



## The role of information in plans for progressing in IWLRM



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### ABSTRACT

Developing new methodologies to advance in Integrated Water and Land Resources Management (IWLRM) should now be the main priority in the context of water and land resources. For over 20 years there have been debates about the need to integrate water and land management, but the results are not as good as expected. It is important to research new ways in which to progress and the level of planning appears to be appropriate for this. The article defines a framework for the plans that could help progress in IWLRM if the key water and land variables of the intervention area are included. Using the framework it is possible to define “model plans” for each scope and this allows us to propose a methodology to assess the current plans from the IWLRM perspective. The case of Eastern Almeria, Spain, provided the empirical focus.

### 1. Introduction

For more than twenty years there has been a commitment to a more integrated management of water and land resources.<sup>1</sup>

The achievement of this goal is an arduous task because several types of barriers need to be crossed: conceptual barriers (Grigg, 2008; Hering and Ingold, 2012; UNU-IHDP, 2014), institutional barriers (Boschet and Ramonilaza, 2015; Mitchell, 2015; Arrojo and Naredo, 1997; Corominas, 2003; Wiering and Immink, 2006); spatial and temporal barriers (Carter, 2007; Frederiksen et al., 2008); and barriers related to the availability of information (McDonnell, 2008; Chéné, 2009; GWP and INBO, 2009).

In spite of many experiences and publications concerning this issue (Mitchell, 1990; Johnson et al., 1996; Calder, 1998; Jonch-Clausen and Fugl, 2001; Moss, 2004; Carter et al., 2005; Del Moral, 2006; Woltjer and Al, 2007; Carmon and Shamir, 2010; Smith et al., 2014; Borchardt et al., 2016), there are no significant operational results (Borchardt et al., 2013) or they have not gained importance (Giordano and Shah, 2014). For these reasons there is an urgent need to develop new, simple methods to address the challenges of IWLRM (McDonnell, 2008). In this context, there are some authors who view intervention at the planning level as an opportunity for more integrated management (Carter, 2007; Del Moral, 2009).

According to Mitchell's “integrated” perspective (1987, 2005, 2008), paying attention to the essential water and land variables and their interactions in the planning instruments (spatial and river basin

plans with the same scope of application) will encourage a more integrated management for the period of validity of these plans.

The aim of this paper is to define a framework that establishes the contents of the spatial and river basin plans to enable progress in IWLRM. Specifically, the paper intends to identify: (a) what data on integrated water and land management should be included in the plans (integration items); and (b) from what perspective (dimensions of information).

The proposed framework will not be universal. Its structure will be adapted to the conditions specific to each area (natural conditions, socio-economic conditions and regulatory framework). By making suitable adjustments for local conditions, the IWLRM will produce better results (Chené, 2009; Pahl-Wostl et al., 2011; Mitchell, 2015).

Afterwards, a new methodology for the assessment of the plans, in accordance with IWLRM, will then be developed, with the proposed framework in mind. This suggestion allows strengths and weaknesses in the plans to be recognised, thus identifying the action points.

Furthermore, if planners apply the proposed methodology in future planning stages, it will be possible to monitor the improvements. This is important in highlighting the efficacy of efforts (De Stefano et al., 2010) and making adaptive governance possible (Pahl-Wostl, 2015).

The proposals can be applied in any area that has planning instruments and want or need to improve IWLRM. To illustrate its contributions, the paper presents the specific framework identified for a Spanish study area in Eastern Almeria, Andalusia. The paper also shows the evaluation results from four plans applied in this area.

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<sup>1</sup> Referring to it with the concept of “Integrated Water and Land Resources Management” (IWLRM), according to Falkenmark and Rockström (2004); Calder (2005); UNU-IHDP, (2014)



Fig. 1. Location Eastern Almería study area.  
Source: Author's own work

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