

**University of Kadiz, Spain**

**Erasmus Mundus Joint Master in Water Coastal Management**

**Module: Integrated coastal zone management**

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**Balancing science and society through establishing indicators for integrated coastal zone management: the Balearic Islands case study**

## **1. Introduction**

While it is now widely acknowledged that the goals of sustainability require a balanced approach to the management of social, economic and environmental issues, the notion of ‘integrated’ or ‘ecosystem- based’ management is not new. Douvère (2008) for example suggests that we can trace the ideas back at least to the 1930s in the US, where integrated, multiple-objective approaches to environmental management were being discussed. She suggests that subsequently these developments were heavily influenced by systems thinking and the environmental movements of the 1960s and 1970s. Thus a decade later we find them refined and articulated in the form of Integrated Coastal Zone Management, or alternatively Integrated Coastal and Marine Area Management (IMCAM) <sup>[2]</sup>.

The success of ICZM in supporting sustainability goals in Europe has been limited due to, among others, the challenge associated with translating the basic principles of ICZM into management action. This incompatibility between science and policy is being addressed through the emergence of increasing numbers of government science agencies, designed to generate policy orientated science, and

with new approaches to science that attempt to bridge this “science-policy gap” that are integrated, aimed at addressing and solving specific problems, and encourage participation of stakeholders <sup>[1]</sup>.

Indicators have been receiving considerable attention in recent years as one potential solution to bridging the science-policy gap. In general terms, indicators are measurements that should quantify and simplify information related to trends that can not be easily observed <sup>[1]</sup>.

## 2. Study area

The Balearic Islands are an autonomous community of Spain and one of Europe’s leading sun, sea and sand tourism destinations. They are made up of the four main islands of Mallorca, Menorca, Ibiza and Formentera, plus the smaller island of Cabrera, a land and sea National Park. The islands cover an area of 497 000 ha, with a coastline of 1428 km and had a population of 1,106,049 in 2010<sup>[3]</sup>.

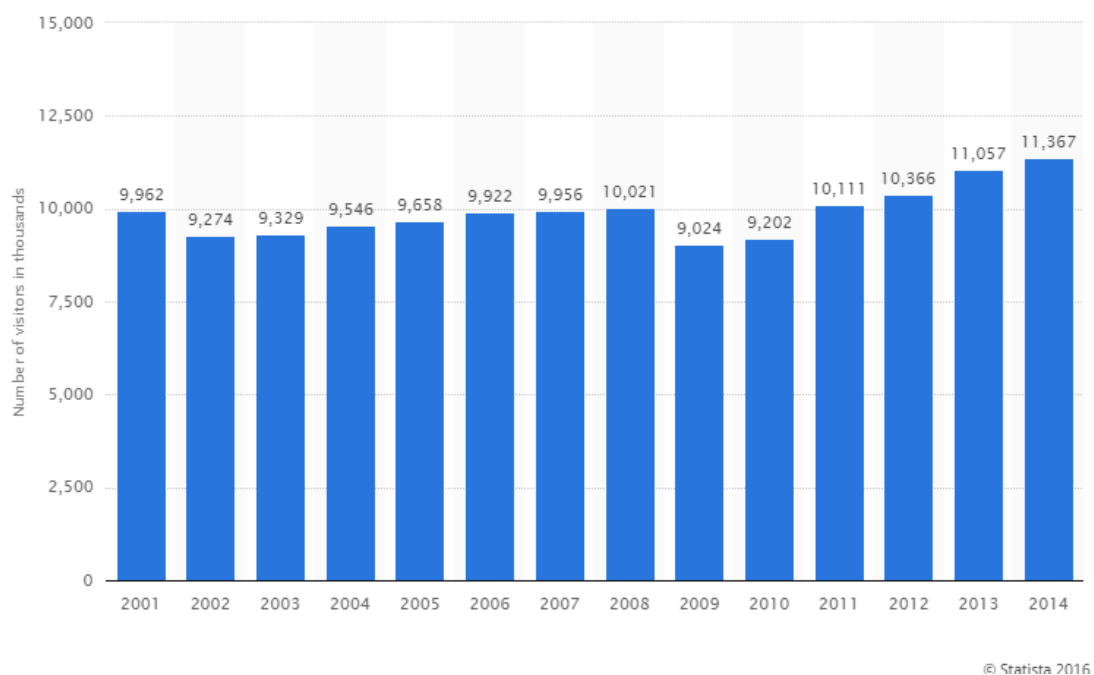


Figure 1. Annual number of international tourists visiting the Balearic Islands 2001 - 2014 <sup>[4]</sup>.

Due to rapidly increasing number of international tourists, the Islands face similar sustainability challenges as other coastal areas (figure 1). Furthermore, the fact that they are insular environments and mature tourism destinations exacerbates problems such as seasonal pressure on natural resources, residuals and unplanned

coastal development, making the achievement of sustainability in the coastal zone all the more important and challenging<sup>[1]</sup>.

## 2.1 Selection of the indicators: methods and process

The Balearic Indicators Project was carried out in two phases, initiated in December 2006 after the research proposal was approved by the Plenary (the highest level of decision making) of the CES (Economic and Social Council of the Balearic Islands) and Government of the Balearic Islands and the Mediterranean Institute of Advanced Studies (IMEDEA)<sup>[1]</sup>.

In the first phase Definition of ICZM objectives, literature review and preliminary list of indicators were performed. In the second phase evaluation of indicator feasibility and importance and development of implementation plan were implemented.

## 3. Results

The results of the current study reflected that, out of the 56 indicators proposed in Phase 1, the opinion of the WC (working commissions) expert group coincided with IMEDEA's for 45 indicators (figure 2). The other 11 resulted in small discrepancies in the opinions. There were no significant differences between allocated scores for the first and second rounds of the study. It was also agreed that two of the indicators from the preliminary proposal would be eliminated due to low viability and importance scores<sup>[1]</sup>.

Category	High importance	Medium importance	Low importance	Total
High viability	17	3	0	20
Medium viability	10	3	1	14
Low viability	9	9	2	20
Total	36	15	3	54

Figure 2. Total number of indicators in importance and viability categories<sup>[1]</sup>.

However, the full document containing such information can be accessed online through the CES webpage (<http://ces.caib.es>).

## 4. Discussion

The overall structure of the Balearic Indicator System is similar to other initiatives that have involved stakeholders in indicator development. However, at a more detailed scale, these systems differ with respect to the local environment within which they are designed to operate. Essentially, these differences among

indicator systems reflect the fact that there is no universal way to implement ICZM because every situation is different and ICZM is generally implemented at the local level <sup>[1]</sup>.

The Balearics are an insular environment, meaning that, as mentioned previously, space and natural resources are particularly scarce. They are also a mature tourism destination, resulting in the fact that coastal sustainability is highly contingent upon sustainable tourism. These local realities are reflected in the resulting indicators and the balance among the different categories. Furthermore, involving more entities in the process could have generated political, logistical and bureaucratic obstacles that may have hindered the project from being completed in a reasonable amount of time <sup>[1]</sup>.

## 5. Conclusions

This article highlighted some important questions about the efficiency of science for addressing sustainability problems. Essentially, many scientists are not provided with incentives to focus their research on management issues.

The objective of this project was to develop a system of indicators that is scientifically viable and comparable internationally yet relevant to the local scale and to ensure its implementation. Bearing in mind the fact that this represents a first step towards establishing an indicator system for ICZM in the Islands, so far, it may be considered a success. There is no doubt that the partnership and process by which the system was developed, coupled with its relative simplicity have helped to progress the implementation thus far. This is reflected in the support the project received at the governance level and the continued involvement of the original partners <sup>[1]</sup>.

Coordination and communication with other entities will also be necessary for the full implementation of the system in all the Islands meaning that the participatory process will continue to play a critical role in ensuring its longterm success <sup>[1]</sup>.

## References

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