and at times “people tended to change their opinion during discussion, following the people with ‘practical knowledge’ (harbour master, sailing club)”, rather than concrete results.

The third challenge was the lack of cost-benefit analyses and more in-depth information concerning the technical aspects of the implementation and maintainance of these measures. For instance, a CSO explained that “practioneers perhaps need to have ‘something to grip’ before accepting it [the SA] as ‘feasable’?! E.g. building a working prototype of a flood proof mooring could change their opinion again?!”. Most CSOs explained that the question of costs over time and in relation to benefits was often brought up by stakeholders. In some cases, this undermined and almost hindered the scoring of SAs, because stakeholders felt that they were not equipped to make an assessed judgement and that they needed the full picture before being able to make a choice.

Despite the challenges named above, most CSOs were satifised with the outcome and how the scoring was carried out. Some were surprised at the clarity and unanimity of the outcome. Those who used the material adequately were surprised to see that the technique actually enabled a more structured discussion and that it was useful for getting stakeholders to engage.

#### 12.4.2 Weights

In contrast to the scores, assigning weights was perceived to be easier, and in most cases, weighting went smoothly, so “weighting was very quick and straightforward”.

CSOs reported some challenges. Some stakeholders felt that the instructions for assigning weights were not clear, so in some cases stakeholders weighted the sub-questions (which were rather meant to be examples or defining questions) before finding out that only the “headings” of the criteria would receive a value (3 weights in total). In some cases, stakeholders felt that the criteria were too general and that it would have been better to score the sub-questions.<sup>2</sup> For some stakeholders economic and political aspects went hand in hand, whilst other stakeholders wished these two aspects would have been divided into different criteria. Effectiveness as a criterion was suggested in one of the cases. However, effectiveness was supposed to be assessed through modelled results emerging from the Bayesian Network.

CSOs observed how one stakeholder could influence the whole group, changing an expected outcome to an unexpected result. For instance, in Porto Garibaldi, there was a clear majority of stakeholders that voted for “feasibility” as the criteria with higher weights. However, following a group discussion one of the stakeholders representing a “minority” opinion managed to convince all other actors that “sustainability” should weigh highest.

CSOs used at least two different methods for adding up the weights: some replicated the individual method of allocating the 8 stickers in between criteria through a group discussion to reach a compromise on the amount of stickers; others decided to add up

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<sup>2</sup> This was the initial approach, however it was decided that this would imply more challenges to adapt the criteria to each of the contexts, and that it would produce large amounts of results for the short amount of analysis time after the workshops.

the individual stickers and come up with an average per criteria. Three cases did both methodologies to compare results. The method did not affect the results; it only affected the type of value: even small numbers from 1-8 in the case of stickers; or uneven numbers with decimals in the case of averages.

Following feedback received from the first case that ran the MCA workshop, Kiel, we removed 1 criteria (Suitability) which, was perceived as difficult to understand or too similar to other criteria. Also, some dependency between some of the criteria was perceived in at least one case (Kristianstad): acceptability could influence feasibility, because “if people demand from their governments certain actions, then decision-makers will have to respond to these demands or else they risk their political posts”. This is an interesting observation that might only be relevant for the cases with decentralized governance systems, where decision-makers are elected rather than assigned. In cases where the decision-making bodies are far away from the places where the risk (and solutions) are taking place, the connections and level of impact that civil society may have upon governments is probably weaker. In such cases with more centralized governance systems, acceptability might be more independent from feasibility.

#### 12.4.3 Purpose of the MCA

The purpose of the MCA workshop was multiple, as stated at the beginning of this document. The ways in which the MCA was perceived and used by CSOs and stakeholders was largely dependent on the particular contexts of each of the cases. For some cases with longer experience of DRR work and participatory approaches like North Norfolk or Porto Garibaldi, the MCA might be a more useful tool to communicate results and engage in a fun exercise. For instance, CSOs in North Norfolk highlight that “although the MCA was of genuine interest, given the 'mature' nature of defence engineering, flood forecasting, crisis management and evacuation planning already in place in North Norfolk, it was difficult to see the MCA workshops changing current policy and practice”. Whilst in other cases where disasters might occur with less frequency and where interaction and communication between agencies and civil society is less developed like in Kristianstad or Kiel, the MCA may be able to generate discussions that in some cases might lead to some type of concrete action or trigger further discussions (see figure X for the media coverage of the MCA in Kiel)

In all cases, CSOs reported that the MCA was a useful tool to disseminate the project results and methodologies. Several CSOs reported that stakeholders became interested into the RISC-KIT tools, and whether these could be acquired, whether they would be open-access, and whether they would be able to use them after the project ended. In some cases (e.g. Kristianstad), stakeholders were eager to learn whether there would be a “second phase” of the project, or whether the tools would be further developed for widespread use.

The general opinion was that the MCA workshop was a good forum to bring people together (see also survey results in the next section). In some of the cases stakeholders regretted not having local inhabitants represented. Other cases agreed that the MCA process helps stakeholders cooperate and find points of agreement, without killing each other.

The MCA was a good exercise for testing our research assumptions and for obtaining better understanding of the divide between research priorities and every-day life



concerns. Exposing ourselves and our “scientific research” forces us to rethink some of the granted assumptions from which we depart. In North Norfolk for example, participants highlighted how the use of return periods is meaningless to populations being warned about possible flood events. Stakeholders asked “how high is the water likely to get?” and they can only visualize this in relation to past events that they may have directly experienced or where there are markers to indicate the height reached by past floods. Thus, for them, it is water levels that are important, not return periods. In several cases, CSOs reported how stakeholders preferred to rely on their own experiences and assumptions than on the evidence provided from our studies. In some of the cases like Kristianstad, this led stakeholders to choose an unexpected SA, even though our evidence showed this measure was not the most effective one. In other cases like Porto Garibaldi or Praia de Faro, we got a better appreciation for time in relation to priorities, and the fact that planning 100 years ahead, is too long into the future for most people. This means that data on for example climate change, which is based on (uncertain) long-term scenarios, is too far away from the near reality of local inhabitants and decision-makers. Thus, no matter how convincing we think our evidence is, showing future scenarios of potential catastrophic events might not necessarily convince people of the need to implement certain measures. Political, cultural and economic factors continue to play a major role on the decision to implement or not a measure, as well as what measures are deemed adequate.

КРИТЕРИЙ	Тежест	СА2				СУМА
		Тегловна оценка	Оценка	Тегловна оценка	Оценка	
Приложимост	2 3 4 5 4 4 3 4 ④	1	3	0.5	0.5	-0.5
Приемливост	3 2 1 1 2 2 1 1 ①	0.25	0	0.13	0.13	0.13
Устойчивост	3 3 2 2 2 2 3 4 3 ③	0.75	5	0.39	0.38	0.28
СУМА		2	1	1	1	1

**Figure 15** MCA Matrix in Varna



**Figure 14** MCA Matrix in Kristianstad



No problems filling out the scoring chart

After some "pushing" one stakeholder came up

Improved dynamics and interaction thereafter!

**Figure 13** MCA Interaction in Varna

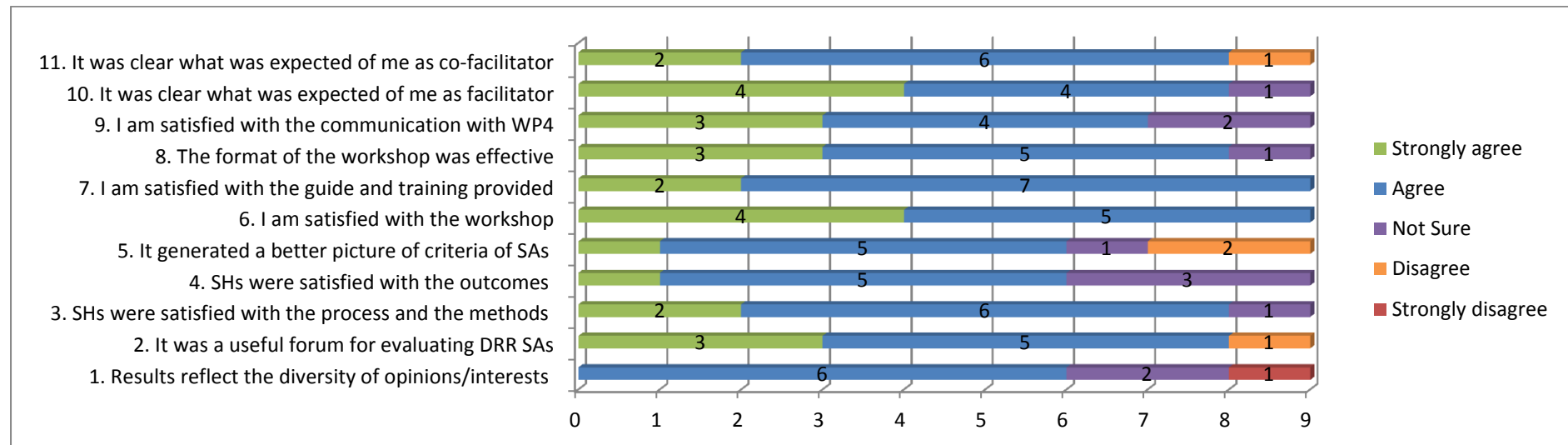


**Figure 12** MCA Interaction in Kristianstad

## 12.5 Surveys

### Facilitator's Survey

- 1 The matrix's results reflect the diversity of opinions and interests amongst stakeholders.
- 2 The workshop was a useful forum for evaluating DRR strategic alternatives
- 3 Stakeholders were satisfied with the process and the methods employed during the workshops
- 4 Stakeholders were satisfied with the outcomes of the workshop
- 5 The workshop generated a better picture of the feasibility and acceptability of the strategic alternatives
- 6 Overall I am satisfied with the workshop
- 7 I am satisfied with the guide and training provided previous to the workshop
- 8 The format of the workshop was effective for achieving its aims.
- 9 I am satisfied with the communication with WP4 package leaders
- 10 It was clear what was expected of me as facilitator
- 11 It was clear what was expected of me as co-facilitator



**Stakeholders' Survey**

- 1 The workshop was a valuable use of my time
- 2 The purpose of the workshop was clear
- 3 The workshop was the right length of time
- 4 The workshop generated a better picture of the feasibility and acceptability of each of the Strategic Alternatives
- 5 The format of the workshop was effective for achieving its aims.
- 6 We engaged in a fruitful discussion
- 7 I feel that the workshop contributed to the debate on DRR strategies
- 8 The workshop was a good forum for discussion on DRR
- 9 Thanks to the workshop I learnt more about how others perceive DRR Strategic Alternatives
- 10 I have a better understanding of the feasibility and acceptability of each of the Strategic Alternatives
- 11 I am satisfied with the outcomes of the workshop

