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An indicator framework for assessing progress in land and marine planning in Colombia and Cuba

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ABSTRACT

Achievement of environmental management goals and objectives in coastal areas, including how to measure success, remains a significant subject for discussion among scholars and practitioners, meanwhile four distinct management efforts potentially converge within the coastal zone: land-use planning (LUP), river basin management (RBM), marine spatial planning (MSP) and integrated coastal management (ICM). This paper examines the general lack of attention being paid to overlapping spatial boundaries within the landward and marine areas and proposes an indicator-based framework to measure the effectiveness of the individual planning instruments, as opposed to specific initiatives, in achieving management goals. The six indicators used in the framework (planning; participation; communication; integration; responsibility and balance) are based on a modified version of the Coastal Sustainability Standard methodology described by Gallagher (2010). The framework provides for four scenarios of progress in three geographical dimensions (river, municipality and marine area) to be assessed. For this study, the Caribbean coast of Colombia and Cuba were identified as the areas to test the feasibility and relevance of the indicator framework to monitor progress in the different management approaches established to achieve coastal sustainability. Several key observations and lessons from the indicator-based framework are discussed in order to analyze the overlapping of the four space-based instruments, identify areas for targeted intervention and improve their integration.

1. Introduction

The adoption of integrated coastal management (ICM) as an approach for addressing the challenges confronting coastal states, as a result of growing pressures in the terrestrial and near-shore coastal areas, was a significant output of the 1992 Earth Summit in Rio de Janeiro, Brazil. After more than two decades, hundreds of ICM initiatives, thousands of scientific papers, national and multinational reports, the question surrounding the achievement of ICM goals and objectives, including how to measure success, remains a significant subject for discussion among scholars and practitioners alike (Olsen, 2003; Stojanovic et al., 2004; Bille, 2007; Tabet and Fanning, 2012; Jacobson et al., 2014; Maccarrone et al., 2014). Specifically, it has been remarked that "*ICM evaluation remains referred as an important issue, rather than being directly addressed*" (Bille, 2007:797). Some authors have offered an explanation to this criticism by noting that the effectiveness of ICM is directly related with the rather broad set of objectives stipulated by clause 17.5, Chapter 17 of Agenda 21 (Anilkumar et al., 2010), while others have focused on the availability of suitable quantitative and qualitative indicators to assess them (Liu et al., 2012). Others have attributed the lack in evaluation progress to the plethora of terms related with management of coastal areas (e.g. integrated coastal management, integrated coastal zone management, integrated coastal and ocean management, coastal and marine spatial planning, marine spatial planning), the long time-frame needed to complete each ICM cycle (usually between 8 and 15 years), or simply the influence of economic interests over social, environmental and political objectives (Ferreira et al., 2014; Milanes, 2014).

As noted by Bille (2007), the essence of ICM is to gradually integrate coastal areas under an appropriate management system, rather than specifically improving instruments to implement management initiatives. Furthermore, it has been argued that

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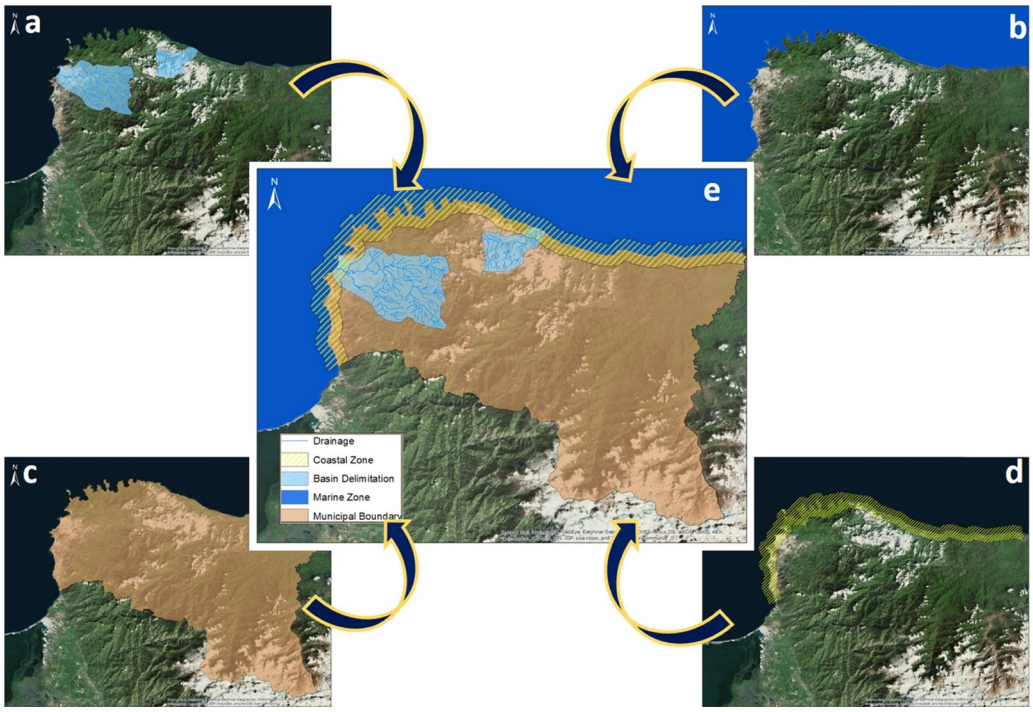

Fig. 1. Boundaries of each space-based planning instrument applied in coastal areas. (a) River basin; (b) marine area; (c) municipal jurisdiction; (d) coastal zone; (e) overlapping of a + b + c + d.

when designing an effective management system, integration must address the need to reconcile current spatial planning efforts at multiple levels, particularly at the local level, as an essential prerequisite for success (Kerr et al., 2014). The need to focus on integrating efforts at the local level is illustrated by the multiple spatial planning efforts that occur within an area's coastal and near-shore environments, leaving local governments to experience considerable difficulties in dealing with the plethora of authorities involved with coastal planning and management within their jurisdictions (Liu et al., 2011).

As illustrated in Fig. 1, four distinct management efforts potentially converge within the coastal zone of a given area. These include land-use planning (LUP) and river basin management (RBM) on the landward side, marine spatial planning (MSP) on the seaward side and integrated coastal management (ICM) spanning both the landward and seaward areas. Given the potential for coastal management to integrate across the spatial boundaries associated with both the landward and seaward management efforts, understanding why there seems to be a disconnect among these planning approaches could shed light on the poor success rate achieved to date in improving coastal sustainability.

An important contributing factor identified by some authors is the difficulty associated with defining the coastal zone (e.g. should it be issues-based, politically-based or ecologically-based?) and by extension, the challenge this poses in addressing overlapping spatial boundaries in the coastal area (Fanning and Burbidge, 2010; Kerr et al., 2014; Milanes, 2014). While studies highlighting near-shore marine and land linkages of coastal zones are more common, only a few include river basins in the landward side of the coastal zone (UNEP, 1999; Rasch et al., 2002; Coccossis, 2004; Maksimovic and Makropoulos, 2010; Cantasano and Pellicone, 2014; Santana and Barroso, 2014). Much less frequent is consideration given to include the extension of coastal boundaries beyond the territorial sea (Ehler and Douvere, 2009). Furthermore, given the increasing role of municipal governments in decisions affecting coastal areas within their jurisdiction, particularly with respect to land use planning, local governments have become an important additional component to involve in decisions affecting the coast at this level (Liu et al., 2011; Milanes, 2014).

This paper examines the general lack of attention being paid to overlapping spatial boundaries within the landward and marine environments as a significant factor affecting the achievement of coastal sustainability, despite the promise of ICM to assist in accomplishing this goal. It discusses the need for a tool to evaluate the appropriateness of linkages across the different spatial planning efforts that are potentially found in coastal areas, namely LUP, RBM, MSP and ICM and tests the feasibility of an indicator-based framework to monitor the degree of integration across these approaches with experts and practitioners in Colombia and Cuba.

2. Current management approaches in coastal and marine areas

Efforts to define spatial boundaries as management units in coastal areas have tended to limit boundaries based on hydrological criteria (e.g. river basins), administrative criteria (e.g. jurisdictional authority for land or sea use planning), and/or issues-based criteria. Within the coastal zone, these spatially defined management units have resulted in four distinct approaches despite their oftentimes overlapping boundaries. Two of these approaches (land use planning and marine spatial planning) are planning processes, focused on specific actions over a defined area, while the remaining two (integrated coastal management and river basin management) are governance schemes, with wider perspective than the former and less focused on a single instrument. A brief description of these four approaches found within a shared coastal area is provided.

2.1. Planning instruments

Land-use planning (LUP) is the most often and oldest approach used for developmental and environmental planning in terrestrial areas, triggered by the industrial revolution at the end of the 19th