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STAKEHOLDERS, MULTI-FUNCTIONALITY, AND GOVERNANCE:

*How to manage competing water uses
and improve decision-making processes
in three Southern European irrigation systems*



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Presentation outlines

1. Introduction

Land-water nexus → public and private goods → complex management

From technocratic to sociocratic approach → stakeholders' point of view

2. The Territorial Irrigation Management Approach

Role of the territory → Inclusion of civil society demands

Aims and methodology of the model → stakeholders, qualitative tools, codification

3. Case studies and main results

Segarra-Garrigues → Neste → Muzza irrigation canals (Spain, France, and Italy)

Word clouds → quotes → speeches

4. Discussion

Benefits and limitations of the model



1. Introduction

Land-water nexus is essential for food production, rural development, landscape conservation, and environment preservation.

Multi-functional agriculture produces goods both **private** (i.e. food, raw materials, and tourism) and **public**, which are divided into:

- **social concerns** → the viability of disadvantaged rural areas, combating rural depopulation, and protecting cultural and heritage values
- **environmental concerns** → the protection of landscapes, the promotion of biodiversity, and the reduction of soil erosion

Multi-functionality expands into three competing dimensions:

- The dimension related to **production**: organic food production, the promotion of local products, and the limitation of intermediaries in food distribution systems.
- The dimension concerning the conventional **relationship between farming and rural areas** (rural tourism, landscaping and heritage)
- The dimension related to **mitigating the environmental impacts** of agricultural practices on rural capital



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1. Introduction

Historically, water resources and agriculture professionals sought to solve challenges raised by water use in agriculture by using a **technocratic approach**



the environmental debate has become **more holistic, calling for stakeholders participation**



There is a higher probability of success if of interests, attitudes and the opinions of those who are directly or indirectly **management is based on collaborative initiatives with broad representation and inclusion** affected → **sociocracy**

Moves from a technocratic “top-down” to a more integrated “bottom-up” approach is also based on the increased awareness that **today’s water problems are complex**

2. The Territorial Irrigation Management Approach (TIMA)

The analysis of territorial irrigation management focuses on what has been identified as the “**geography of actors**” or “**social geography**”:

- **the analysis of territorial structures resulting from the conflicting discourses** exposed by the diversity of stakeholders involved in managing a natural resources
- **the study of the interactions between nature and society under a dual purpose:**
 - ▶ understanding the social behaviours that affect the management of natural resources
 - ▶ understanding how the dynamic of the territory can interact with social demands



2. The Territorial Irrigation Management Approach (TIMA)

The promotion of **irrigation management with a territorial nature incorporates the social demands** (represented by the **civil society platforms**) into the **traditional scheme of irrigation management**, which is composed by:

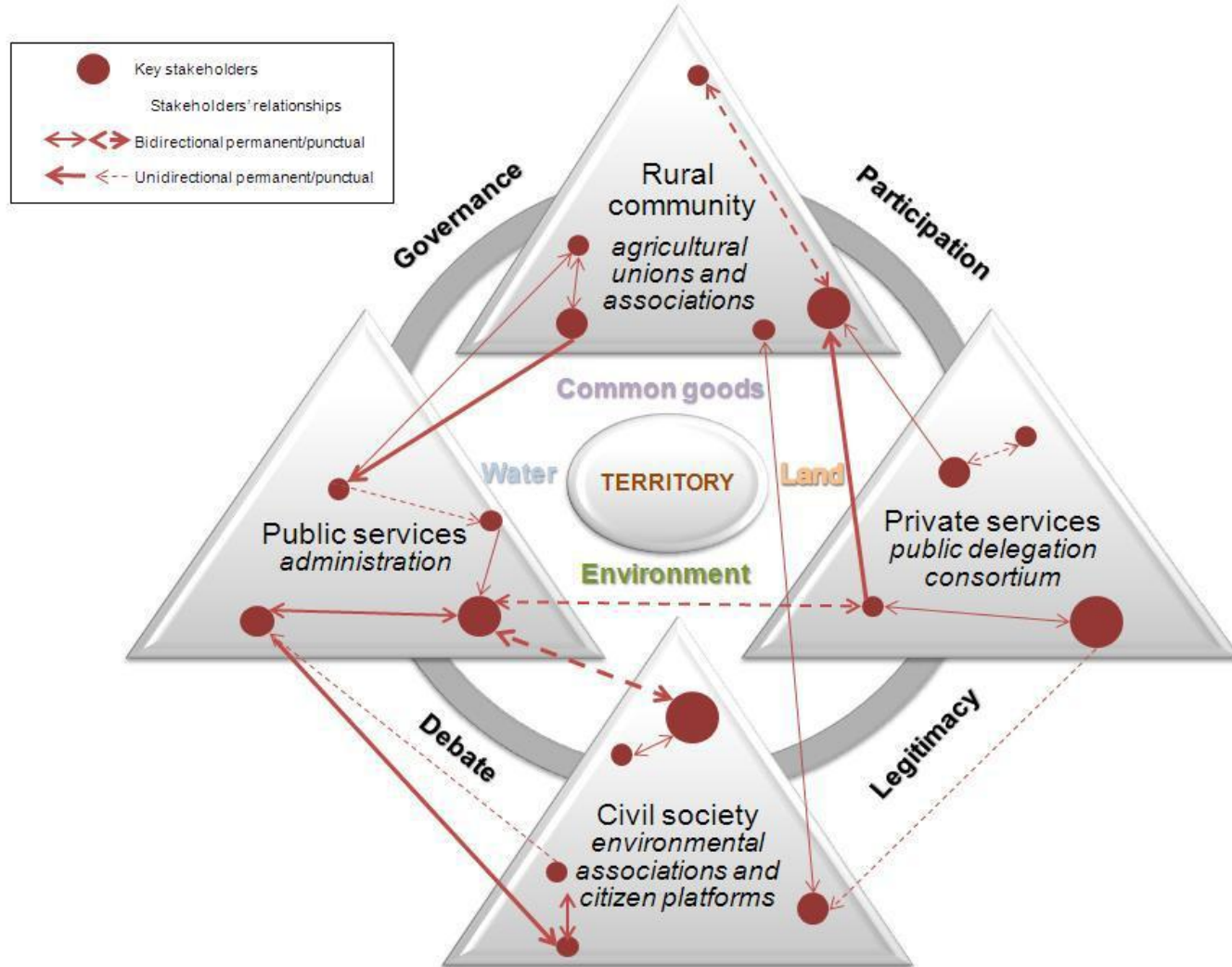
- public services (administration, agencies)
- private services (companies)
- rural community (farm unions and irrigators" syndicates)

The modelling of **TIMA aims to find commonality among all the conflicting discourses over a multi-functional irrigation system for defining and promoting agreements among all the competing water uses.**

Process:

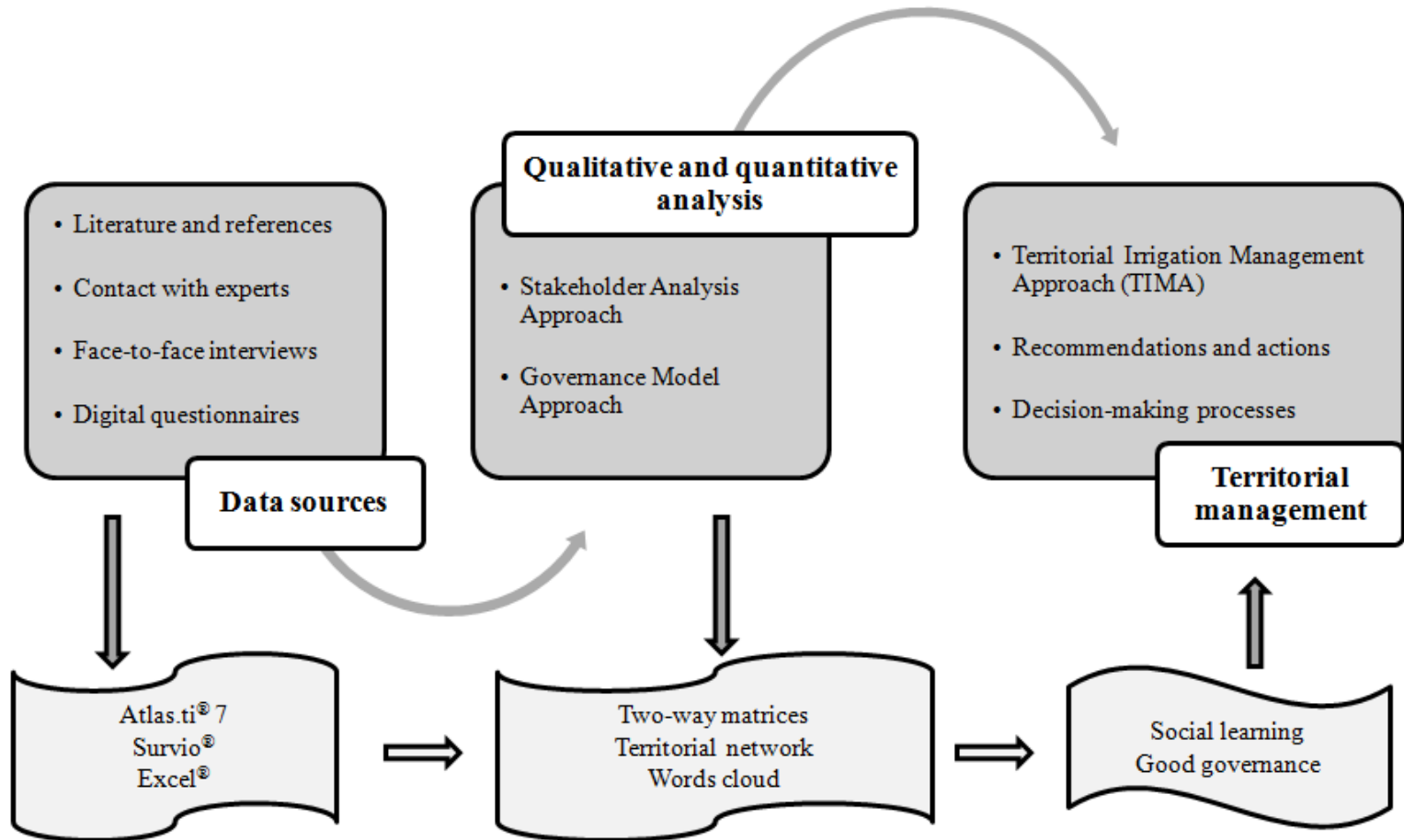
- 1) identification and characterisation of each discourse expressed by the stakeholders involved in managing one irrigation system
- 2) analysis of the affinity and/or conflicting relationships among them

2. The Territorial Irrigation Management Approach (TIMA)

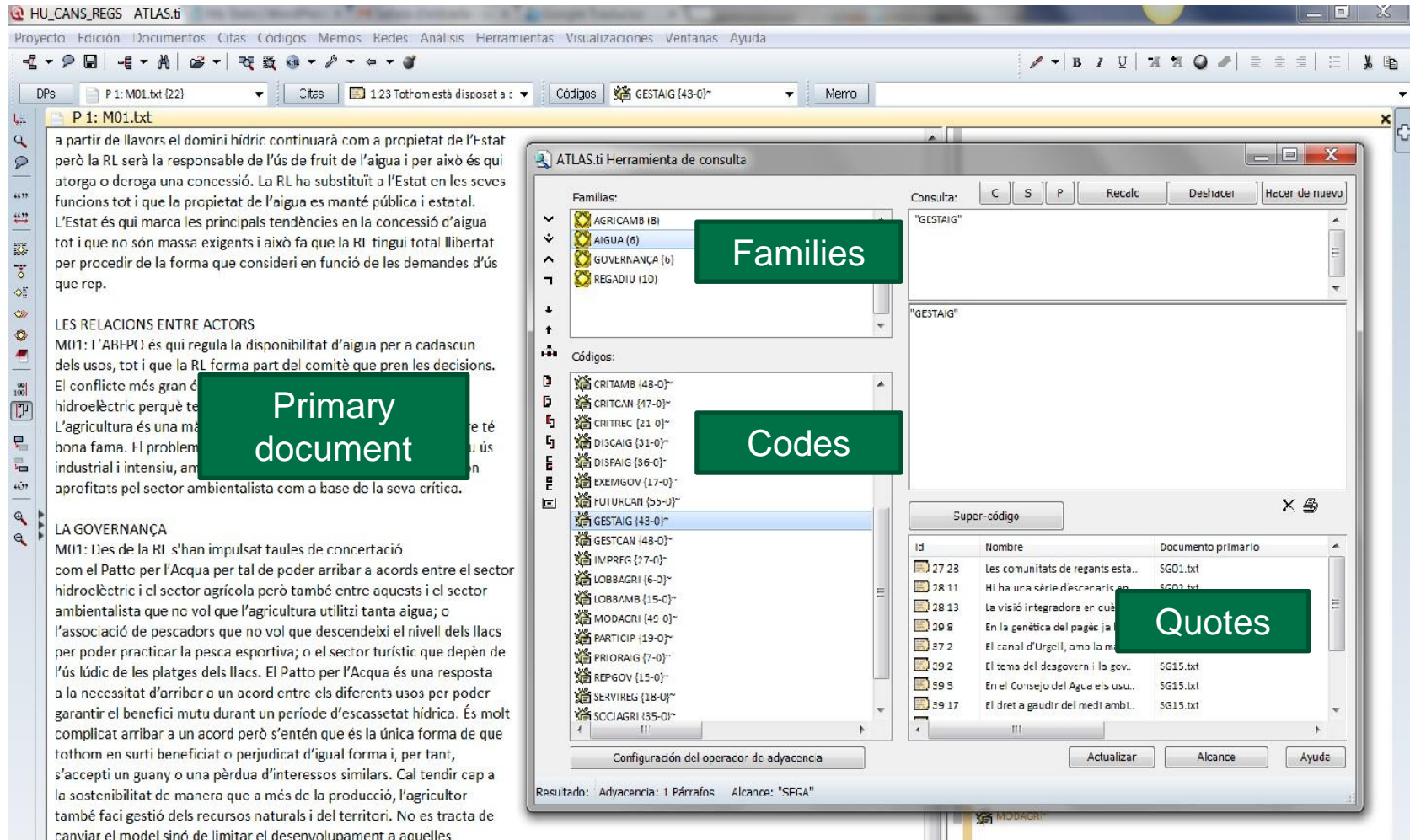


2. The Territorial Irrigation Management Approach (TIMA)

How? Data collection and methods



2. The Territorial Irrigation Management Approach (TIMA)



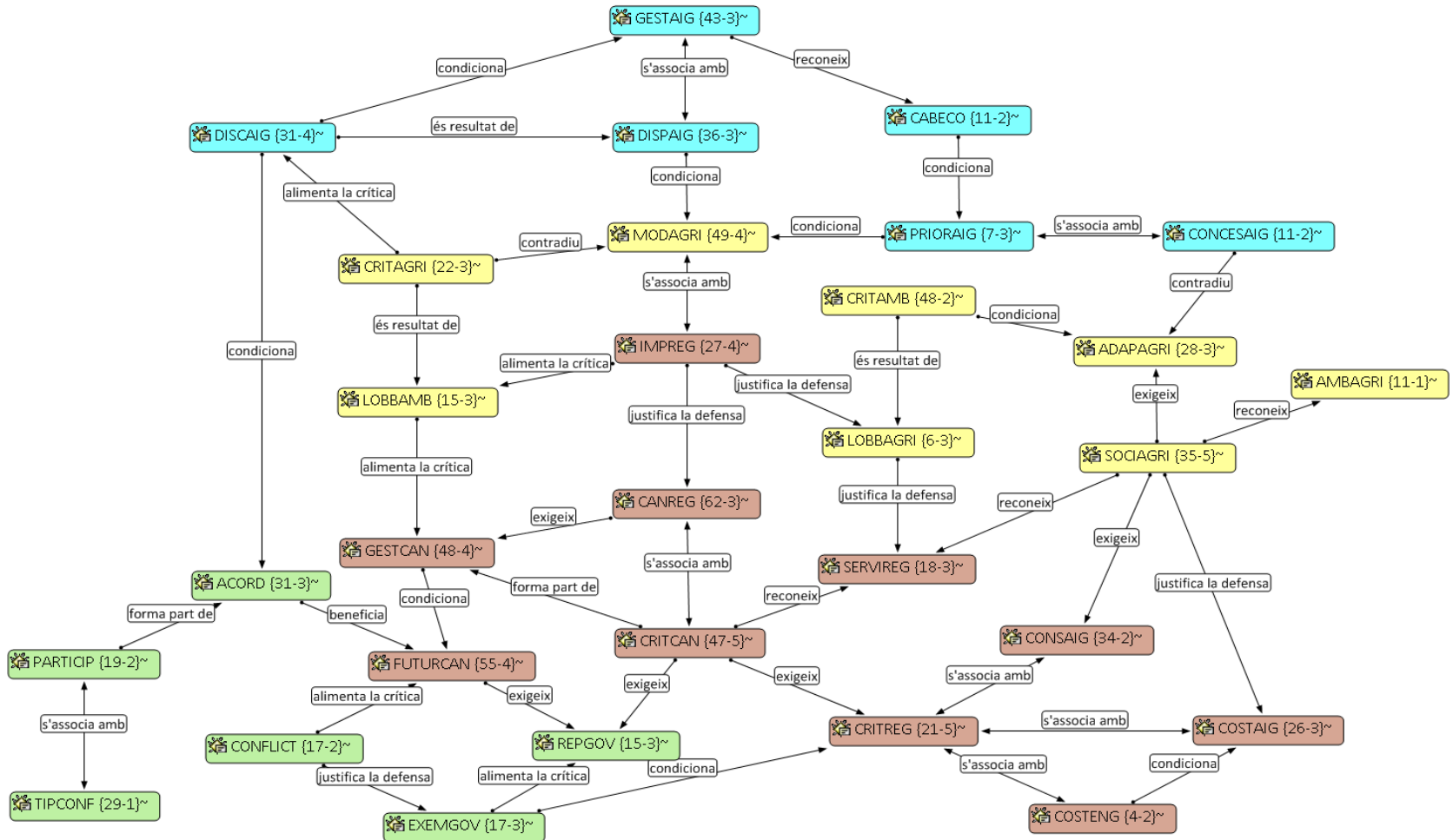
The screenshot shows the ATLAS software interface. On the left, a document editor displays text from a file named 'P 1: M01.txt'. The text discusses water management, mentioning 'RL' (Regulation of Land) and 'Estat' (State). A green box labeled 'Primary document' highlights a section of the text.

On the right, a search tool window titled 'ATLAS.ti Herramienta de consulta' is open. It shows a search for 'GESTAIG'. The results are organized into 'Familias' (Families) and 'Códigos' (Codes). A green box labeled 'Families' highlights the 'AGUA (6)' family, and another green box labeled 'Codes' highlights the 'GESTAIG (43-0)*' code.

Below the search results, a table lists 'Super-código' (Super-code) entries. A green box labeled 'Quotes' highlights a row in the table:

Id	Nombre	Documento primario
27-23	Les comunitats de regants esta...	SG01.txt
28-11	Hi ha una sèrie d'esparcissos	SG03.txt
28-13	La visió integradora ar cuà	
29-8	En la genètica del pagès ja	
27-2	El conal d'Urgell, amo la m	
29-2	El tema del desgovern i la gov.	SG15.txt
29-3	En el Consejo del Agua els usu.	SG15.txt
29-17	El dret a gaudir del medi ambli.	SG15.txt

2. The Territorial Irrigation Management Approach (TIMA)

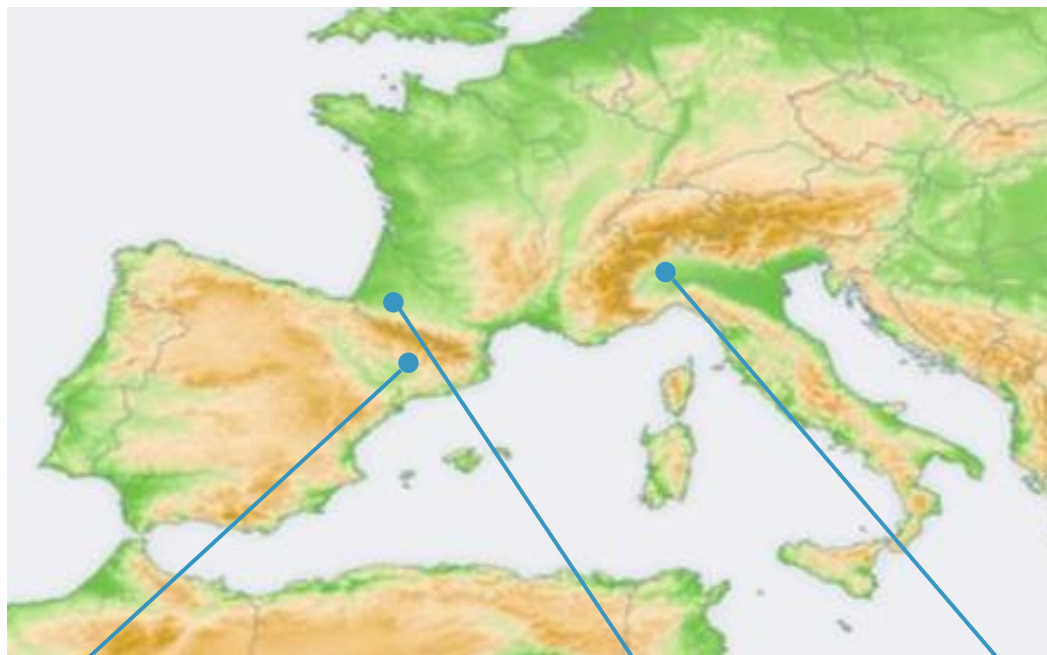




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3. The case studies



Segarra-Garrigues system

Ebro river basin

Lleida (Catalonia)

Neste system

Adour-Garonne river basin

Hautes-Pyrénées (Midi P.)

Muzza system

Po river basin

Milano-Lodi (Lombardy)



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3. The case studies

The Segarra-Garrigues canal





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The Segarra-Garrigues canal

Confederación Hidrográfica del Ebro	Public services
Agència Catalana de l'Aigua	
Departament d'Agricultura, Ramaderia, Pesca, Alimentació i Medi Natural. Subdirecció General d'Infraestructures Rurals i Infraestructures de la Generalitat de Catalunya S.A.U	
Oficinas comarcales del DAAM en la Noguera, el Segrià y Les Garrigues	Private services
Aigües del Segarra Garrigues S.A	
Comunitat de Regants del Segarra-Garrigues	
Unió de Pagesos de Catalunya	Rural community
Associació Agrària Joves Agricultors - Associació d'Empresaris Agraris de Lleida	
Joves Agricultors i Ramaders de Catalunya	
Institut Agrícola Català Sant Isidre	
Federació de Cooperatives Agràries Catalanes	Civil society
SEO/BirdLife	
Institució de Ponent per a la Conservació i l'Estudi de l'Entorn Natural	
Institució per a l'Estudi, Gestió i Recuperació dels Ecosistemes Lleidatans	
Lleida Ambiental	
Compromís per Lleida	
Plataforma en Defensa de l'Ebre	



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3. The case studies

The Segarra-Garrigues canal



411 quotes

Public services

- ▶ water concessions
- ▶ environmental impacts

Private services

- ▶ irrigation system as rural development
- ▶ irrigators and environmentalists conflict

Rural community

- ▶ irrigation system management
- ▶ agriculture and productivity

Civil society

- ▶ water availability and management
- ▶ environmental aspects
- ▶ monoculture productivity



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3. The case studies

The Segarra-Garrigues canal



“We understand people... most of them have been waiting for water over one hundred and fifty years... but there has been no political will to explain to people that, unfortunately, the project cannot be completed and it is necessary to find alternatives for the agricultural activity”
[civil society]

“The fact that people do not adhere to irrigation because they cannot pay for water suggests that the canal is a political rather than territorial project” [public services]

“Water is culture, is industry, is food, is influence, is power... is everything. Water is a strategic element in our land where droughts abound” [private services]

“It is not imperative to stop irrigating a number of hectares to protect some birds that are already protected at the national level. The same birds that serve as an excuse to justify that we cannot irrigate with the Segarra-Garrigues canal are in the neighbouring Urgell canal...” [rural community]



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3. The case studies

The Neste canal





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The Neste canal



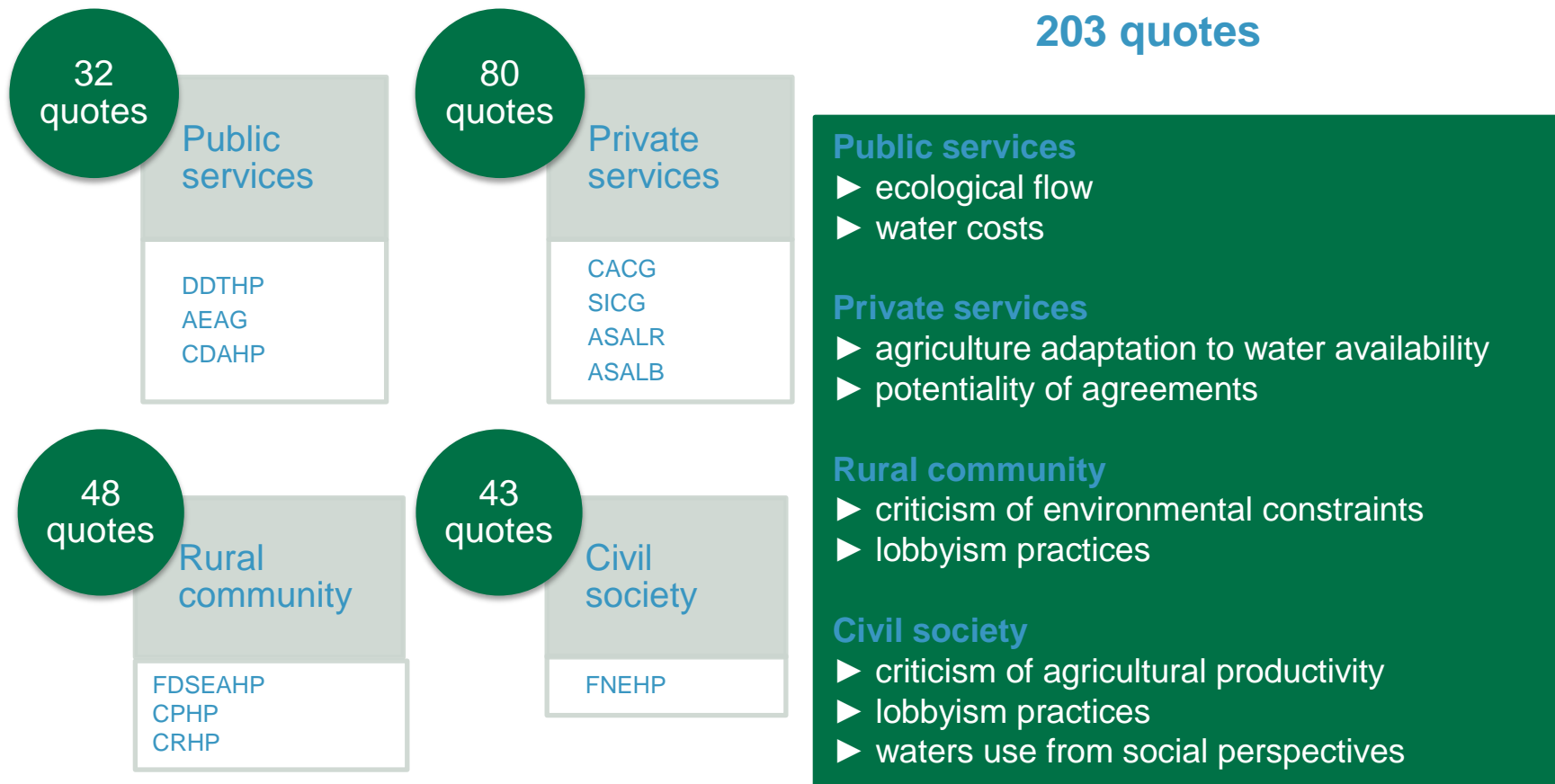


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3. The case studies

The Neste canal





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The Neste canal



“For us, water is a common heritage while for both the agricultural sector and the energy sector it is just a business” [**civil society**]

“The Neste system is a simple system where there is water available, [along with] socioeconomic demands and ecological flow... the hardest thing is to gather people around a table to discuss it” [**public services**]

“Farmers have already accepted the existence of environmental factors that must be taken into account, and they are primarily interested in ensuring their implementation on farms” [**private services**]

“There are people who want to irrigate and improve the profitability of their farm, but cannot do it because the environmental pressure is very strong and limits all options for irrigation” [**rural community**]



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3. The case studies

The Muzza canal



3. The case studies

The Muzza canal

Regione Lombardia - DG Ambiente, Energia e reti	Public services
Regione Lombardia - DG Territorio e Urbanistica	
Regione Lombardia - DG Agricoltura	
Regione Lombardia - DG Sistemi Verdi e Paese	
Autorità di Bacino del Fiume Po	
Consorzio dell'Adda	Private services
Consorzio Bonifica Muzza Bassa Lodigiana	
Unione Regionale Bonifiche Irrigazioni e Miglioramenti fondiari	
ENEL Lombardia	Rural community
Confederazione Generale dell'Agricoltura Italiana Lombardia	
Confederazione Nazionale Coldiretti Lombardia	
Confederazione Italiana Agricoltura Lombardia	
WWF Lombardia	
Legambiente Lombardia	Civil society
Forum Italiano dei Movimenti per l'Acqua	



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3. The case studies

The Muzza canal



209 quotes

Public services

- ▶ Environmental services from irrigation practices
- ▶ Water use vs water consumption

Private services

- ▶ Non consumptive water use
- ▶ conflict between agriculture and environment requirements

Rural community

- ▶ water use for agricultural practices
- ▶ adaptation of agricultural sector

Civil society

- ▶ availability and management of water resources
- ▶ Patto per l'Acqua (Water agreement)



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3. The case studies

The Muzza canal



“The main problem of the water management model at the national level is the diversity of involved stakeholders who have some type of responsibility” [**civil society**].

“For many people, irrigators are those who consume and waste water instead of seeing the function of returning water to the soil, drainage management, and landscape conservation” [**public services**]

“In managing the Muzza canal, there will always be someone who does not have a global view about water resources and those who defend their interests above the common good” [**private services**]

“The agricultural sector is not a lobby, although part of the environmental sector believes that agriculture is the source of all water problems” [**rural community**]



4. Discussion

The current trend in natural resources management calls for an integrated approach that considers all sectors, that encourages social learning in order to improve sustainability in managing the commons, and in which stakeholders can actively participate in the decision-making processes.

The TIMA is based on the qualitative analysis methods and the results of its application can be used by the relevant authorities to customize their interventions by knowing beforehand in a well-structured form which are the different stakeholder priorities.

This could generate useful information in prioritizing and developing joint river basin management plans, in particular by basing them on irrigation challenges and by promoting measures and policies that focus on improving governance in decision-making processes.

It will be useful to encourage further research on the ability to model irrigation systems that combine consumptive and non consumptive water uses, as well as social and environmental demands.

Subsequent studies should go deeper into the use of quantitative analysis to clarify the qualitative values expressed in interviews and questionnaires, in order to ultimately improve their graphical representation. This improvement is essential in extending and comparing the application of TIMA to other irrigation systems in Southern Europe.



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Thank you so much for your attention!



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