The Role of Actors' Values, Beliefs, and Identities in Integrated Watershed Management: A Case Study from Switzerland

Raphael Gaus[1,2], *Matthias Buchecker*[1], *Adrienne Grêt-Regamey*[2]

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raphael.gaus@wsl.ch

[1]: Swiss Federal Institute for Forest, Snow and Landscape Research WSL
[2]: Institute for Spatial and Landscape Development IRL, ETH Zürich

Introduction and Theoretical Framework

integrated watershed management

- complexity requires the participation of diverse actors sharing different competences and interests in decision-making
- actors often have dissimilar perspectives on the problem based on their respective values, beliefs, and identities

participatory governance of social-ecological systems (SES)

- change of perspectives and development of a shared identity
- alteration of behavior, practices, and institutions

(Schusler et al. 2003; Reed et al. 2010; Spence and Pidgeon 2010)

Introduction and Theoretical Framework

mental model approach

- frameworks in the minds of individuals to interpret the world
- focus on participants‘ perspectives: attitudes, values, beliefs
- shared mental models through social interaction in multi-stakeholder platforms are a basis for common understanding and joint action

(Kolkman et al. 2005; Biggs et al. 2011; Biedenweg and Monroe 2013)

Research Questions

related to content

- What are the actors' perspectives on water resources and participatory governance of SES in an integrated watershed management project in the Swiss Alps?
- How are these perspectives linked to actors' values, beliefs, and identities?

related to methodology

- How can actors' perspectives in a complex environmental planning project be revealed through qualitative and quantitative methods based on a mental model approach?

Methods

qualitative

- document and actor analysis concerning the selected case study
- semi-structured theory-generating expert interviews
  - including participatory drawing tasks to elicit mental models
- participant observation at meetings and workshops

quantitative

- standardized survey on the different actors' perspectives

Methods

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- standardized survey on the different actors' perspectives

Results of Document and Actor Analysis

case study "Water Bodies Development Concept Hasli"

- catchment basin of the River Hasliaare, 600 km^2, 12'500 inhabitants
- commissioned and funded by the national and regional government
- 6 deliberative workshops from 2015 to 2017 with about 60 participants
  - national and regional government authorities
  - local municipalities, associations, and corporations

project aims

- establish a local platform for the coordination and exchange of views
- elaborate a vision for the future development of the water bodies
- define technical and institutional measures to manage water resources

Rivers, Waterfalls, Lakes, and Glaciers

Channeled Rivers and Dammed Lakes

Mental Model Approach

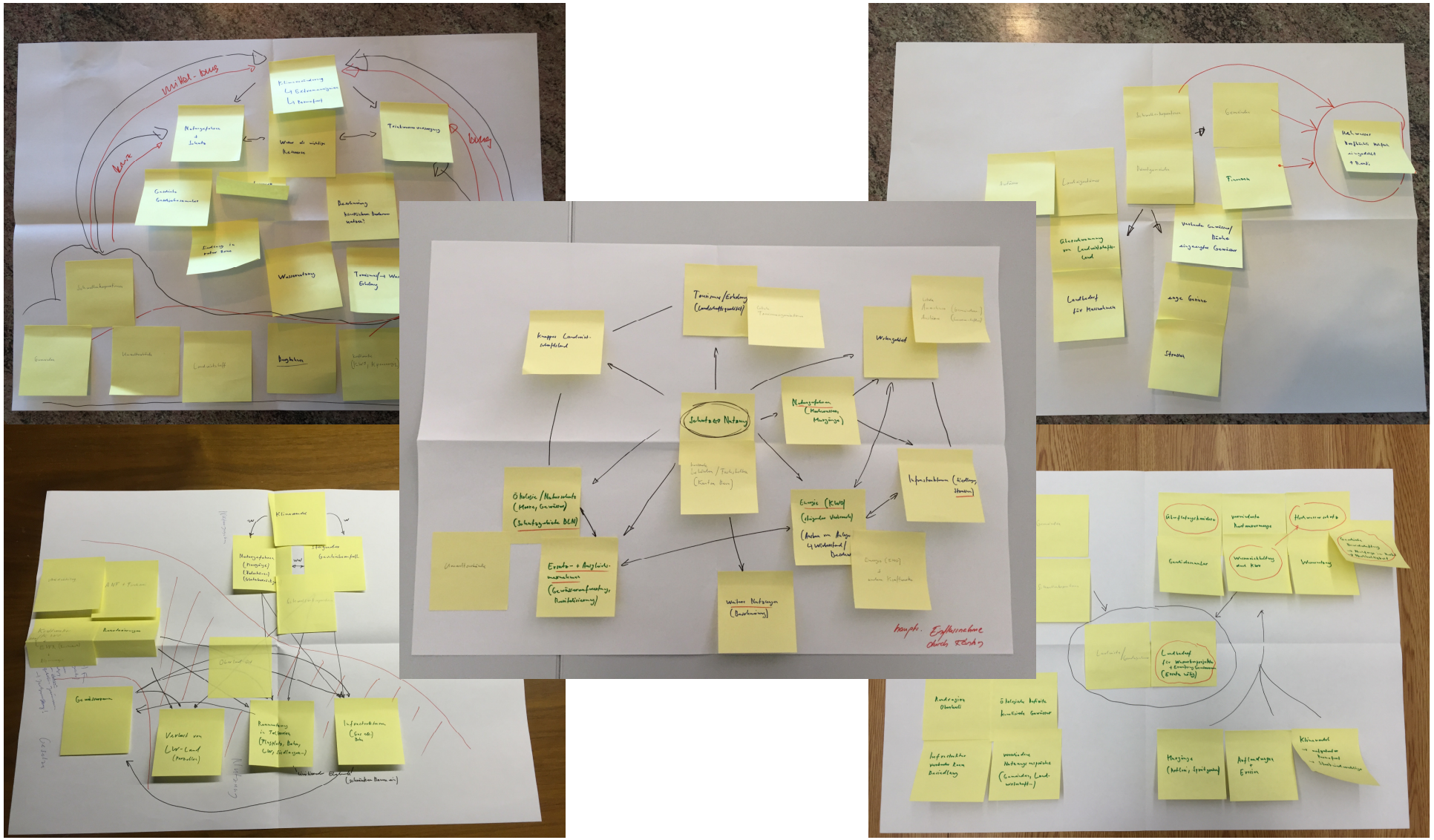
22 interviews based on actor analysis and purposeful sampling

participatory drawing → cognitive maps, influence diagrams

- interviewer: keyword notes of mentioned concepts during interview
- open-ended task to arrange the concepts at the end of interview
- interviewee: arrangement, amendment, linking, labeling, explaining

→ conversation elicits the interviewees' mental model
→ depicted mental model stimulates further conversation

Mental Model Approach



Results of Mental Model Approach

analysis of concepts and functional links reveals diverse contents and structures of mental models

- type: specific ←→ abstract
- position: central ←→ peripheral
- arrangement: hierarchical ←→ numbered ←→ grouped ←→ isolated
- embeddedness: local ←→ regional ←→ national ←→ global
- numbers, proportions: dense ←→ sparse

→ different perspectives on the SES and its boundaries

- narrow ←→ broad
- open ←→ closed
- diverging foci

Synthesis of Qualitative Results

management of floods and mudflows is the most important concept

- linked to ecological restoration, agriculture, and hydropower

different values, beliefs on dealing with water-related natural hazards

consensus

- risk increases due to climate change
- flood protection is the main goal of integrated watershed management

disagreement

- maximal flood protection ←→ extensive ecological restoration
- increasing hydropower ←→ promoting nature conservation
- agricultural production ←→ ecological compensation

Synthesis of Qualitative Results

many local actors perceive ecological restoration as an external intervention affecting the SES since it is regulated by national law

- seen as green urban values imposed on the peripheral rural region
- particularly farmers consider quantity of arable land more important
- broad support for hydropower due to job creation

consensus about importance of participatory governance but local actors are skeptical about integrated watershed management

- uncertainty how to include the whole watershed and set priorities
- main problems and need for action seen in other villages

Conclusion

perspectives on water resources influenced by values and beliefs

- dominant focus on natural hazards due to climate change
- dispute about ecological restoration, land resources, and hydropower

discourse shaped by distinct identities of locals, farmers, and ecologists

- disagreement about priorities and benefits of integrated SES governance

participatory drawing is a useful method to elicit actors' mental models

- open-ended task reveals different contents and structures

Outlook

combine qualitative results with quantitative analysis of survey

compare findings with data collected in an advanced project phase

- conclusions about changes in actors' perspectives and social learning

Literature

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Appendix: Results of Actor Analysis

summary of actors in the SES relevant to the case study

national and regional government authorities

- natural hazards, hydropower, fishery, ecological restoration, nature and landscape conservation, land improvement, agriculture, forestry, spatial and regional planning, transport network

local municipalities, associations, and corporations

- residents, landowners, farmers, fishers, conservationists, hydraulic engineering, hydropower, tourism, (mountain) railways