

Article

Furthering Internal Border Area Studies: An Analysis of Dysfunctions and Cooperation Mechanisms in the Water and River Management of Catalonia, Aragon and the Valencian Community (Spain)

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Received: 19 July 2019; Accepted: 16 August 2019; Published: 20 August 2019



Abstract: Cooperation between countries or regions that share a political border is one of the primary concerns of border studies. However, while cooperation between states is a well-established field based on international agreements, the cooperation between internal-state regions is not as well understood and requires more exhaustive study. Cooperation agreements between regions are frequently based on the shared and collaborative management of environmental resources such as river basins. This paper aimed to identify mechanisms of river basin cooperation in the internal border area between Catalonia, Aragon and the Valencian Community (Spain), with the objective of analyzing dysfunctions in their water management and identifying the territorial needs for the efficient management of these resources. Focus group sessions were conducted with 84 public administration stakeholders and a total of 53 border municipalities were involved in the project. In our study area, we identified a considerable number of dysfunctions that affected different levels of water management (e.g., supply, navigation and reservoirs) and which impeded effective cooperation between different administrations (above all, between town councils and the public water agencies). However, we also identified several interesting initiatives to promote water management in both the medium and long term, including river contracts, river commonwealths and river tourism projects managed by border municipalities.

Keywords: border studies; internal border areas; dysfunctional water management; cooperation mechanisms; focus groups

1. Introduction

Border studies is a field that has generated a sizable body of scientific literature, not only in the disciplines of Geography and Geopolitics [1–3], but also in Economics [4,5], Law and the Social and Political Sciences [6,7]. Although originally developed within Geography, border studies today tends to involve all disciplines that address the impact of political boundaries in societies and territories on all possible scales [8–10].

In fact, the border is conceived as a social and political construct [11] that determines a given territory in which certain powers are exercised by an entity endowed with autonomy in that territory via a series of norms and administrative acts [12–14]. The study of borders can be considered as having a geopolitical dimension to the extent that a border is always the expression of a political power expressed at different scales [15] and, as such, this circumstance has social and economic consequences

for a territory's citizens [16–18]. Administrative boundaries are projected over border spaces, resulting in both centripetal and centrifugal effects [19–21]. This ambivalence, from the theoretical standpoint, is consubstantial to the concept of border, a reflection of its dynamic and changing nature [22,23].

On the one hand, centripetal forces that induce cooperation can be found. These are the socio-economic dynamics or instruments of cooperation between administrations on both sides of a boundary [24–26]. On the other hand, centrifugal or separating forces that affect the boundary function and create conflicts and barriers can be found [27,28], so that administrations may end up highlighting the territorial dimension of their performances and accentuating the “border effect” [29,30]. An example of this is provided by Europe's “changing borders” [31].

In fact, regulations have a spatial projection, in the same way that space conditions the application of law. According to Braverman et al. [32] (p. 4), “Law is constitutive of space or implicated in social spatializations . . . Law draws lines, construct insides and outsides, assign legal meanings to lines, and attaches legal consequences to crossing them”. Such boundaries are affected, therefore, by concepts of a legal nature, such as law and jurisdiction [33]. As Raustiala [34] states, the scope and reach of law is connected to territory, and spatial location also determines the operative legal regime.

Law enforcement and cooperation mechanisms in border spaces are strongly influenced by cross-border planning and governance [35,36]. The existence of territorial promotion plans and projects, agreed by cross-border authorities and policymakers, can be a good way to promote common cooperation objectives, mobilize and involve stakeholders (local and regional) and, consequently, reduce the “barrier effect” [37,38]. The border, far from being a “barrier”, can also represent an opportunity for the individual, social and cultural development of local communities [39]. Thus, the existence of a border can cause dysfunctions in the legal order, but it also can be an occasion to rethink relations between citizens, stakeholders and administrations [40].

Evidently, most previous studies have focused on the effects of the existence of inter-state borders, and on their dynamics and the social, economic, cultural or legal mechanisms that seek to dilute their influence. Less attention has been paid to internal state border spaces [41–43], that is, boundaries between regions that form part of the same state. One of the main problems arising in internal border areas is the difference in regulations between regions. In a decentralized state, the competencies transferred to regions have to be accompanied by appropriate coordination and cooperation mechanisms, as discussed by Mosley & Schütz [44] in the case of Germany, Thoenig [45] in France and McGregor & Swales in the UK [46]. In Spain, the decentralization of the state into various Autonomous Communities has ushered in the creation of different legal orders that present contradictions and has created “borderlands” [47–49].

Water management in border areas is also a common focus of attention in border studies [50–52], since, in many instances, water bodies represent the boundary between states or regions. Kidd & Shaw [53] noted that water spaces can act as a conventional border between states and can be a relevant source of conflict. In Spain, water management is critical due to its status as a Mediterranean country. There, the decentralization of water policies has caused a series of dysfunctions and contradictions in the legal orders of autonomous communities [54–56].

This paper (1) carried out a qualitative study in the internal border area between Catalonia, Aragon and the Valencian Community in Spain, (2) identified and analysed water management dysfunctions and cooperation mechanisms through focus groups sessions with public stakeholders, and (3) proposed future research in the area studied.

2. Materials and Methods

In the regional study area (Aragon-Catalonia-Valencian Community internal border regions), 70 border municipalities and 10 internal border areas (IBA) were identified based on their homogeneous geographical characteristics (Figure 1).

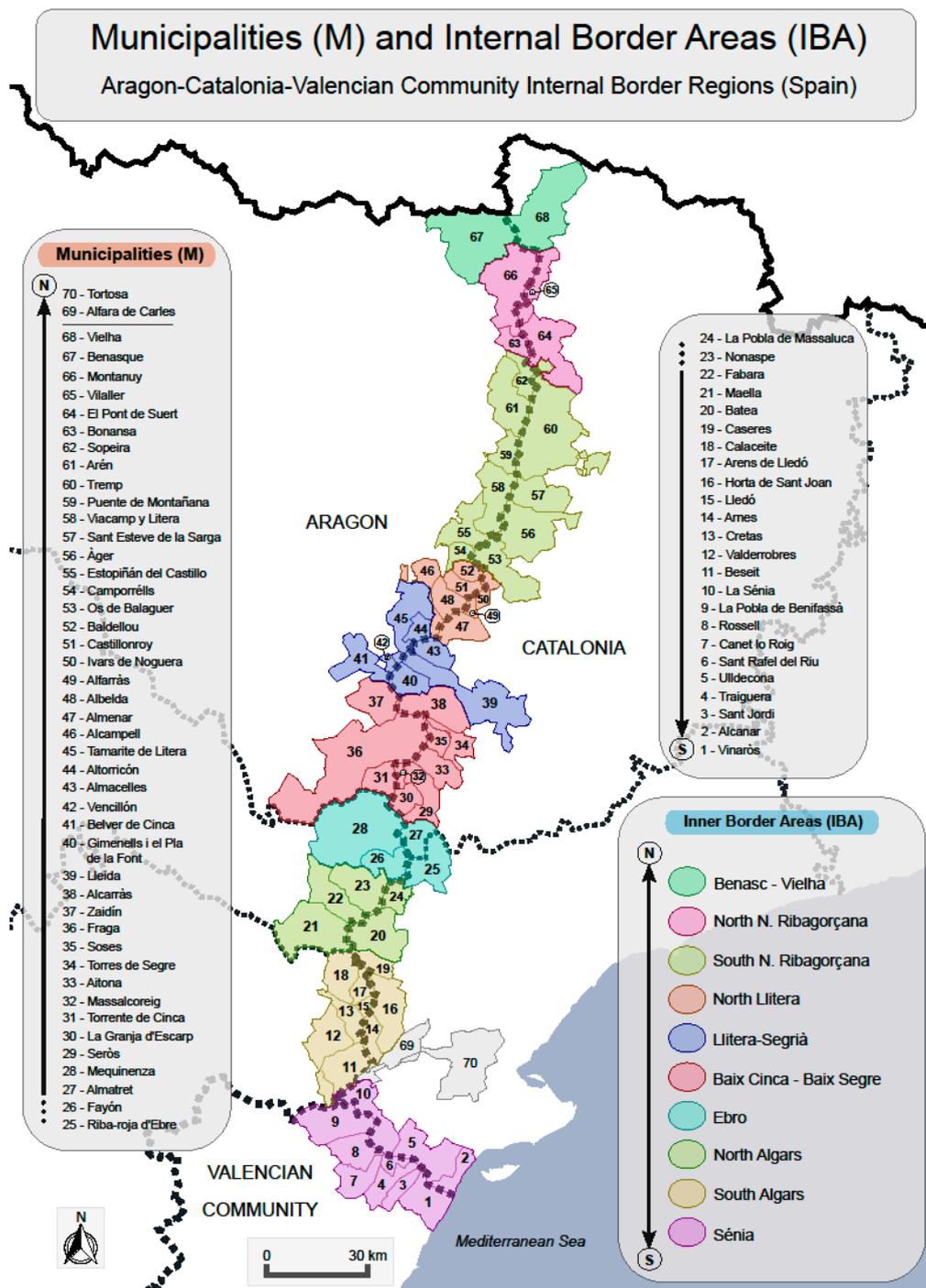


Figure 1. Municipalities (M) and Internal Border Areas (IBA) between Aragon, Catalonia and the Valencian Community (source: authors).

The internal border between these three Spanish regions is characterized by the existence of tributaries and sub-tributaries of Ebro river basin (from north to south, Noguera Ribagorçana, Cinca, Segre, Matarranya, Algars), as well as a small basin, Sènia river. Some of these river courses serve as the border line between Aragon and Catalonia (Noguera Ribagorçana, Cinca, Algars) and between Catalonia and the Valencian Community (Sènia).

Before identifying the qualitative techniques employed in the framework of this study, some methodological and theoretical considerations should be made: (i) this analysis does not seek to study

the border itself as such, but rather the spaces adjacent to it: a fringe (IBA) in which both conflict and cooperation dynamics can be detected; (ii) the analysis adopts a functional approach and takes the municipality as its unit of reference, on the one hand, along the length of the border between Catalonia and Aragon, and on the other, between Catalonia and the Valencian Community; (iii) the analysis raises a number of problems related to decentralization and cooperation in the administrative framework of the Spanish Autonomous State.

In order to learn about the existing river management dysfunctions and cooperation mechanisms in place between IBAs, focus group sessions were conducted with public stakeholders (the mayors and town clerks of each municipality). A total of 84 stakeholders were involved in this study (43 mayors and 41 town clerks). Our general research framework is characterized by its application of the following methodological criteria: (i) the Vielha-Benasc IBA was discarded, since it is formed by two municipalities separated by a large geographical feature (the Pyrenees) without any possibility of or need for cooperation; (ii) two border municipalities (69 and 70 in Figure 1) were also discarded from our study due to their small border area and disconnection from urban centers and associated dynamics; and (iii) not all potential stakeholders participated in the study (as can be seen in Figure 2, certain municipalities opted not to participate). Thus, out of 68 potential municipalities, a total of 53 were involved in our study.

All focus group sessions (nine, one for each IBA except Vielha-Benasc) were subject to the following criteria [57–59]: (i) wherever possible, a group of public stakeholders was formed of between 6–10 individuals, (ii) homogeneous composition of the group based on balance numbers of mayors and town clerks; (iii) the moderator played a very limited role: minimal intervention and, only when necessary, a redirection of the topics to be discussed. Table 1 shows the technical data for these sessions. Following the focus group meeting, two types of results were identified: on the one hand, those related to dysfunctions in water management, and, on the other, those related to the cooperation mechanisms shared by administrations (river contracts, river commonwealths and river tourism projects).

Table 1. Technical data of the focus groups carried out in this study (source: authors).

N	IBA ¹	TM ²	A/C/V ³	NS ⁴	SM ⁵	DL ⁶
1	North Noguera Ribagorçana	PM = 4 TM = 4	2/2/0 2/2/0	PS = 4M/4TC TS = 4M/3TC	M = 63A, 64C, 65C, 66A TC = 63A, 65C, 66A	2017/05/30 64C
2	South Noguera Ribagorçana	PM = 10 TM = 9	6/4/0 5/4/0	PS = 10M/10TC TS = 8M/6TC	M = 54C, 56C, 57C, 58A, 59A, 60C, 61A, 62A TC = 53C, 56C, 58A, 59A, 61A, 62A	2017/05/29 61A
3	North Llitera	PM = 7 TM = 5	4/3/0 3/2/0	PS = 7M/7TC TS = 4M/5TC	M = 46A, 47C, 48A, 49C TC = 46A, 47C, 48A, 49C, 52A	2017/05/23 49C
4	Llitera-Segrià	PM = 7 TM = 6	4/3/0 3/3/0	PS = 7M/7TC TS = 5M/4TC	M = 40C, 42A, 43C, 44A, 45A C = 39C, 40C, 43C, 44A	2017/05/10 43C
5	Baix Cinca–Baix Segre	PM = 10 TM = 7	3/7/0 2/5/0	PS = 10M/10TC TS = 4M/6TC	M = 30C, 33C, 36A, 37A TC = 30C, 32C, 33C, 35C, 37A, 38C	2017/05/09 33C, 37A
6	Ebro	PM = 4 TM = 4	2/2/0 2/2/0	PS = 4M/4TC TS = 3M/4TC	M = 26A, 27C, 28A TC = 25A, 26A, 27C, 28A	2017/04/26 28A
7	North Algars	PM = 5 TM = 1	3/2/0 0/1/0	PS = 5M/5TC TS = 1M/1TC	M = 20C TC = 20C	2017/03/27 18V
8	South Algars	PM = 9 TM = 9	6/3/0 6/3/0	PS = 9M/9TC TS = 8M/7TC	M = 11V, 12V, 13V, 14C, 16C, 17V, 18V, 19C TC = 13V, 14C, 15V, 16C, 17V, 18V, 19C	2017/03/27 18V

Table 1. Cont.

N	IBA ¹	TM ²	A/C/V ³	NS ⁴	SM ⁵	DL ⁶
9	Sénia	PM = 10 TM = 8	0/3/7 0/3/5	PS = 10M/10TC TS = 6M/5TC	M = 1V, 4V, 5C, 6V, 8V, 9V TC = 1V, 2C, 6V, 9V, 10C I ⁷ = Taula del Sénia Clerk	2017/01/30 10C, 6V

¹ IBA = Internal Border Areas; ² MI = Municipalities Involved (PM = Potential Municipalities involved, TM = Total Municipalities involved (Mayor or Town Clerks Participation)); ³ A/C/V = Potential (normal) and Total (bold) Municipalities involved in each region (A = Aragon, C = Catalonia, V = Valencian Community); ⁴ NS = Number of Public Stakeholders involved in Focus Group Sessions (M = Mayors, TC = Town Clerks); ⁵ SM = Stakeholders involved in each Municipality (n = Municipality number, A = Aragon, C = Catalonia, V = Valencian Community); ⁶ DL = Date and Location (n = Municipality number, A = Aragon, C = Catalonia, V = Valencian Community); ⁷ I = Other public stakeholders invited.

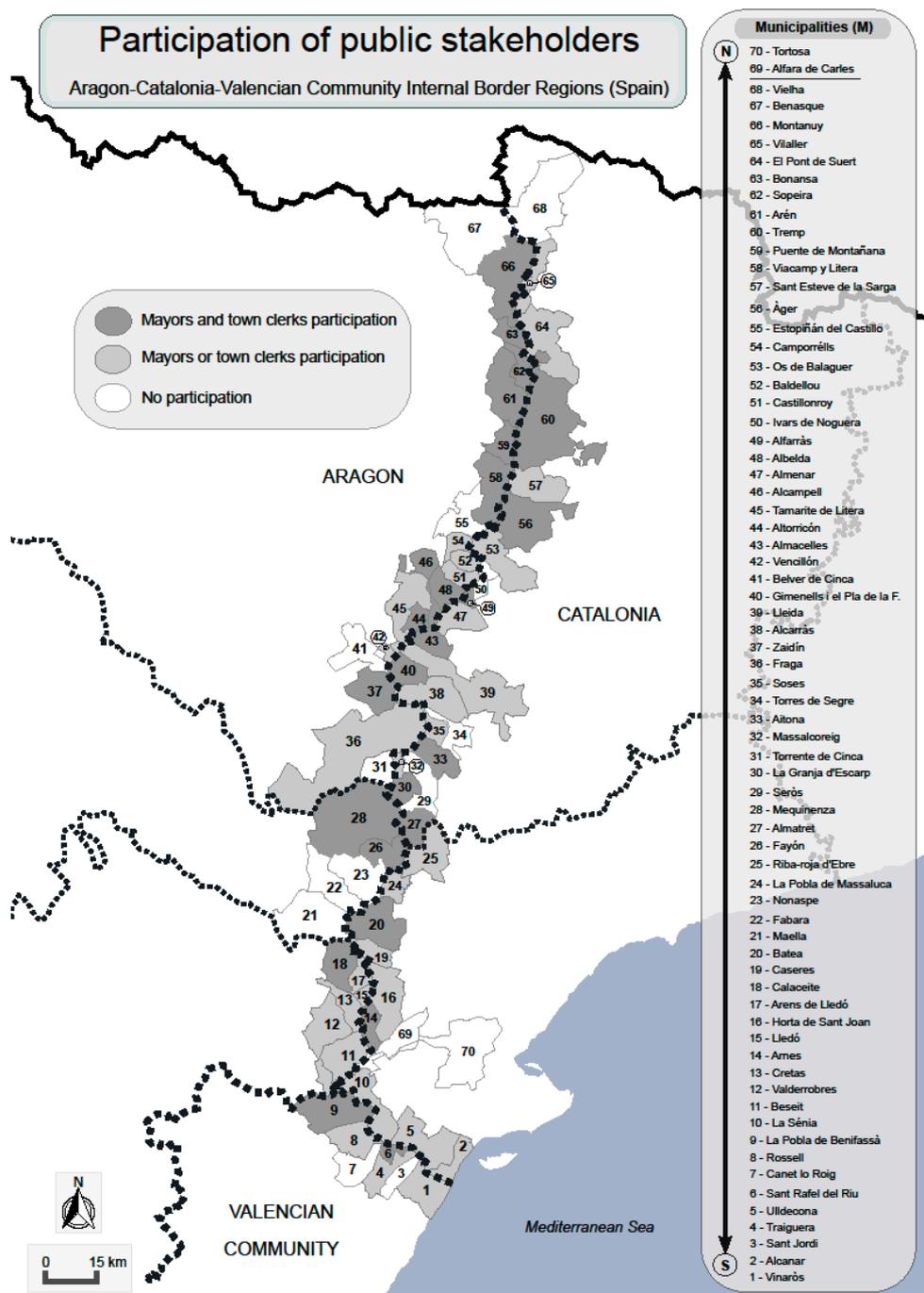


Figure 2. Participation map of public stakeholders (mayors and town clerks) (source: authors).

3. Results and Discussion

3.1. Dysfunctional Water Management

Poor management of water resources is a matter of international relevance, since water is a limited resource and management is necessary to minimize interference between users and administrations [60]. Problems such as the lack of clear objectives and the absence of collaboration between administrations when managing water [61], the privatization of management [62,63], water supply problems [64,65] and ineffective or null management and governance of existing water conflicts between users [66] are some of the most common dysfunctions that have been identified. In this study, in order to identify and gather information about the dysfunctions and management of water resources in our study area, the information derived from the focus groups was essential for analysing this situation in each IBA (Table 2).

Table 2. Water management dysfunctions detected in each IBA.

N	IBA ¹	WMD ²
1	North <i>Noguera Ribagorçana</i>	No dysfunctions detected.
2	South <i>Noguera Ribagorçana</i>	Problems derived from privatization of water company (ENEL) Conflict of competencies between Ebro Water Agency (CHE) ³ and Catalan Water Agency (ACA) ⁴ Overexploitation of water derived from a tourist activity (Congost de Mont-Rebei)
3	North <i>Llitera</i>	Lack of communication with Ebro Water Agency (CHE) Different regulation of fishing between Aragon and Catalonia
4	<i>Llitera-Segrià</i>	Double taxation: conflict between Catalan Water Agency (ACA) and Ebro Water Agency (CHE) Lack of communication between Ebro Water Agency (CHE) and municipalities in Aragon & Catalonia Canal irrigation management
5	<i>Baix Cinca – Baix Segre</i>	Double taxation: conflict between Catalan Water Agency (ACA) and Ebro Water Agency (CHE) Lack of communication between Ebro Water Agency (CHE) and municipalities in Aragon & Catalonia Canal irrigation management
6	<i>Ebro</i>	Different regulation of fishing between Aragon and Catalonia Historical problem: (a) construction of Mequinensa reservoir (1970s) and difficulty of physical communication with towns on the other shore; (b) mismanagement of sludge by Ebro Water Agency (CHE)
7	North <i>Algars</i>	Different regulation of boat license and fishing between Aragon and Catalonia
8	South <i>Algars</i>	Difficulty in water supply due to mismanagement of Catalan Water Agency (ACA)
9	<i>Sénia</i>	Double taxation: conflict between Jucar Water Agency (CHJ) ⁵ and Ebro Water Agency (CHE)

¹ IBA = Internal Border Areas; ² WMD = Water Management Dysfunctions detected; ³ *Confederación Hidrográfica del Ebro* (CHE); ⁴ *Agència Catalana de l'Aigua* (ACA); ⁵ *Confederación Hidrográfica del Júcar* (CHJ).

Table 2 shows a wide variety of dysfunctions detected in each IBA, although a common pattern emerged in most of them. Six categories were identified with regards to the local dysfunctions of each IBA: those that made reference to (i) water supply (IBA 8), (ii) overexploitation of water resources (IBA 2), (iii) divergent regulations, competencies and tributes (IBA 2–7,9), (iv) privatization (IBA 2), (v) lack of communication between administrations (IBA 3–5) and (vi) other historical problems (IBA 6). No dysfunctions were detected in IBA 1. Of all these categories, only the overexploitation of water resources due to tourism had no direct relation to the existence of the internal border.

The most common dysfunctions detected in our study area were those related to divergent regulations between autonomous communities (e.g., boat licenses and fishing) and water agencies (competencies and double tributes). The existence of different regulations, typical of a decentralized

state, gives rise to scenarios in shared water bodies (e.g., rivers and reservoirs) in which the users (e.g., fishers and craft skippers) are the ones most affected by their not having a common license.

Likewise, the municipal councils, who have to pay tributes to the water agencies, also suffer the absence of a clear distribution of competencies. The focus groups report that, on several occasions, there is an overlap between the general and the tribute competencies of the Ebro Water Agency (CHE) and the Catalan Water Agency (ACA) (IBAs 2,4,5) and between the Ebro Water Agency and the Júcar Water Agency (CHJ) (IBA 9). There are border municipalities that belong at the same time in several river basins and, therefore, both water agencies require the same tax (instead of coordinating to request a single tax). On the other hand, although less frequent, there have also been instances of a marked absence of communication between the Ebro Water Agency (CHE) and the municipalities, especially in the case of irrigation management in the Aragon & Catalonia Canal (IBAs 4,5).

The rest of the dysfunctions detected are highly localized and unique and are associated with the socioeconomic characteristics of each IBA. They include the overexploitation of water resources due to intense tourist activity (IBA 2), historical problems arising from the creation of reservoirs and the poor management of sludge (IBA 6) and the privatization and absorption of the former ENHER company (*Empresa Nacional Hidroeléctrica del Ribagorzana*) by a multinational (ENEL, *Ente Nazionale per l'Energia Elettrica*) (IBA 2).

3.2. Water Policies: Matarranya River Contract and Sénia River Commonwealth (*Taula del Sénia*)

River contracts are cooperation mechanisms that pursue objectives of sustainability in the management of water resources [67–69]. They are effective measures of management and participation that occur in the French legal system (*contrats de rivière*) to restore, improve or conserve a river through concerted actions between stakeholders and public administration [70,71]. Such river contracts have been maintained in French regions following the implementation of the EU Water Framework Directive [72].

A similar river contract initiative was identified in two of the IBA focus group sessions (North and South Algars). Nine municipalities in Aragon (11–13,17,18,21–23 and 26 in Figure 1) and four in Catalonia (14,16,19 and 20 in Figure 1), as well as other non-border municipalities of Aragon and Valencian Community, have signed the so-called Matarranya River Contract (initiated in 2015), which also includes other administrations and policy makers (provincial councils, water agencies as well as private partners).

The Matarranya River Contract set itself the goals of (i) favouring consensus and agreed solutions between public stakeholders and (ii) developing a joint-action program in the Matarranya river basin through assemblies, working groups and debates. Its members do not acquire any type of legally enforceable commitment: all actions assumed are voluntary. However, despite not having its own legal status in Spain, the follow-up and control of its members' activities are managed through two supervisory authorities: the Contract Committee and the Board of Directors. In sum, the Matarranya River Contract is a young initiative whose objectives have yet to be properly shaped and whose legal status has yet to be fully forged, given that it is a unique organization in Spain.

In contrast, a commonwealth of Catalan, Aragonese and Valencian municipalities has been created in the Sénia river basin (Sénia IBA), including all its municipalities (1–12 in Figure 1, in addition to a non-border municipality, Pena-roja de Tastavins). In Spain, a commonwealth (in Spanish, *mancomunidad*) can be defined as a voluntary association of municipalities whose purpose is the management and execution of municipal works and services in common.

From 2006 to the present day, this commonwealth, the *Taula del Sénia*, has carried out several joint projects, among which the protection of millenary olive trees stands out. It has also been involved in the recruitment of young people for local entities and participated in the celebration of the European Heritage Days, with the organisation of a large number of activities (e.g., talks, exhibitions, workshops and walking routes). As was made clear in this particular focus group (Sénia IBA), the mission of the Sénia River Commonwealth is not limited to that of fulfilling just a cultural function, but also a social

one. For example, the *Taula del Sénia* has been able to provide a number of social services, including waste management, the coordination of historical archives and various urban planning competencies.

3.3. *Tres Territoris River Tourism Project*

River tourism is a modality based on recreational and leisure activities developed in a freshwater body and includes river cruising, fishing, house-boating, speed-boating and white-water rafting [73,74]. Activities related to the historical and cultural heritage are also considered to be typical of this modality of tourism [75,76]. River tourism projects are conceived as a useful tool for regional economic development [77,78], and, as such, could be effective instruments in our study area.

Thanks to the focus group sessions, a river tourism project initiative was identified in two IBAs (North and South Algars). The project, known as *Tres Territoris*, was created in 2017 thanks to an agreement between three county councils (*Comarca del Matarranya* in Aragon, *Consell Comarcal de la Terra Alta* in Catalonia and *Mancomunitat Comarcal Els Ports* in the Valencian Community).

The main objective of this project is the strengthening of commercial relations between the three county councils by sharing actions to promote cultural, nature and adventure tourism in the Algars river basin. A webpage is active (<http://3territoris.org>) on which a biannual publication can be consulted, listing all the tourist activities that are carried out in the Algars territory: (i) fairs, festivals and gastronomy, (ii) fishing and water sports and (iii) cultural and heritage events. Moreover, efforts are currently underway to create a tourist trail that unites the three regions along the Algars river (*Camí dels Tres Territoris*). In brief, *Tres Territoris* is a very young project which needs to be developed further through the promotion of new tourist activities.

4. Conclusions and Future Prospects

The existence of dysfunctions in the water management of Spain's internal border areas is an undeniable fact. The decentralization of the Spanish State into Autonomous Communities has led to the development of divergent regulations in each region, a process that has had negative consequences for border municipalities and their citizens. With the aim of identifying these problems in the case of Spain, this study focused on the internal border areas between Catalonia, Aragon and the Valencian Community. Focus groups with public stakeholders (mayors and town clerks) were conducted in nine previously defined internal border areas.

Water supply problems arising from the lack of cooperation mechanisms between border municipalities, the existence of divergent regulations in each region (e.g., fishing and boat licenses) and the lack of communication between water agencies (Ebro, Catalan and Júcar Water Agencies) are some of the main dysfunctions identified. The duplication of regulations, as well as the overlapping of tasks between administrations dedicated to water management, were additional problems identified in our study area.

However, in parallel with these dysfunctions, progress has also been made in our study area in terms of the development of mechanisms of cooperation between administrations aimed at achieving common objectives in water management. Although these cooperation mechanisms are as yet neither numerous enough nor sufficiently empowered to address the dysfunctions detected in the short term, they do represent a step forward in the development of innovative ways to manage water resources. Of the nine IBAs identified, three (North Algars, South Algars and Sénia) were involved in different cooperation mechanisms, as identified through the focus group sessions.

These mechanisms include: first, a river contract in the Matarranya basin (North and South Algars IBAs) set up in 2015 with the aim of achieving a consensus and support for sustainable water management projects. This contract is a unique case in Spain, and while such regulations are common in France, they have yet to be incorporated in the Spanish legal system; second, a river commonwealth was formed in the Sénia basin (*Taula del Sénia*) in 2006 to promote cultural activities and; third, a river tourism project (*Tres Territoris*) was set up in 2017, a joint initiative of three county councils (North and

South Algarz IBAs). The cooperation mechanisms detected are recent developments and it is too early to draw any firm conclusions about their effectiveness.

Specific studies of internal border areas in Spain, as well as in other EU-states, are needed to understand the different types of dysfunctions that manifest themselves and the different cooperation mechanisms adopted between regions. Water management represents an opportunity to undertake a sectoral analysis of this subject, and this can usefully be complemented with other variables of interest, including, for example, education, health, waste management, fire and police services, among others. In this way, the inefficiency detected in water management can be seen in parallel with the dysfunctions characterizing other sectors and scenarios, especially with regards to the competencies transferred from the state to the regions.

Author Contributions: A.S.R., R.G.C. and J.T.D. contributed equally to this paper. They conducted the analyses and wrote the paper together.

Funding: This research was funded by Escola d'Administració Pública de Catalunya (EAPC) Research Program (JT089150) and Program 2017SGR1344 (Grup de Recerca Ambiental Mediterrània) supported by the Generalitat de Catalunya. The authors also wish to acknowledge funding from CSO2015-6787-C6-4-P of Ministry of Economy and Competitiveness of the Government of Spain and postdoctoral scientific project concerted between the University of Barcelona and Societat General d'Aigües de Barcelona (Agbar). This work has also been supported by the EUR H2O'Lyon (ANR-17-EURE-0018) of Université de Lyon (UdL), within the program "Investissements d'Avenir" operated by the French National Research Agency (ANR).

Acknowledgments: We wish to thank Iain Robinson (SL-UB) for revising the English manuscript and Roger Clavero for his advice on undertaking the cartography.

Conflicts of Interest: The authors declare no conflict of interest.

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