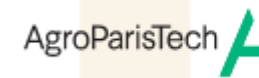


# Mapping stakeholder influence in the agricultural water management

## a preliminary study for the Lebna watershed, Tunisia

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1 LISAH • 2 G-Eau • 3 INRGREF • 4 AgroParisTech • 5 INAT



# A short presentation

The group of students and researchers observing the Kamech siltation reservoir within the Lebna watershed. © Bilel Halouani 2023



# Background and methodology

“Form is the diagram of force”

Forman 2014

**Water** includes flowing *blue water* (e.g. reservoirs, irrigation), and *green water* available in soil for plants (e.g. rainfed agriculture) (Falkenmark & Rockström, 2006). Water management implies to balance between blue/green

**Spatial anisotropies** in hilly watersheds require to consider blue/green water management and interactions between stakeholders and actors in a spatially explicit way (Barton *et al.*, 2010)

**Geoagronomy** aims at mapping interactions and influence of the power balance and spatially explicit interactions in agricultural management (Deffontaines, 2006)

Agricultural water management stakeholders and actors

Interactions

Interest

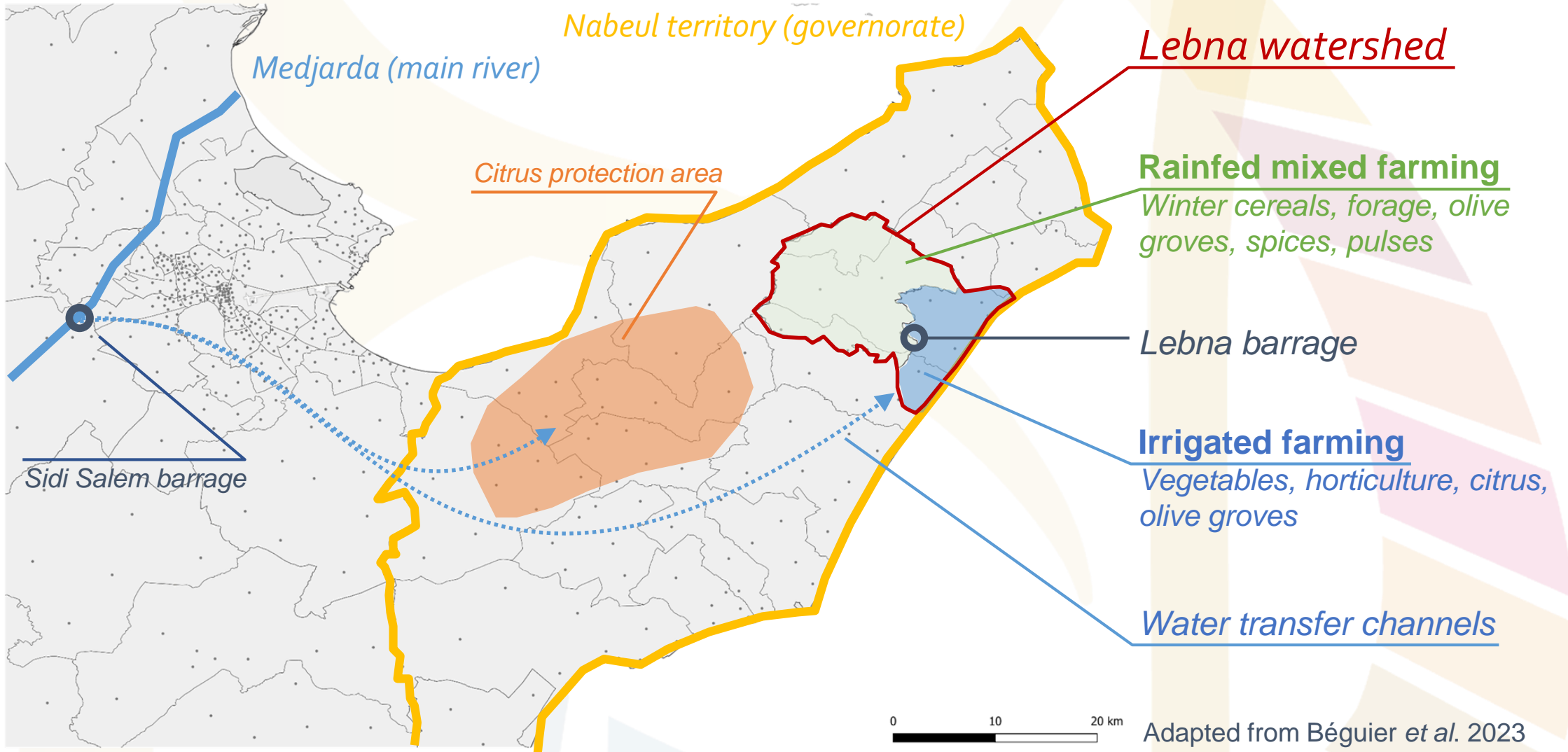
Influence

Zones

Power (territories)

Influence

# Study area (pilot case)



# Data and methods

Off-field (4 weeks)

4 French students

**Synthesis of institutional documents and literature**

List of available data and resources

**Survey guide**

Preliminary selection of the stakeholders

On-field | Cap Bon and Tunis (2 weeks)

4 French students + 4 Tunisian students

**Semi-structured interviews (n=25)**

Respondent self-presentation

Individual/institutional actions and interactions:  
**list and map**

Who to contact on the topic

**Analysis and synthesis of interviews and maps**

Interest/influence diagram of the collective actors

Chorematic diagram of **influence zones**

Network of the interactions

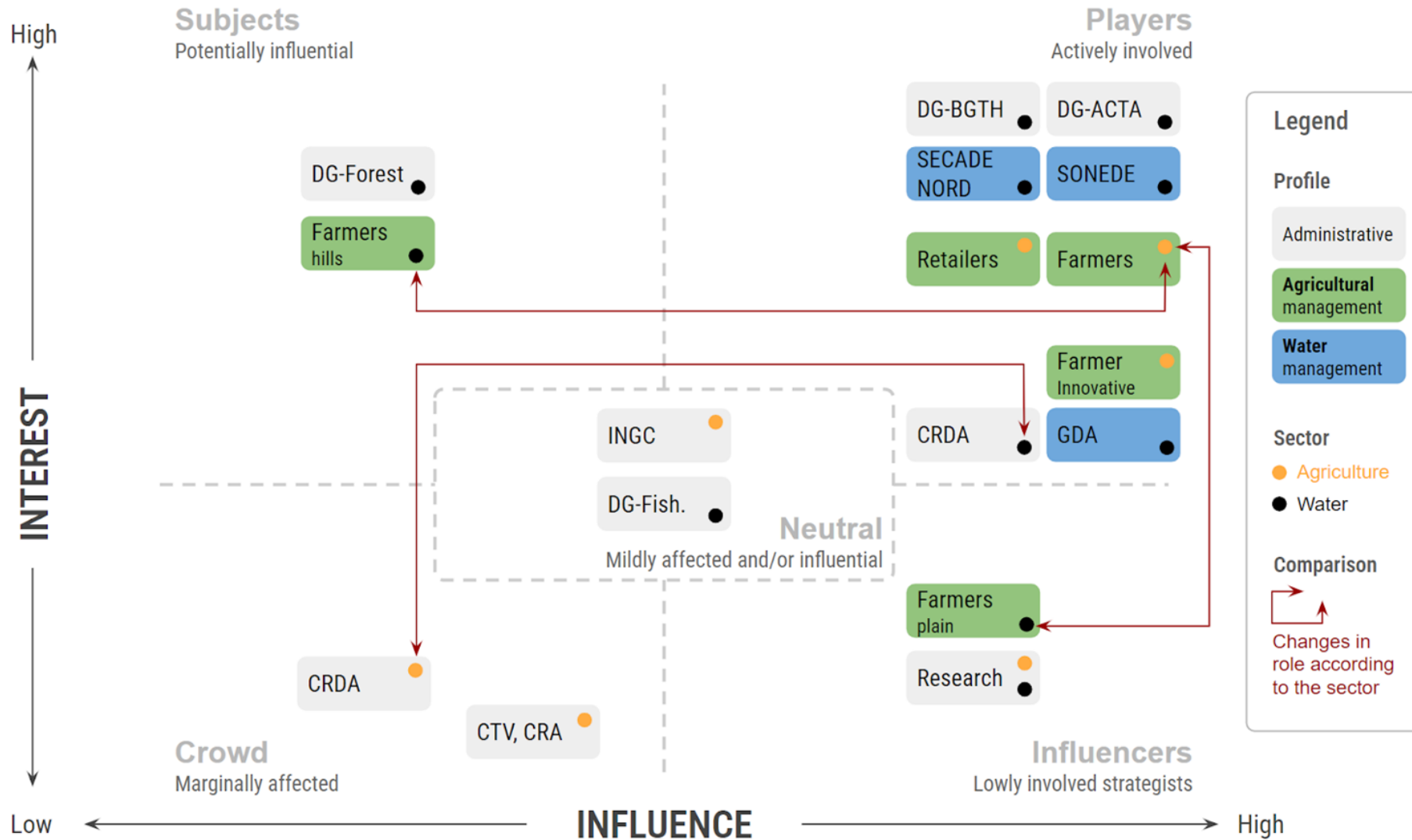
# Results and implications



*Lebna barrage, Cap Bon, northern Tunisia. CC BY 4.0 Davide Rizzo, 14 Feb. 2023*

# Findings /interactions

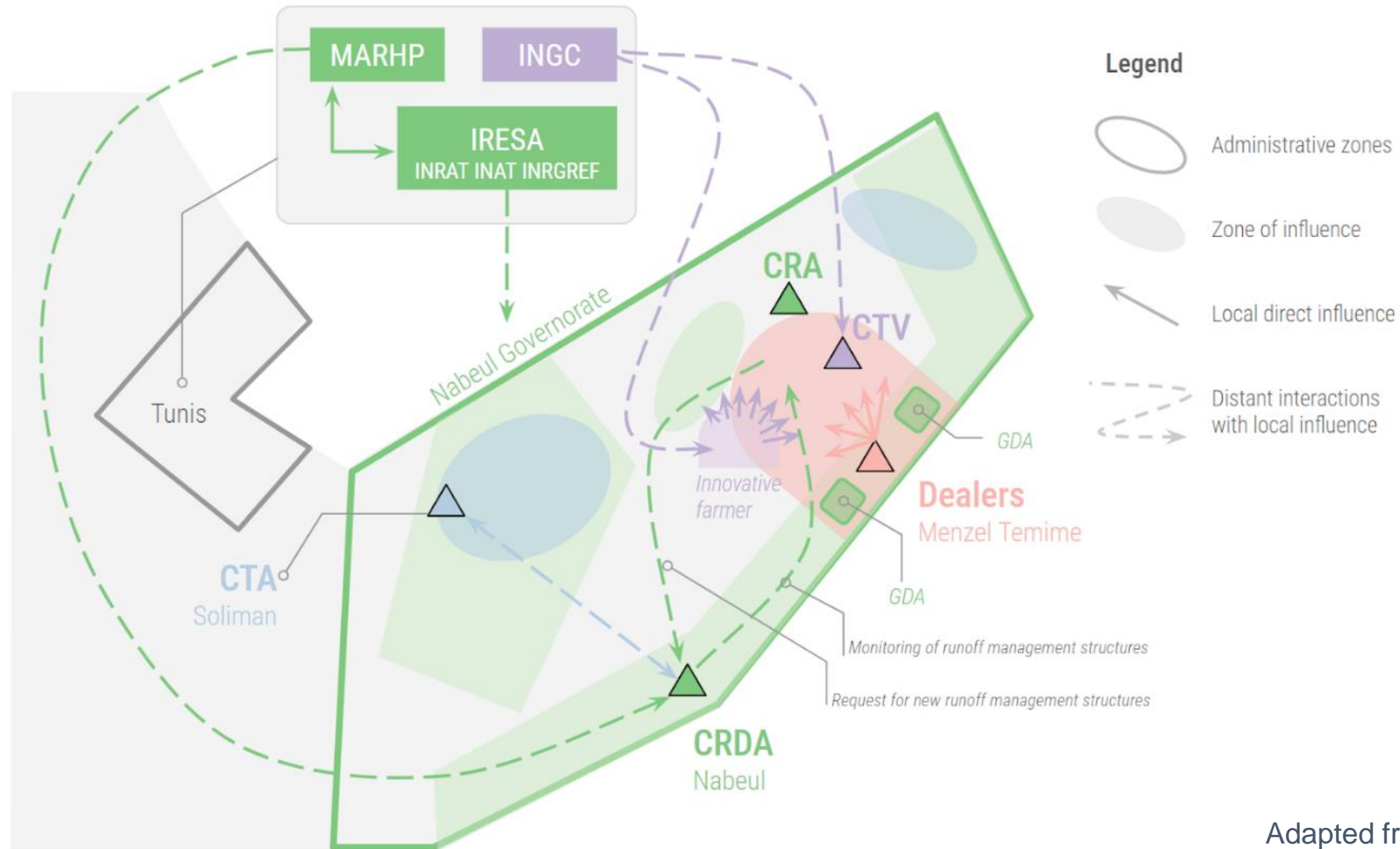
*Influence/interest diagram\**



\*Based on Eden and Ackermann (1998, p. 122), it relates interest in strategy making and the power in strategy implementation

# Findings /zones

Chorematic diagram\* of the influence zones



\* symbolic representation based on qualitative-descriptive spatial models focused on dynamics, elaborated by Brunet (1993)

Adapted from Bégurier *et al.* 2023



# Practical & theoretical implications

Challenges in balancing centralized control with local actions. **Intermediate actors** are crucial in facilitating communication.

**Geoagronomic approach** can enhance socio-technical descriptions of water management bridging land management and biophysical dimensions.

Future Steps: Enhancing spatial definition of **influence zones** and revising questionnaire design to include less influential stakeholders.

*Farmer transporting straw and tank for milk collection, Menzel Aïssa, northern Tunisia. CC BY 4.0 Davide Rizzo, 15 Feb. 2023*

# Thank you for the attention

*Agricultural landscape near Rainine, Cap Bon, northern Tunisia. CC BY 4.0 Davide Rizzo, 27 Oct. 2022*



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# List of stakeholders acronyms

Acronym	French name	English translation	Spatial level
CRA	Cellule Rayonnement Agricole	Local units for agricultural enhancement	Department
CRDA	Commissariat Régional au Développement Agricole	Regional Centres for Agricultural Development	Region
CTV	Cellule de Vulgarisation Agricole	Local agricultural extension units	~Municipality
DG	Direction Générale	General Directorate	National
-- ACTA	Aménagement et de la Conservations des Terres Agricoles	Agricultural land management and conservation	--
-- BGTH	Barrages et des Grandes Travaux Hydrauliques	Dams and large hydraulics works	--
-- Forêt	Forêts	Forest	--
-- PA	Pêche et de l'Aquaculture	Fisheries and Aquaculture	--
GDA	Groupement de Développement Agricole	Group of agricultural development	Local
INGC	Institut National des Grandes Cultures	National Institute for Field Crops	National
SECADENORD	Société d'Exploitation du Canal et des Adductions des Eaux du Nord	Society for the operation of the northern canal and its water supply system	Regional
SONEDE	Société Nationale d'Exploitation et de Distribution des Eaux	National society for water exploitation and distribution	National


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