Experiences of a ValPar.CH PhD

ValPar.CH closing event

Benjamin Black

Planning of Landscape and Urban Systems (PLUS), ETH Zurich

Pre-ValPar.CH...

What have I done in ValPar.CH?

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Module C: Scenarios of a functional ecological infrastructure

What have I done in ValPar.CH?

Module C: Scenarios of a functional ecological infrastructure

Scenarios of a functional ecological infrastructure

Quantification

- Dynamic drivers
- Spatial trends and interventions
- Rates of LULC change

Driver	EI for Nature	EI for Society	Growth and Extinction	Business as Usual	EI as Culture
	+1.4°C RCP 2.6	+2.3°C RCP 4.5	+3.1°C RCP 8.5	+2.3°C RCP 4.5	+1.4°C RCP 2.6
	Low 9.5M	Reference 10.5M	High 11.5M	Reference 10.5M	Reference 10.5M
	22% (2030) 30% (2060)	17% (2030) 22% (2060)	15% (2030) 0% (2060)	15% (2030) 20% (2060)	17% (2030) 25% (2060)
	SSP 1 Green Road	SSP 2 Middle of the road	SSP 3 Rocky Road	SSP 2 Middle of the road	SSP 1 Green Road

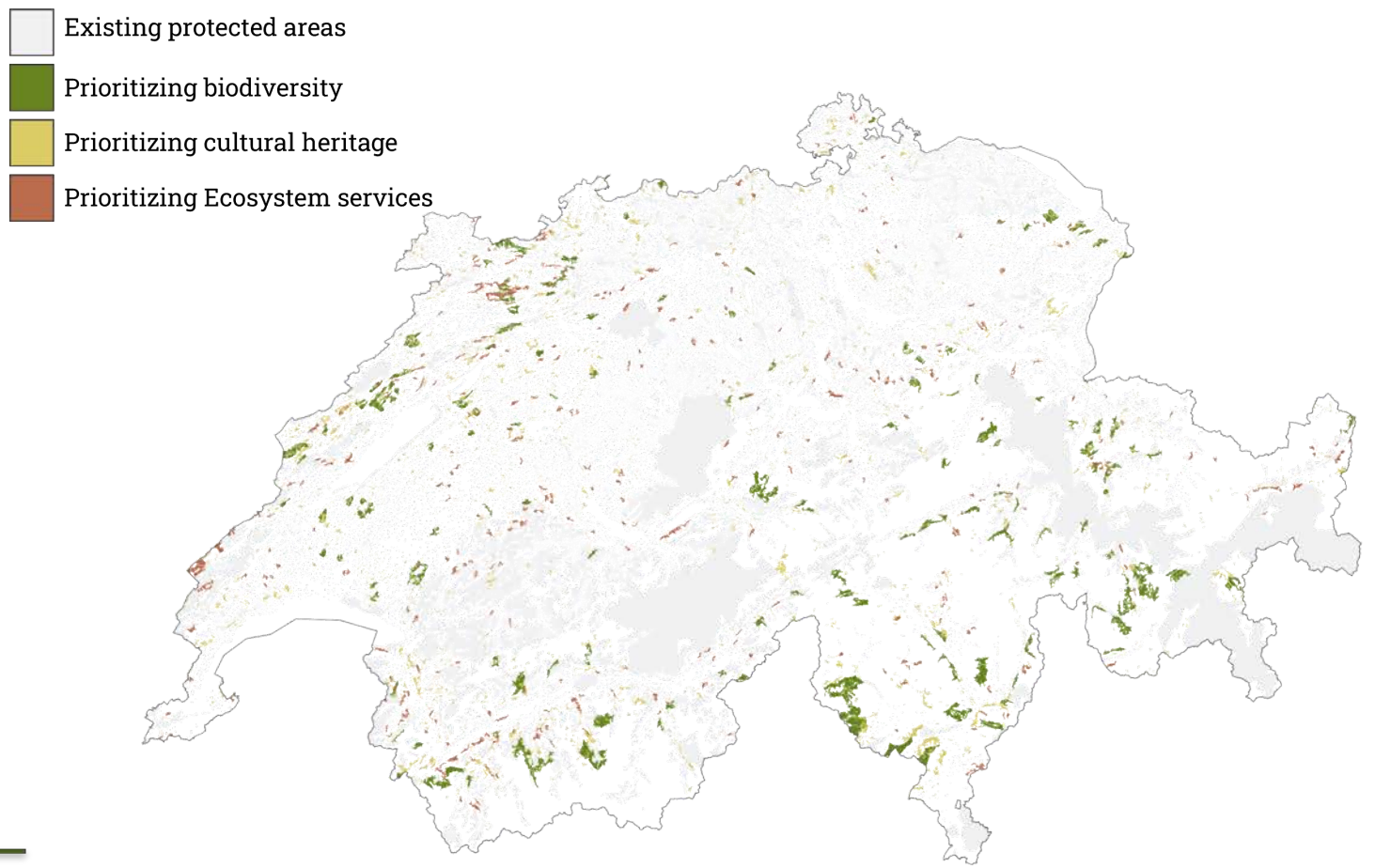
Scenarios of a functional ecological infrastructure

Quantification

Dynamic drivers

Spatial trends and interventions

Rates of LULC change



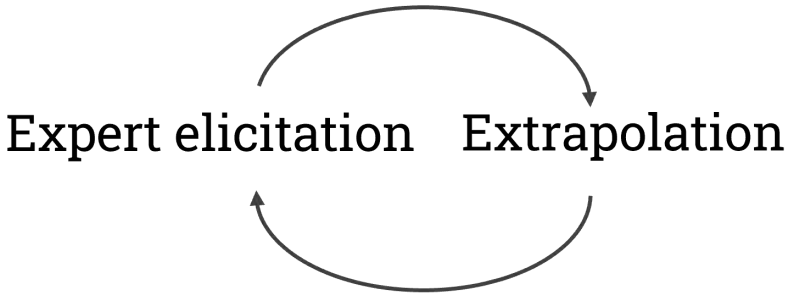
Scenarios of a functional ecological infrastructure

Quantification

Dynamic drivers

Spatial trends and interventions

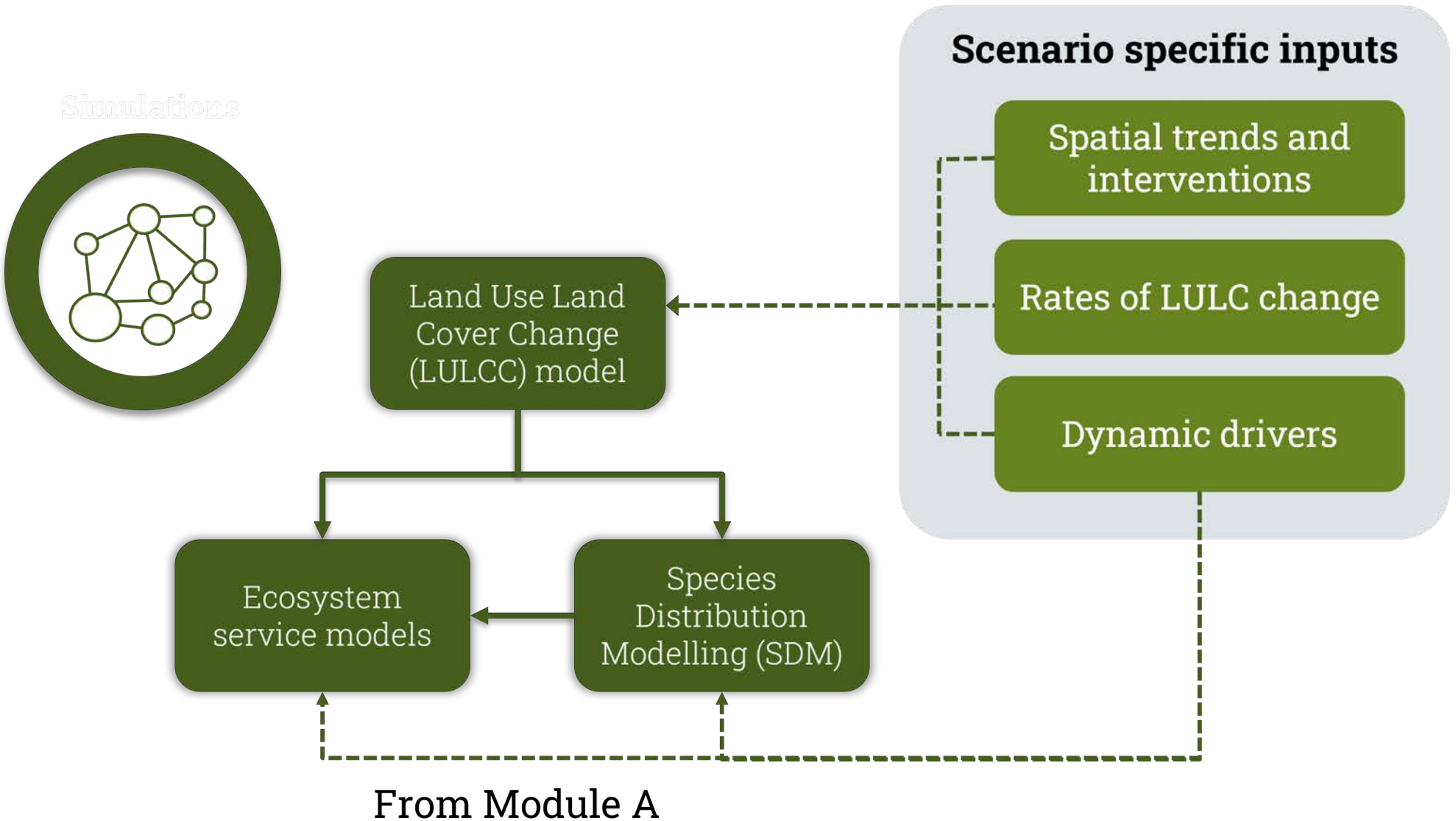
Rates of LULC change



Driver	Sub-Driver	Scenario Description for Sub-Driver	Urban	Static	Open Forest	Closed Forest	Shrubland
Agricultural policy	Direct payments and structural subsidies	Direct payments linked to biodiversity promotion (landscape quality and ecological connectivity) Direct payments for land left aside for the development of habitats sensitive species.	-	0	+++	+++	+++

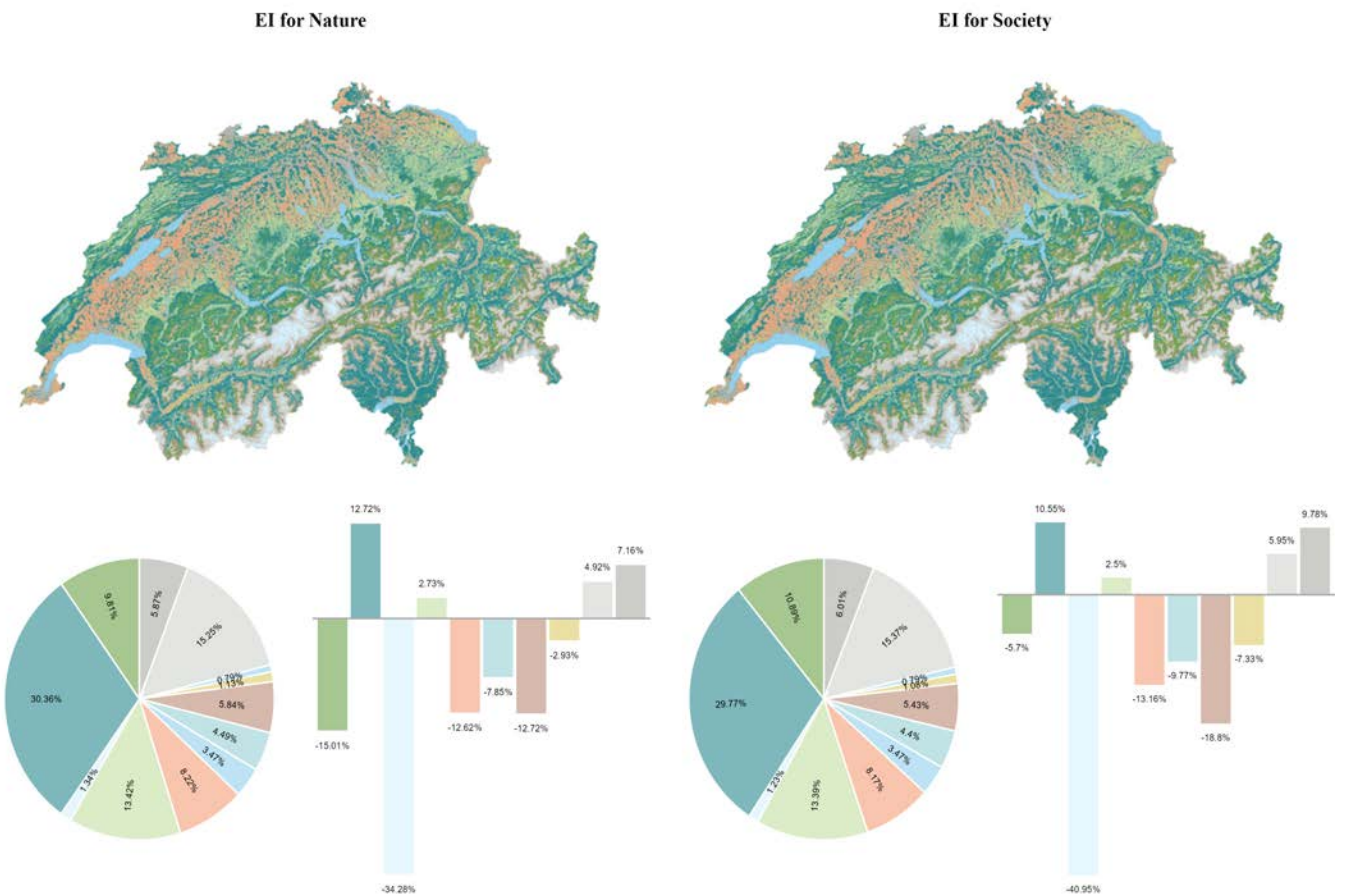
Scenarios of a functional ecological infrastructure

Simulation



Scenarios of a functional ecological infrastructure

Simulation: LULCC scenarios



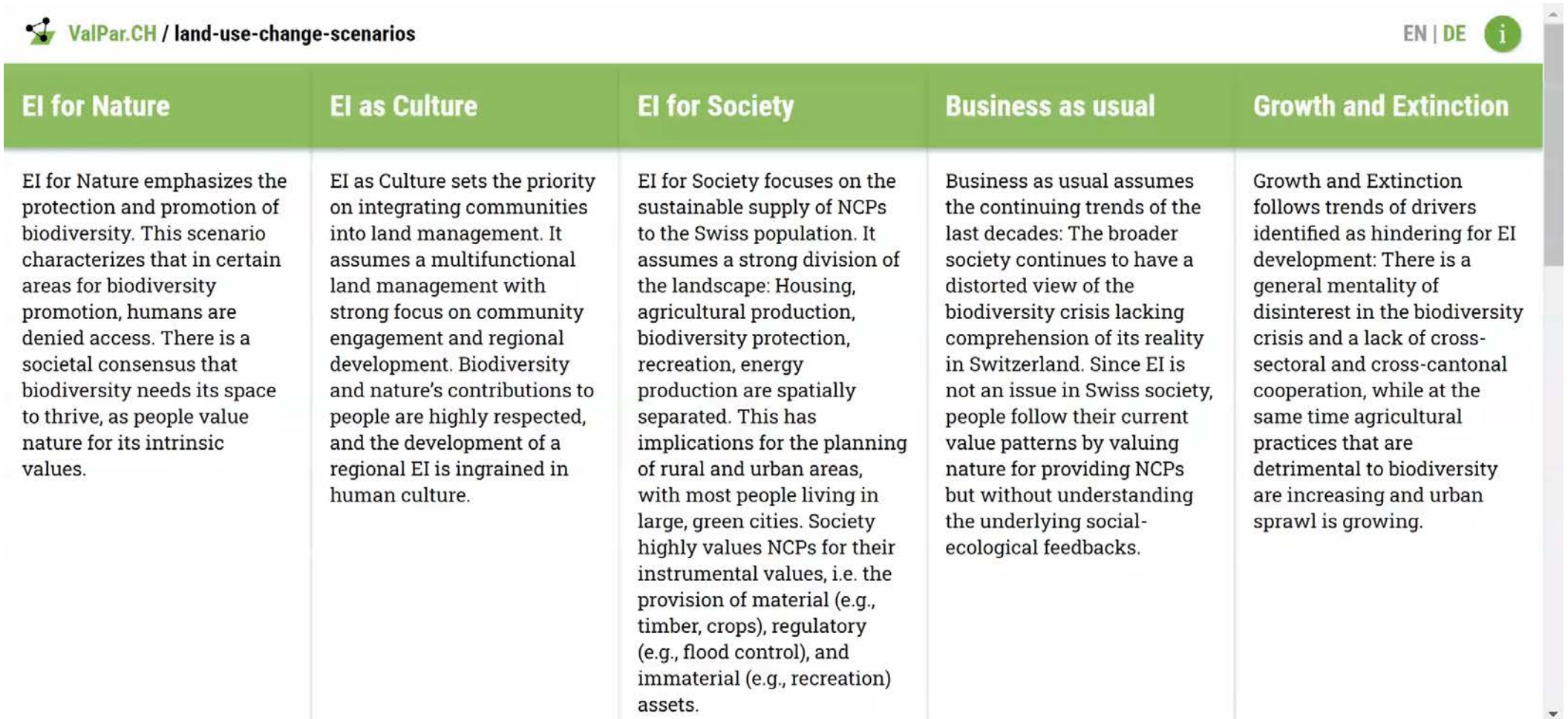
Data and results

zenodo

Model

Scenarios of a functional ecological infrastructure

Simulation: LULCC scenarios



ValPar.CH / land-use-change-scenarios

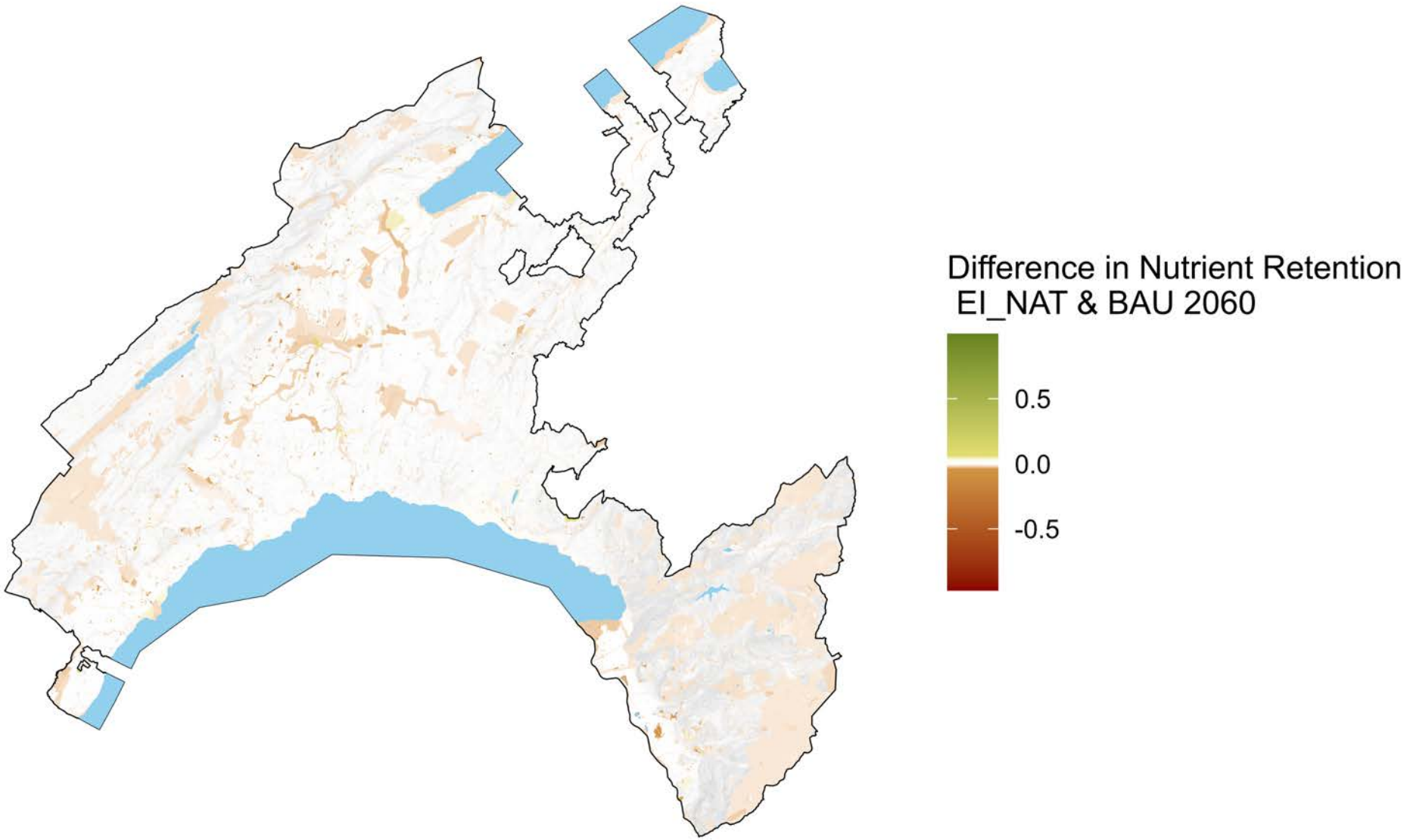
EN | DE

EI for Nature	EI as Culture	EI for Society	Business as usual	Growth and Extinction
EI for Nature emphasizes the protection and promotion of biodiversity. This scenario characterizes that in certain areas for biodiversity promotion, humans are denied access. There is a societal consensus that biodiversity needs its space to thrive, as people value nature for its intrinsic values.	EI as Culture sets the priority on integrating communities into land management. It assumes a multifunctional land management with strong focus on community engagement and regional development. Biodiversity and nature's contributions to people are highly respected, and the development of a regional EI is ingrained in human culture.	EI for Society focuses on the sustainable supply of NCPs to the Swiss population. It assumes a strong division of the landscape: Housing, agricultural production, biodiversity protection, recreation, energy production are spatially separated. This has implications for the planning of rural and urban areas, with most people living in large, green cities. Society highly values NCPs for their instrumental values, i.e. the provision of material (e.g., timber, crops), regulatory (e.g., flood control), and immaterial (e.g., recreation) assets.	Business as usual assumes the continuing trends of the last decades: The broader society continues to have a distorted view of the biodiversity crisis lacking comprehension of its reality in Switzerland. Since EI is not an issue in Swiss society, people follow their current value patterns by valuing nature for providing NCPs but without understanding the underlying social-ecological feedbacks.	Growth and Extinction follows trends of drivers identified as hindering for EI development: There is a general mentality of disinterest in the biodiversity crisis and a lack of cross-sectoral and cross-cantonal cooperation, while at the same time agricultural practices that are detrimental to biodiversity are increasing and urban sprawl is growing.

https://valpar.ch/land-use-change-scenarios/index-en.html

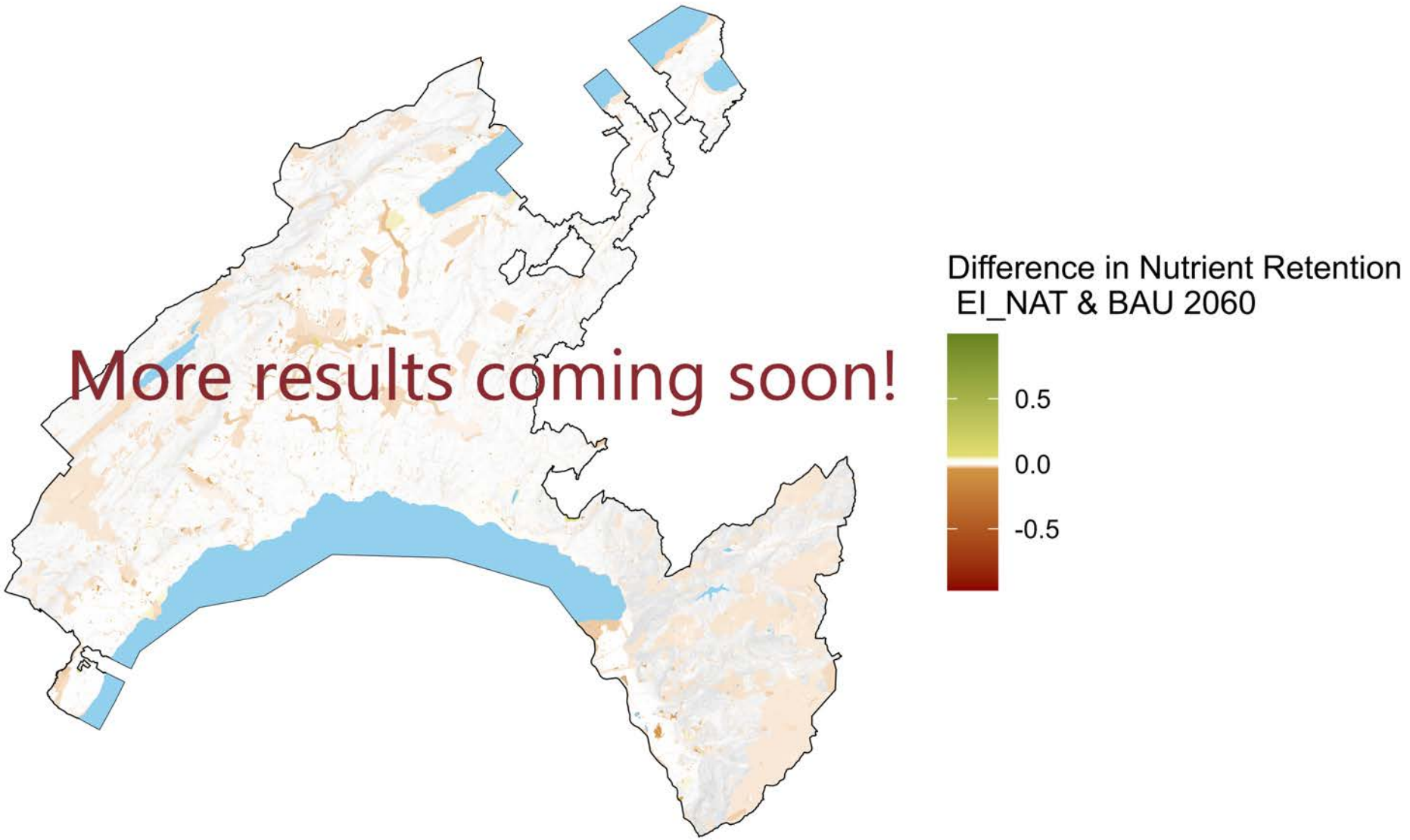
Scenarios of a functional ecological infrastructure

Simulation: Future NCP provision and Biodiversity



Scenarios of a functional ecological infrastructure

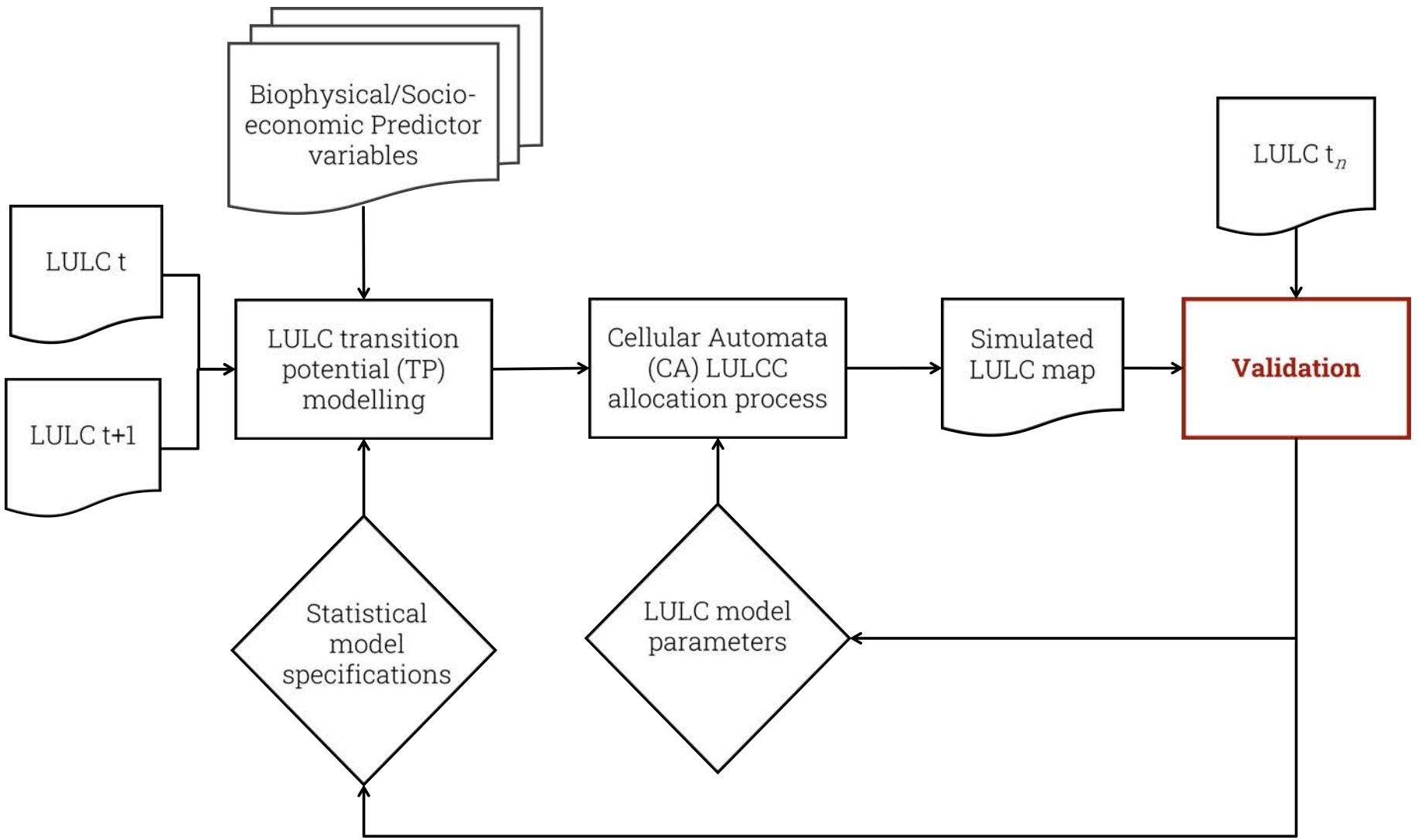
Simulation: Future NCP provision and Biodiversity



Wider Research contributions

Calibration of Land use change models

Re-considering the status quo: Improving calibration of land use change models through validation of transition potential predictions



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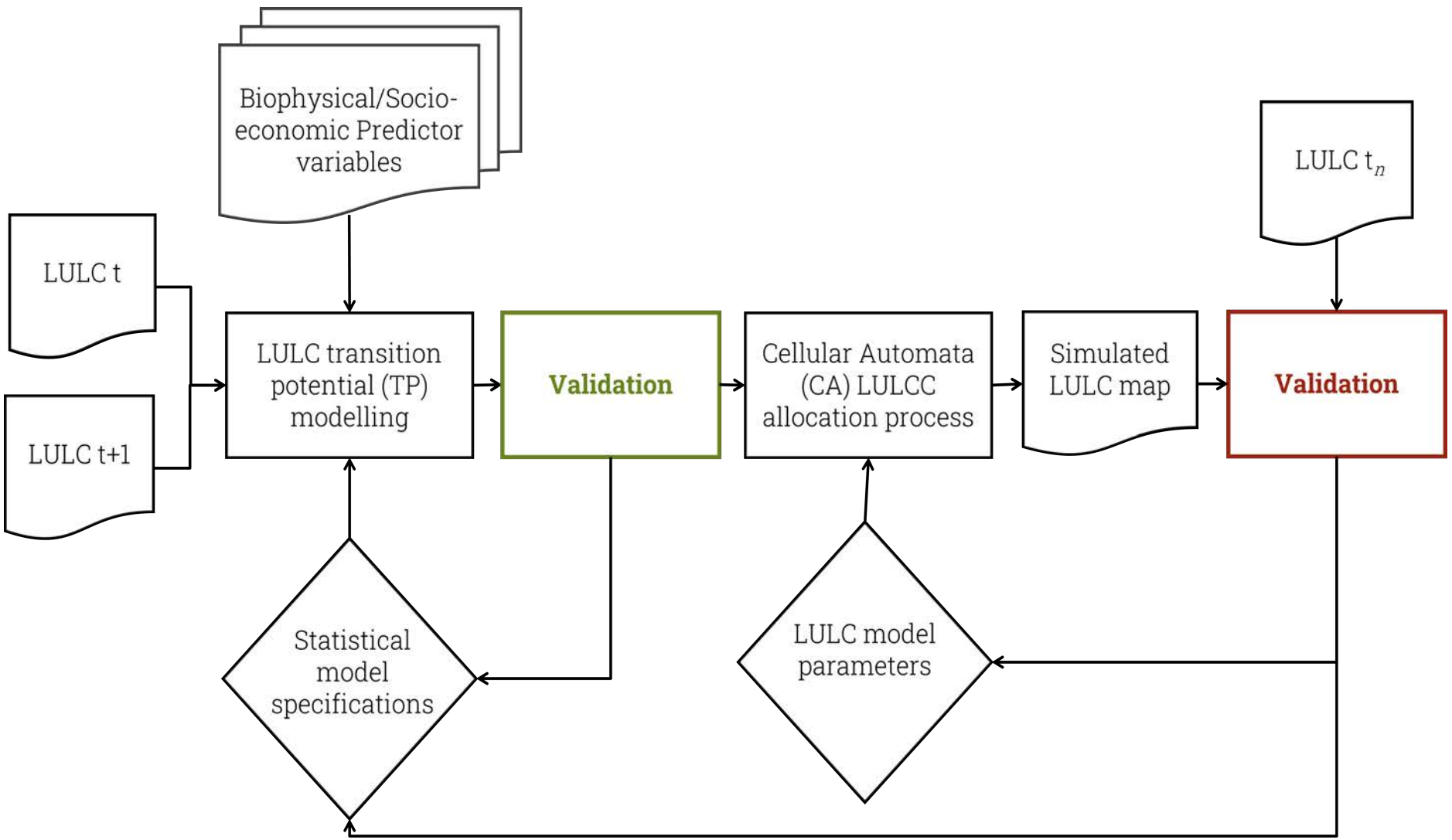

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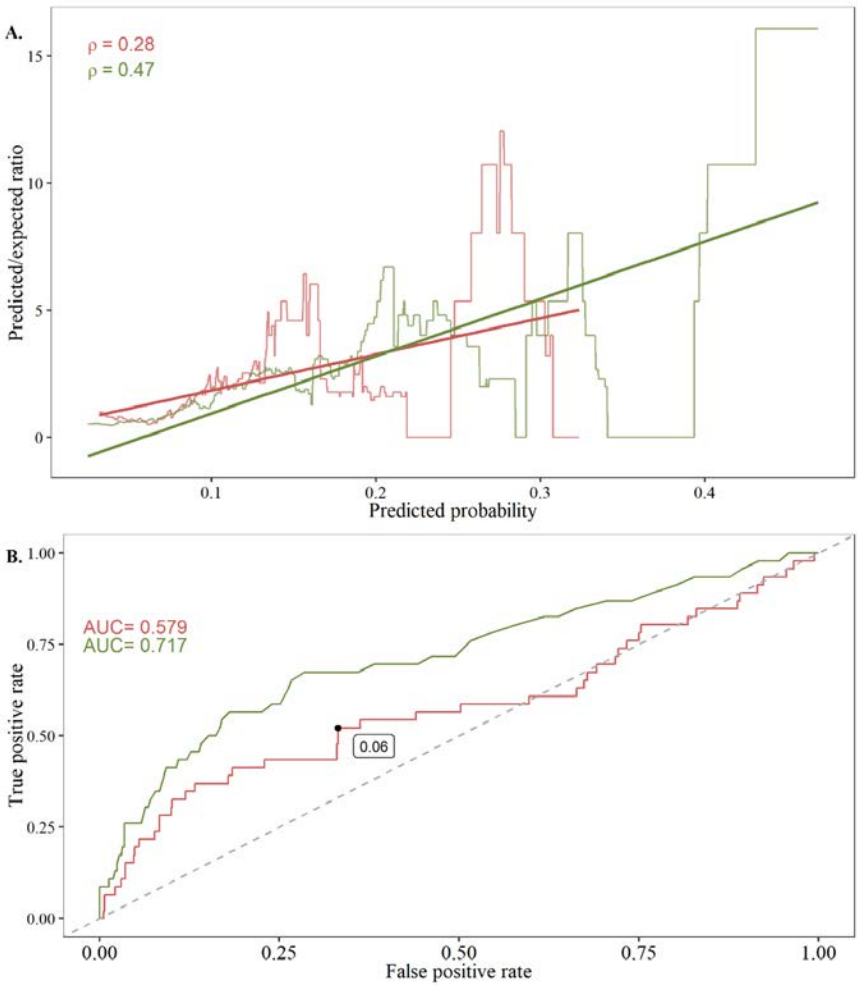
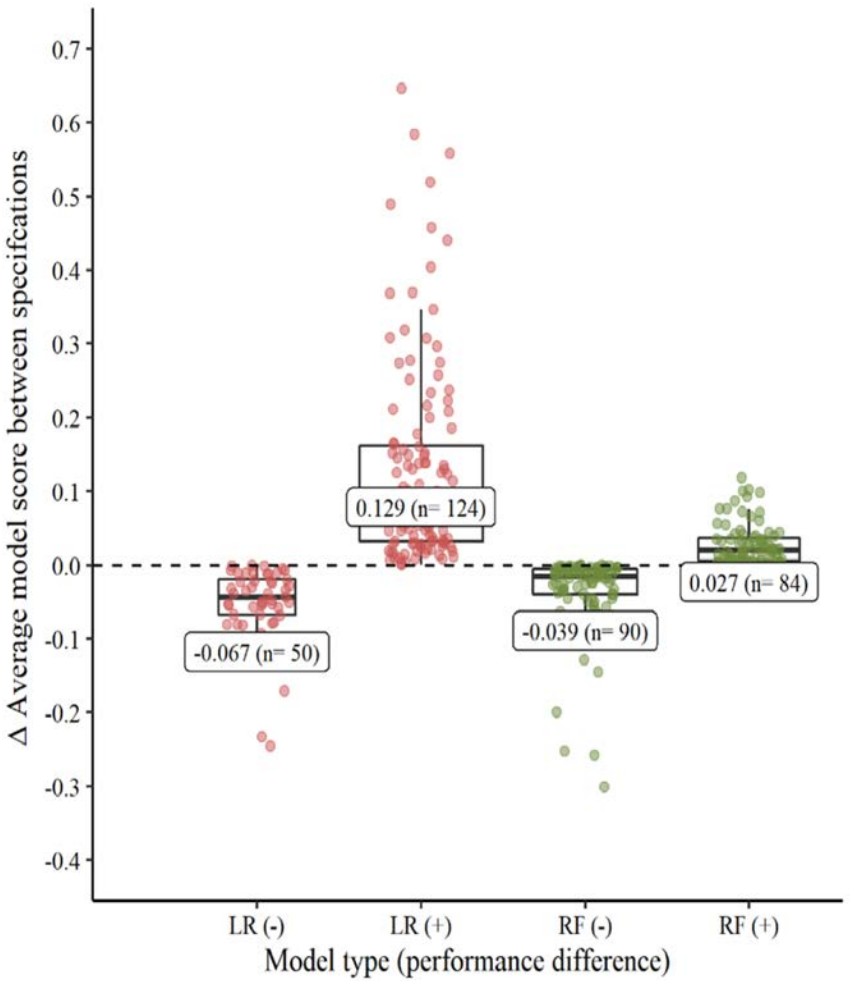
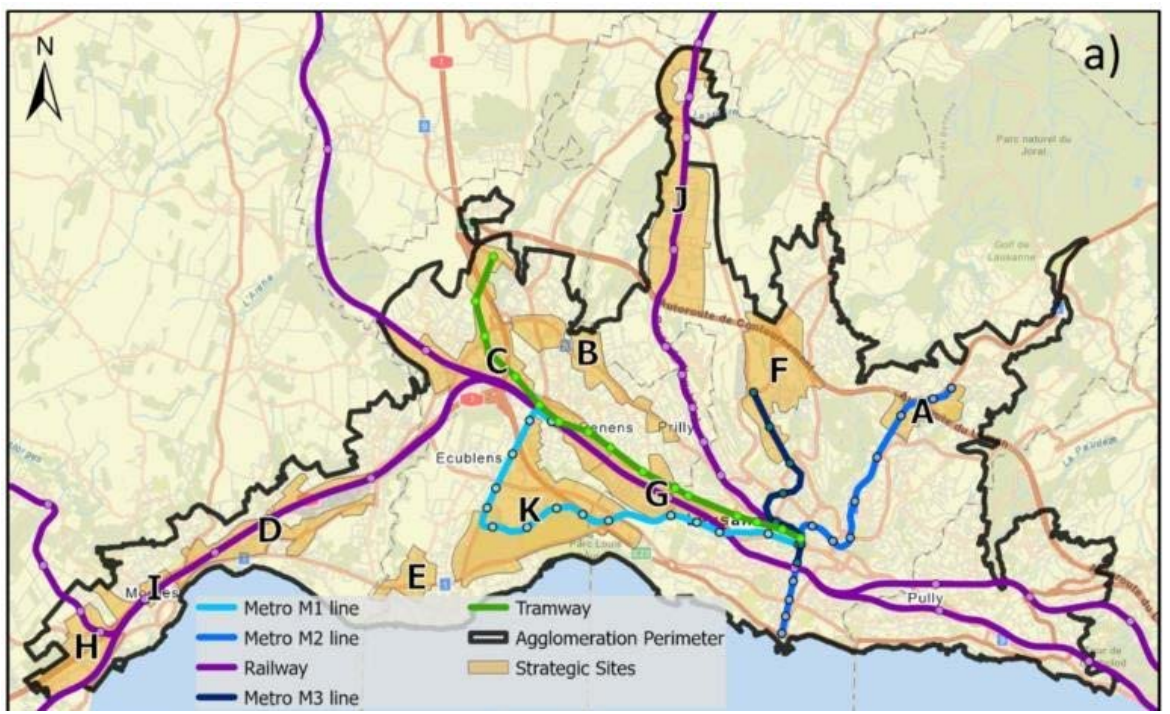
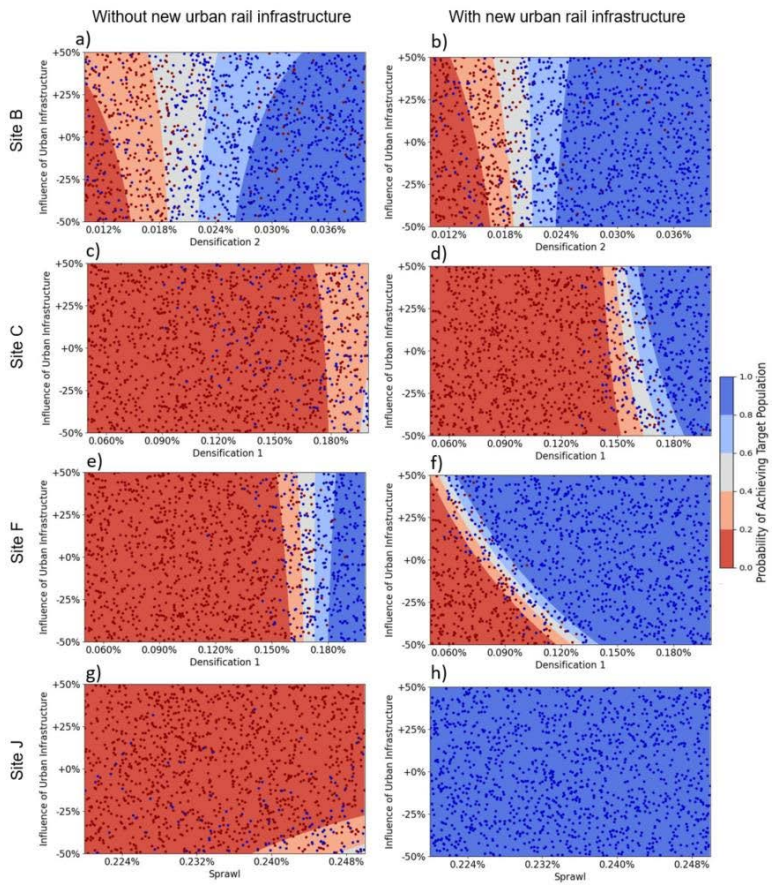




Uncertainty in land use change models

Identifying decision-relevant factors in stochastic Land Use Cover Change (LUCC) future scenarios for transport infrastructure planning under uncertainty





Further application of LULCC model

NCCS-Impacts project: Socioeconomic Scenarios for Switzerland

National Center for Climate Services (NCCS)

Module 1: Conceptualisation and method design (WSL)

Module 2: Development of qualitative socio-economic scenarios (WSL)

Module 3: Modelling of land use and CO_2 emissions (tender)

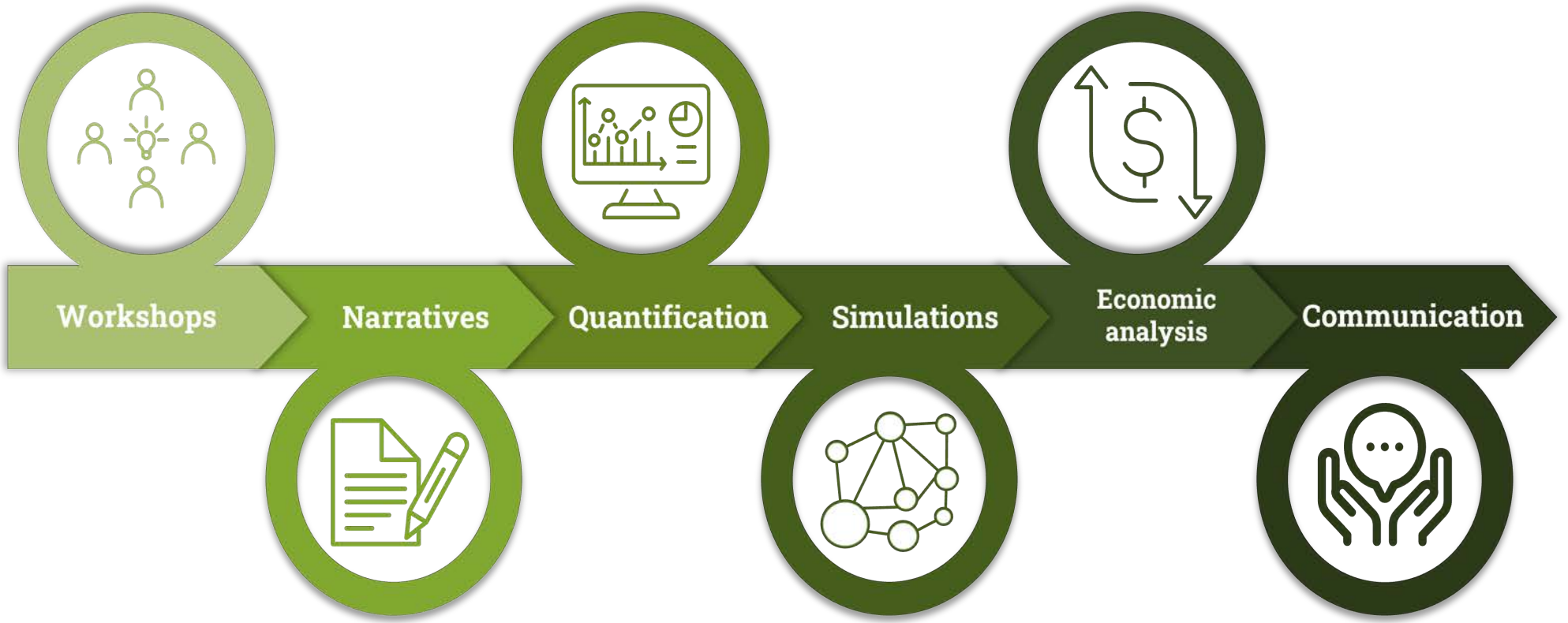
Module 4: Policy coherence analysis and development of Shared Policy Assumptions (tender)

Module 5: Communication and dissemination of results (Module 1—4) (tender)

What’s next?

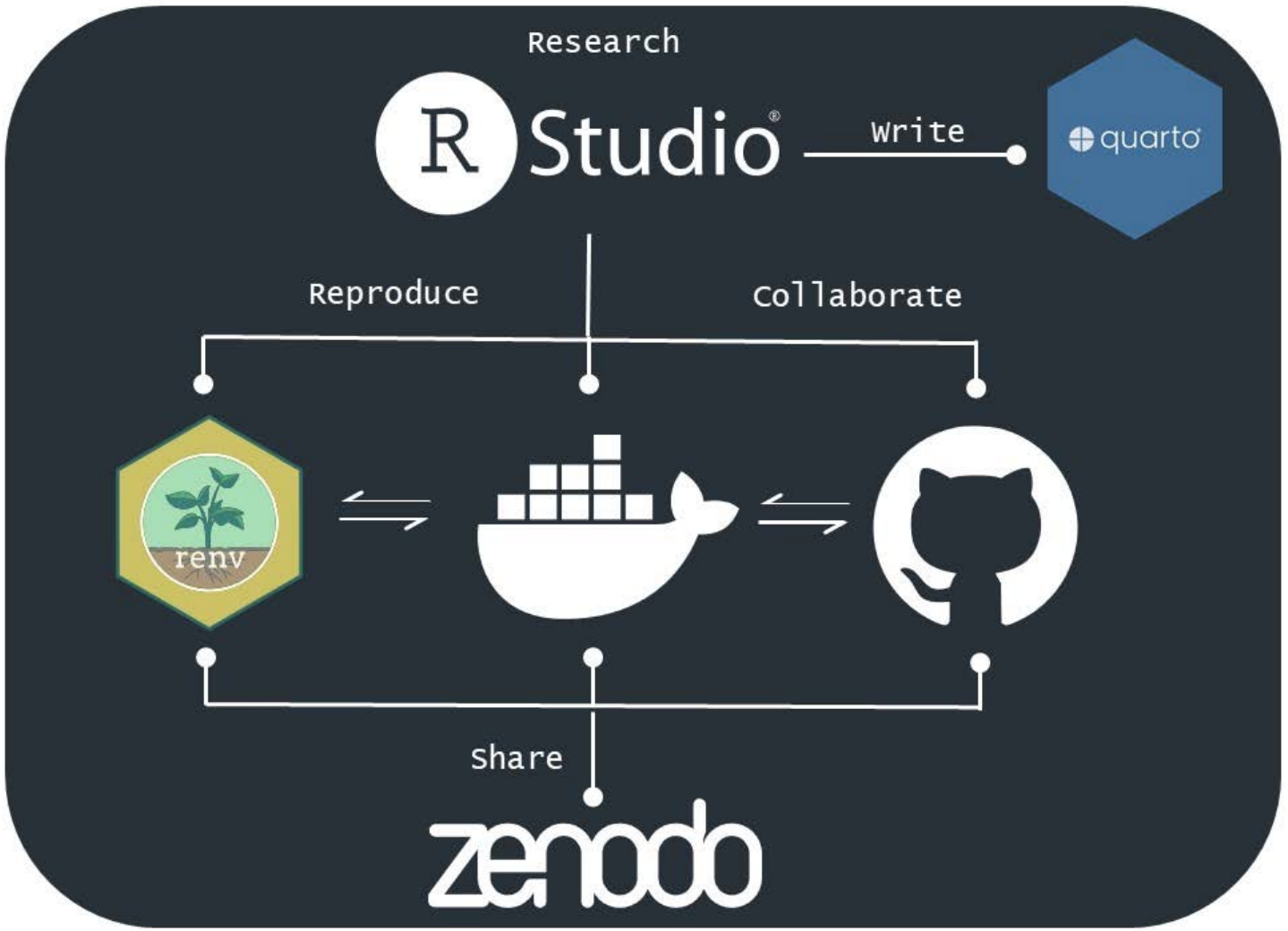
NASCENT-PERU

NAture-positive SCenarios for ENvironmental Transitions: Peru



Swiss Re Institute
Swiss Re Foundation
Swiss Re Corporate Solutions
AXA Research Fund
EY
WWF

New interests

Open science and reproducibility

Masterclass on Reproducible Research with R and Quarto at Landscape conference 2024, Berlin