



## DELIVERABLE D 1.3



## The project website

<http://lagoons.web.ua.pt/>

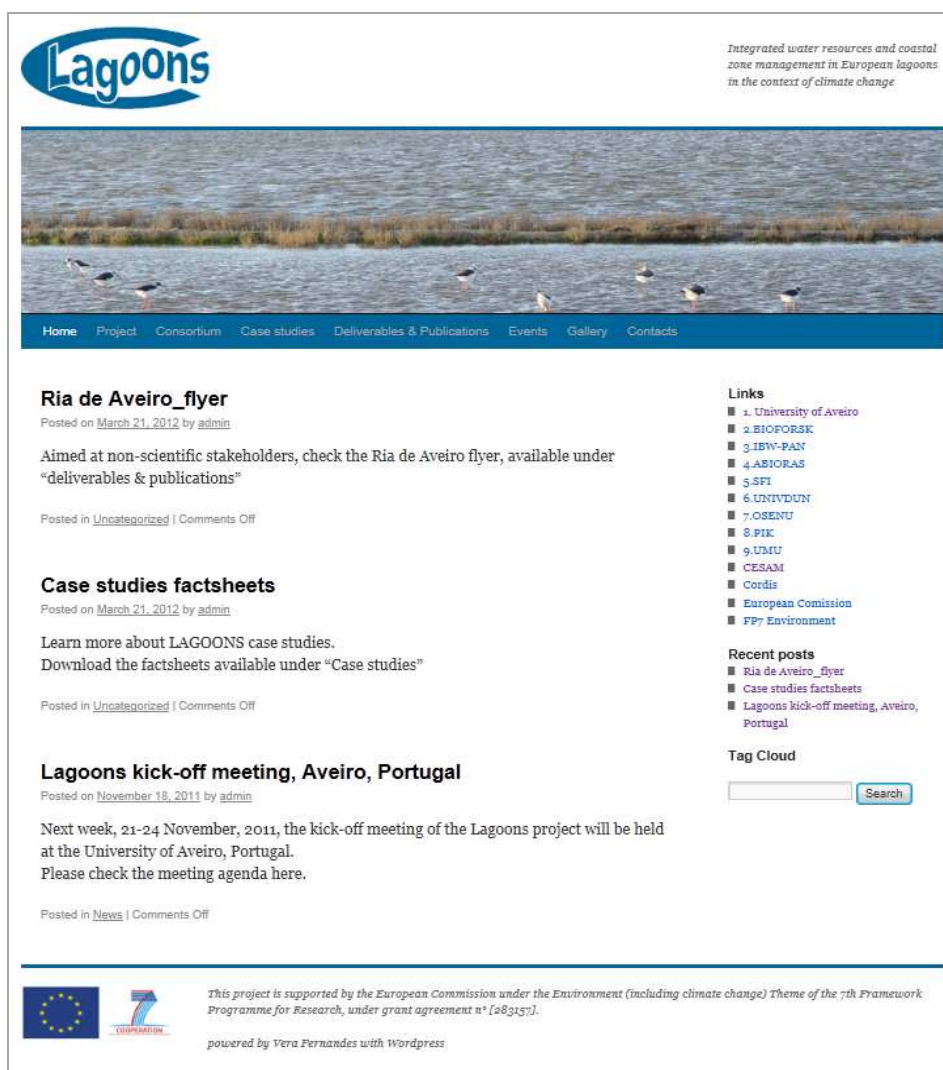


Photo: Website frontpage



Integrated water resources and coastal zone management in European lagoons in the context of climate change



|   |                                   |
|---|-----------------------------------|
| <b>Title:</b>   | The project website               |
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**Title of project:** Integrated water resources and coastal zone management in European lagoons in the context of climate change (LAGOONS)

**Instrument:** FP7-ENV.2011.0.1.1-1

**Contract number:** 283157

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Duration: 36 months

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<sup>1</sup> PU Public

PP Restricted to other programme participants (including the Commission Services)

RE Restricted to a group specified by the consortium (including the Commission Services)

CO Confidential, only for members of the consortium (including the Commission Services)

## **Contents**

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## Background

The LAGOONS website has been developed, following the references for the structure/layout of “EU Project Websites - Best Practice Guidelines”, as well as some benchmarking to other FP7 funded projects websites. It has been installed at the servers in the University of Aveiro and it was adopted the tool Wordpress (blog and website editor), so as to ease administration and updates of information in a regular way. A simple and traditional layout (banner + menu+ bodytext) has been used, giving priority to a user-friendly and direct display of information.

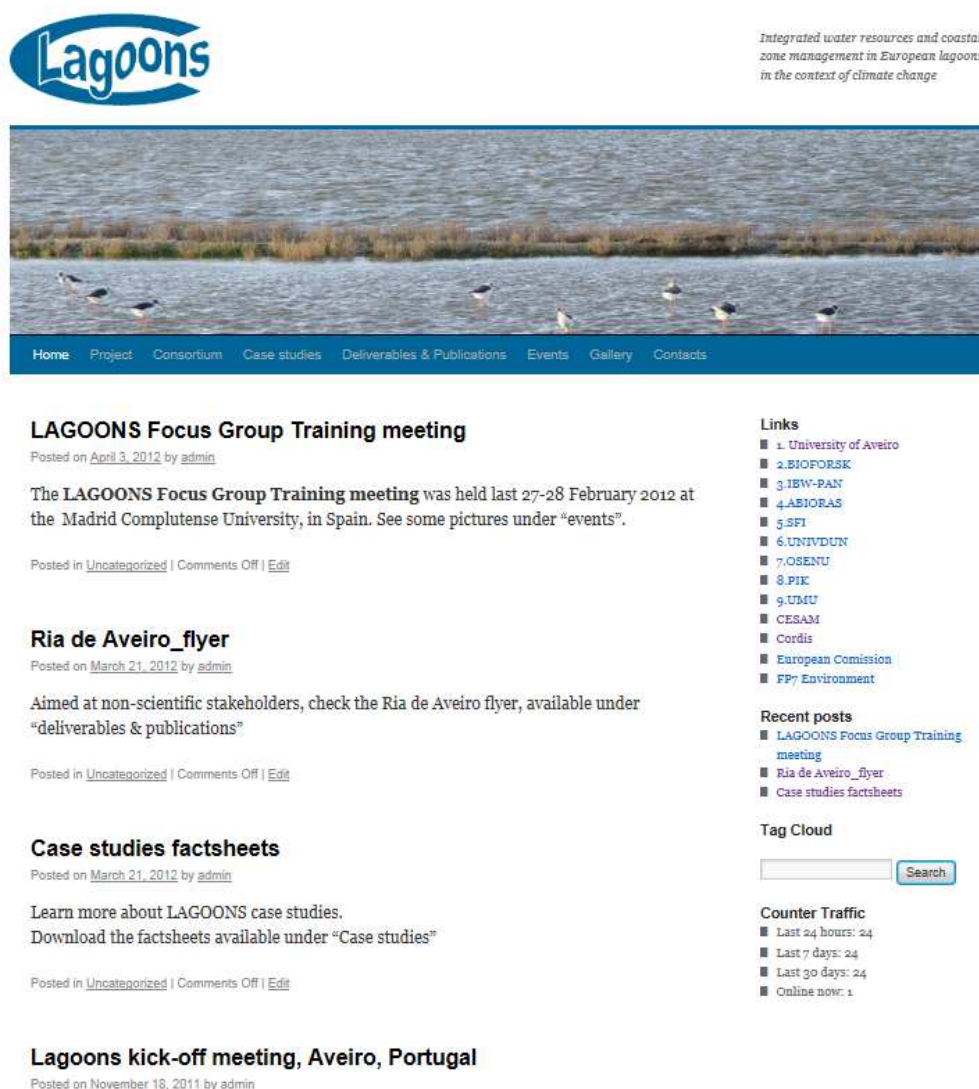


Fig. 1 – Frontoffice of the website

## Sitemap

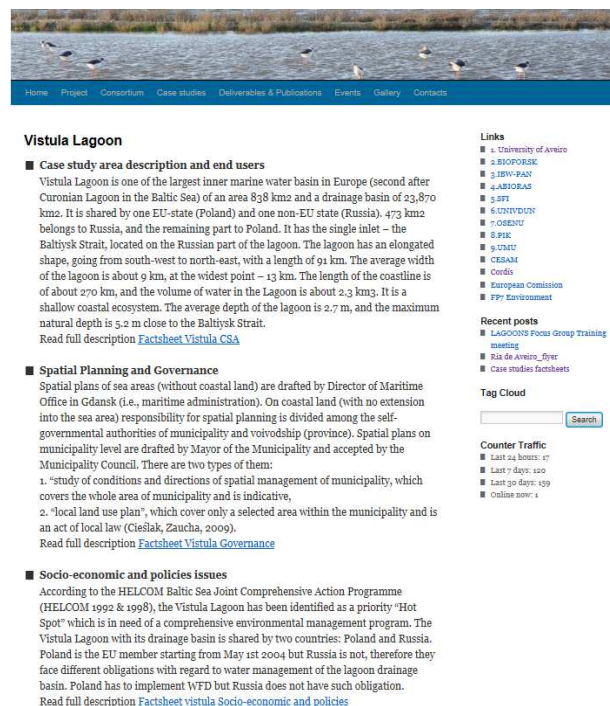
On the front page top menu visitors find the sections **Home**, **Project menu**, **Consortium menu**, **Case studies**, **Deliverables and Publications** and **Events**:

In the **Home**, visitors are able to check for the latest updates to the website.

In the **Project menu**, basic information regarding the project is provided, namely a short description, the macro objectives, the scientific methodology adopted, the list of Workpackages and also the possibility do download the LAGOONS factsheet.

In the **Consortium menu**, a brief description of partners involved in LAGOONS and respective contact information and team allocated per partner is to be provided. So as to better understand the management structure of the project, a chart is provided under this menu.

Of major importance is the **Case studies** menu, where 3 different perspectives are given, namely a Case Study Area Description and End Users, a Spatial Planning and Governance and a Socio-economic and policies issues (Fig.2). A downloadable factsheet is available for each perspective (Annex I as example).



**Vistula Lagoon**

■ **Case study area description and end users**  
Vistula Lagoon is one of the largest inner marine water basin in Europe (second after Curonian Lagoon in the Baltic Sea) of an area 838 km<sup>2</sup> and a drainage basin of 23,870 km<sup>2</sup>. It is shared by one EU-state (Poland) and one non-EU state (Russia). 473 km<sup>2</sup> belongs to Russia, and the remaining part to Poland. It has the single inlet – the Baltiysk Strait, located on the Russian part of the lagoon. The lagoon has an elongated shape, going from south-west to north-east, with a length of 91 km. The average width of the lagoon is about 9 km, at the widest point – 13 km. The length of the coastline is of about 270 km, and the volume of water in the Lagoon is about 2.3 km<sup>3</sup>. It is a shallow coastal ecosystem. The average depth of the lagoon is 2.7 m, and the maximum natural depth is 5.2 m close to the Baltiysk Strait.  
Read full description [Factsheet Vistula CSA](#)

■ **Spatial Planning and Governance**  
Spatial plans of sea areas (without coastal land) are drafted by Director of Maritime Office in Gdansk (i.e., maritime administration). On coastal land (with no extension into the sea area) responsibility for spatial planning is divided among the self-governmental authorities of municipality and voivodship (province). Spatial plans on municipality level are drafted by Mayor of the Municipality and accepted by the Municipality Council. There are two types of them:  
1. "study of conditions and directions of spatial management of municipality, which covers the whole area of municipality and is indicative,  
2. "local land use plan", which cover only a selected area within the municipality and is an act of local law (Cieślak, Zaucha, 2009).  
Read full description [Factsheet Vistula Governance](#)

■ **Socio-economic and policies issues**  
According to the HELCOM Baltic Sea Joint Comprehensive Action Programme (HELCOM 1992 & 1996), the Vistula Lagoon has been identified as a priority "Hot Spot" which is in need of a comprehensive environmental management program. The Vistula Lagoon with its drainage basin is shared by two countries: Poland and Russia. Poland is the EU member starting from May 1st 2004 but Russia is not, therefore they face different obligations with regard to water management of the lagoon drainage basin. Poland has to implement WFD but Russia does not have such obligation.  
Read full description [Factsheet Vistula Socio-economic and policies](#)

**Links**  
■ 1. University of Aveiro  
■ 2. BIOFORISK  
■ 3. IRIPI-PAN  
■ 4. AEROSAD  
■ 5. RPI  
■ 6. IZONOVION  
■ 7. OCEANIC  
■ 8. RPI  
■ 9. IZONIC  
■ CESAAM  
■ Cordis  
■ European Commission  
■ FP7 Environment

**Recent posts**  
■ LAGOONS Focus Group Training meeting  
■ Ria de Aveiro\_flyer  
■ Case studies factsheets

**Tag Cloud**

**Counter Traffic**  
■ Last 24 hours: 47  
■ Last 7 days: 120  
■ Last 30 days: 139  
■ Online now: 4

Fig. 2 – Case study: Vistula Lagoon

In the **Deliverables and Publications** section, downloadable documents are available. Publications, factsheets, public reports and other dissemination leaflets will be published and accessible for general visitors.

LAGOONS meetings and other events are published under **Events** section, also with some pictures to better illustrate the dynamics of the involved scientists.

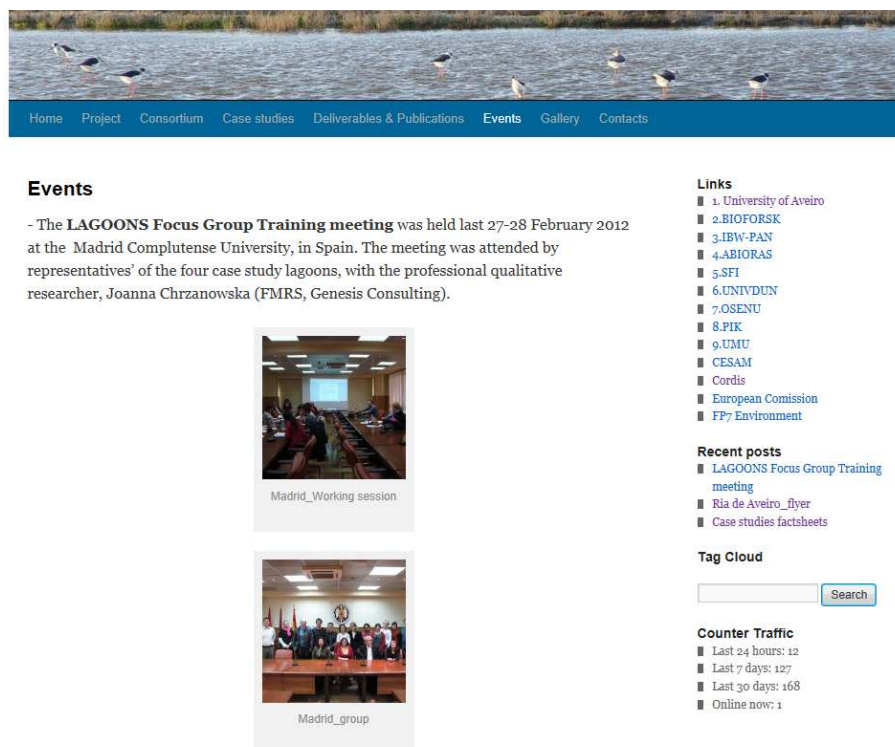


Fig. 3 – Publications under “Events”

As images can better describe or explain certain situations, a **Gallery** has been created, where pictures of the case studies will be published, given the proper copyrights by the authors.

The **Contacts** display the information related to the coordination team only, as other project members have been described in the respective case studies section.

On the front-page visitors find in the right hand menu useful links (e.g. each partner’s web page, Cordis, FP7, or other relevant within this context), recent posts and the Tag Cloud, a research tool which will facilitate visitors in looking for a specific subject or term.

The following picture describes the structure of the website, which was organized according to the recommendations of the referred publication.

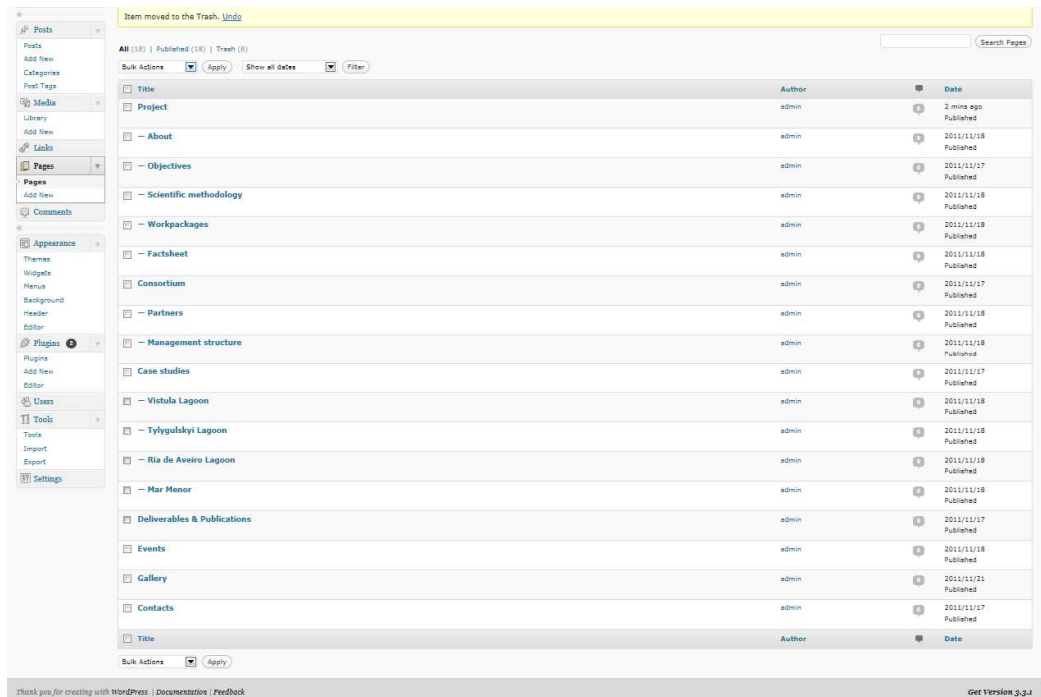


Fig. 4 – Backoffice of the website

## Other functionalities

As a means to evaluate the dissemination of the project, it is very important to accompany the visits to the website. Lagoons web manager will evaluate the visits by enabling the visits counting at the webpage and also by using Google Analytics tools. Also relevant in this context is the download counter, so as to number how many times documents will be downloaded. By controlling the number of visits and downloads to the website, the dissemination of LAGOONS may be better assessed.

## **Conclusions**

Considered as one of the most important dissemination tools, the website of a project should contain all the necessary information in such a way that all public, scientific or non-scientific, should understand its contents and understand the objectives of the project. It is our goal with LAGOONS website to reach all publics, so the information will be displayed in a user-friendly and easy-to-understand way.



## Annexes - Annex I –Factsheet for case study area description and end users\_Ria de Aveiro

### Integrated water resources and coastal zone management in European lagoons in the context of climate change



#### Project partners

- University of Aveiro (PT)
- Bioforsk- Norwegian Institute for Agricultural and Environmental Research (NO)
- Institute of Hydro-Engineering of the Polish Academy of Sciences (PL)
- Atlantic Branch of P. P. Shirshov Institute of Oceanology of Russian Academy of Sciences (RU)
- Sea Fisheries Institute in Gdynia (PL)
- University of Dundee (UK)
- Odessa State Environmental University (UA)
- Potsdam Institute for Climate Impact Research (DE)
- Universidad de Murcia (ES)

#### THEME: Case study area description and end users

#### Case study – Ria de Aveiro (Portugal)

Dias J.M.<sup>1</sup>, Alves F.L.<sup>2</sup>, Queiroga H.<sup>3</sup>, Sousa L.P.<sup>2</sup>, Vaz N.<sup>1</sup>, Cleary D.F.R.<sup>3</sup>, Lopes L.<sup>3</sup>, Lencart e Silva J.D.<sup>1</sup>, Esteves V.<sup>4</sup>, Seródio J.<sup>1</sup>, Otero M.<sup>4</sup>, Soares A.M.V.M.<sup>1</sup>, Lillebø A.<sup>3</sup>

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#### Description of physical conditions (Vouga river basin and Ria de Aveiro coastal lagoon)

The basin of the Rio Vouga has an area of approximately 3362 km<sup>2</sup>, located in the central part of Portugal (Figure 1). The Vouga river originates in the mountains of Lapa, at an altitude of about 930 m, covering about 141 km before flowing into the Ria de Aveiro coastal lagoon (Van der Weijden et al., 2006). Its main tributaries are the Sul, Caima, Antuã and Águeda rivers.

The Ria de Aveiro (40°38'N, 08°45'W) is a shallow coastal lagoon connected to the Atlantic Ocean through a single inlet (1.3 km in length, 350 m wide and 20 m deep) (Dias & Lopes, 2006), and is located in the central coastal zone of Portugal, integrating the Vouga river catchment area (Figure 1). It is c. 45 km in length (NNE-SSW), 10 km wide and in a spring tide covers an area of approximately 83 km<sup>2</sup> and 66 km<sup>2</sup> of wetland at high water and low water, respectively (Dias et al., 2000). The bathymetry of the Ria de Aveiro consists of four main channels which radiate from the mouth with several branches, islands and mudflats. The total fluvial discharge into the lagoon during a tidal cycle is about 1.8×10<sup>6</sup> m<sup>3</sup>, while the tidal prism is 137×10<sup>6</sup> m<sup>3</sup> for maximum spring tide, and 35×10<sup>6</sup> m<sup>3</sup> for minimum neap tide (Dias et al., 2000). The circulation in the Ria de Aveiro is therefore essentially dominated by tidal forcing. The tidal phase lag, relative to the mouth, is in the order of 4 h in the upper reaches of the S. Jacinto channel, being lower (between 2-3 hours for the other main channels). Due to the combined effects of the freshwater discharge and tidal propagation, the central area of the Ria de Aveiro exhibits a longitudinal salinity gradient from about 0 in the upper reaches of the Espinheiro channel to about 36 at the bar entrance (e.g. Vaz & Dias, 2008). The average depth of the lagoon relative to the chart datum is about 1 m, except in navigation channels

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n°283157



<http://lagoons.web.ua.pt>

where dredging operations are frequently carried out. Due to the small depth and to the significant tidal wave amplitude there are zones, especially along the borders of the lagoon and its central area, which are alternately wet and dry during each tidal cycle. The lagoon is mesotidal with an average tidal range of 2 m (tidal amplitude at the inlet ranges from 0.6 m in neap tides to 3.2 m in spring tides) (Dias et al., 2000).



Figure 1 – Location of Ria de Aveiro coastal lagoon and the Vouga River drainage basin (source: <http://www.riahcentro.pt/>)

The Ria de Aveiro and its main tributary (Vouga river) flood recurrently, inundating the low-lying adjacent lands. The surrounding littoral stretches of Esmoriz-Furadouro and Vagueira-Mira show coastal erosion problems with high risk of sand spit rupture (EEA 2006; [www.reports.eea.europa.eu/eea\\_report\\_2006\\_6/en/](http://www.reports.eea.europa.eu/eea_report_2006_6/en/)). Much of the flooding events occur during adverse weather conditions, with heavy rainfall causing high river flows. Low pressure N/NW of Portugal and high pressure S/SW and strong southerly winds cause surges in the Portuguese coast. High tides also impact on the level of flooding, as well as the mean sea level evolution. The morphodynamic of the inlet channel also depends on the mean sea level and on the north-east Atlantic wave climate regime. Furthermore, these last factors and the sediment supply also impact the coastal erosion of Ria de Aveiro Littoral (IHRH, 2003; [www.euroslon.org/reports-online/reports.html](http://www.euroslon.org/reports-online/reports.html)).

#### Main water management problems (ecological/environmental, social and economic)

The Ria de Aveiro is highly productive and support a number of essential services of vast ecological and economic importance (Figure 2), while human pressure has increased during the past decades.

The productivity of Ria de Aveiro is sustained by the amount of nutrients that comes mainly from diffuse sources, namely from surface runoff and from agricultural fields drainage, and less than 10% from point sources (Ferreira et al., 2003). With respect to environmental quality, the Ria de Aveiro has a moderately low degree of eutrophication and low overall human influence in comparison to other estuarine systems. However, despite some human interventions, like the construction of a submarine outfall that reduced the nutrient loads, the quality status of different areas within the

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system can vary (Lopes et al., 2007). This means that these particular areas should be taken under consideration for specific monitoring programmes and management measurements. The implementation of EU environmental policies has, furthermore, aided in reducing anthropogenic sources of contaminants. There is, however, substantial contamination in bottom sediments as a result of historical pollution and these may become a major source to the water column. In fact, the assessment of Ria sediment quality status, through metal-sediment characterization and through acute and chronic assays, identified the most impacted areas, i.e. the northern part of the estuary (Largo da Coroa), where most of the historical industrial units are concentrated, and near the industrial complex of Estarreja (Laranjo Basin), historically contaminated by mercury (e.g. Castro et al., 2006; Pereira et al., 2009).

This lagoon plays an important ecological role, being the habitat for several species of flora and fauna that are supported by the dynamics of the lagoon. The system is composed of a wide range of biotopes (e.g. wetlands, seagrasses, salt marshes and mudflats) used as nursery areas for many valuable species that include bivalves, crustaceans, fish and birds. It is classified as a special area of conservation under the EU directive on the conservation of wild birds (79/409/EEC). Under the Berne Convention it has several species classified as protected, strictly protected or as endangered. In its northern part, between S. Jacinto and Torreira, there is a nature reserve—"Reserva Natural das Dunas de S. Jacinto". Moreover, from the conservational point of view this system is considered a high priority since it is a fundamental step in the migration of aquatic birds and an ideal place for winter shelter and nesting. The whole area of the Ria de Aveiro also supports agriculture farms and activities intrinsically associated with major towns in coastal areas: port facilities, industries, aquacultures, salt production and fishing.

According to recent climate change scenarios (IPCC, 2007, <http://www.pnud.org/recientes/IPCC-Report.pdf>) southern Europe will tend to become drier despite winter torrential rain events becoming more frequent, increasing freshwater discharges. Consequently, erosion processes and material loads are expected to increase, leading to an aggravation of light-limiting conditions to phytoplankton and consequently to primary production. This will inevitably disturb the trophic structure of the system, and consequently affect the system secondary production including fishery-stocks. Sea level rise is also expected to cause changes inside estuaries (intertidal areas), affecting the hydrodynamics of these transition systems.

Ria de Aveiro was recently selected as a Portuguese long term monitoring site (LTER-site) and can be seen as one of the most important Southern European LTER Estuary reference study site.

#### End users

##### On national level:

- ICNF I.P. - Instituto Conservação da Natureza e Florestas (Institute of Nature Conservation and Forestry);
- APA - Agência Portuguesa do Ambiente I.P (Portuguese Environmental Agency);
- DGT - Direcção Geral do Território (Directorate-General for Territory)
- ITP - Turismo de Portugal (Portuguese Institute for Tourism)

##### On regional and local level:

- CCDR Centro - Comissão de Coordenação e do Desenvolvimento Regional do Centro (Centro Regional Coordination and Development Commission);
- Direcção Regional de Agricultura e Pescas do Centro (Centro Regional Directorate for Agriculture and Fisheries)
- Comunidade Intermunicipal da Ria de Aveiro (Intermunicipal Community for Ria de Aveiro);
- Reserva Natural das Dunas de S. Jacinto (Natural Reserve of Dunes of S. Jacinto);
- Municipalities (Ovar, Murtosa, Estarreja, Aveiro, Ílhavo, Vagos e Mira);

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- Sectoral associations, namely: farming (Associação da Lavoura do Distrito de Aveiro), artisanal fisheries (Associação de Pesca Artesanal da Região de Aveiro), salt pans producers (Associação de Produtores e Marnoteiros da Ria de Aveiro) and other local users of the lagoon.



Figure 2 – Landscape and ecosystem services provided by Ria de Aveiro (source Lillebo et al, 2011)

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## Annex II –Factsheet for non-scientific stakeholders \_Ria de Aveiro

**Acerca do projecto**

**Título:** LAGOONS - Integrated water resources and coastal zone management in European lagoons in the context of climate change

**Financiamento:** 7º Programa-Quadro da União Europeia

**Duração:** 36 meses

**Início:** 01/10/2011

**Consórcio:** 9 parceiros de 8 países

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Projecto financiado por:  
FP7-ENV- contrato n.º 283157

**A Ria de Aveiro é uma das quatro lagoas costeiras consideradas neste projeto internacional, e que, em conjunto com o Mar Menor (Mar Mediterrâneo, Espanha), a Laguna de Vistula (Mar Báltico, Polónia e Rússia) e a Laguna de Tyigulakyi (Mar Negro, Ucrânia), constitui um caso de estudo a nível europeu. Para além dos países já referidos, são ainda países parceiros do projeto a Noruega, a Alemanha e o Reino Unido.**

**Gestão integrada de lagoas costeiras europeias no contexto das alterações climáticas**

**Lagoons**

**Gestão integrada de lagoas costeiras europeias no contexto das alterações climáticas**

**LAGOONS & Ria de Aveiro**

**A Ria de Aveiro**

A sua riqueza natural e as múltiplas atividades que suporta conferem-lhe uma importância económica considerável e reconhecida a nível local, regional e nacional.



**O desafio**

As mudanças climáticas são, possivelmente, um dos maiores desafios a que os cientistas, populações ribeirinhas e agentes envolvidos na gestão da Ria de Aveiro se irão deparar.

**A sua opinião conta**

É objetivo do projeto envolver não só os cientistas e os decisores políticos, mas também a população em geral e ter em conta a sua visão, assim como as atividades, usos e costumes que se desenvolvem em torno da Ria.

**Quais os resultados a alcançar?**

O projeto irá contribuir para a integração de vários instrumentos da União Europeia, nomeadamente, a Diretiva-Quadro da Água, a Diretiva Habitats, a Recomendação para a Gestão Integrada das Zonas Costeiras, e a Diretiva-Quadro Estratégia Marinha.

Com a participação de todos, o projeto irá recomendar medidas para combater os impactos das alterações climáticas de acordo com os atuais objetivos da União Europeia, concretamente a Estratégia 2020, isto é, uma estratégia para um crescimento inteligente, sustentável e inclusivo.

**Lagoons**