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ASSESSMENT DEGREE THE ADAPTATION OF SUB-REGIONAL PLANS FROM ANDALUSIA (SPAIN) TO WATER FRAMEWORK DIRECTIVE

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The recognition of the need to integrate water and territorial policies (Recital 16) was one of the innovations introduced by the Water Framework Directive (henceforth WFD). This issue is also implicitly addressed throughout the Directive, since it is impossible to achieve its objectives without increasing the integration between water and territorial policies.

This is not a new idea. Many scientific papers and regulations have been published throughout the world since the second half of the 20th century, claiming for a joint management of land and water resources, especially in river basins (White, 1957; Ingram, 1973; Schramm, 1980; Lundquist et al, 1985). From the 1990s, we assist to a huge increment in the number of papers tackling the matter, asserting the need for integration: Germany (Moss, 2004); Australia (Johnson, et al, 1996); Canada (Carter et al, 2005); Spain (Del Moral, 2006); United States (Mitchell, 1990); Holland (Woltjer and Al, 2007); Israel (Carmon and Shamir, 2010); United Kingdom (Kidd and Shaw, 2007). Most of the papers focus on theoretical advantages of a more integrated approach to planning and managing water and land whereas there is a shortage of operational methodology to progress.

Among the papers, we find some that attribute a decisive role to planning instruments as a first step towards integration (Carter, 2007; Del Moral, 2009). Incorporating water resources approach into the spatial planning and vice versa can be a way to move toward integration policies. These changes would reduce conflicts and increase synergy among the planning instruments. In Europe, this idea implies that spatial plans should assume the principles, objectives and measures of the WFD.

This paper focus on assess the adaptation degree of spatial plans to the Directive, as a first step to evaluate land-water integration. We propose a method whit three phases:

1. Identification of the main territorial consequences of the WFD and its derived legislation in Spain

2. Determination of the evaluation criteria about adapting spatial plans to WFD
3. Assessment of the adaptation degree to the Directive

The main territorial consequences have been identified by the WFD analysis: principles (sustainability; recovery of cost for services related to water; protection; participation and clarity; Integration), objectives and measures were reviewed that could have a greater impact in terms of land management. The result of this phase is a list whit the territorial changes that could happen after the WFD application in Spain.

From this list, ten evaluation criteria were established about adapting spatial plans to WFD. These criteria can be classified into three groups:

A. Structural criteria
   Criterion 1. Accept environmental flow as a water resources restriction.
   Criterion 2. Accept the need to keep a balance between water resources and demands.
   Criterion 3. Accept the need to keep a balance between extraction and recharge of aquifers.
B. Proposal criteria
   Criterion 4. Contain specific measures to keep a balance between water resources and demands, such as limit to demand for water resources, new water resources or water saving.
   Criterion 5. Contain specific measures to keep a balance between extraction and recharge of aquifers, such as artificial recharge or limit water use licenses.
   Criterion 6. Include specific measures to control pollution from bodies of water, such as waste water treatment or limit to use of pollutant.
   Criterion 7. Incorporate specific measures to reduce the risk of flooding, such as restoration of river, restriction of specific land uses or infrastructure of protection.
   Criterion 8. Accept extraordinary measures in case of draught.
C. Adaptive criteria
   Criterion 9. Include some instruction to reduce the incidence of: changes crop; changes irrigation systems and land abandoned.
   Criterion 10. Incorporate spatial restrictions from water laws and water planning instruments, such as protection zones or areas prone to flooding.

The last phase starts choosing plans to analyse. In this paper the plans chosen are five sub-regional spatial plans of Andalusia (Spain):

– Bay of Cadiz Spatial Plan (2004)
– Western Coast of Huelva Spatial Plan (2006)
– Eastern Almeria Spatial Plan (2009)
– North-west Coast of Cadiz Spatial Plan (2011)
– Tropical Coast of Granada Spatial Plan (2012)

These spatial planning instruments were approved in different dates. It is possible to analyse if the adaptation degree to the Directive has been improved or not along time.

After choosing plans, it is necessary to review the different documents of each plan to look for references related to the proposed criteria. The adaptation degree to the Directive by spatial plans is based on the number of references we find in the documents for each criterion and the type of regulatory treatment. This last issue is established according to the Law 1/1994, where Andalusian sub-regional spatial plans are regulated. The references can be:

- Rule: direct binding application issues by public administrations and individuals.
- Guideline: binding application issues (not direct). The competent public government will establish the measure to achieve them.
- Recommendation: indicative issues (neither binding nor direct application).

The results obtained with the revision of plans are presented in a table where it can be seen the number of references found for each criterion and its category of regulatory treatment. We found out that there is a significant numeric difference between the references found in the plans. Differences on regulatory treatment were found as well.

In the light of the results obtained, it is possible to say that the studied spatial plans are not adapted to Water Framework Directive. This mean that new problems relative to water and land can be appear in these territories in the medium term because the spatial plans do not have capacity to manage the consequences of WFD.

There are some criteria with relevant issues that do not match references in any spatial plans. This happens in the criteria "accept environmental flow as a water resources restriction" and "accept the need to keep a balance between extraction and recharge of aquifers". It was also detected that there is a lack of extraordinary measures for drought situations.

Most proposal criteria (with measures to keep a balance between water resources and demands, keep a balance between extraction and recharge of aquifers, control pollution from bodies of water, reduce the risk of flooding) have an important number of references in the spatial plans. However, the legal form of these references involves a reduction of their effectiveness. The regulatory treatment of these references in most cases is "guideline". Consequently, the effectiveness is more reduced.

Despite the previous fact, we also found out that the adaptation degree has been increased with the time. The oldest plans are less adjusted to the Water Framework Directive than most recent plans. In criterion 6 ("include specific measures to control pollution from bodies of water, such as waste water treatment or limit to use of pollutant") it can be seen a progressive incorporation of measures to control pollution. Bay of Cadiz Spatial Plan (2004) includes waste-water treatment in all towns as a consideration to the public administration (article 114), whereas the Western Coast of Huelva Spatial Plan (2006) and the following plans include it as own goal. It means that spatial plans gradually assume new objectives linking with water resources.

The incorporation of specific actions to "improve the treatment capacity, build new infrastructure and minimize impacts" (article 84 Eastern Almeria Spatial Plan; article 74 Tropical Coast of Granada Spatial Plan; article 76 North-west Coast of Cadiz Spatial Plan) is other example of the change in the spatial plans.

According to the valuation standards (number of references and the regulatory treatment) Tropical Coast of Granada spatial plan is the best adjusted to WFD (the latest). This plan

contains references for eight of the ten defined criteria. It has also references classified as "guidelines" for five of the ten defined criteria. On the contrary, Bay of Cadiz Spatial Plan is the worst adapted (and it is the oldest plan).

As a summary, it can be said that nowadays spatial plans are not adapted to WFD in Andalusia, but the situation is improving little by little. To make progress, it will be important to modify some aspect of governance, such as: to introduce ways to fix common goals for spatial planning instruments and water planning instruments; to establish realistic goals for medium term (Molle, 2008); or to set up active participation systems.