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

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dbio, CESAM, Universidade de Aveiro

# **LAGOONS** AT A GLANCE

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

**Instrument: FP7, Collaborative Project - Small or medium-scale focused research project**

**Project Coordinators: Ana Isabel Lillebø, University of Aveiro (coordinator)  
Per Stålnacke, Bioforsk (co-coordinator)**

**Total Cost: 3 338 591.60 €**

**Start Date: 1/10/2011**

**EC Contribution: 2 545 659.50 €**

**Duration: 36 months**

**Project Web Site: [www.lagoons.web.ua.pt](http://www.lagoons.web.ua.pt)**

Consortium: 9 partners from 8 countries



## PROJECT PARTNERS

University of Aveiro

Bioforsk- Norwegian Institute for Agricultural and Environmental Research

Institute of Hydro-Engineering of the Polish Academy of Sciences

Atlantic Branch of P. P. Shirshov Institute of Oceanology of Russian Academy of Sciences

Sea Fisheries Institute in Gdynia

University of Dundee

Odessa State Environmental University

Potsdam Institute for Climate Impact Research

Universidad de Murcia



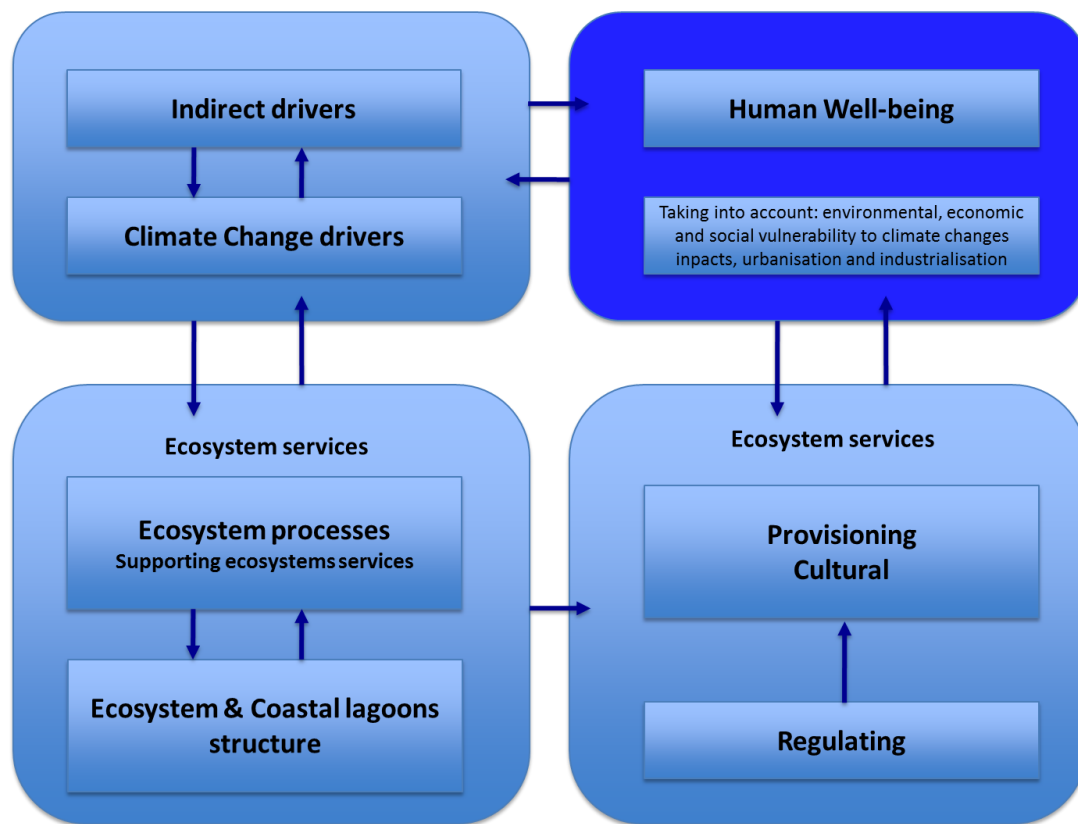
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## THE CHALLENGE

- In the context of climate change, the environmental issue of concern of the LAGOONS project is the *anthropogenic deterioration and climate change impacts - especially the effects of extreme weather events - on surface water and on the ecological services provided by lagoons ecosystems.*



## THE CHALLENGE

- The knowledge produced by different scientific disciplines will be combined and integrated with local knowledge and the views of stakeholders in order to produce integrated, participatory scenarios.
- To use a qualitative-quantitative-qualitative scenario approach supplemented with the science modeling inputs, of future possible trends and conditions in coastal lagoons in the context of climate change.

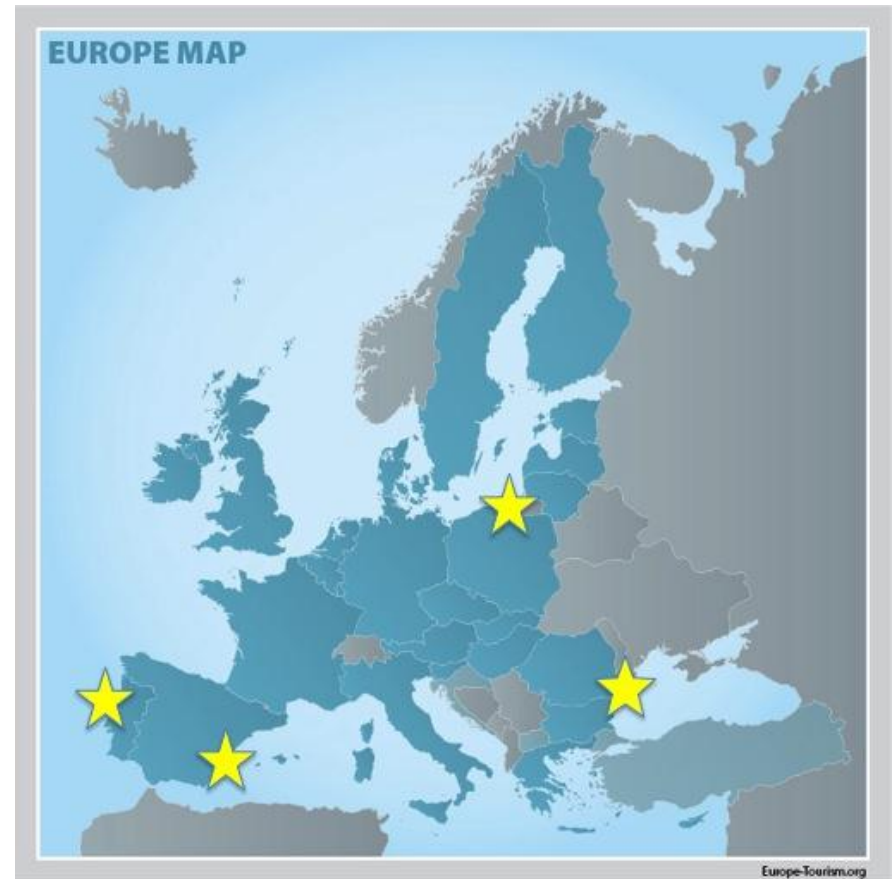
## PROJECT OBJECTIVES

- The main and overall objective of the LAGOONS project is to develop science-based strategies and decision support frameworks for the integrated management of lagoons, based on an increased understanding of **land-sea** linkages processes and the **science-policy-stakeholder** interface.
- The project will seek to contribute to interface between the EU Water Framework Directive, the Habitat Directive, the EU's integrated coastal zone management (ICZM) Recommendation, and the EU Marine Strategy Directive.

Key Words: Lagoons, Climate change, Modeling, Ecosystem Processes, WFD, science-policy, interface, river basins

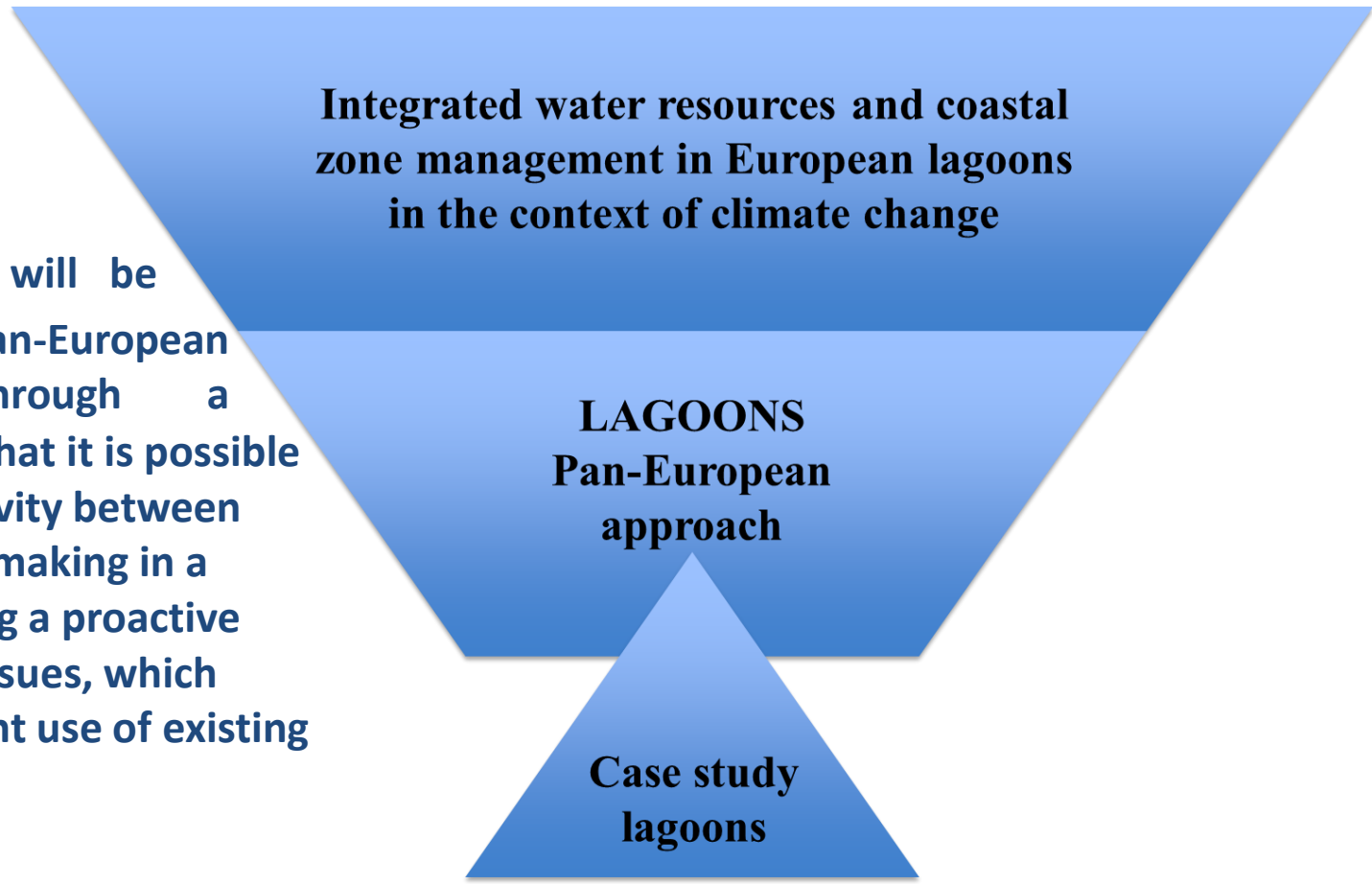
## METHODOLOGY

- Four case study lagoons have been selected to represent a set of "hotspot" coastal lagoons with a wide and balanced geographical distribution and different characteristics.
- The lagoons included are: Vistula Lagoon in the Baltic Sea (Poland/Russia); Tylygulskyi Lagoon in the Black Sea (Ukraine); Ria de Aveiro Lagoon in the Atlantic Ocean (Portugal), and Mar Menor in the Mediterranean Sea (Spain).



## METHODOLOGY

These case studies will be the support for Pan-European integration through a **bottom-up** approach, showing that it is possible to enhance connectivity between research and policy-making in a lagoons context using a proactive approach to water issues, which assures more efficient use of existing research results.





Month 1

Month 36

WP1 – Project management and dissemination (UAVR/Bioforsk)

## WP2 – Knowledge base and gap analysis (Bioforsk)

Metadata – Input data to WP3-6 and for Stakeholder information

WP3– Problem based science analysis (UMU)

Vistula Lagoon  
Baltic sea

Tylygulskiy Lagoon  
Black Sea

Ria de Aveiro  
Atlantic Ocean

Mar Menor  
Mediterranean Sea

WP4– Stakeholders participation  
Law, policy and Institution analysis  
Qualitative scenarios definition in river basin, coastal zone and lagoons (UNIVDUN)

Stakeholders Workshop 1

Stakeholders Workshop 2

Stakeholders Workshop 3

WP5 – Quantitative drainage basin scenarios modeling (PIK)

WP6 – Quantitative lagoons scenarios modeling (IBW-PAN)

WP7 – Strategies and decision support framework and pan-European dissemination (UAVR)

## EXPECTED RESULTS

- The integrated and participatory scenarios will be formulated to develop strategies and methodologies for *integrated decision support for stakeholders*, as well as with special focus on recommendations of *suitable use of ecosystem services*, foreseen eco-efficiency of the services and eco-innovation in *solutions to overcome or mitigate the services losses due to the changing environment*.
- In management terms, LAGOONS will contribute to the *decision-support methodologies* for a coordinated approach to the Water Framework Directive and the Marine Strategy Directive.
- In addition, LAGOONS *will propose actions to tackle bottlenecks in the context of climate change*, i.e., LAGOONS will propose actions foreseen in the goals of the Europe 2020 strategy - A strategy for smart, sustainable and inclusive growth.

# Case study Ria de Aveiro coastal lagoon

**Marine Strategy  
Framework Directive  
(Directive 2008/56/EC)**

**Integrated Coastal  
Zone Management  
(ICZM)  
(COM(2007)308 final, 7.6.2007)**

**WFD  
(Directive 2000/60/EC)**

**LAGOONS will propose actions  
foreseen in the goals of the Europe  
2020 strategy**

**Nitrates Directive  
(Directive, 91/676/EEC)**

**Habitat Directive  
(Directive, 92/43/EEC)**

Data SIO, NOAA, U.S.  
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# Case study Ria de Aveiro coastal lagoon

The precise effects of CC cannot be known, but some major challenges can be identified:

- Coping with the impact of extreme weather events
- Promoting ecosystem service tradeoffs
- Evaluate coastal systems economies' resilience to climate risks
- Promoting coastal systems environmental resilience to climate risks

Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
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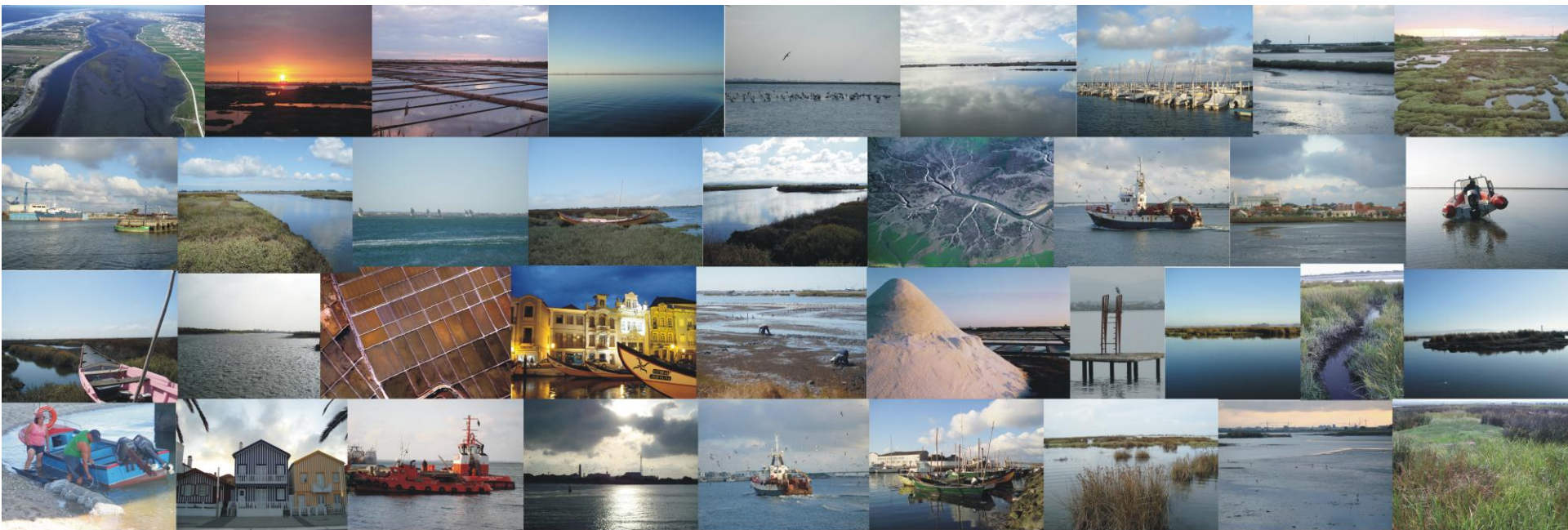


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# Case study Ria de Aveiro coastal lagoon



## Landscape and ecosystem services provided by Ria de Aveiro





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# Thank you



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