

Trends in the water sector – How to manage sustainable water supply to all users, safeguarding livelihoods and biodiversity



Outline

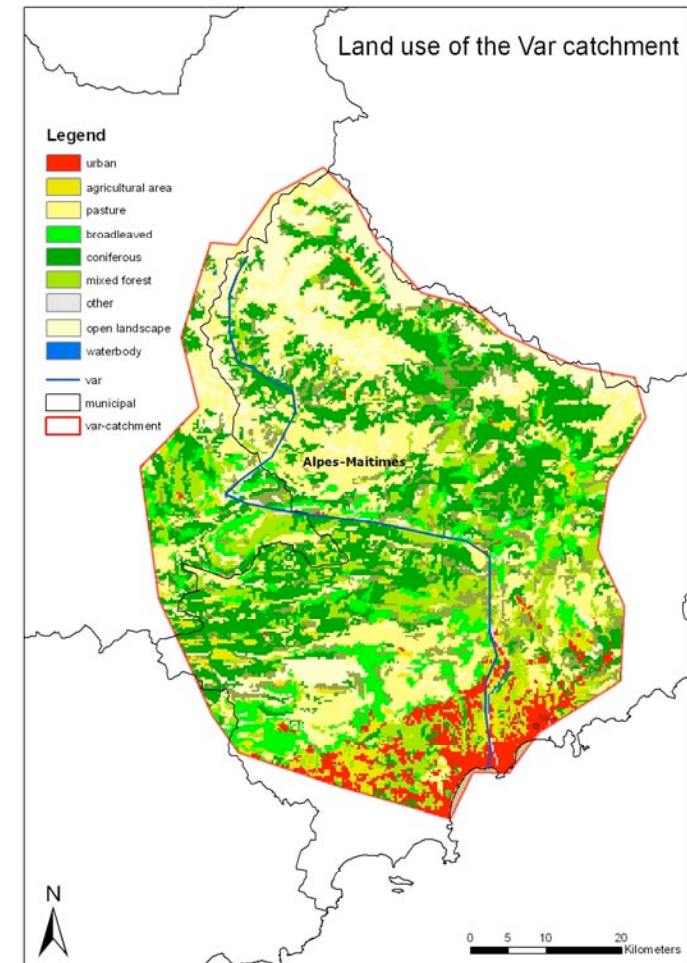
- Background (characterisation of the area)
- Methods (short outline)
- Drivers (most important drivers and pressures)
- Impacts and responses (example: economy)
- Links between sectors (tourism, agriculture, conservation)
- Vulnerability assessment (example: Adapting Mosaic)

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Background

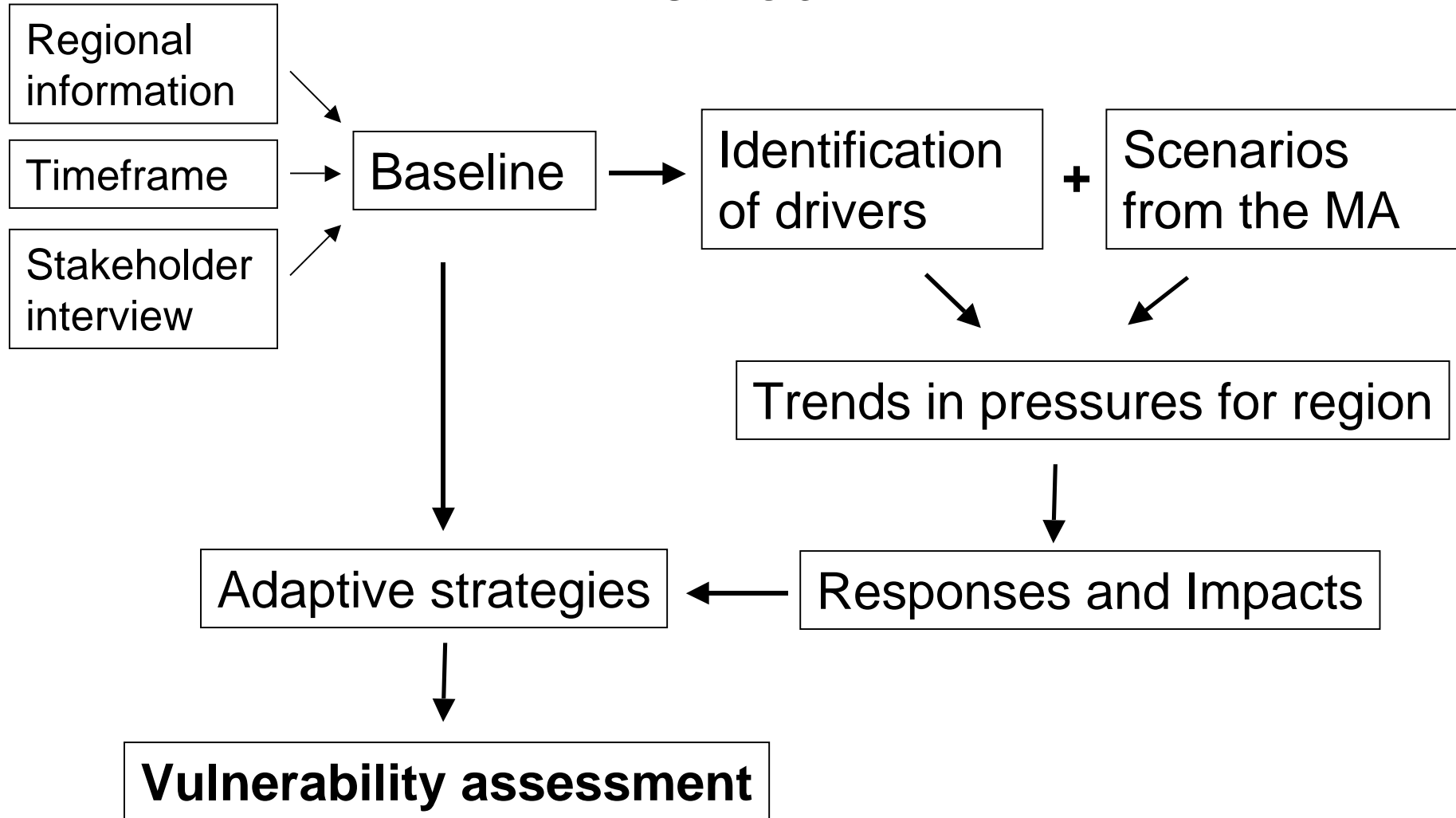
- Clean water is vital to all people, for drinking, agriculture, industries, energy production and recreation
- Drought is already a problem
- Ongoing and anticipated changes in e.g. climate and land use could mean even less available water
- Mountains are also important for the water quantity in downstream areas



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Method



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Drivers

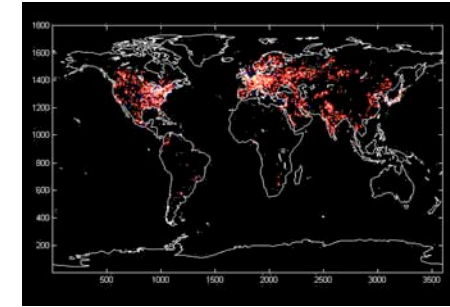
Climate



Economy



Population and demographics



Land management



Policy and planning



Technical innovation

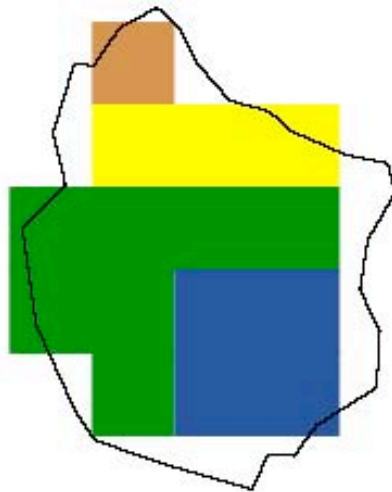


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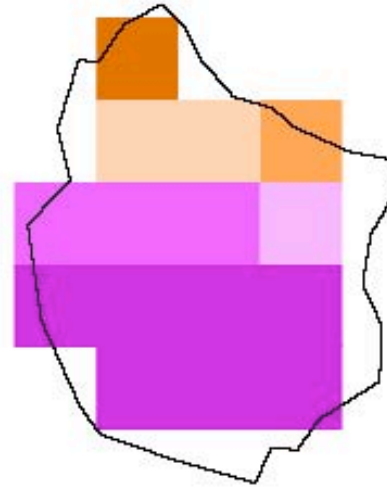
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Results of the ATEAM project - precipitation changes after Hadley A1 scenario for 2050

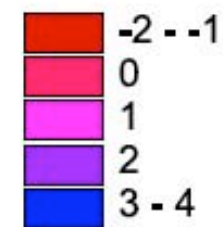
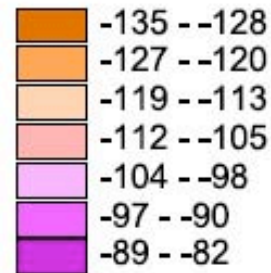
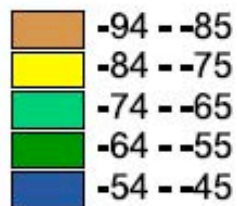
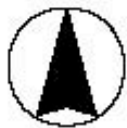
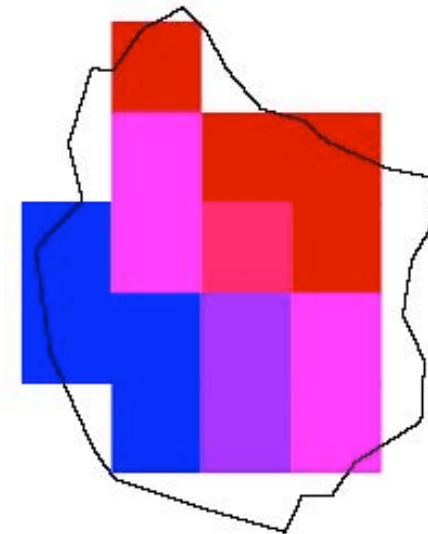
Changes in annual precipitation



Changes in summer precipitation

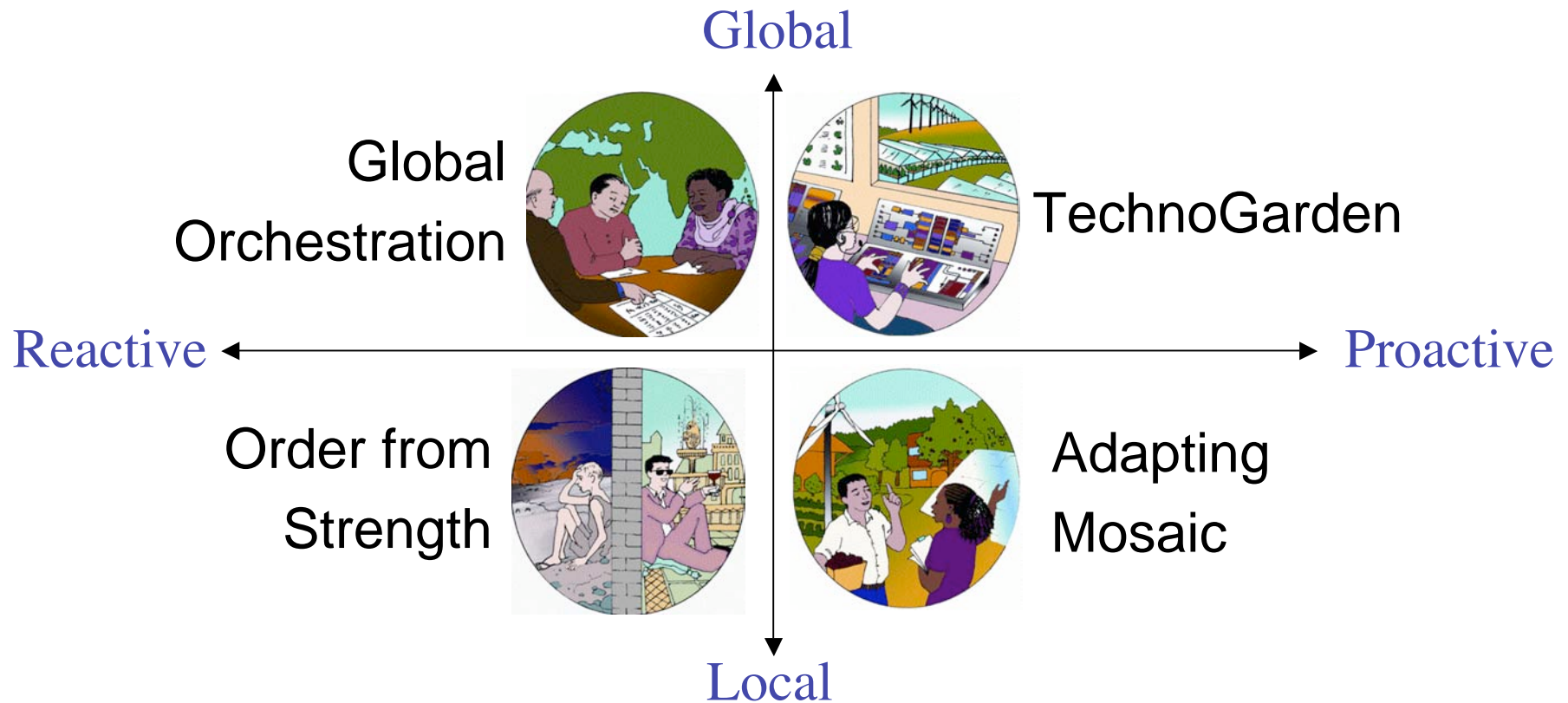


Changes in winter precipitation



Scenarios

Regionalised scenarios based on
Millennium Ecosystem Assessment



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Impacts and Responses

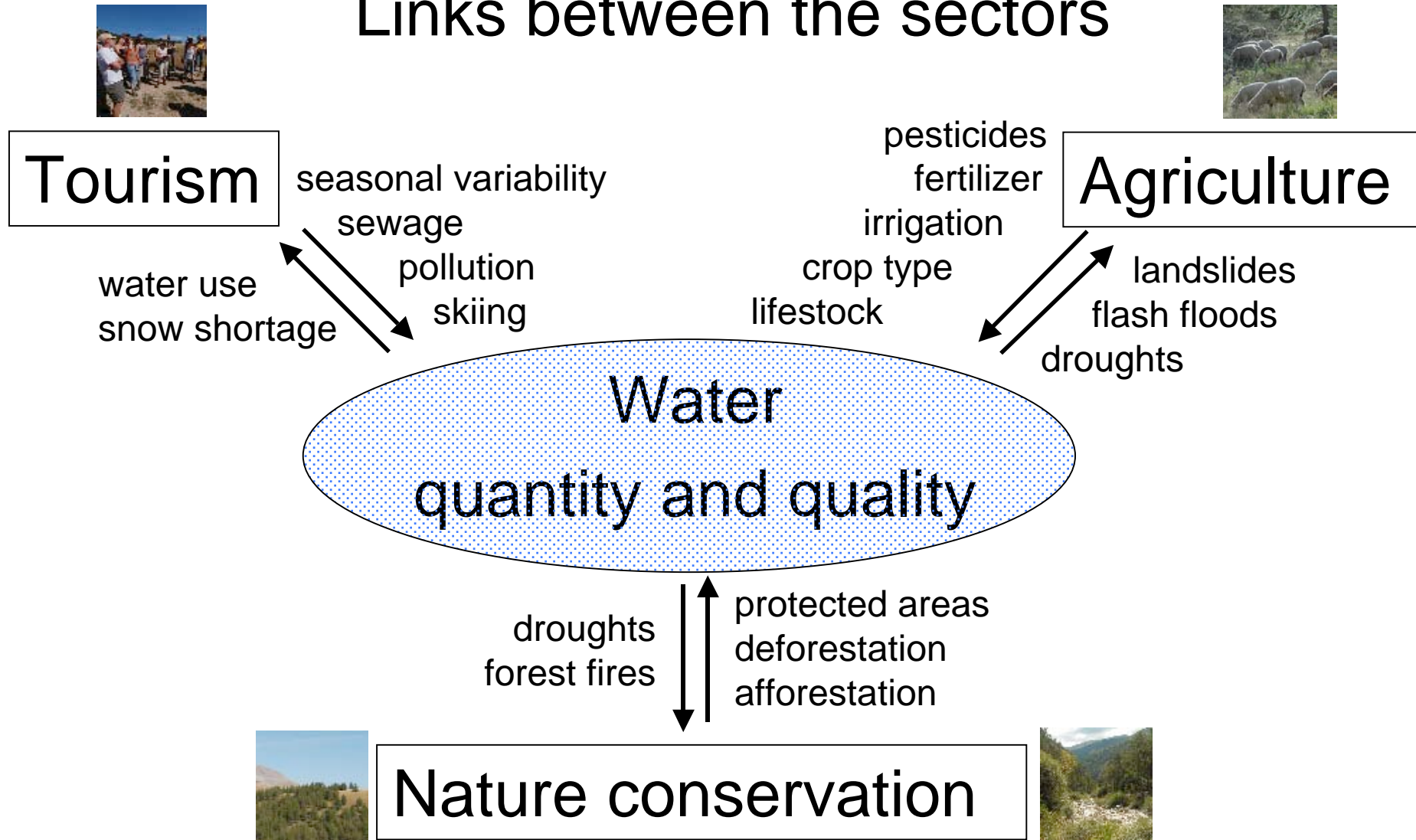
IMPACTS AND RESPONSE	Scenario	Order from Strength		Adapting Mosaic	
		Reactive and Regional		Proactive and Regional	
Driver	Pressure	2020	2050	2020	2050
Economy	Nature Conservation	Protected areas ↑ → biodiversity in the aquatic system ↑		Focus on ecosystem service → protected areas ↑ → efficient use of water ↑	
	Agriculture	Regional markets → agriculture ↑ fertilizer and pesticides ↑ → water quality ↓		No change in agriculture intensity / fertilizer + pesticides ↓ → improved water quality ↑	
	Tourism	Tourism ↓ → water demand and seasonal variability ↓ → long-term water availability ↑ Income of people ↓ → water use ↓			

➤ Various drivers and pressures for all four scenarios...

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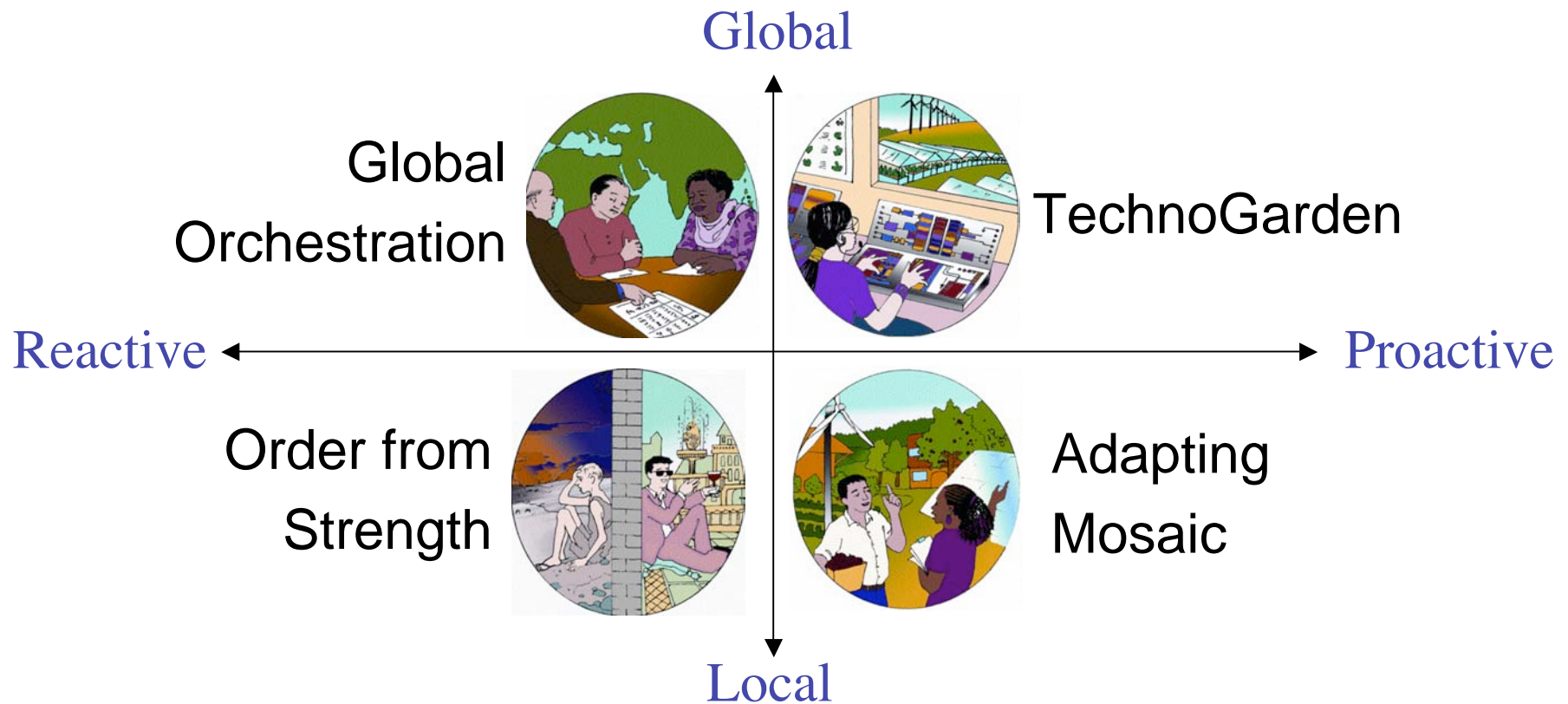
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Links between the sectors



Scenarios

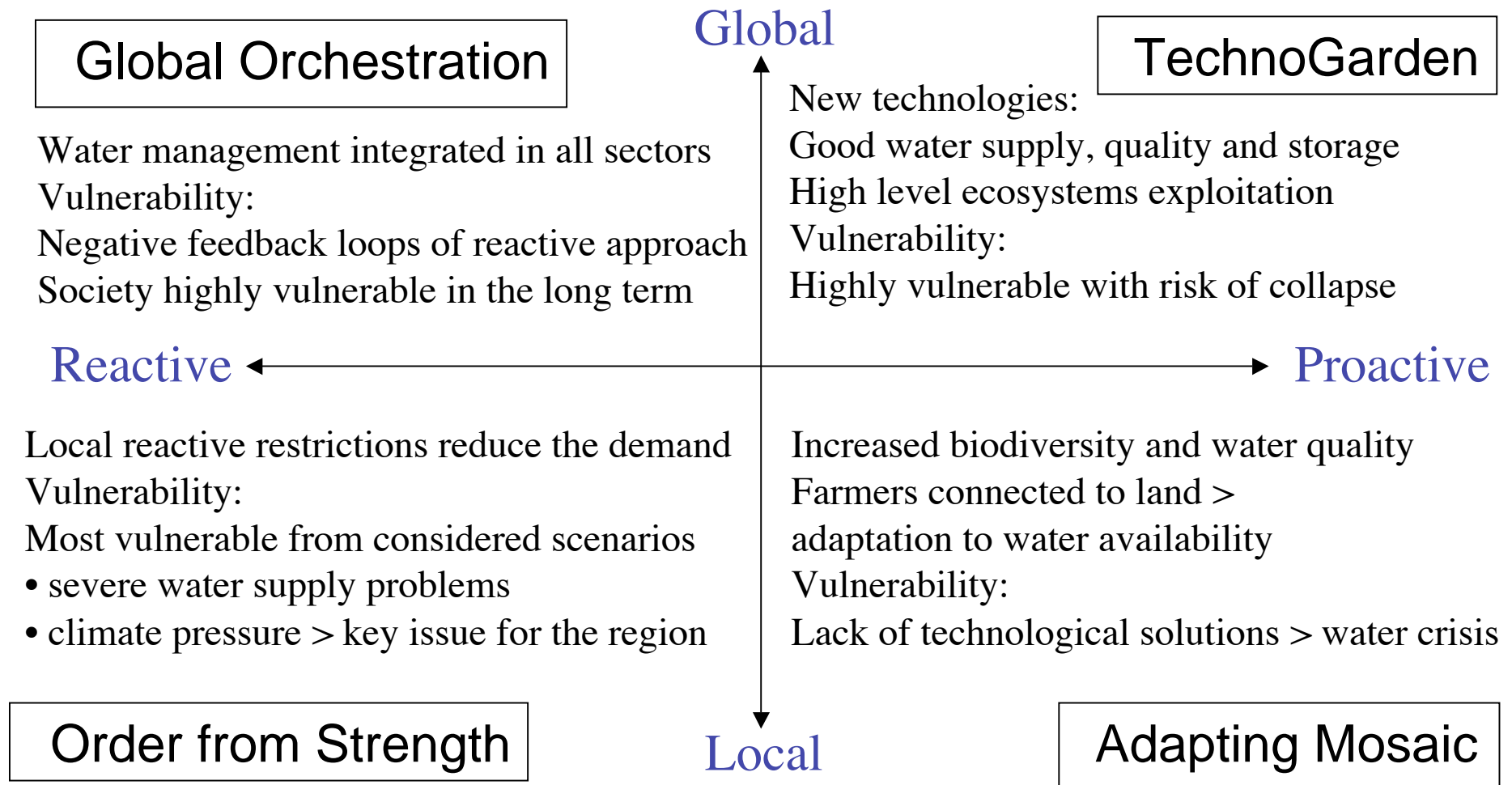
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Vulnerability assessment



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Adapting Mosaic

1. Storyline

- proactive, local and experimental management of natural resources
- political and economic activities focus on ecosystems
- low economic growth

2. Drivers and Impacts

- water availability decreases until 2050
- increased agriculture and conservation
- decreased tourism and industry
- more extreme events (e.g. droughts)

3. Adaptive Strategies

- education for sustainable water use
- agro-environmental schemes
- adaptive management (e.g. plant hedgerows, maintain small ponds)
- strengthen regional markets

4. Vulnerability

- lack of global water supply network might lead to water crisis
- need for external ecosystem services
- lack of technological solutions

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Adapting Mosaic

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➤ Society medium vulnerable with respect to water services

➤ Uncertainties related to ecosystem services are reduced

2. Drivers and Impacts

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4. vulnerability

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Many thanks to:

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- All participants of the summer school

