

## Using participatory methods for coastal lagoon management and climate change

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### ABSTRACT

The underlying concept of the LAGOONS project is that knowledge produced by different scientific disciplines needs to be combined together with local knowledge and stakeholders' views in order to produce integrated, participatory scenarios of possible future trends and conditions in coastal lagoons. During the project this aim will be reached through active engagement of stakeholders (and policymakers) via a three stage participatory process using three different forms of engagement (focus groups; citizens' juries; scenario workshops) in each of the four case study areas. This paper concentrates on the first step of this project's participatory process where focus groups were used as the initial method of engaging stakeholders to identify key issues in each of the lagoons, from the perspective of various groups (e.g. farmers, fishermen, local businesses). Between six and eight focus groups were conducted in each study area, led by the case study partners following a training session conducted for these partners. The outputs of these focus groups were summarised by the partners and then further analysed by the University of Dundee team, who led the stakeholder work, for the preliminary identification of the main drivers, issues and concerns per lagoon from the stakeholders' perspective. These focus group outputs are to be used to help decide the inputs required for the next phase of the participatory process, citizen juries. In addition, the training provided to the case study partners, who are not social scientists, through the University of Dundee team, contributes to an interdisciplinary understanding which is increasingly important in water and environmental management.

**KEY WORDS:** *stakeholders, participatory methods, science-policy-stakeholder interface, coastal lagoon management.*

### INTRODUCTION

The key concept underpinning the LAGOONS project is that knowledge produced via different scientific disciplines needs to be combined with local knowledge and stakeholders' views in order to produce integrated, participatory scenarios (supplemented by science modelling inputs) of possible future trends and conditions in coastal lagoons (LAGOONS, 2011). For the duration of the LAGOONS project this aim will be sought through active engagement of stakeholders (and policymakers) via a three stage participatory process (namely: focus groups; citizens juries; scenario workshops) in each of the four case study areas (CSAs). This paper specifically addresses the outputs of the first stage and mode of stakeholder engagement in the projects' participatory process i.e. Focus Groups, used for eliciting and exploring a range of different stakeholders' views and concerns within each of the four CSAs, to help define the main drivers and areas of concern in relation to the lagoon in question. Focus group methodology can be broadly and briefly defined as a research technique for collecting data via a group's (usually consisting of between six to twelve individuals) interaction and response to questions focusing on a specific topic, determined by the researcher. A focus group, in the context of a lagoon, may involve people who have a common interest as they are:

living within a particular area on the shores of the lagoon, or may share a specific interest, as in the case, for example, of fishing, agriculture, nature conservation or tourism. Several focus groups were therefore held in each of the four lagoons so as to be able to elicit views from a broad set of CSA stakeholders.

The outputs of the focus groups will be used to determine what the substantive inputs should be for the second part of the participatory process, citizens' juries. Ultimately, the project will facilitate the consideration of combined local community and overall policy interests in the evaluation and adjustment of the management models and scenarios used by holding a final stakeholder workshop.

The potential benefits of increased public or stakeholder participation and input into environmental decision making are well recognised and actively encouraged (e.g. Article 14 of the EU Water Framework Directive 2000/60/EC). The contribution that stakeholders can provide is an important consideration, particularly when faced with the task of defining solutions to complex environmental problems and uncertainties (Hage et al, 2010). However, the legitimacy and quality of the decision making resulting from such participation is dependent on a number of factors, including context, content, timing and type of participatory process employed (Webler & Tuler, 2006; Reed, 2008). The literature regarding the evolution and varied use of focus

groups as a means of public and stakeholder engagement and gathering of qualitative data is extensive (Kitzinger, 1995; Morgan 1996; Stewart *et al.*, 2007) but within the field of environmental science is still comparatively limited. Interest in the use of different participatory methodologies in the field of environmental planning and decision making (Kallis *et al.*, 2006; Videira *et al.*, 2006) has increased considerably and can be expected to continue to increase, broadening both experience and knowledge of their application and usefulness in this area of research.

The four CSAs selected for inclusion in the project represent a wide but balanced range of both the geographical and environmental characteristics associated with coastal lagoons: Ria de Aveiro, Portugal; Mar Menor, Spain; Tyligulskiy, Ukraine; Vistula - a transboundary lagoon shared between Poland and Russia (Kaliningrad). These coastal lagoons provide a sound basis for investigating the research project's main issue, that is, the deterioration of surface waters and lagoon ecosystems due to the impact of anthropogenic activities and climate change.

## METHODS

### Identification of focus groups per lagoon

A number of focus groups were held in the vicinity of each lagoon, aimed at particular groups or associations of people (e.g. fishermen, farmers, residents, ecologists and businesses) whose participation and input at this stage of the project's participatory process had been identified as important in order to gain their point of view on aspects of the CSA in their vicinity. The type of focus group participants engaged were identified via a preliminary stakeholder and social group mapping exercise and the importance of engaging them at this point in the process confirmed by CSA partners familiar with the study area in question. A two day training session on how to conduct focus groups was held for project members from each of the four CSAs prior to conducting the focus groups.

### Focus groups - location and type per lagoon

Each focus group was conducted within the participants' locality, in a setting where they would be comfortable discussing the focus group's stated purpose (see Figure 1). The number, location and type of focus groups held per lagoon were as follows:

- **Aveiro = 9** (residents; students/researchers; council members; recreational hunters and fishermen; mixed activity; fishing sector; shipping; marine harvesting of salt, reed etc).
- **Mar Menor = 6** (ecologists; seniors; students/researchers; business owners; fishermen; farmers and stockbreeders).
- **Tyligulskiy = 8** (farmers; fishermen; hunters; landscape park employees; Odessa residents; tourists and tourist sector employees)
- **Vistula (PL only) = 6** (teachers; fishermen; hotel owners/operators; gastronomy sector; local authorities; social activists).

### Resources used for focus group meetings

The focus groups held in the four CSAs were set up and conducted in a comparable way and included the use of the following resources:



Figure 1. Focus Group in Mar Menor

- A moderator and facilitators.
- Written materials were distributed and PowerPoint presentations on the project were used during the focus groups, which provided information for the participants on the project's goals and activities.
- Warm up/open questions – depended on the group in question; flexibility was essential.
- Map of the CSA lagoon – stickers were provided for the participants to signify areas on the map which they viewed as either a positive aspect (green sticker) of the lagoon or an area of notable concern (red sticker) within the lagoon area. Some used yellow markers to denote the location of the focus group. (Figure 2 is provided as an example of one of the maps produced through this form of exercise).
- Recording and collection of focus group data. Audio recordings were made with notes taken simultaneously.

### Data collection, tabulation and analysis

The data collected and recorded by the project's CSA members from the subsequent discussions of the participants of each focus group held were summarised and then translated from their original language into English. All the translated focus group material originating from each CSA was further considered tabulated and analysed by the University of Dundee project team to assess what the main messages were from each *individual* focus group.

## RESULTS

The response of potential participants when initially approached by the CSA project partners and asked whether they would be willing to participate in the focus groups was variable. However, a number of focus group participants were very eager to take part and initiate discussion once they were provided with an explanation on what the project was about and understood the reasons for asking for their involvement and opinions. The level of input and details volunteered by the focus group participants during their dialogue on specific features of the lagoon provided a good basis to understand the main areas of concern from their

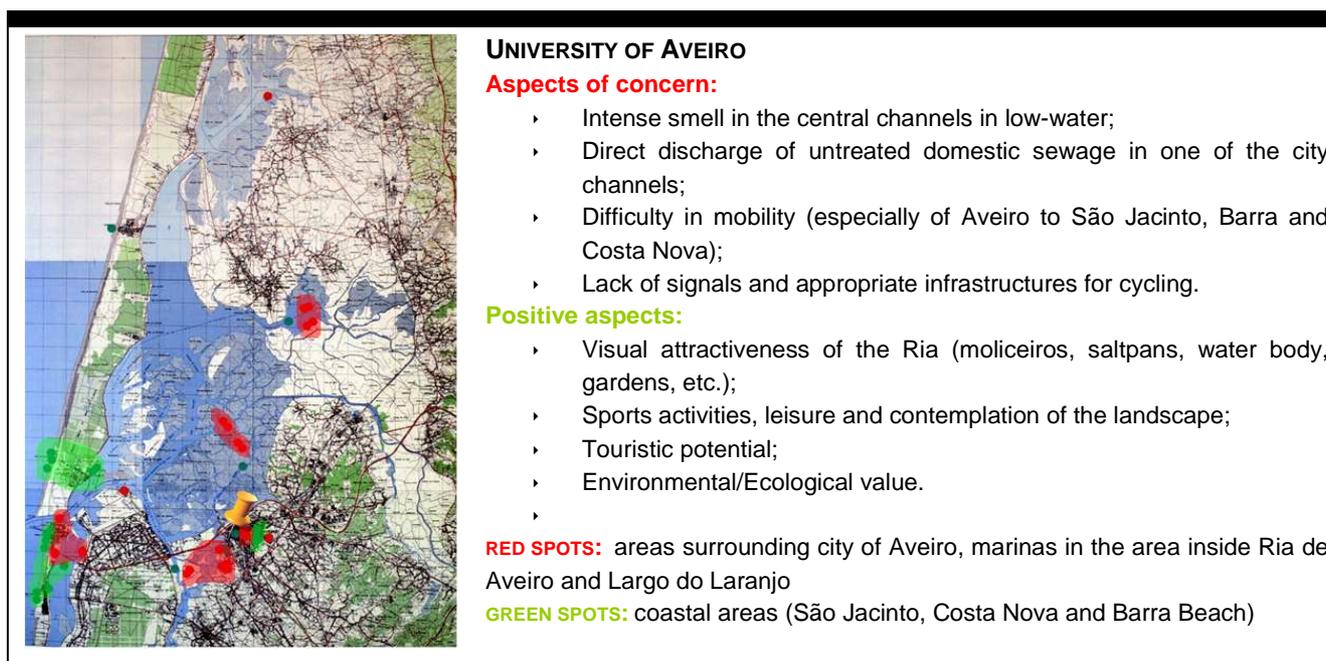


Figure 2. Example of map from a Ria de Aveiro focus group

Table 1. DPSIR table produced for Ria de Aveiro based on local focus groups

Driver	Pressure	State	Impact	Response
Economy	Channel dredging	↓ Seagrasses	↓ Traditional employment/activities	Better overall regulation, law enforcement
Fishing/shellfish	Sediment dynamics (erosion/deposition)	↑ Pressure on fish/shellfish species	↑ Parallel economy	Improve procedures for monitoring biotoxins and lead
Tourism	Water velocity	↑ Bait digging	Locals' income variability	Unique local management structure
Port activities	Land salinity; surface salt water intrusion.	Impoverishment of sediments bed	Management conflicts	Improve public participation
Downturn	↓ Infrastructure investment	↓ Reeds	Invasive species impact on lagoon environment and local economy	Stimulate stakeholders and end-users engagement
Uncoordinated management	Illegal fishing gears	↑ Siltation	Changes in seagrass beds ('moliço') and hydrology	High-end/ sustainable tourism including traditional activities
Traditional activities	Competition between harbour and local fishermen interests	↑ Margin erosion ↑ Water quality	↓ Seagrasses nursery function	Better promotion of produce
Agriculture	Professional vs. recreational fisheries activities	↑ Water velocity	Sense of isolation	Appropriate sustainable infrastructure/transportation
Recreational hunting and fishing activities	Historical industrial pollution (e.g. Largo do Laranjo)	↓ Traditional activities	Loss of agriculture land	Integration of local fishermen and port interests
	Temporary ban on shellfish harvesting due to biotoxins	↑ Bivalve health ↓ Public transport (ferry & speedboat)	↑ Air temperature Avanca	Structures to control currents and water velocity
	↑ Local unemployment	Salinization of cultivated fields	Cormorant impact on aquaculture farms	Increase role of Uni of Aveiro
	Invasive species	↓ specimens for recreational fishing and hunting	Excess growth of <i>Eichhornia crassipes</i> , (Common Water Hyacinth) in freshwater channels;	Conclude Baixo Vouga dike
	↑ Motorboats	Environmental imbalance due to mismanagement	Large stork colonies impact on prey population	Promote the balance between freshwater and saltwater
	↑ Drinking water price			Small channels restoration
				Traditional activities recovery

point of view. A number of issues raised during the focus group sessions regarding the state of their lagoon at present were recognised by more than one focus group. A number of groups also went into great detail about the effect of the state of the lagoon at present on their enjoyment of the lagoon, their daily lives and means of employment and how, if need be, they thought the issues they had identified could be improved or rectified.

Transcribed material from one of the focus groups from each of the four CSAs is provided in Table 2 to serve as an example of the type of issues discussed and comments made by the participants. Based on the initial tabulation and analysis of the output of each individual focus group an attempt was made to transcribe all the qualitative information originating from all the focus groups held per lagoon into a preliminary DPSIR table for each lagoon. The resulting DPSIR table for Ria de Aveiro is used here as an example (see Table 1).

Table 2. Examples of issues raised by focus groups in the four CSAs.

CSA Lagoon	Focus Group comments
Ria de Aveiro (Portugal) FG participants - involved in different activities.	"The problem that gathered more consensus among participants was the strong currents that are felt in the channels of the Ria de Aveiro. The increased velocity of water causes the disappearance of some species of fish, seagrasses and reeds, giving rise to silting and destruction of the seabed of the Ria".
Mar Menor (Spain) FG participants - Fishermen's Guild	"The participants noticed many changes from 30-40 years ago, like "chapinas" (little clams, various species) that have been disappearing, the amount and kind of jellyfish, water quality, soil quality, beaches composition, amount of ship tie points, amount and space of "chiringuitos" (beach bars), eutrophication...they complained about illegal fishing which has been increasing".
Tyligulskyi (Ukraine) FG participants - hunters	"Illegal sand mining is still one of the most important factors affecting the faunal diversity (and not only)...There is a structural unit of the regional environmental agency in Kominternivskyi district, but there is no sufficient forces and means for his staff to stop the chaos there".
Vistula (Polish side) FG participants - local authorities and female social activists	"Water (In the lagoon) is dirty. Even though field fertilizing is less intensive and the resultant influx of nutrients went down considerably, the water starts blooming in mid-July, so bathing is no longer possible and beaches grow empty...Flood management of the lagoon is inadequate and wrong; in case of backwatering (storm surge) Tolkmicko, Suchacz, Elbląg are flooded. Better flood protection is required".

## CONCLUSION

Holding several different but pertinent focus groups within the vicinity of each lagoon, in this instance, was the first step in the project's participatory sequence. Eliciting and exploring views expressed by highly relevant and recognised stakeholders, in relation to each lagoon provided further insight into the possible drivers of change in each of

the CSAs. This initial form of 'opening up' information via focus groups has helped identify which, in the participants' minds are: the main areas of concern regarding any issues or problems in relation to the lagoon; where they might be located; what future changes they would like to see implemented.

The next step of the participatory process, citizen juries, will allow CSA stakeholders to develop a more informed understanding of the lagoon, based on both the important issues identified through the focus groups held per lagoon and the relevant scientific evidence provided, in order to produce applicable and appropriate recommendations. In this iterative process on-going use of participatory methods and early engagement of participants with both professionals and authorities, may enable these recommendations to be taken forward, ideally within some legally binding framework for action.

Whilst the LAGOONS team cannot commit to the implementation of the recommendations, they can assure participants that the recommendations will be brought to the attention of the relevant authorities, avoiding a sense of engagement with no real effect. The final LAGOONS workshop, scheduled for near the end of the project, will provide the opportunity to explore future activities with all the participants, professionals, water users and authorities. In addition, the training provided to the case study partners, who are not social scientists, through the University of Dundee team, contributes to an interdisciplinary understanding which is increasingly important in water and environmental management.

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