Building Science Based Participatory Scenarios – Looking into the Future from Diverse Perspectives

As a research project combining different disciplines and knowledge holders, PRODIGY wants to understand the connections between nature, economy and society in the southwestern Amazon region between Peru, Brazil and Bolivia.

Our research is based on the idea that diversity in ANY system increases resilience to disturbances. Therefore, we study functional diversity not only in the soil or ecosystem, but across ALL components of the southwestern Amazon region, including local communities, decision-making processes, economic activities, values and norms.

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The participative scenario development and integrated modelling approach aims at (i) identifying future social-ecological impacts of current land use decisions and (ii) identify (more) sustainable land management and development strategies that improves livelihood and social cohesion of local communities thus strengthening resilience of the social-ecological systems.

The approach builds on the diverse and different perspectives of local, regional and national stakeholders. These perspectives are linked and integrated into data-driven impact models (i.e. the land use model LandSHIFT) that quantify the potentials, capacities and limitations of certain stakeholder perspectives or identified land use development strategies. This co-design process encompasses the knowledge transfer from stakeholders into integrated modelling activities as well as the discussion of modelling results with stakeholders. Thereby, the project aims to achieve high relevance, applicability and credibility among regional stakeholders.

The scenario and modelling activities are structured into two steps.
First, we develop and simulate diverse *explorative scenarios* about how the socio-economic system may develop towards the year 2050. At the beginning, we have picked up results from global scenario analysis and have enriched them with regional stakeholder perspective during a physical scenario workshop in Acre (Brasil) and a serial of virtual workshops during the CORONA pandemic. Based on these activities we have developed a wide range of qualitative narratives (storylines) how the region may develop. These narratives have been quantified i.e. for key model parameters to drive the land use change simulation respectively. The obtained modelling results will be discussed and verified with the stakeholders by the end of year 2022 or beginning of the year 2023.
Second, based on the explorative scenarios (gained from step on) we apply the co-design process to develop *normative scenarios.* These scenarios differ from the ones in step one because they clearly target a predefined desirable sustainable future. Stakeholders discuss and provide development pathways considering key elements, processes and constrains to achieve or hinder these desirable sustainable futures. Respective pathways will be quantified for causal consequences and effectiveness by the developed and adjusted integrated impact models.

In southwestern Amazonia we co-design possible future pathways for a more sustainable land management and for improving livelihood and social cohesion of local communities thus strengthening resilience and adaptive capacity of the social-ecological systems in the region. The scenario process targets policy makers, non-governmental organizations as well as local stakeholders.

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