



1st Participatory Workshop

Case Study 5 Improving integrated management
of Natura 2000 sites in Ria de Aveiro, Portugal

Report



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.

Authors

Ana Isabel Lillebø Batista, António José Arsénia Nogueira, Heliana Teixeira, Mariana Morgado, Ana Genua Olmedo (University of Aveiro)

With contributions by:

Javier Martínez-López (BC3 – Basque Centre for Climate Change)

Photos by:

Joaquim Pedro (University of Aveiro)

Project coordination and editing provided by Ecologic Institute.

Report completed in 22nd May, 2018

Document title	1st Participatory Workshop
Case Study	Case Study 5 Improving integrated management of Natura 2000 sites in Ria de Aveiro, Portugal
Document Type	Report
Date	22 May 2018
Document Status	Final version

Acknowledgments & Disclaimer

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 642317.

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information. The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

Contents

1 Introduction	4
2 Participants' reception and welcome lunch	5
3 Opening Session	6
4 Plenary session: "Current status, opportunities for the management of natural capital of Ria de Aveiro"	7
4.1 Natural capital and services provided by the ecosystem	7
4.2 Current situation and opportunities for management	7
5 Parallel sessions: "Valuation of the ecosystem services of Ria de Aveiro and Baixo Vouga Lagunar"	8
6 Intermission	10
7 Plenary session: Multicriteria decision analysis on prospective scenarios of ecosystem services for decision support	11
7.1 Results: natural capital and services provided by the ecosystem	12
7.2 Results: current situation and opportunities for management	15
7.3 Results: Valuation of the ecosystem services of Ria de Aveiro and Baixo Vouga Lagunar	15
8 Acknowledgements	17
9 Annex	18

List of Tables

<i>Table 1: Case Study 5 1st Participatory Workshop agenda</i>	4
<i>Table 2: "Beneficial effects" and "Concerns that persist" after current management interventions – stakeholders' Post-it answers:</i>	12
<i>Table 3: Habitats where the participants allocated the colour stickers on the maps. In brackets, the number of people who identified the same habitat.</i>	15

List of Figures

<i>Figure 1: Invitation for the workshop, sent to the participants</i>	4
<i>Figure 2: Participants' reception.</i>	5
<i>Figure 3: The lunch was held in the workshop room, where stakeholders could look at the Ria de Aveiro and Baixo Vouga Lagunar maps that would be discussed later.</i>	6
<i>Figure 4: Opening session</i>	6
<i>Figure 5: Session about Natural Capital and Services provided by Ecosystem.</i>	8

<i>Figure 6: Session about Current situation and opportunities for management.</i>	8
<i>Figure 7: Participants during the exercise of ecosystem services' valuation of Ria de Aveiro and Baixo Vouga Lagunar. The form and the support material are shown.</i>	10
<i>Figure 8: Post-it answers, maps with the stickers and preparation of the results from the questionnaire.</i>	11
<i>Figure 9: Workshop evaluation board.</i>	12
<i>Figure 10: Answers to the question: To which group of key actors do they belong?</i>	15
<i>Figure 11: BVL and Ria de Aveiro priority areas based on stakeholders' preferences on ecosystem services, as mapped by the spatial multicriteria analysis (preliminary results not yet validated).</i>	16
<i>Figure 12: Multidimensional scaling of the 17 participants (colored by stakeholder type) based on voting preferences on Ecosystem Services (preliminary results not yet validated).</i>	16

List of Annex

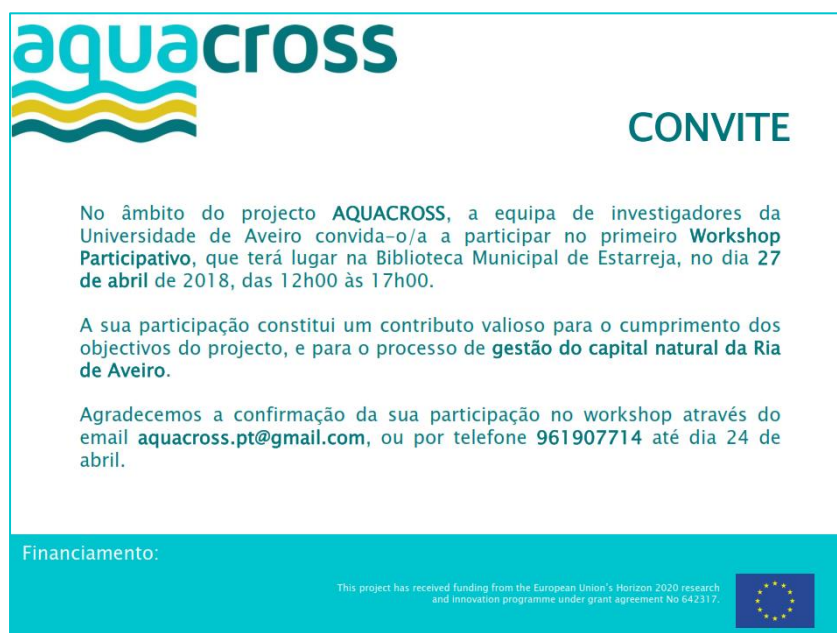
<i>Annex 1: 1st Workshop schedule (original in Portuguese)</i>	18
<i>Annex 2: Original presentation, in Portuguese, from the Opening session</i>	19
<i>Annex 3: Original presentation, in Portuguese, from the Plenary session: "Current status, opportunities for the management of natural capital of Ria de Aveiro"</i>	20
<i>Annex 4: Original list, in Portuguese, of the Services of the Ecosystem (SE) evaluated in the Parallel session: "Valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar". The SE coming from abiotic outputs from the ecosystem were marked with asterisk (*)</i>	24
<i>Annex 5: Support material given to the participants for the evaluation of the services of the ecosystem (e.g. Provisioning – Materials – Biomass, SE3)</i>	26
<i>Annex 6: Original presentation, in Portuguese, from the Parallel session: "Valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar"</i>	27

1 Introduction

The current report describes the 1st participatory workshop of Case Study 5 (CS5) as proposed in the case studies coordination strategy of the AQUACROSS project. The objective of this workshop of the Portuguese case study of the Ria de Aveiro Nature 2000 site was to identify the relevance of ecosystem services in Ria de Aveiro for building alternative management scenarios. The workshop was held in Estarreja Municipal Library on the 27th of April, between 12 o'clock and 17 o'clock.

The original invitation, in Portuguese, sent to the participants is shown in Figure 1. Circa seventy stakeholders were invited; the participants were formally invited by letter, in most cases, which was sent by the mail in 11th April. Due to the low number of positive replies, a second invitation was made by phone between the 23rd and the 25th April and/or by e-mail. Eighteen stakeholders participated in the workshop.

Figure 1: Invitation for the workshop, sent to the participants.



The 1st Participatory Workshop was organized based in the schedule in Table 1, the original schedule in Portuguese can be found in Annex 1:

Table 1: Case Study 5 1st Participatory Workshop agenda

Time	Moment
12.45h – 13.45h	Participant's reception. Lunch
13.45h – 14.00h	Opening session
14.00h – 14.45h	Plenary session: Introduction to AQUACROSS project and objectives to the Participatory Workshop: "Current status, opportunities for the management of natural capital of Ria de Aveiro"

Time	Moment
14.45h – 16.00h	Parallel sessions: “Valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar”
16.00h – 16.20h	Coffee – break
16.20h – 16.50h	Plenary session: Spatial Multicriteria Analysis on prospective scenarios of ecosystem services for decision support
16.50h – 17.00h	Closing session

2 Participants’ reception and welcome lunch

The participants’ reception was held in the second floor of the library. Each participant received a folder (Figure 2 and Figure 3) including:

- ▶ the workshop agenda,
- ▶ AQUACROSS Project flyers,
- ▶ consent agreement form, which included the permission to take pictures,
- ▶ and work material (blank sheets, post-it, coloured stickers, and a pen).

Figure 2: Participants’ reception.

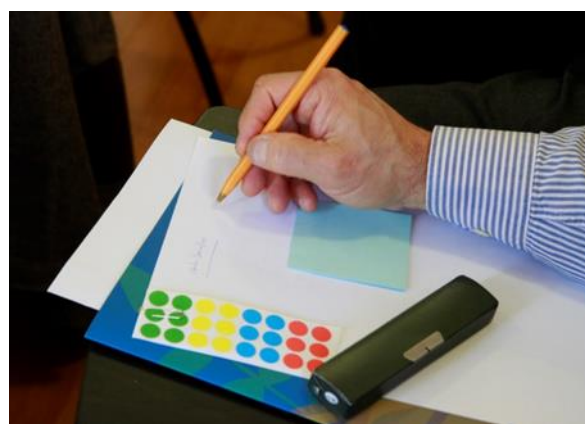


Figure 3: The lunch was held in the workshop room, where stakeholders could look at the Ria de Aveiro and Baixo Vouga Lagunar maps that would be discussed later.



3 Opening Session

The opening session was hosted by António Nogueira (University of Aveiro – DBIO & CESAM). The participants were welcomed and their active participation in the workshop was acknowledged. The AQUACROSS project was presented and how it could address the improvement of the management of the aquatic ecosystems. A global overview of the project was given to the participants and the workshop methodology was explained (Figure 4).

The original presentation in Portuguese can be found in Annex 2.

Figure 4: Opening session.



4 Plenary session: “Current status, opportunities for the management of natural capital of Ria de Aveiro”

The plenary session was divided in two main topics: the natural capital and services provided by the ecosystem, and the current situation and opportunities for management. For both topics the participants were invited to actively contribute with their opinion and knowledge. In the first session, a question was made to the participants, which they had to answer in a post-it to be affixed in the wall. In the second session, they were requested to point out the relevant areas on the map using stickers of three different colors. Details of each topic are presented below.

The original presentation in Portuguese can be found in Annex 3.

4.1 Natural capital and services provided by the ecosystem

The topic was presented by Ana I. Lillebø (University of Aveiro – DBIO & CESAM). The concepts of natural capital and ecosystem services were introduced with examples from Ria de Aveiro region. To visualize these examples, a promotional [video](#) of Ria de Aveiro region made by Polis Litoral Ria de Aveiro was shown.

Two previous projects about the management of aquatic ecosystems in Ria de Aveiro were also referred to (LAGOONS and ADAPT-MED projects) since some of the stakeholders present already followed the previous projects. Generally, the recommendations proposed by the key actors to achieve/avoid the desirable/undesirable aspects of the management of Ria de Aveiro habitats were shown (LAGOONS project). As well as the current decision-making in the elaboration of policy of Ria (ADAPT-MED project).

Maps of the habitats and activities of Ria de Aveiro and Baixo Vouga Lagunar (BVL) were presented. Some activities planned for 2018 were commented such as the dredging plan and the completion of the BVL flood bank.

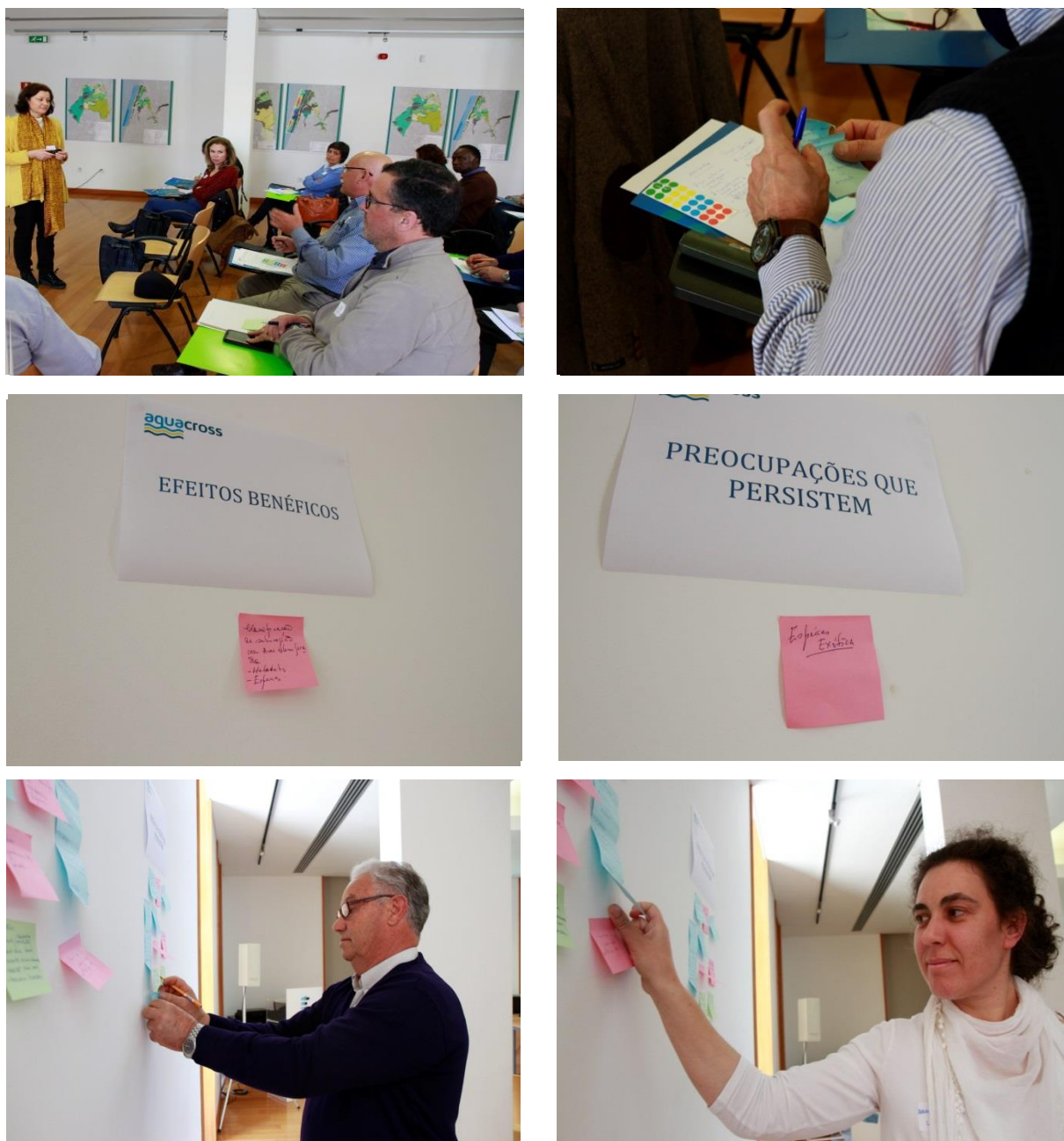
The first question for the participants was **“What are the expected beneficial effects and persistent concerns related to the current management of the natural capital of Ria de Aveiro?”** Participants responded affixing the post-it in the wall, filling in the column of **“Beneficial effects”** and **“Concerns that persist”** (Figure 5).

4.2 Current situation and opportunities for management

In this part the participants were asked to identify relevant areas on the map, with color coded stickers (green, yellow and red), according to (Figure 6):

-  Which areas will benefit?
-  Which areas have no obvious alteration?
-  Which areas are still raising concern?

Figure 5: Session about Natural Capital and Services provided by Ecosystem.



5 Parallel sessions: “Valuation of the ecosystem services of Ria de Aveiro and Baixo Vouga Lagunar”

The topic on valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar was presented by Heliana Teixeira (University of Aveiro –DBIO & CESAM). This session held an individual participatory exercise which was explained to the audience. The aim of the exercise was to assess the stakeholders’ perspective on the value of the different ecosystem services of Ria de Aveiro. The concept of spatialized multicriteria analysis was introduced. This method was chosen to take into account several criteria simultaneously (*i.e.* several ecosystem services) as evaluated by several key actors.

Figure 6: Session about Current situation and opportunities for management.



Each participant, individually, took part in a 50 minutes exercise. They expressed their preferences regarding the different types of Services of the Ecosystem (SE). Specifically eleven SE were evaluated for the Ria de Aveiro. The original list of SE in Portuguese can be found in Annex 4.

The services were evaluated by pairwise comparison, using a form created on the internet for this workshop. The answers were anonymous, and participants were only asked to **“Which group of key actors did they belong?”** They were given seven options: politicians, public administrators, citizens, scientific, group of interest, business or services.

The main question was **“Which is the importance of SE1 in relation to the remaining ten SE?”** (*i.e.* SE2, SE3... SE11). And so on with the rest of SE (*e.g.* **“Which is the importance of SE2 in relation to the remaining nine SE?”** (*i.e.* SE3, SE4... SE11)? The options were: much less important, less important, equally important, more important or much more important. They answered the form using the laptops, tablets, computers from the library, or even their own mobile phones (Figure 7). Exceptionally, two participants requested to fill up the printed version that was afterwards introduced into the system by the team members.

Participants used as support material examples of the cards for the SE. These cards included the description of the SE, pictures of examples of the SE, and a map of the habitats of BVL where the SE happens. An example of one of the cards is shown in

Annex 5. The original presentation of this session in Portuguese can be found in Annex 6.

Figure 7: Participants during the exercise of ecosystem services' valuation of Ria de Aveiro and Baixo Vouga Lagunar. The form and the support material are shown.

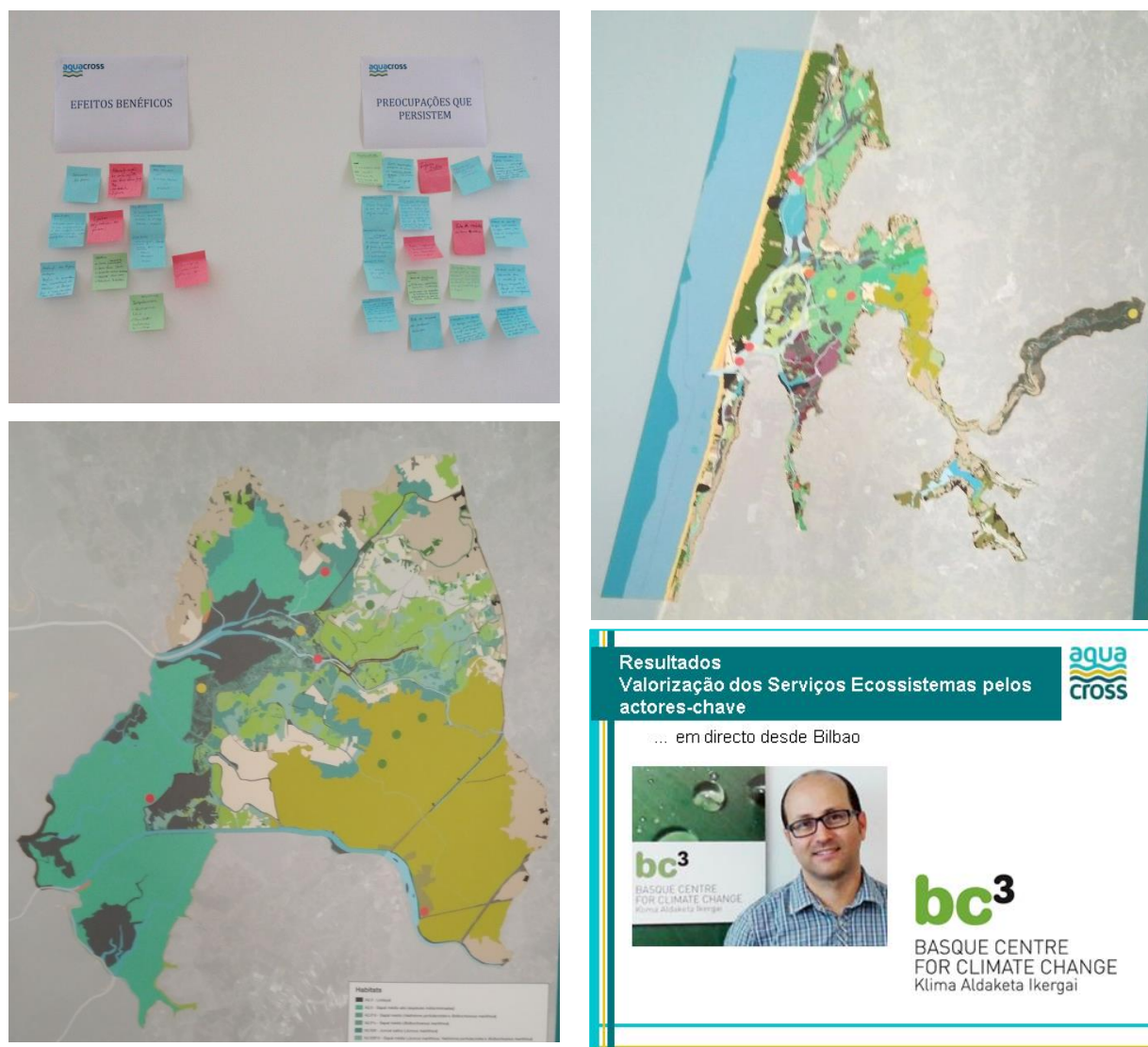


6 Intermission

During the coffee-break the results from the first plenary session (post-it answers and color stickers in the map) and from the individual exercise (form) were organized to be presented in the second plenary session. The results from the form

were obtained in collaboration with Javier Martínez-López (from AQUACROSS partner institution BC3), who was attending the workshop via online connection (Figure 8).

Figure 8: Post-it answers, maps with the stickers and preparation of the results from the questionnaire.



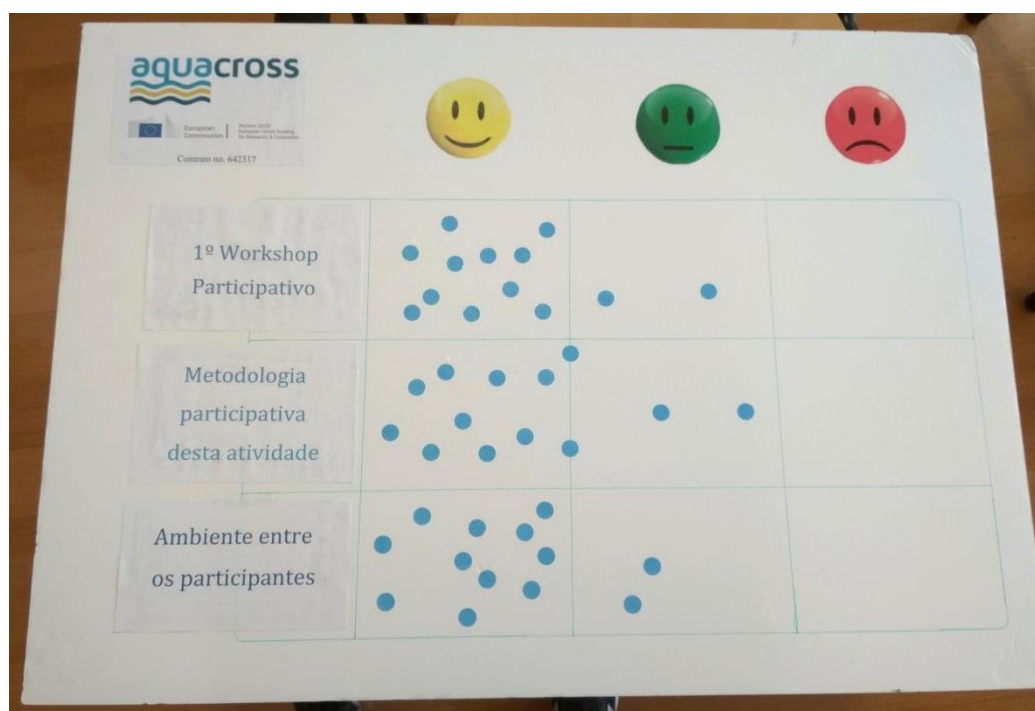
7 Plenary session: Multicriteria decision analysis on prospective scenarios of ecosystem services for decision support

The results obtained in the first plenary session and in the individual exercise were presented in this plenary session. The workshop overview and the results on the current situation of natural capital in Ria de Aveiro were presented by Ana I. Lillebø, followed by Heliana Teixeira (and Javier Martínez-López) that presented the results on the valuation of the ecosystem services of Ria de Aveiro and BVL.

To keep on schedule, Ana I. Lillebø announced the second workshop (July 5th, tbc) and invited all participants for the next steps of the project. Finally, participants were invited to participate in the workshop evaluation.

To evaluate the workshop, 3 aspects were taken into account: The workshop as a whole, the participative methodology and the environment among participants. 13 of the 17 participants did the evaluation. The results are shown in Figure 9.

Figure 9: Workshop evaluation board.



7.1 Results: natural capital and services provided by the ecosystem

The participants' answers of the expected beneficial effects and persistent concerns of the management of the natural capital of Ria de Aveiro are presented in Table 2.

Table 2: "Beneficial effects" and "Concerns that persist" after current management interventions – stakeholders' *Post-it* answers:

Beneficial effects	Concerns that persist
• Completion of the flood bank construction • Fresh water for irrigation	• Lack of communication between entities • The increase of invasive species such as <i>Acacias</i> and especially <i>Cortaderia selloana</i> (Pampas grass) that competes with the reed, and changes the habitat (Atlantic salty meadows)

Beneficial effects	Concerns that persist
• Increase in agricultural land area	• The dredging activities are extremely impacting to the living organisms of the Ria, namely juvenile fauna and <i>Zostera</i> meadows
• Marked walking trails usually in natural environments, supporting recreational activities	• The increase of the invasive species such as water hyacinth in freshwater streams, with all the inherent consequences
• Habitat for the fauna and flora	• Loss of habitats in the coastal zone
• Promote local economy: stimulate ecotourism and agriculture	• Where did the soil come from for the construction of the flood bank/floodgates? Attention to the quality of soil that will be transported (<i>*for e.g. to avoid contamination with exotic species</i>)
• Preservation of the freshwater aquatic biodiversity	• Exotic species
• Higher balance between farming and natural environment	• Low navigability of the inner channels
• Classification of sub-region with classified area: habitats and species (<i>*increased knowledge of BVL area</i>)	• Lack of involvement of local land owners
• Sustainability and development of economic activity sectors: primary, secondary and tertiary	• Lack of dredging/desanding of the channel of Ribeira do Mourão and Avanca, and of the wharf of Moliceiros
• The involvement of social community to enjoy the balance of agricultural activity and environment	• Rubbish dumps in several private lands and public roads. They are in flooded land, with a high risk of contamination of soils and water
• Drainage of Ria de Aveiro (<i>*e.g. in terms of navigability and flood prevention of public infrastructures</i>)	• More information and awareness in the municipal councils
• Migratory species of fish	• Dredging tends to increase currents and the mobilization of contaminants in the sediments into the water
• Increased navigability, but dredging activity should be further extended in order for families to return to the river, as this was their means of sustainability.	• Lack of police surveillance

Beneficial effects	Concerns that persist
The advantage of the construction of the flood bank: benefit of agriculture with maintenance of the Bocage structure, that is a rare landscape in Portugal	Invasive arboreal species (Eucalyptus sp)
	- Emergency discharges in the pumping stations of the waters of Portugal (Esteiro de Canelas) - Incentives and compensations for the maintenance of agricultural/aquaculture activities that generate the maintenance of ecosystems and biodiversity
	- The effective real management of the territories - Volume of water/levels of the oceanic saltwater
	- Desanding of the Canal de Mira until the encounter of the ditch which drains in Mira, in order to: - protect local habitats (including both flora and fauna); - prevent flooding from channels to housing and infrastructures; - and ensure protection of the margins and avoid erosion.
	- Loss of wetlands' habitats - The abandonment of parcels of Bocage, rare biotope, will originate the creation of forest that should be managed from the point of view of the present species
	The planned works will contribute to the increase in the tidal prism, which will deteriorate wet systems of marshes and reed, benefiting the mudflats

* Supporting notes mentioned during group discussion session.

7.2 Results: current situation and opportunities for management

The relevant areas identified by the participants, using color coded stickers in the maps, are presented in Figure 8 and listed in Table 3.

Table 3: Habitats where the participants allocated the colour stickers on the maps. In brackets, the number of people who identified the same habitat.

Areas	BVL Map	Ria de Aveiro Map
	Bocage (3), Rice fields (1)	Bocage
	Mudflat (2), Saline reed bed (2), Medium saltmarsh (2)	Riparian, Agriculture
	Acacias (6), Mudflat, Saline reed bed, Medium saltmarsh, Infralittoral muddy sand	Subtidal sandy from Ria, Bocage, Agriculture (2), Medium saltmarsh, Infralittoral muddy sand, Coastal pinewood

7.3 Results: Valuation of the ecosystem services of Ria de Aveiro and Baixo Vouga Lagunar

The participants' answers to the questionnaire (online form) are presented in Figure 10, Figure 11 and Figure 12.

In this workshop we only missed stakeholders representing the Services sector.

Figure 10: Answers to the question: To which group of key actors do they belong?

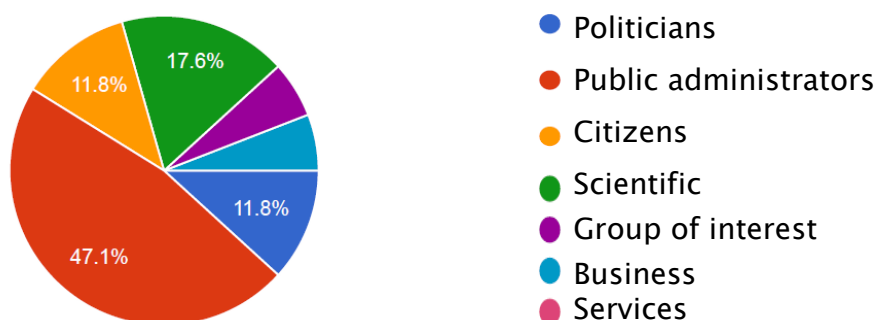


Figure 11: Ria de Aveiro and BVL priority areas based on stakeholders' preferences on ecosystem services, as mapped by the spatial multicriteria analysis (preliminary results not yet validated).

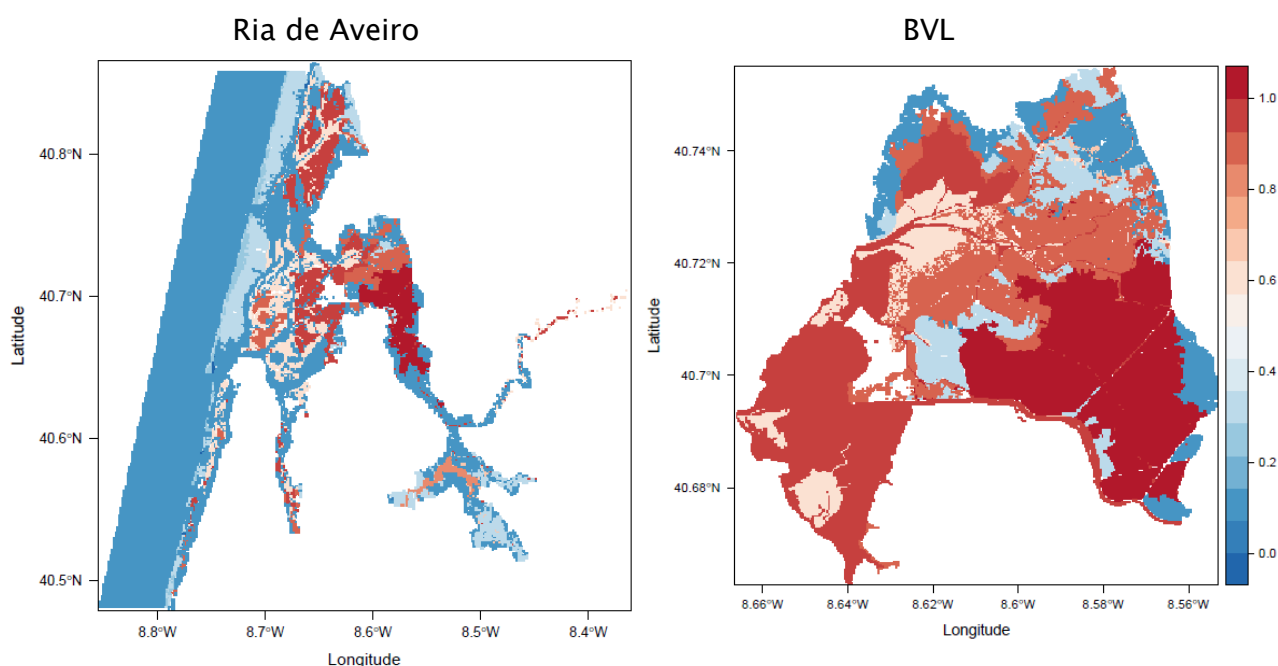
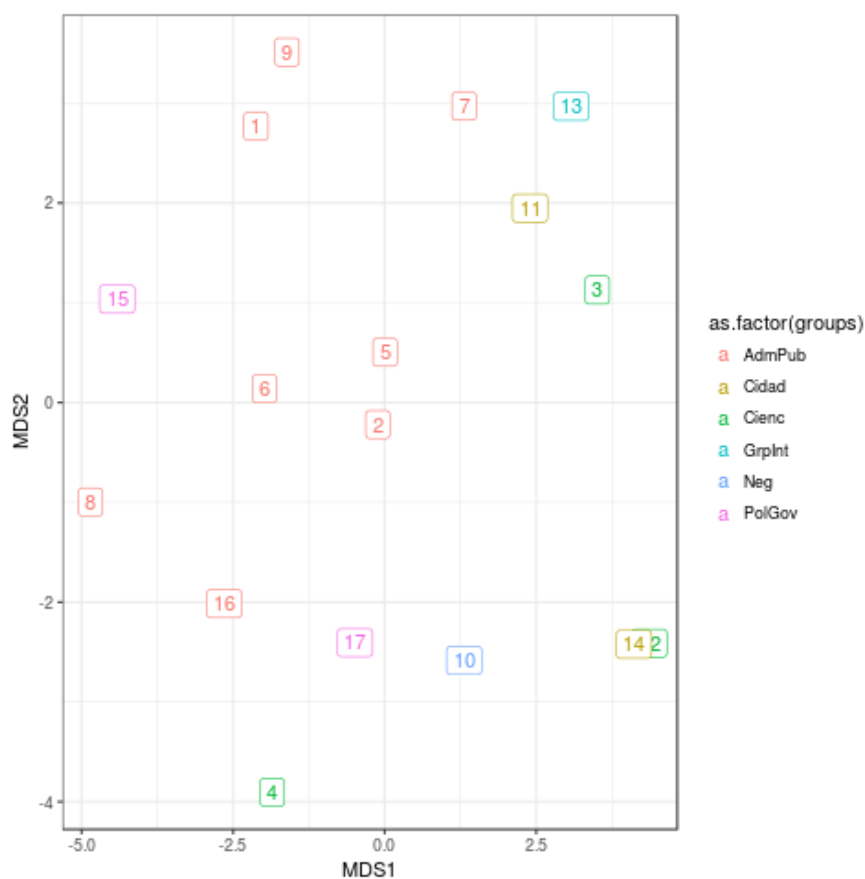


Figure 12: Multidimensional scaling of the 17 participants (colored by stakeholder type) based on voting preferences on Ecosystem Services (preliminary results not yet validated).



These preliminary results will be validated for consistency and then further analyzed for use as working material supporting the next workshop. This presentation, in Portuguese, can also be found in Annex 6.

The workshop finalized with the closing session carried out by António Nogueira.

8 Acknowledgements

The AQUACROSS team gratefully acknowledges the workshop participants for their enthusiasm and active participation.

We would like also to acknowledge the Estarreja Municipal Library, for providing its facilities and for all the support during the workshop.

We would also like to acknowledge Joaquim Pedro from the University of Aveiro for the photographic register of this workshop.

9 Annex

Annex 1: 1st Workshop schedule (original in Portuguese)



I Workshop Participativo

27 de Abril – Biblioteca Municipal de Estarreja
Programa

12:45 – 13:45	Recepção dos participantes Almoço buffet
13:45 – 14:00	Sessão de abertura
14:00 – 14:45	Sessão plenária: “Apresentação do projecto AQUACROSS e objectivos do I Workshop Participativo: “Situação actual e oportunidades para gestão do Capital Natural da Ria de Aveiro”
14:45 – 16:00	Sessões paralelas: “Valoração dos serviços do ecossistema da Ria de Aveiro e do Baixo Vouga Lagunar”
16:00 – 16:20	Pausa para café
16:20 – 16:50	Sessão plenária “Decisão multicritérios sobre cenários prospectivos dos serviços dos ecossistemas para apoio à decisão”
16:50 – 17:00	Encerramento

Financiamento:

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642317.



Annex 2: Original presentation, in Portuguese, from the Opening session



I Workshop participativo

Sessão de abertura

António Nogueira
Departamento de Biologia & CESAM
Universidade de Aveiro

Biblioteca Municipal de Estarreja, 27 de Abril

The AQUACROSS project is co-funded by the European Union under the Horizon 2020 research and innovation programme. The AQUACROSS project is co-funded by the European Union under the Horizon 2020 research and innovation programme.



O Projeto AQUACROSS

Políticas da UE e internacionais
relacionadas com a
biodiversidade aquática na UE e a
gestão dos ecossistemas

aquacross
Ecosistemas Aquáticos
Água doce - Costeiro - Marinho

Conhecimento e dados existentes
sobre funções e serviços de
ecossistemas

Envolvimento e partilha
integrando os membros dos atores
chave no trabalho de investigação em
Sociedade de Ecosistemas

Métodos e ferramentas
abordagem para identificação,
monitoramento, avaliação e
transparência dos impactos dos
ecossistemas aquáticos

Implementação da Gestão baseada em
Ecosistemas dos ecossistemas aquáticos

**AQUACROSS foca-se na integração, interligando ciência, atores chave,
políticas, conhecimento, dados e gestão para a melhoria da gestão baseada em
ecossistemas dos ecossistemas aquáticos**

27/04/2015 I workshop participativo WWW.AQUACROSS.EU

Os parceiros AQUACROSS



6/0/2015 WWW.AQUACROSS.EU



Contexto das Políticas da UE



- Estratégia para a Biodiversidade
- Diretivas Aves e Habitats
- Diretiva Quadro da Água
- Diretiva Quadro da Estratégia Marinha

Event:
Author: WWW.AQUACROSS.EU

6/0/2015



Gestão baseada em Ecossistemas (EBM)

- Objeto**
 - Sistemas Sócio-Ecológicos
- Foco**
 - Integração de políticas com conhecimento científico e estratégias de gestão tendo como base Cenários de Gestão definidos com a participação e contribuição dos atores chave
- Princípios chave**
 - Efetividade:** atingir o objetivo ambiental
 - Eficiência:** fazer o máximo para garantir o bem estar humano
 - Equidade e Justiça:** partilha dos benefícios

27/04/2015 I workshop participativo WWW.AQUACROSS.EU



Princípios da Gestão baseada em Ecossistemas (EBM)

- Efetividade**
 - Capacidade de atingir os objetivos ambientais estabelecidos relativamente a um ponto de referência
- Eficiência**
 - Maximizar o bem estar humano que permita a escolha e implementação mais eficiente das medidas de gestão, através de uma análise custo-benefício entre os custos de desvio da situação de referência e os benefícios resultante desse mesmo desvio
- Equidade e Justiça - Envolve**
 - avaliação de alternativas para implementação das políticas em termos de seus impactos previsíveis sobre a distribuição dos lucros
 - identificação de beneficiários (vinculando eficácia com critérios de equidade)
 - Identificação de benefícios (vinculando eficiência com equidade)

27/04/2015 I workshop participativo WWW.AQUACROSS.EU



I Workshop participativo

- Objetivo:** Identificar o capital natural da Ria de Aveiro
- Metodologia:** Sessão de trabalho e discussão
- Na primeira sessão de trabalho serão colocadas duas questões:
 - 1.ª Pedimos que respondam nos post-its que estão na pasta e que os afixem na parede indicada para esse fim;
 - 2.ª Pedimos que respondam assinalando, com autocolantes de três cores diferentes, as áreas relevantes no mapa disponibilizado para esse fim.
- Na segunda sessão de trabalho pedimos que avaliem, por via electrónica um conjunto de serviços de ecossistemas.

27/04/2015 I workshop participativo WWW.AQUACROSS.EU



Obrigado!



Fonte: Natural Capital (Nogueira-Pereira et al. in press, ISBN: 9789290200000)

27/04/2015 I workshop participativo WWW.AQUACROSS.EU

Annex 3: Original presentation, in Portuguese, from the Plenary session: “Current status, opportunities for the management of natural capital of Ria de Aveiro”



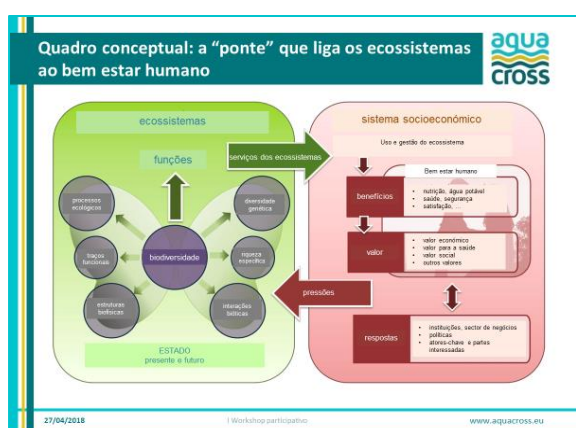
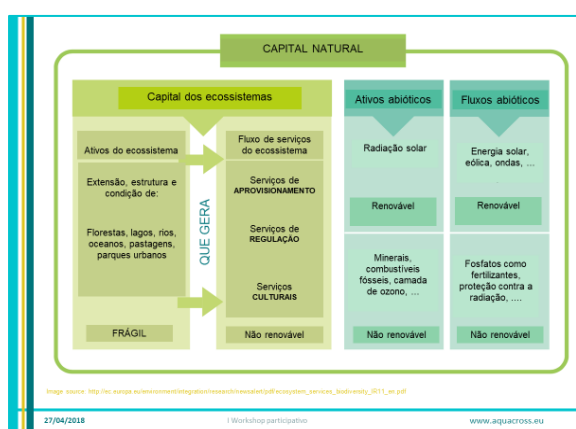
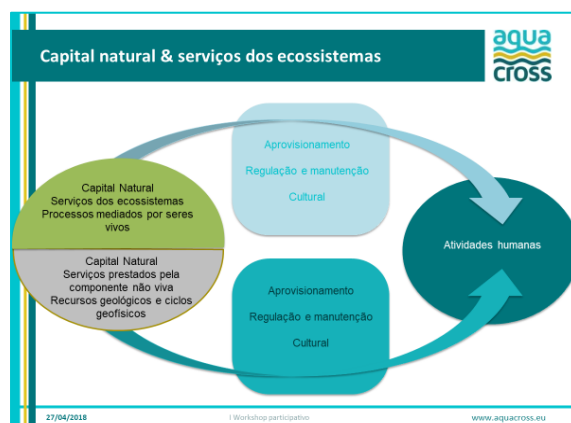
I Workshop participativo

Capital Natural e serviços prestados pelo ecossistema

Ana Lillebø
Departamento de Biologia & CESAM
Universidade de Aveiro

Biblioteca Municipal de Estarreja, 27 de Abril

The AQUACROSS project has received funding from the European Union Horizon 2020 for Research, Technology Development and Demonstration under Grant Agreement Number 480401


O Capital Natural da Ria de Aveiro

Ria de Aveiro - "A Paixão que nos une"
(Documental, Versão Portuguesa)

<https://vimeo.com/134320308>



27/04/2018 I Workshop participativo www.aquacross.eu

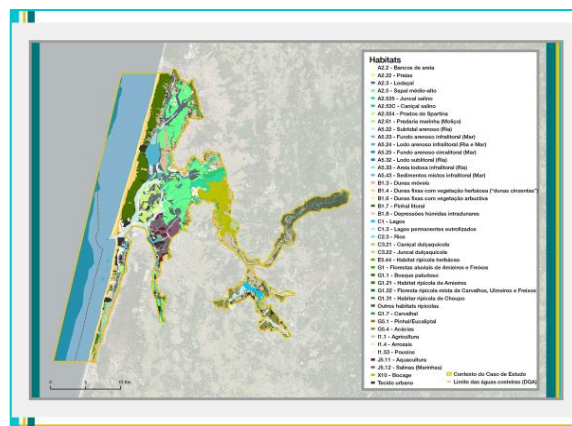


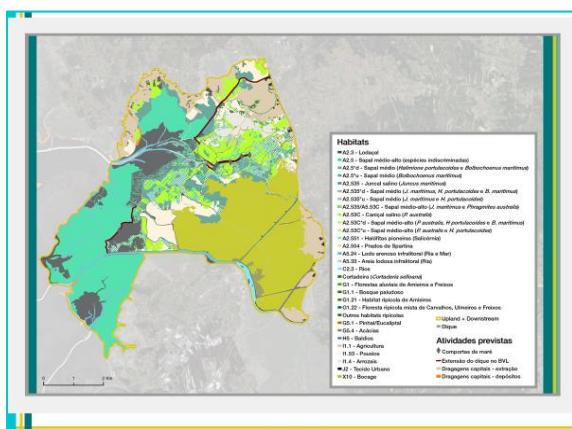
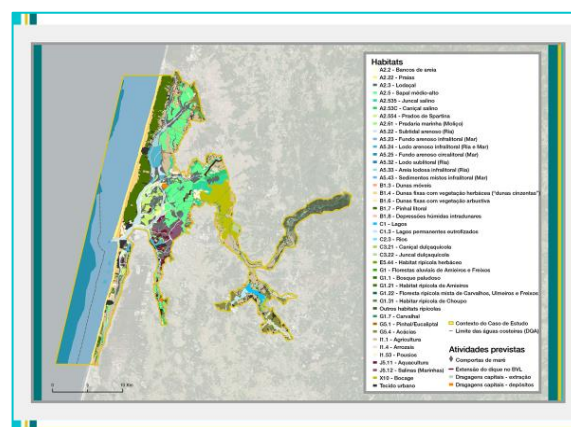
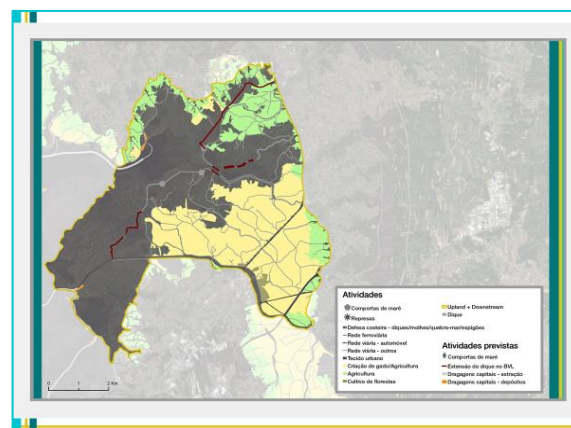
Oportunidades para gestão do Capital Natural da Ria de Aveiro

GESTÃO INTEGRADA DE LAGUNAS COSTEIRAS EUROPEIAS NO CONTEXTO DAS ALTERAÇÕES CLIMÁTICAS




27/04/2018 I Workshop participativo www.aquacross.eu





27/04/2018

| Workshop participativo

www.aquacross.eu

- 27/04/2018

I Workshop partecipativo

www.aquacross.eu

27/04/2018

| Workshop participativo

www.aquacross.eu

[illegible]

Obrigada!

Capital Natural

From: Natural Capital: Making the Planet's Order Item (ISBN: 9780300210880)

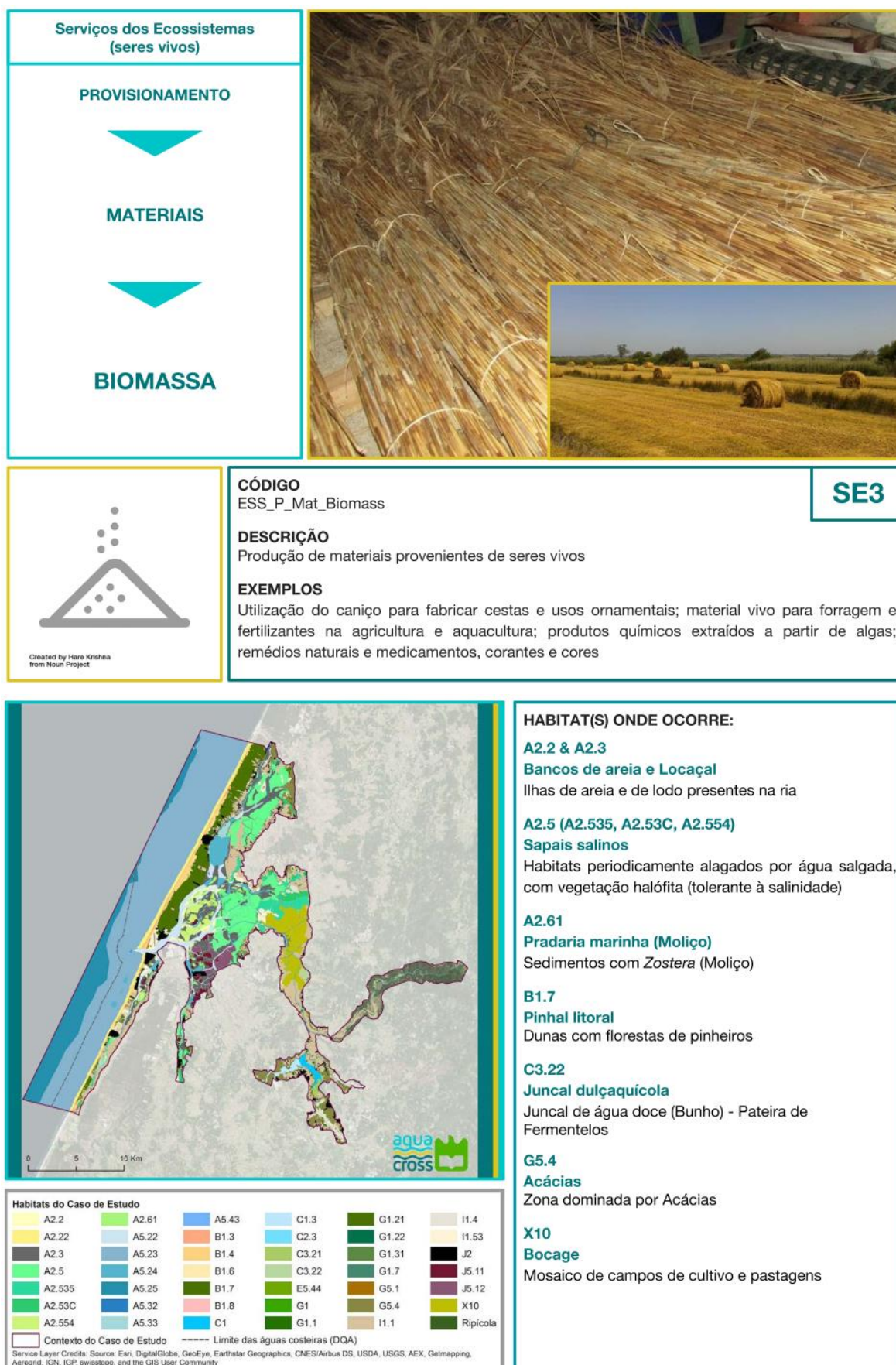
27/04/2018 1 Workshop participants www.aquacross.eu

Annex 4: Original list, in Portuguese, of the Services of the Ecosystem (SE) evaluated in the Parallel session: “Valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar”. The SE coming from abiotic outputs from the ecosystem were marked with asterisk (*).

Card	SE	Description
1	1	Provisionamento – Energia – Biocompostagem
2	1	Provisionamento – Energia – Tração animal
3*	2	Provisionamento – Energia – Energias renováveis
4	3	Provisionamento – Materiais – Biomassa
5*	4	Provisionamento – Materiais – Água
6	4	Provisionamento – Materiais – Não-metálicos
7*	4	Provisionamento – Nutrição – Água
8	5	Provisionamento – Nutrição – Biomassa
9*	6	Provisionamento – Nutrição – Minerais
10	7	Regulação–Manutenção – Mediação de fluxos – Fluxos sólidos
11	7	Regulação–Manutenção – Mediação de fluxos – Fluxos líquidos
12	7	Regulação–Manutenção – Mediação de fluxos – Fluxos gasosos ou de ar
13*	7	SE7: Regulação–Manutenção – Mediação de fluxos – Por fluxos sólidos, líquidos e gasosos
14	8	Regulação–Manutenção – Mediação de poluentes – Mediação por animais e plantas
15	8	Regulação–Manutenção – Mediação de poluentes – Mediação pelo ecossistema
16*	8	Regulação–Manutenção – Mediação de poluentes – Por processos naturais físicos e químicos
17	9	Regulação–Manutenção – Manutenção de condições físicas, químicas e biológicas – Manutenção de ciclos de vida, habitats e protecção da identidade genética
18	9	Regulação–Manutenção – Manutenção de condições físicas, químicas e biológicas – Controlo de doenças e pestes
19	9	Regulação–Manutenção – Manutenção de condições físicas, químicas e biológicas – Formação e composição do solo
20	9	Regulação–Manutenção – Manutenção de condições físicas, químicas e biológicas – Estado da água

Card	SE	Description
21	9	Regulação–Manutenção – Manutenção de condições físicas, químicas e biológicas – Composição da atmosfera e regulação do clima
22	10	Cultural – Interacções físicas e intelectuais com o ambiente – Interacções físicas (contacto directo)
23	10	Cultural – Interacções físicas e intelectuais com o ambiente – Interacções intelectuais (percepção)
24*	10	Cultural – Interacções físicas e intelectuais com infraestruturas – Interacções físicas (contacto directo)
25*	10	Cultural – Interacções físicas e intelectuais com infraestruturas – Interacções intelectuais (percepção)
26	11	Cultural – Interacções simbólicas com o ambiente – Interacções intelectuais espirituais ou emblemáticas
27	11	Cultural – Interacções simbólicas com o ambiente – Outras interacções culturais

Annex 5: Support material given to the participants for the evaluation of the services of the ecosystem (e.g. Provisioning – Materials – Biomass, SE3)



Annex 6: Original presentation, in Portuguese, from the Parallel session: “Valuation of the ecosystem services of Ria de Aveiro and of Baixo Vouga Lagunar



I Workshop participativo

Análise multicritério para a valoração dos serviços dos ecossistemas

Heliana Teixeira
Departamento de Biologia & CESAM
Universidade de Aveiro

Biblioteca Municipal de Estarreja, 27 de Abril

The AQUACROSS project is co-funded by the European Union under the Horizon 2020 Research and Innovation Programme, in the framework of the Marie Skłodowska Curie Grant agreement 101019712.





Introdução à análise multicritério para a valoração dos serviços dos ecossistemas

- A **análise multicritério** foi o método escolhido para agregar as preferências dos actores-chave
- O que é a análise multicritério (AMC)?
 - é um instrumento de apoio à decisão
 - aplicada para comparar projectos alternativos
 - permite ter em conta diversos critérios em simultâneo (11 SE)
 - evidencia eventuais visões alternativas dos actores-chave
 - permite analisar os possíveis efeitos de diferentes alternativas num cenário prospectivo
 - permite assim apoiar os responsáveis pela tomada de decisão e a integrar do melhor modo essas diferentes visões nas suas acções de gestão

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Introdução à análise multicritério para a valoração dos serviços dos ecossistemas

- Análise multicritério (AMC) **especializada** – integração com Sistemas de Informação Geográfica (SIG)
 - Permite optimizar a selecção de áreas que melhor cumpram os requisitos das preferências manifestadas pelos actores chave
 - Os mapas gerados com base na AMC facilitam a integração com outras camadas de informação relevantes e existentes para o local, por exemplo:
 - o mapa de actividades analisado na primeira sessão
 - Instrumento de apoio ao planeamento e gestão ambiental

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Visão sobre valoração dos serviços dos ecossistemas

Exercício participativo:

- Individualmente, irão expressar as vossas preferências relativamente aos diferentes tipos de Serviços do Ecossistema (SE)
- Os serviços serão avaliados por comparação aos pares, dado serem muitos e isso dificultar uma ordenação robusta.
 - Usar um **formulário** criado na internet para este workshop, onde só têm que assinalar opções (versão papel)
 - Material de apoio:** cartões com exemplos para os 11 SE
 - podem existir vários cartões por serviço
 - 50 minutos** para este exercício

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Capital Natural da Ria de Aveiro: habitats e os serviços prestados



SE1



SE2



SE3



SE4

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Capital Natural da Ria de Aveiro: habitats e os serviços prestados



SE5



SE6



SE7



SE8

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Capital Natural da Ria de Aveiro: habitats e os serviços prestados



SE9



SE10



SE11



SE12

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01



Formulário

Serviços dos Ecossistemas: preferências dos actores-chave

OBJECTIVO:
O objectivo deste questionário é perceber quais os Serviços dos Ecossistemas (SE) mais valorizados pelos diferentes actores-chave da Ria de Aveiro e em particular do Baixo Vouga Lagunar.

CONTEXTO:
Este questionário surge no âmbito do Projecto Europeu AQUACROSS, no qual a Universidade de Aveiro é parceira.

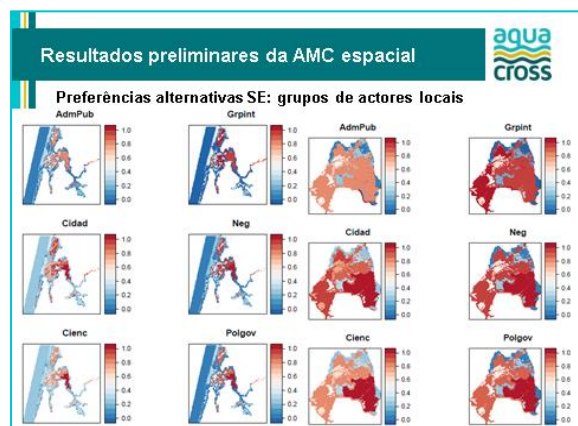
USO DOS DADOS:
As respostas recolhidas serão anónimas. Os resultados desta consulta serão divulgados entre os actores-chave da região de Aveiro, e usados no contexto do Projecto AQUACROSS em publicações científicas e de divulgação.

Agradecemos-lhe desde já a sua participação neste questionário.

Abaixo, comece por seleccionar o grupo de actores-chave com o qual mais se identifica no contexto da Ria de Aveiro e do Baixo Vouga Lagunar.

Em seguida, pedimos-lhe que compare pares de Serviços do Ecossistema (SE) e selecione a opção que melhor reflecte a sua opinião. Cada Serviço tem um código (de SE1 a SE12) e pode encontrar exemplos reais de cada Serviço do Ecossistema no material de apoio.

27/04/2012 | Workshop participativo | WWW.ZQ.13C10E.F.01







27/04/2012
1 Workshop participativo
WWW.AQUACROSS.PT

AQUACROSS PARTNERS

Ecologic Institute (ECOLOGIC) | Germany

Leibniz Institute of Freshwater Ecology and Inland Fisheries (FVB-IGB) | Germany

Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO) | France

Wageningen Marine Research (WMR) | Netherlands

University of Natural Resources & Life Sciences, Institute of Hydrobiology and Aquatic Ecosystem Management (BOKU) | Austria

Fundación IMDEA Agua (IMDEA) | Spain

Universidade de Aveiro (UAVR) | Portugal

ACTeon – Innovation, Policy, Environment (ACTeon) | France

University of Liverpool (ULIV) | United Kingdom

University College Cork, National University of Ireland (UCC) | Ireland

Royal Belgian Institute of Natural Sciences (RBINS) | Belgium

Stockholm University, Stockholm Resilience Centre (SU-SRC) | Sweden

Danube Delta National Institute for Research & Development (INCDDD) | Romania

Eawag – Swiss Federal Institute of Aquatic Science and Technology (EAWAG) | Switzerland

International Union for Conservation of Nature (IUCN) | Belgium

BC3 Basque Centre for Climate Change (BC3) | Spain

**Contact
Coordinator
Duration**

aquacross@ecologic.eu
Dr. Manuel Lago, Ecologic Institute
1 June 2015 to 30 November 2018

**Website
Twitter
LinkedIn
ResearchGate**

<http://aquacross.eu/>
[@AquaBiodiv](https://twitter.com/AquaBiodiv)
www.linkedin.com/groups/AQUACROSS-8355424/about
<https://goo.gl/lcdtZC>