

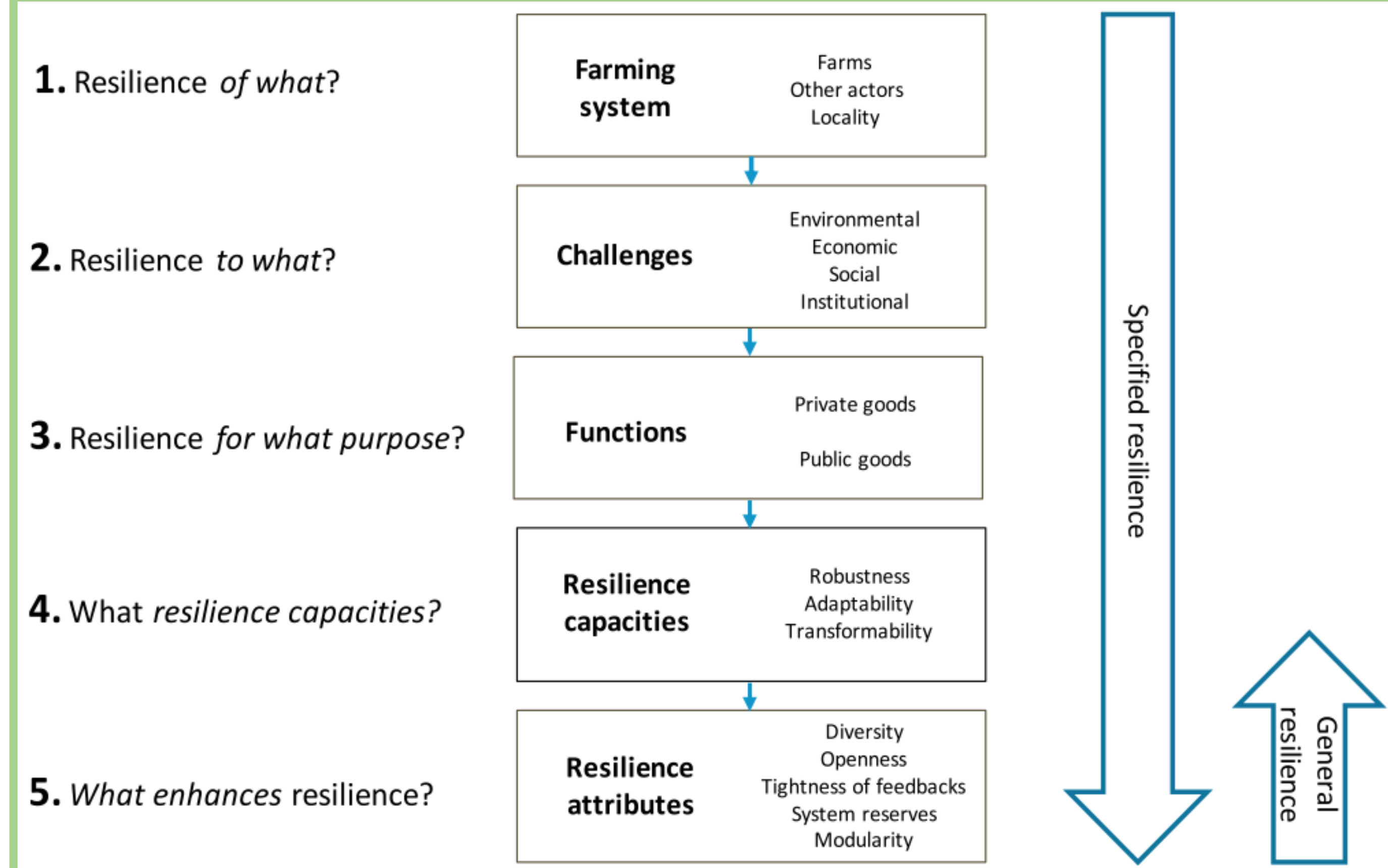
Background

Challenge

- Farming systems need to be resilient
- Agriculture critical to **supporting sustainable development** → global populations, natural resources
- Evolving **disturbance regimes** (e.g., environmental, social, economic, institutional) and uncertainty of impacts

Resilience assessments

- Used to understand the **dynamics** of complex social-ecological systems and design **strategic interventions** (Biggs et al., 2021)
- Various frameworks exist but due to the **complexity** of the concept, applicability is highly **context dependent**
- Meuwissen et al. (2019) resilience assessment framework may be an effective tool



Biggs, R. et al. *The Routledge handbook of research methods for social-ecological systems. The Routledge Handbook of Research Methods for Social-Ecological Systems* (Taylor and Francis, 2021). doi:10.4324/9781003021339

Brown, E. D. & Williams, B. K. Resilience and Resource Management. *Environ. Manage.* **56**, 1416–1427 (2015).

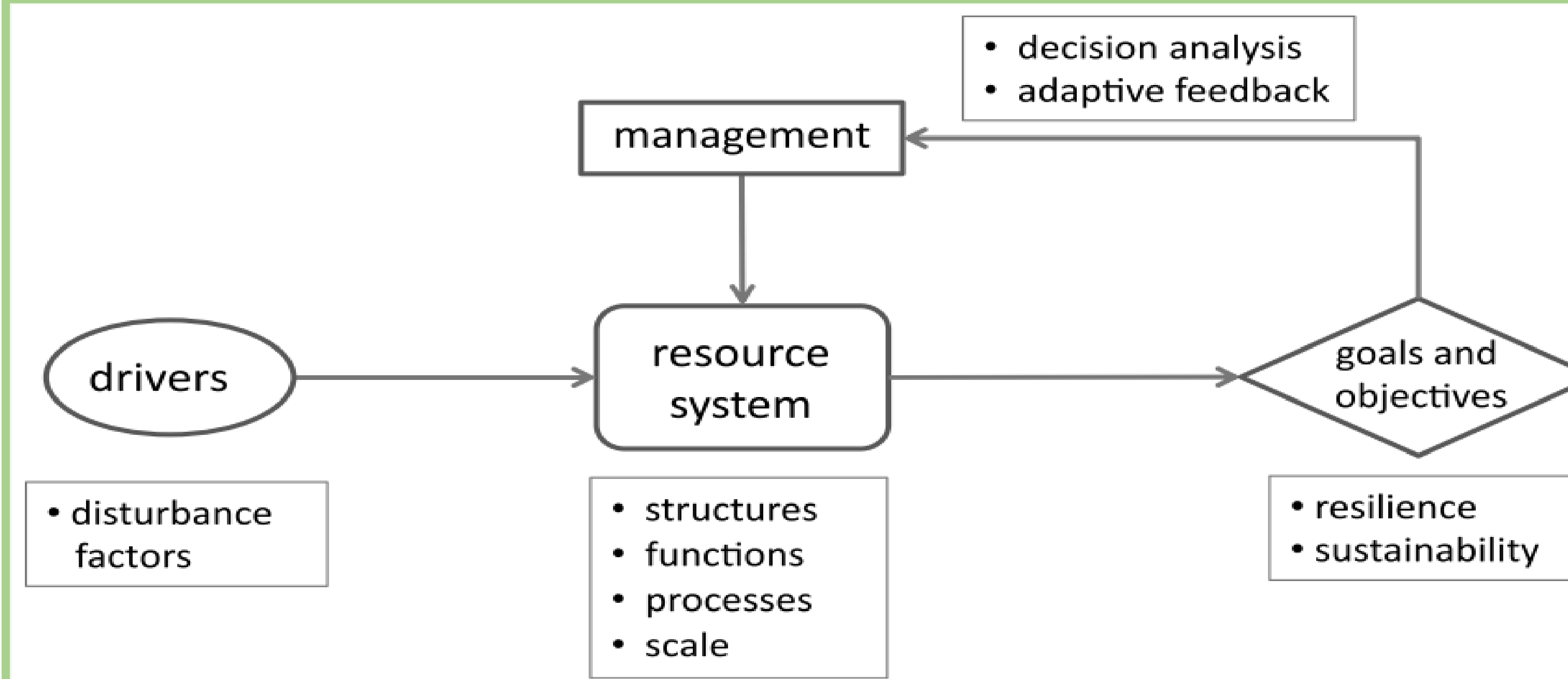
Meuwissen, M. P. M. et al. A framework to assess the resilience of farming systems. *Agric. Syst.* **176**, 102656 (2019).

Research question:

Are the qualitative methods for operationalizing the resilience assessment framework from Meuwissen et al. (2019) effective at eliciting data that supports resilience management of social-ecological systems?

Methods

- Implemented the framework's methods** using the apple farming system of South Georgian Bay, Ontario as a **case study**
- Results** of the case study **evaluated** according to Brown and Williams (2015) **resilience management framework**:

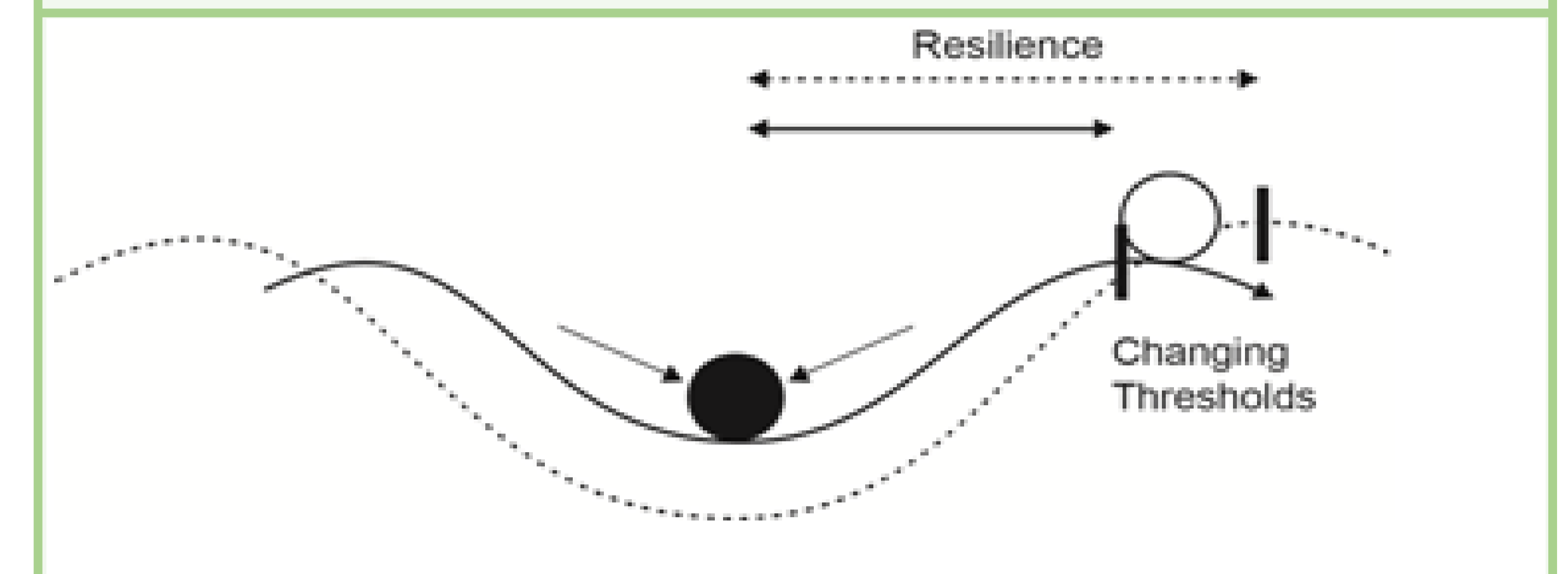


Results

	Characterization of the farming system	Identification of farming system disturbances	Identification of farming system goals and objectives	Management of the farming system via decision analysis and adaptive feedback
Step 1	Effective.	-	-	-
Step 2	-	Effective.	-	-
Step 3	Effective.	-	Effective.	Moderately effective.
Step 4	-	-	-	Moderately effective.
Step 5	-	-	-	Moderately effective.

Discussion

- Qualitative methods were easy to follow, sufficient flexibility
- Effective at understanding internal and external **disturbance factors** and how the system responds
- Desired functions of farming systems (public & private) effectively identified
- Case study did not satisfy collection of **indicators** to measure performance of functions
- Robust decision analysis and adaptive feedback requires **quantitative data**
- Delineation of **system thresholds** important for developing appropriate resilience-enhancing attributes



Conclusions

- Qualitative methods alone were **insufficient** to support resilience management
- Semi-structured interviews can be very effective but must reflect the audience to avoid **knowledge barrier** constraints
- All perspectives within the farming system should be included for a robust assessment
- Framework should adapt to identify **critical thresholds**
- Larger sample-size and quantitative methods should be included in future evaluation