US-IALE 2018 Annual Meeting

Operationalizing the telecoupling concept to assess land system regime shifts, land use decision making, and impacts on human well-being in tropical forest frontier landscapes:

first empirical results from Laos, Madagascar, and Myanmar



Case study landscapes in tropical forest frontier contexts

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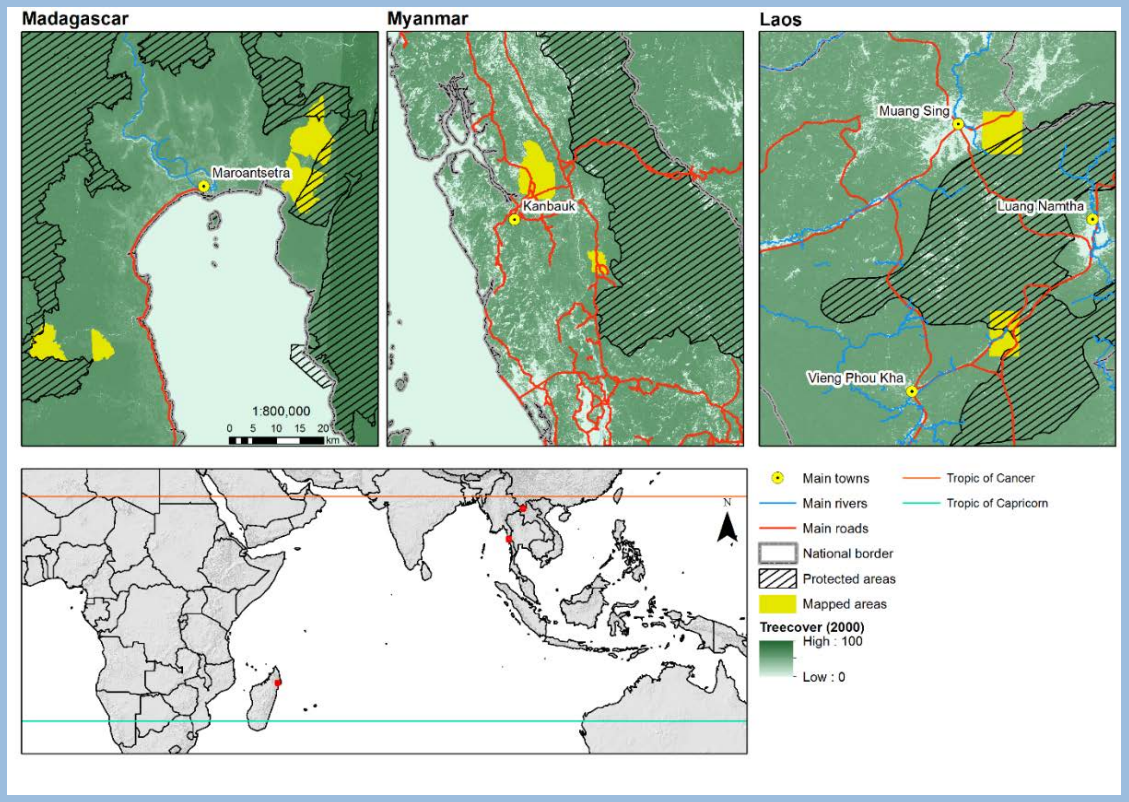

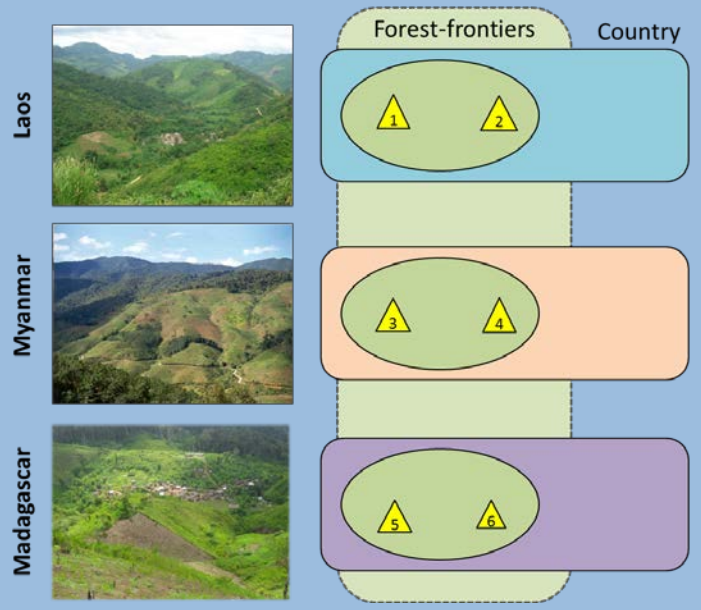

3 Hypotheses

- ***1. Problem-oriented***:
  With increasing telecoupling the capacity of socio-ecological systems to support ecosystem service flows and human well-being decreases
- ***2. Solution-oriented***:
  Telecoupling involves new and distant stakeholders. Their involvement in land governance can increase the adaptive capacity of socio-ecological systems
- ***3. Transformation-oriented***:
  Learning processes among multiple actors contribute to adaptive decision-making and innovative governance schemes

1. Problem-oriented: identify spatially explicit land system regime shifts

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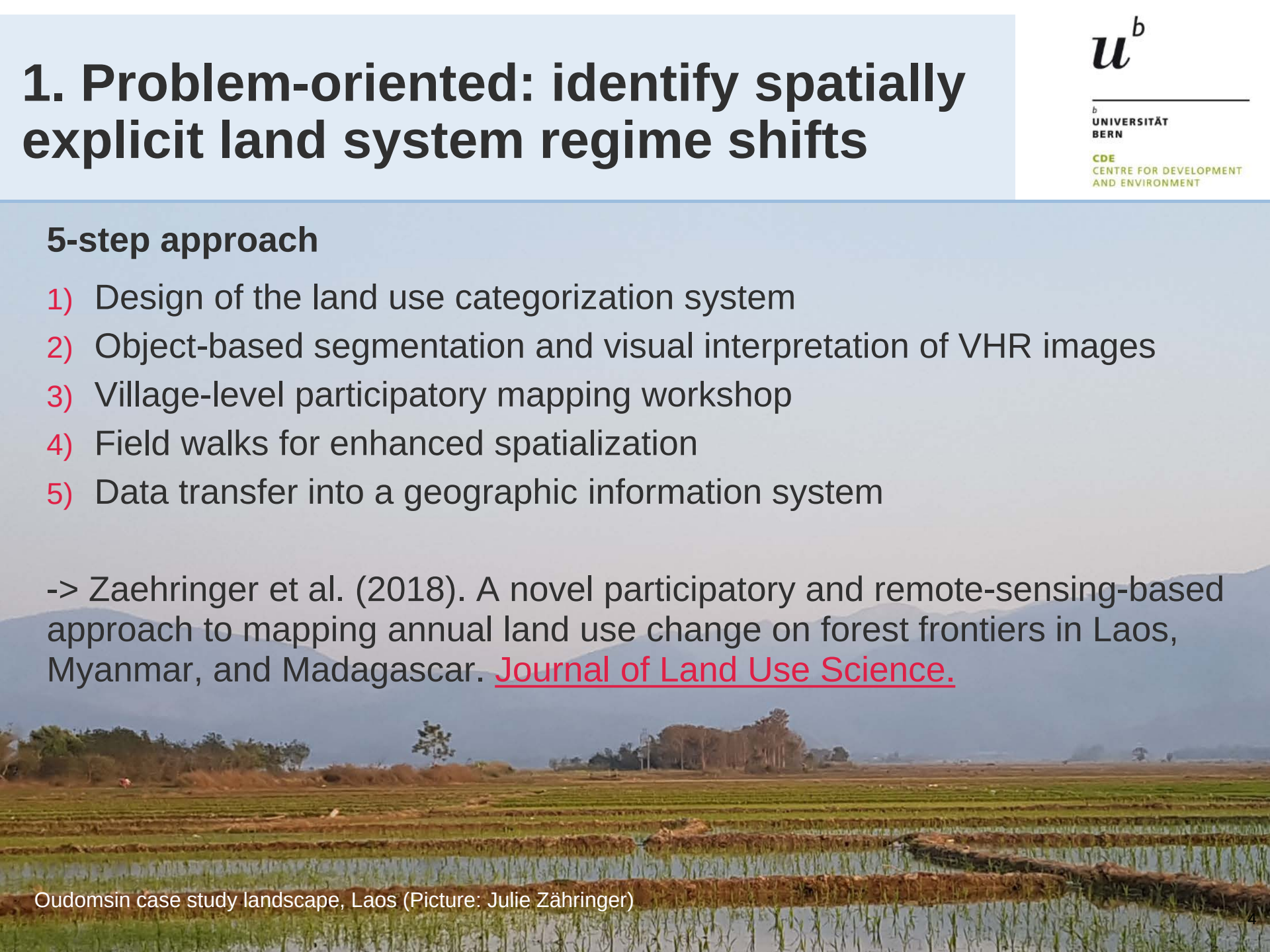
5-step approach

1) Design of the land use categorization system
2) Object-based segmentation and visual interpretation of VHR images
3) Village-level participatory mapping workshop
4) Field walks for enhanced spatialization
5) Data transfer into a geographic information system

-> Zaehringer et al. (2018). A novel participatory and remote-sensing-based approach to mapping annual land use change on forest frontiers in Laos, Myanmar, and Madagascar. Journal of Land Use Science.



Oudomsin case study landscape, Laos (Picture: Julie Zähringer)

Empirical result: land system regime shifts in Myanmar and Laos

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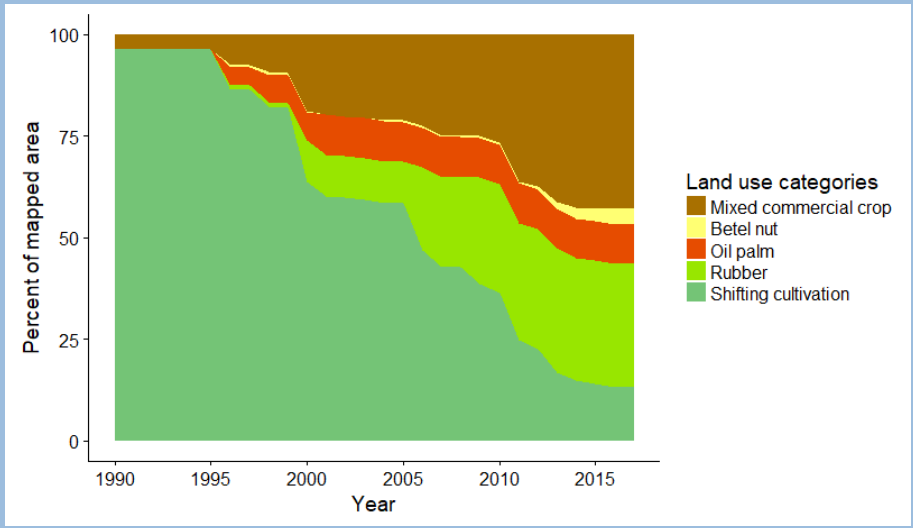
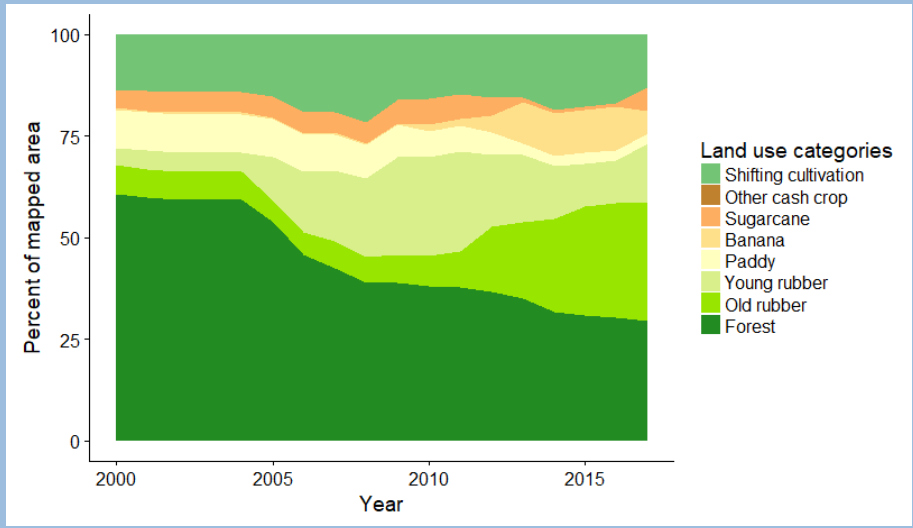
Myanmar (Hein Ze)
1990-2017



Laos (Oudomsin)
2000-2017



1. Problem-oriented: impacts of land use changes on human well-being

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Changes in well-being over the last 20 years, according to Nussbaum's list of well-being dimensions

In each case study landscape at village level;
- Gender-separated focus group discussions
- Qualitative interviews with 60-100 land users

Madagascar

Laos

Myanmar

Empirical result: changes in human well-being over the last 20 years

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	Laos		Madagascar		Myanmar	
	♂	♀	♂	♀	♂	♀
Health	↓↑	↑	↓		↑	↑
Being well nourished	↑	↑	↓	↑	↑	↑
Good social relations	↓	↑	↓		↑	↑
Education	↑	↑	↑	↑	↑	↑
Income opportunities	↑	↑	↓↑	↑	↓↑	↑
Security	↑		↓	↓	↑	↑
Healthy environment	↓↑	↑	↑		↓	↑↓

↑ increase
↓ decrease

2. Solution-oriented: a process-based approach combining an actor- with a network-perspective

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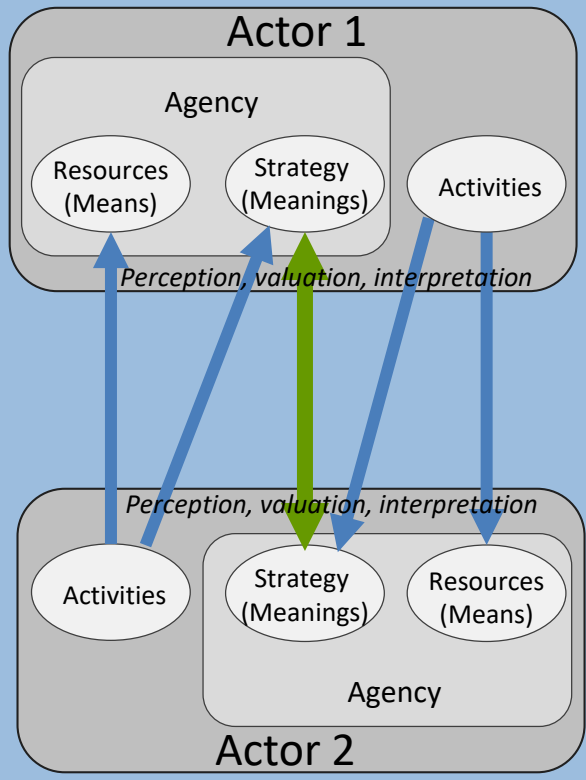

Flow of goods, capital, information

Shared institutions

Empirical results: networks of actors, flows, and institutions in Madagascar

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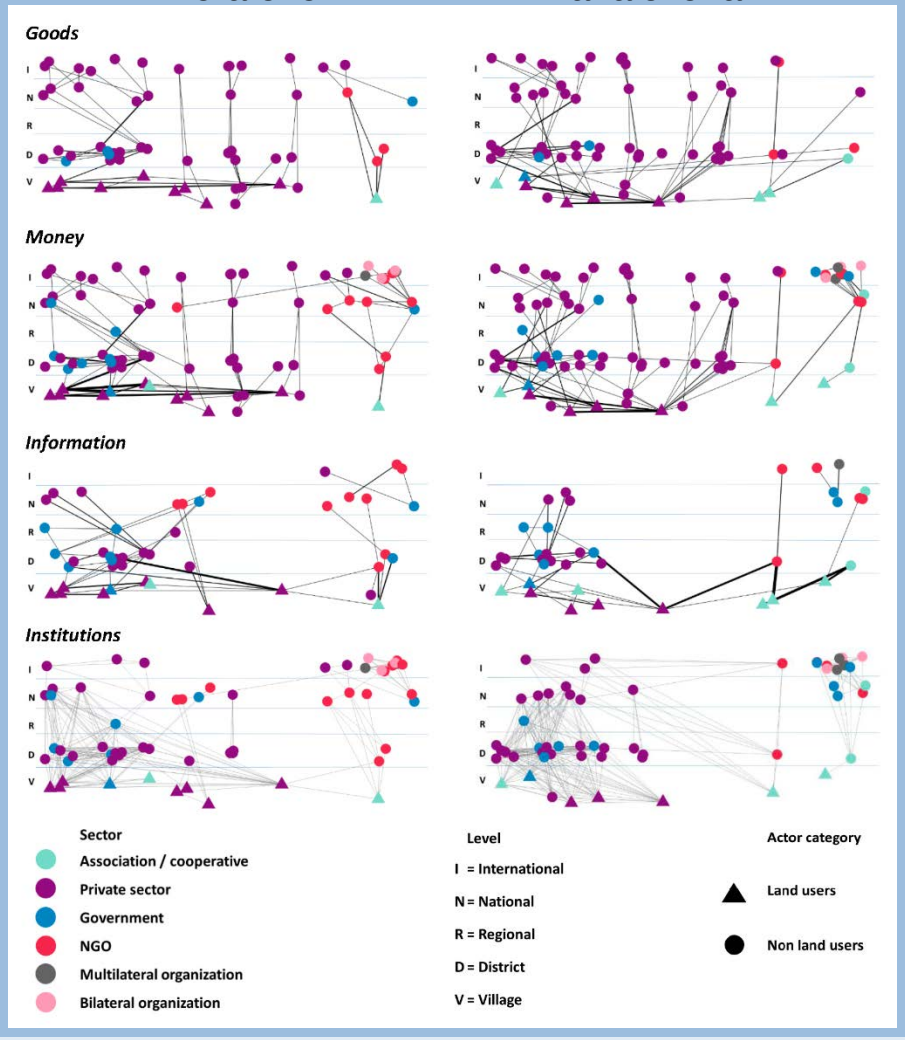

Standardized actor survey with snowballing approach

- Key actors are from the private sector (cash crop trade)
- Government is present at every level, but activities controlled by private sector actors
- Conservation and agricultural investment sectors have almost no links

Andriamihaja et al. (in preparation)

2. Solution-oriented: participatory modelling of future land use

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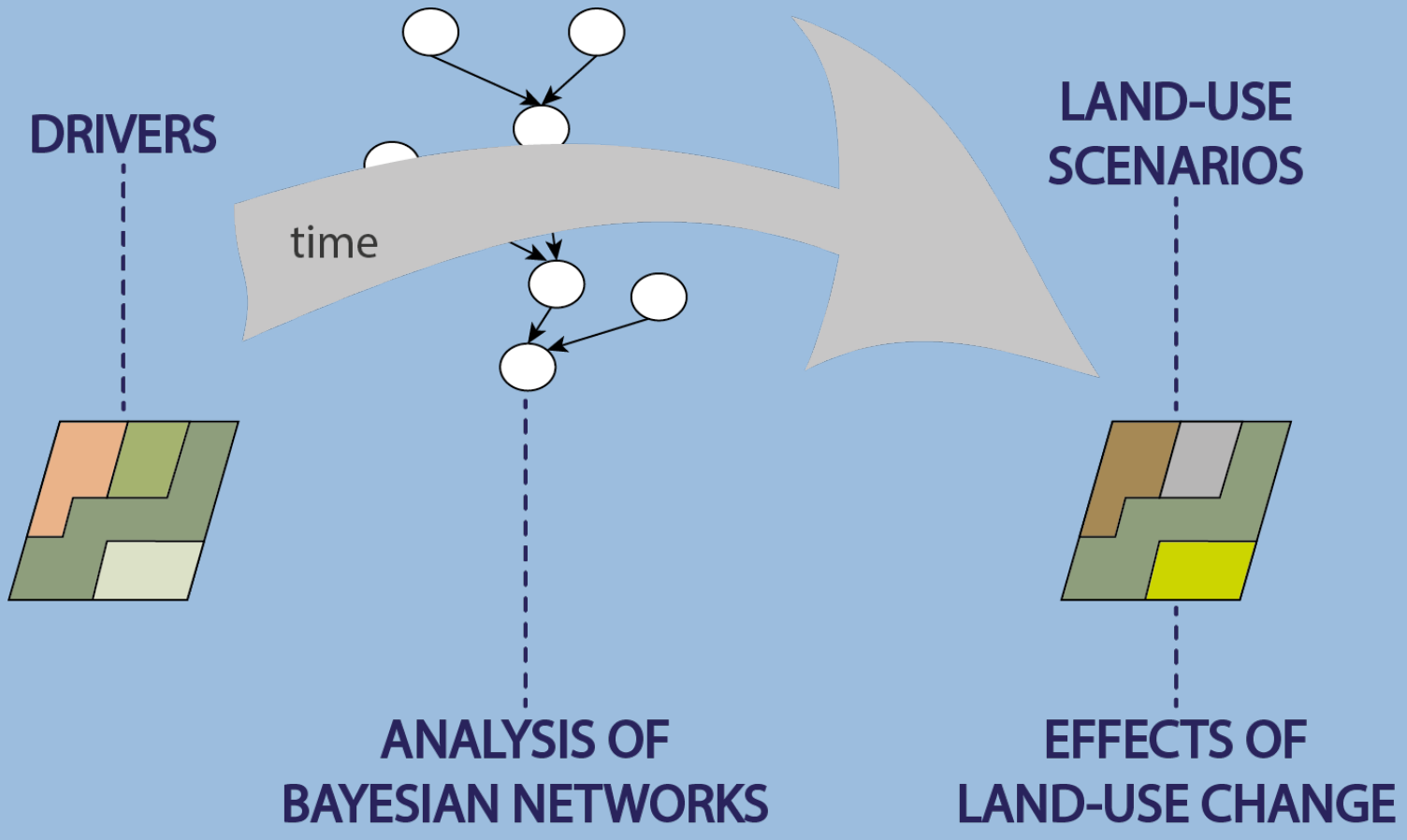

Empirical results: Predictions of land use 2023 in Fizono, Madagascar, under BAU scenario

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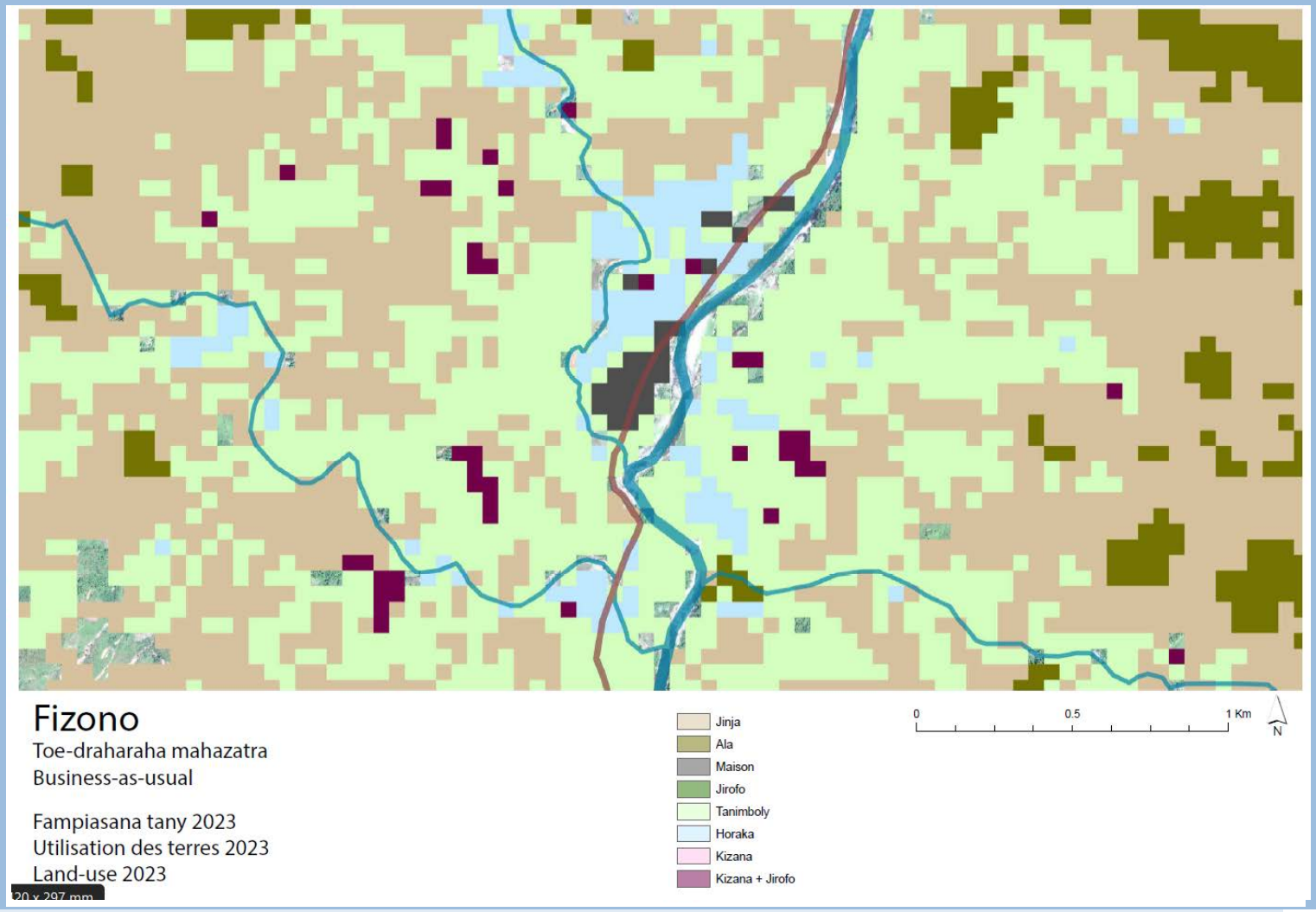

3. Transformation-oriented: continuous stakeholder learning platforms

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Requires different approaches according to the political and social context:

- **Madagascar:** platforms at 3 levels, interactions between various stakeholders within and between the platforms (cross scale)
- **Laos:** platforms at 4 levels, interactions mainly between governmental actors within the levels
- **Myanmar:** platforms at 2 levels; at regional level the project links to professionally moderated oil palm platform

3. Transformation-oriented: partnership actions for cooperative telecoupling

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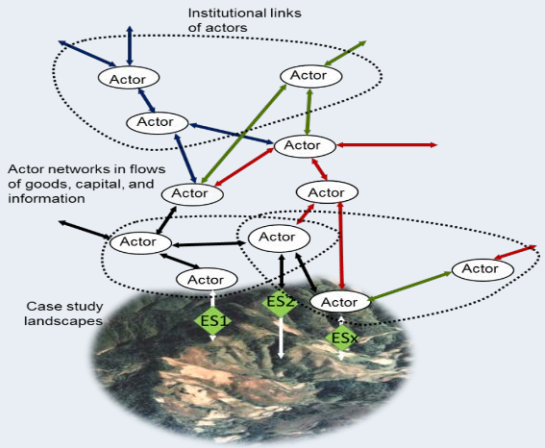
Pathways to impact

Systems interaction and power relations:



Operationalization

- Establish multi-stakeholder platforms
- Co-design and co-production of knowledge
  - Transformative strategy development
- Partnership Actions for Cooperative Telecoupling (PACTs)

Theory of change

Emergence concept based on complexity theory:

1. Stakeholders' capacities
2. Creating networks
3. Communities of practice
4. Pioneering transformation efforts

Preliminary conclusions

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- Telecoupled forest-frontier landscapes are experiencing land use regime shifts with unprecedented consequences for social-ecological systems
- A priori setting of system boundaries is counter-productive to identifying change agents in land governance
- Making flows transparent is an important component of social learning in telecoupled systems

→ Using telecoupling as a lens, combining a place-based with a process-based perspective, pushes us to ask the relevant research questions in land science

Thank you for your attention!

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