

Understanding vulnerability and response to drought: from a local to a pan-European scale

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Patton (2010)

Drought Vulnerability & Responses

European analysis

Pan-EU - Mapping of vulnerability factors

Country – Evaluation of past responses
(*& vulnerability analysis*)

RB: Evaluation of past responses
(*& vulnerability analysis*)

Local: past responses
(*& vulnerability analysis*)

Spain

Country: Discourse & content analysis of exceptional laws

River Basin: Evaluation of past responses

Farmers' perception & local strategies

Literature review

- Over 180 Applied Vulnerability assessments
- Over 80 theoretical papers
- Systematic review of 71 applied drought vulnerability assessments

Impacts reported in the European Drought Impact Inventory (EDII)



Case Study past responses
Case Study vulnerability analysis

Situations of vulnerability to water shortage

Drought Vulnerability & Responses

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Spain

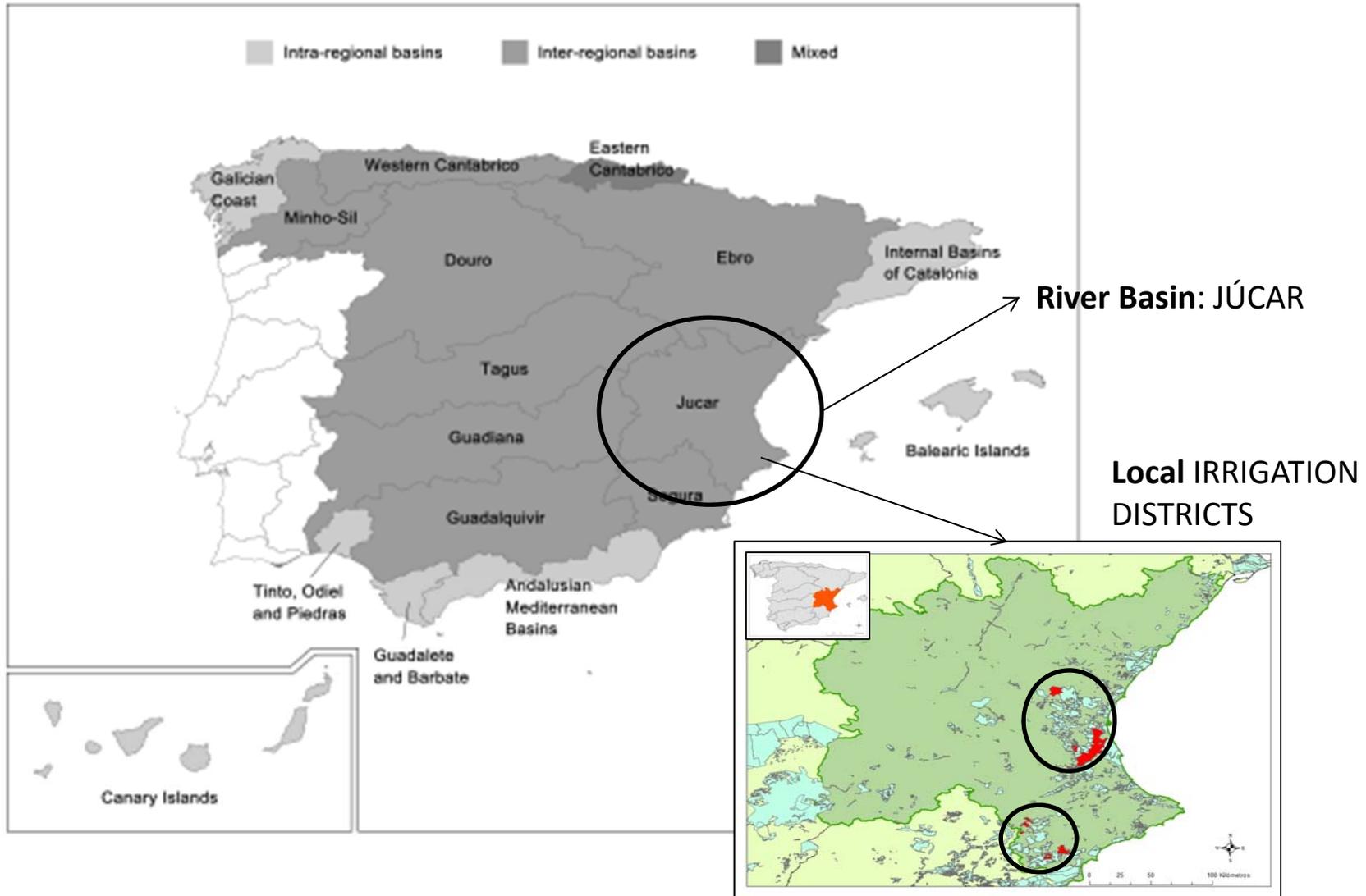
Country: Discourse & content analysis of exceptional laws

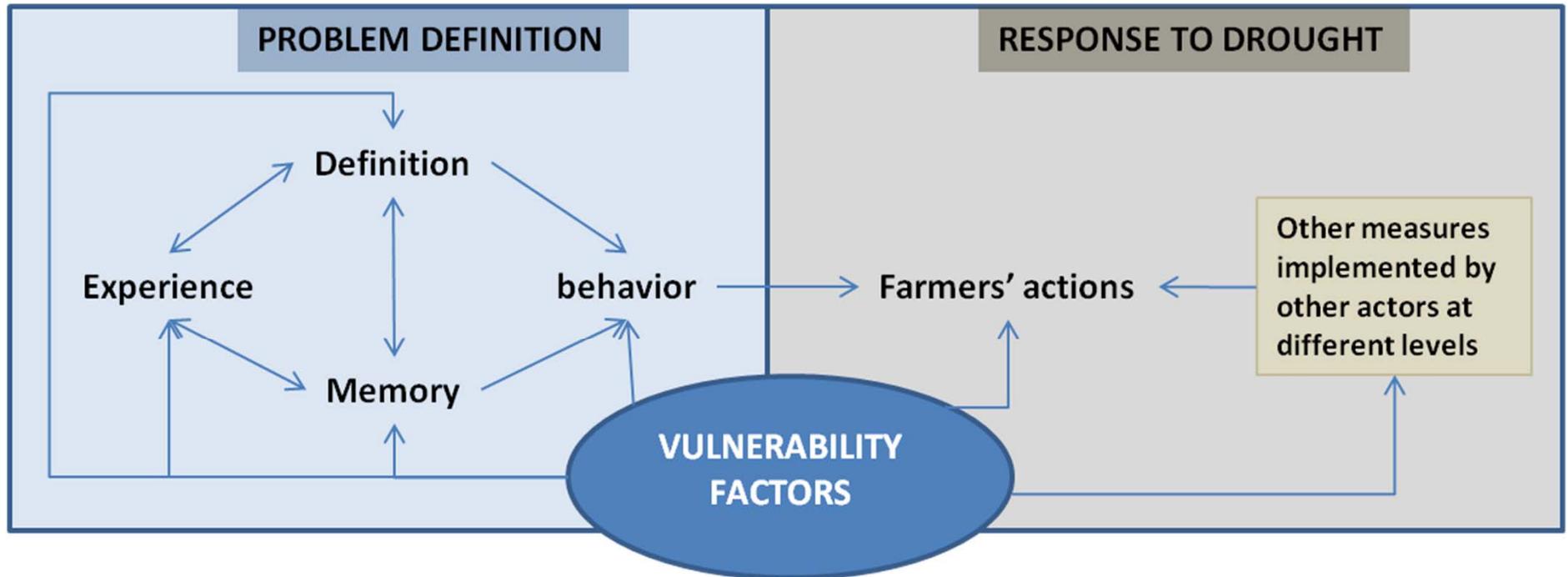
River Basin: Evaluation of past responses

Farmers' perception & local strategies

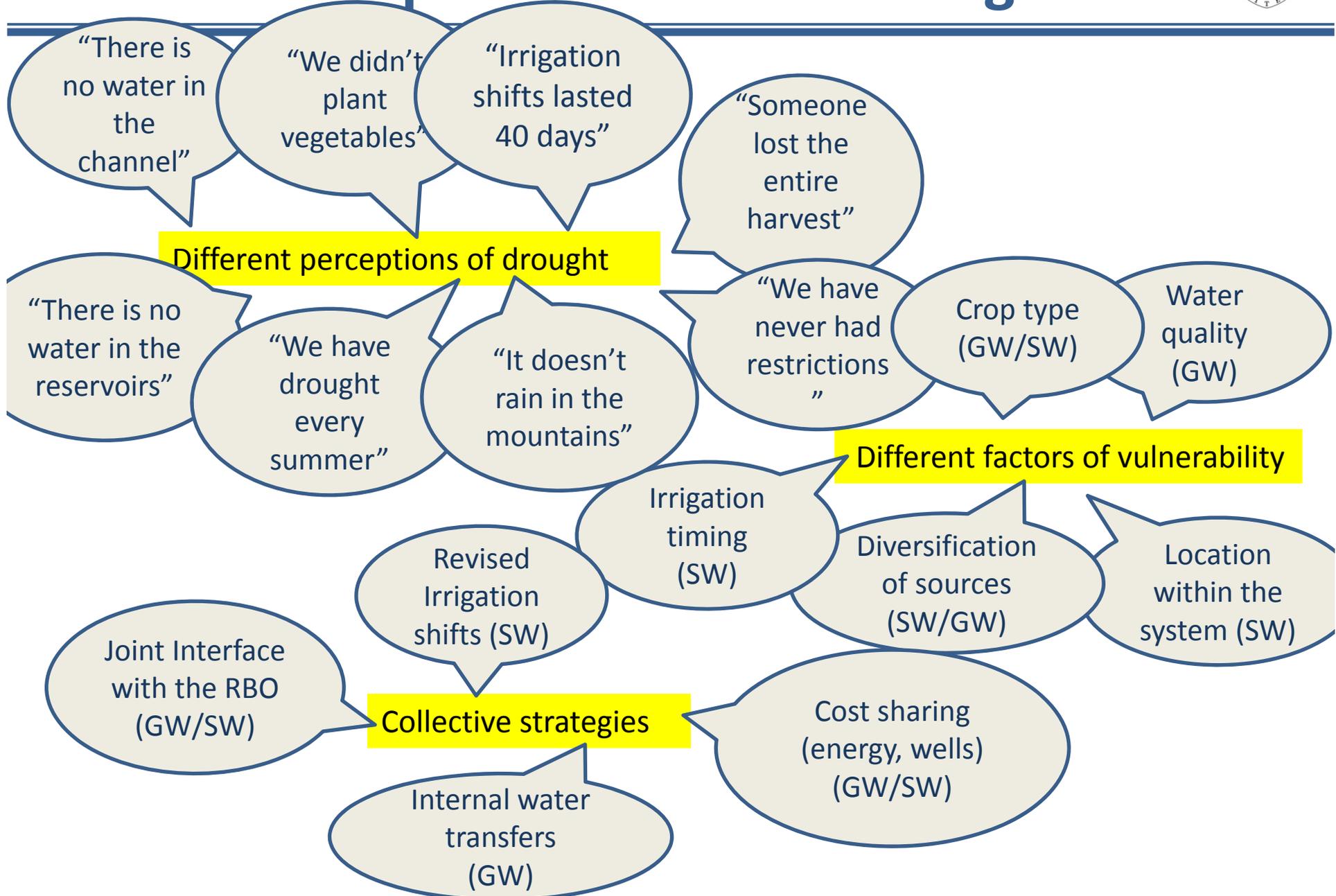
The analysis in Spain

Country: SPAIN





Perception and local strategies



What can we learn from all this?

Different scales = different perspectives

Inconsistencies across scales

Response and vulnerability evolve over time



EUROPEAN:

- Mapping of vulnerability factors
- Standards for data collection

Coarse mapping to inform EU decisions

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NATIONAL:

- Regulatory framework (e.g. exceptional laws)
- Official discourse, dominant paradigms in water management

Policies are often designed at a national level

RIVER BASIN:

- Understanding of the water system
- Water allocation among users and infrastructures development

Policies are often implemented at a sub-national level

LOCAL:

- Stakeholders perception and vulnerability factors at a local level
- Strategies to address drought individually and collectively

Detailed analysis of drought measures and their relation to the larger context

Inconsistencies in drought perception

SPAIN (NATIONAL) = Stress the natural origin; alarmist terms and exceptionality; Definitions based on rainfall > storage > impacts



Drought is NOT “normal”

JUCAR RB = References to hydrological drought, which causes impacts on water users

*Drought is “normal”
Operational definitions are used*

IRRIGATION DISTRICTS = Definitions are based on storage levels (19/24) > impacts (17/24) >> rainfall (7/24) or drought is not perceived (7/24)

*The boundaries
between water
scarcity and drought
is sometime blurry*

Different approaches to drought management → Risk approach (RB) – Crisis approach (Nat) – Mixed (L)

Inconsistencies in responses

- Spatial disconnect: national measures are promoted also in areas not affected by drought
- Temporal disconnect: long time span between drought relief needs and delivery of the response
- Different use of indicators: drought indicators at RB level ignored at the other levels

Evolution over time

Comparing different drought events at the same place

‘Fast’ changes in vulnerability are mainly achieved through changes in **adaptive capacity**

- Júcar RB = change after drought in the 1990s
Shift toward proactive approach & development of Drought Management Plans
- Irrigation districts = change after drought in the 1990s
Diversification of water sources
Modernization of irrigation systems

- Comparison is useful:

- Comparing different case studies according to a set of common criteria
- Comparing different drought events at the same place
- Analysing a single event from different perspectives and scales

Still, assessing measures and vulnerability across scales is challenging

- The analysis of *discourses* is useful to understand the underlying logic that affects drought actions at the different levels
- Stakeholders input is essential to really understand vulnerability and response to drought

- Need to improve communication across scales so that efforts made at a certain level positively impact also the other levels
- Need to increase the consistency of the official discourse around drought
- Need to address inconsistencies between policy objectives and implemented measures
- Need to enhance data collection and data access (transparency)
 - Lack of impact data
 - No fully reliable data on water use by sectors, water rights, etc.
- Need to systematically evaluate response to drought

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