

## Coastal Lagoons Ecosystem Goods and Services: Bringing Science to Stakeholders of Ria de Aveiro (Portugal)

Lisa Sousa<sup>(a)</sup>, Ana Lillebø<sup>(b)</sup>, Fátima Alves<sup>(a)</sup>, Geoffrey Gooch<sup>(c)</sup>

(a) Dep. Env. and Planning & CESAM, Univ. Aveiro

[lisa@ua.pt](mailto:lisa@ua.pt) / [malves@ua.pt](mailto:malves@ua.pt)

(b) Dep. Biology & CESAM, Univ. Aveiro

[lillebo@ua.pt](mailto:lillebo@ua.pt)

(c) IHP-HELP Centre for Water Law, Policy and Science, Univ. Dundee

[G.D.Gooch@dundee.ac.uk](mailto:G.D.Gooch@dundee.ac.uk)

### ABSTRACT

Coastal lagoons, such as Ria de Aveiro, are valuable areas of extreme variability, diversity and multifunctionality that provide a variety of goods and services which are essential to the human wellbeing. They are among the most productive ecosystems and simultaneously among the most modified and threatened coastal environments, compromising the associated goods and services, which endangers their ecological functions. As ecosystems within coastal lagoons are changed, lost or degraded, their capacity to deliver services to satisfy human wellbeing is changed, threatening the overall ability to sustainably support human society. Meaning that coastal lagoons constitute complex social-ecological systems, where sustenance of ecological functions are also supporting the availability of ecosystem goods and services. Therefore, the continued availability of ecosystem goods and services is predicated on a complex combination of social, economic, political and ecological drivers. This interdependency is clearly recognized in the Marine Strategy directive. In addition, following the 14th article of the Water Framework Directive, it is essential to address and encourage the active participation of stakeholders in the protection, development and management of coastal lagoons. Furthermore, climate change is also predicted to have a significant impact on the availability of ecosystems goods and services. In this context, policy makers, managers and the scientific community have been manifesting an increasing interest on ecosystem services approach as a mean to draw attention to the importance of natural capital for society and human wellbeing and to trigger political action to address the issues of biodiversity and ecosystems change and loss. However, there are still many challenges regarding its practical application, e.g. there is no consensus between authors about ecosystem services classification, and the definition itself is not stabilized: the term 'ecosystem services' is commonly used to express goods, services, benefits and/or functions.

Ria de Aveiro is one of the European "hotspot" coastal lagoons being studied within the EU-FP7 LAGOONS project – Integrated water resources and coastal zone management in European lagoons in the context of climate change. Within the project we aim to develop strategies and methodologies for integrated decision support for stakeholders, with special focus on recommendations of suitable use of ecosystem services. In addition, it is our aim to better understand and manage the dynamics of the relationship between humans and the coastal lagoons, including ecosystem services tradeoffs, in the context of climate change. Therefore, we propose to discuss and contribute to clarify the concept of ecosystem services, goods, functions and processes, having Ria de Aveiro coastal lagoon as case study area, and foreseeing to contribute to the integrated management of coastal lagoons.

**KEY WORDS:** *policies, social capital, ecosystem services, integrated management, social-ecological systems.*