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The adaptive capacity of local water basin authorities to climate change: The Thau lagoon basin in France

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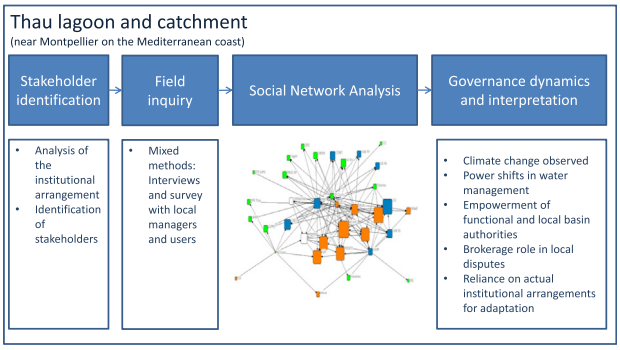
HIGHLIGHTS

- Adaptation to climate change is already an issue in Mediterranean coastal lagoons;
- Shifts in power are observed due to changes in water governance, but not a direct consequence of WFD implementation;
- Functional and local basin authorities have gained power and legitimacy;
- Local basin authorities clearly have a brokerage role;
- This mix of top-down and bottom-up governance is appropriate to deal with climate change adaptation.

GRAPHICAL ABSTRACT



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ABSTRACT

Climate change exacerbates climate variability, and makes water governance more complex. The French local water management plans (SAGE) developed an integrated approach that relies on a balance between bottom-up and top-down governance. The aim of this article is to question the actual role of the local basin authorities and ask whether they are central in water governance. The Social Network Analysis of the Thau basin shows that the key actors of the SAGE, namely the Rhone-Mediterranean-Corsica Water Agency, the local water agency and the local water commission, are the most powerful actors in the management of the river basin and play a crucial brokerage role in climate change adaptation. Integrated water resource management shifted power from territorial and central authorities to functional and local managers.

1. Introduction

Climate change is predicted to raise temperatures in many European regions and in particular in the Mediterranean with a reduction of rainfall, leading to a decrease in water yield and possibly worsening the situation of water resource shortages. This change is going to increase disputes between users and requires responsive water basin authorities which are able to play a brokerage role and provide adaptations to climate change.

Since 1992, the French Government has promoted water management and development plans (SAGE). In 2015, 179 SAGE were approved in the country of which 108 have already been implemented. These local plans developed an integrated and concerted water management

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that combines environmental protection with the human-induced water usages. In line with the Water Framework Directive, they rely on a water basin authority which designs and implements the plan in a consensual way and encourages the definition of common goals between the local managers and users.

The aim of this article is to question the actual role of the basin authority and ask whether it is central in the local water governance. Are local basin authorities pivotal? Alternatively, major stakeholders or public authorities may be the de facto decision-makers in the distribution of water uses. This question is raised with two basic assumptions in mind: (1) A discrepancy exists between formal and actual institutional arrangements, and (2) public authorities contribute to the allocation of water between users.

Empirically, the main contribution of this article is to observe whether the river basin authorities designated to implement integrated water resource management gained power and legitimacy and are able to bring appropriate answers in terms of climate change adaptation. The question of the role of river basin authorities in integrated water resource management is addressed with a case study on the Thau lagoon catchment in France. In 2012, users and managers within the basin were submitted to a specific survey designed to conduct a Social Network Analysis (SNA) with the data in order to assess the power relationships. SNA is used to visualize and describe social structures and power relations. It identifies the position and reputation of each actor within the network. Specifically, the analysis uses three measures of centrality linked to different forms of power: degree centrality, closeness, and brokerage.

After a presentation of the analytical framework and the method, the Thau catchment will be extensively described in a third part. The result of the SNA will then be presented and discussed.

2. Local authorities in water governance

Institutions are mediating climate change adaptation. Climate change and water are related through water governance arrangements. Water governance has changed with the introduction of integrated water resource management (IWRM) that replaced the former sector-based approach (Gain et al., 2013). Water issues should no longer be addressed separately by sector departments in national governments (e.g. water for transport, water for agriculture, water for industry, and nature protection), but all sector interventions should be coordinated within a common structure. Integrated water resource management relies on planning activities as a support for coordination, i.e. a management plan, including a mapping of water uses and pressure, a monitoring program, common objectives and a list of specific measures. In local governance, the approach was territorial, which means that sector departments had deconcentrated units at lower levels which cooperated with local authorities (in France at the regional or department's level). Integrated water resource management is organized around watersheds or river basins. Management is not anymore territorial, but functional (Varone et al., 2013). It goes across the borders of the political and administrative territories in order to follow the rivers and water streams. With integrated water resource management, a functional and networked governance at the river basin scale has substituted to a former territorial and hierarchical governance. It may also generate more decentralization, but this depends on the institutional arrangement retained in each country (Sevä and Sandström, 2017).

The change is not only spatial (for territories to functional spaces), but also scalar and possibly modifies power relationships among the stakeholders. Integrated water resource management has modified the scales at which water is governed (Varone et al., 2013). The institutional arrangement has become multi-level with combined dynamics of upscaling and downscaling. First, the European Union is the level at which broad objectives and procedures are set. Every public authority in Europe is bounded with the requirements of the Water Framework Directive (2000/60/EC) (Voulvoulis et al., 2017; Moss, 2008). The coordination within international river basins also imposes supra-national institutions that decrease State sovereignty and oblige the Member States to cooperate.

Second, downscaling occurs in the implementation phase at the local level. Although the water basin authorities usually remain the national or regional government, the institutional arrangement set up local committees for managing local issues in smaller basins (for example, local water commissions in France, *Commissions locales de l'eau*). Deconcentrated sector administrations must cope with participatory mechanisms which involve the municipalities and the users. They tend to become one stakeholder among others. Thus, water governance operates at multiple levels, but the main steering activities were upscaled at the European level. For example, the implementation of the Water Framework Directive is driven by a committee composed of the national water directors which sets up common guidelines to implement the directive the same way.

Moreover, a change in scale means a change in power distribution. The effects of institutional arrangements on the positions of power of water users and managers must be stressed (Thiel, 2015). The rescaling of the governance structure of water management is a power-laden process (Faure et al., 2007): "*The emergence of new territorial scales of governance and the redefinition of existing scales (like the nation-state) change the regulation and organisation of social, political and economic power relations*" (Swyngedouw, 2004: 26; see also Brenner, 1999). Any reconfiguration of the regulatory regime, with upscaling of some regulatory process (e.g. definition of standards for the measurement of water quality or criteria for establishing exceptions to the objective of good quality of water as of 2015 at the European level) and the downscaling of others (for example, set up of the program of measures at the national or regional level and designation of natural areas, land-use planning, design of the sewage network at the local level) have impacts on the relative power position of the stakeholders. Some users benefit from tailored rules or a better access to the decision making arenas, while others lose. The venue and scope of the issues are not power neutral. This is an empirical question worth being investigated. For example, one notable effect of policy forums at local scale is that they enhance collaboration between actors (Hamilton and Lubell, 2018). The nature and variation of the power relations between users become an empirical question.

As this article is approaching power through relational and reputational perspective (see below), we will follow Manuel Castells in his appreciation: "*Power is the relational capacity that enables a social actor to influence asymmetrically the decisions of other social actor(s) in ways that favor the empowered actor's will, interests, and values. Power is exercised by means of coercion (or the possibility of it) and/or by the construction of meaning on the basis of the discourses through which social actors guide their action*" (Castells, 2009: 10). This definition combines two sources of power exercise: coercion, that is close to Weber's understanding of power (Weber, 1978), but also discourse, and more specifically the issue framing conveyed in discourses (Jones and McBeth, 2010; Laws and Rein, 2003). "*Throughout history communication and information have been fundamental sources of power and counter-power, of domination and social change. This is because the fundamental battle being fought in society is the battle over the minds of the people. The way people think determines the fate of norms and values on which societies are constructed*" (Castells, 2007: 238). This perspective opens the way to approach power empirically through the study of the interactions between stakeholders. The perceived influence of one actor by the community members as well as the position of this actor within the information flow are telling about the distribution of power among a community. This article looks at the fit between the power distribution perceived by the stakeholders within a river basin and the formal institutional arrangement governing water management in the basin. Who are the most powerful public authorities or users? Is it in line with the changes introduced by integrated management or are the former authorities still the most powerful?