

FUNCTIONAL DIVERSITY TO FOSTER CONVIVIALITY?

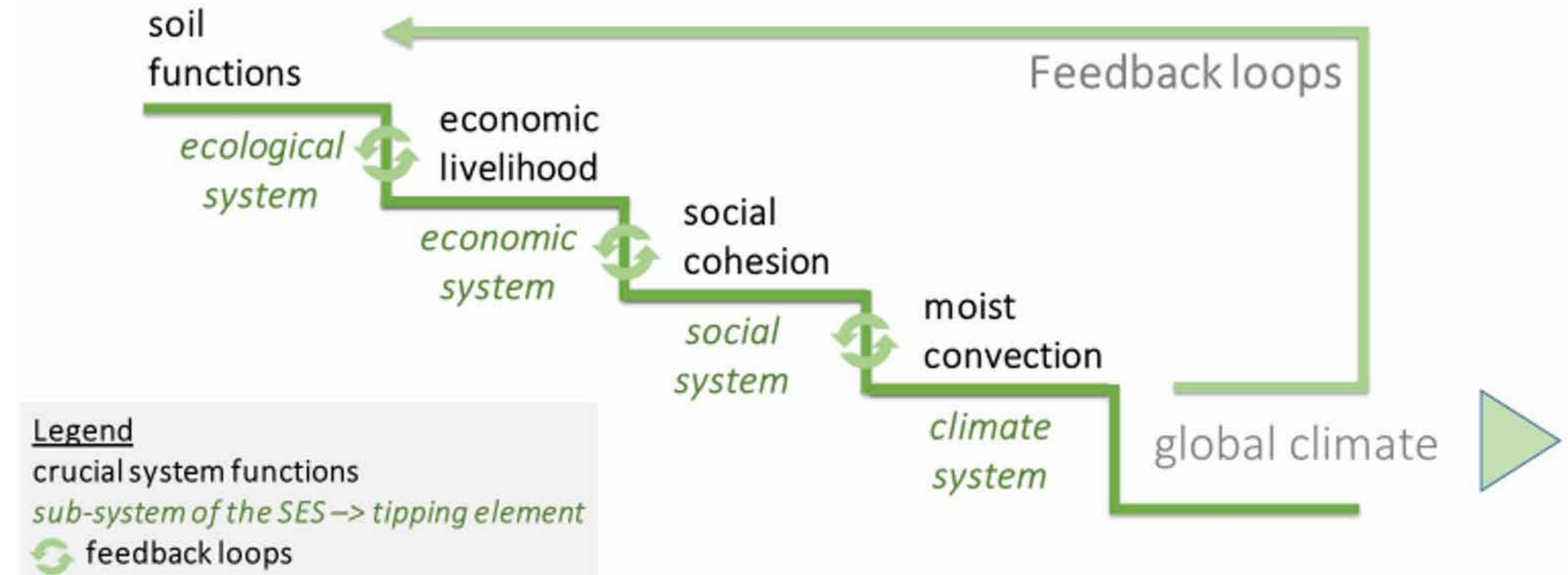
UNDERSTANDING THE CASCADE OF AMAZONIAN 'TIPPING POINTS'

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The ,tipping point' cascade in the Amazon



INTRODUCING OUR HYPOTHESIS

As an inter- and transdisciplinary research project, [PRODIGY](#) wants participants to understand the interdependence between natural and social systems, and to jointly identify options to govern related 'tipping dynamic'. As such, a short interactive reflection on human-nature relationships will take place at the beginning of the session.

Our hypothesis is that knowledge-based management of functional diversity enhances the resilience of complex social-ecological systems. Resilience, we understand as the ability of a system (e.g., an ecosystem, food production system, income and livelihood system, or governance system) to withstand, recover from and adapt to external disturbances.

We test this idea through contextualizing it within cascades of tipping elements – from the microbial functional diversity in soils, to the impact of ecosystem services on the economy, social cohesion and regional climate processes.

As such, we argue that diversity management should be in the interest of local communities, as well as global actors, as it offers the chance to merge economic interests with the needs of local populations, nature conservation, sustainable resource use and the development of vibrant societies.

We aim to reframe the common role people give biodiversity as victim of human impacts, by highlighting its indisputable relevance in achieving sustainability. As those making decisions around national and global environmental governance – along with the financial community – become increasingly aware of the need to internalize the costs of socially and environmentally harmful activities, sustainable thinking is on the rise, also in international financial transactions. Accordingly, sustainability is becoming integral to management and strategic thinking, not only in civil society but also in governmental bodies, companies and corporations.



DEFINITIONS

What is a **tipping point**?

The point at which a series of small changes or incidents becomes significant enough to cause a larger, mostly irreversible, change.

What do we mean when we talk about **tipping elements**?

Tipping elements are key elements (subsystems) of a system – if they tip towards a new state most likely the whole system will. To give an example, for the global climate system, the Amazon is a tipping element, meaning if the Amazon tips towards a new state (savanna instead of forest) the global climate system most likely will tip, too.

With **tipping dynamic**, we mean interwinded processes that may lead to one or more tipping points.

What is meant by **functional biodiversity**?

Functional biodiversity refers to the set of species that, for example, contribute to ecosystem services in an agroecosystem. In other words, it is the biodiversity that is useful to farmers. Through environmental management, functional biodiversity provides benefits that can be valued by the farmer.

What exactly do we mean by **ecosystem services (ESS)**?

Ecosystem services denote all benefits that human beings and society derive from ecosystems. They typically comprise provisioning of resources and commodities from which humans derive direct benefits, but also benefits from regulating functions of ecosystems like climate regulation and flood protection as well as cultural benefits like recreation and identity.

When we talk about **social cohesion**, what are we referring to?

Social cohesion describes interactions and relationships between members of society characterized by a set of attitudes and norms, as well as their behavioral manifestations.

What do we mean by **scale**?

Change (e.g., climate, land use) may have different impacts at local, regional, national and global scales. When we are talking about the data we collect and interpret, it is important to be transparent about the scale of change we are talking about.

How does **transdisciplinarity** differ from **interdisciplinarity**?

Whereas interdisciplinarity describes the close cooperation of different academic disciplines, transdisciplinarity includes the dialogue or even co-production of knowledge with local knowledge holders and practitioners.

And, what does **conviviality** mean?

We can speak of conviviality when individuals are able to interact creatively and autonomously with others and their environment to satisfy their own needs. Conviviality is living together with difference and diversity.

Fostering and supporting these positive developments requires solid data and the monitoring of social-ecological resilience on the ground. Together with its local partners, the research consortium PRODIGY¹ is taking on this challenge in South-Western Amazonia, by pushing the concept of ‘tipping points’ from a metaphoric description to a system and process-oriented understanding. Through our transdisciplinary and participatory approach, this understanding will provide the foundations for target-oriented options for the management of social-ecological systems.

CHALLENGES RELATING TO THE STUDIED CASCADE OF ‘TIPPING POINTS’

1. The Amazon region is on the periphery of all countries it belongs to. Our study area is composed of subnational entities, which are Madre de Dios in Peru, Acre in Brazil and Pando in Bolivia, where land-use and development outcomes are partially dependent on political decisions taken by subnational governments. This partial independence also means that

SESSION OBJECTIVES

We highlight best practice local ecosystem management in the region, and identify factors that favor or hinder their adoption.

We discuss the important role of civil society and the scientific community, as change agents who can lay the foundations to make such best practice sustainable, as well as pass on knowledge to younger and future generations.

We also want to showcase that knowledge-based and inclusive diversity management in Amazonia can contribute to sustainable futures, at both a local and global scale.

OUR KEY QUESTIONS

Starting from the interdisciplinary perspective that tipping points are found within the natural system, but also within socio-cultural and economic systems, we ask:

1. **What is the connection between soil, land use and social cohesion in the Amazon?**
2. **How can a research project help to strengthen communication structures in a border region, like the one between Peru, Brazil and Bolivia, in the Southwestern Amazon?**
3. **How can local and academic knowledge production complement each other?**

¹ The PRODIGY research consortium is part of the BioTip programme, funded by the German Ministry for Education and Research (BMBF).

there is some leeway for the areas in question to make their own decisions to enforce, reinterpret or ignore existing national legislation. Civil society in the area, although engaged, has limited ability to identify and effectively use windows of opportunity to effect change, when it comes to environmental management - e.g. regarding the rules for management plans of natural reserves. And, if opportunities arise, a regional or even global alliance would be of great help in pursuing local visions of sustainable development. Such alliances infrequently exist, due to lack of information or communication structures.

2. Co-producing the necessary knowledge to effectively address dangerous tipping points is a major challenge for scientists working in the Amazon. Such knowledge has to be produced in inter- and transdisciplinary ways, and thoughtful communication strategies are key.

STRATEGIES TO OVERCOME THESE CHALLENGES

1. As we will show in our session, when it comes to local diversity management – particularly in ecological, social and economic transitions and sometimes crises – listening to local stakeholders is the best strategy to coproduce useful knowledge.
2. For this reason – and due to the Amazon’s political dynamics – we advocate for a bottom-up strategy, with local partners and local civil society leading the conversation.
3. At the same time, we amplify these local voices by distributing co-produced knowledge across our global networks.

RECOMMENDATIONS FOR POLICYMAKERS

1. Diversity – of soils, ecosystems, cultures, social systems and economic strategies – is the best foundation for managing current and future challenges, as well as the best foundation for life-sustaining pathways.
2. Building resilience to the mounting risks of socioecological tipping points in the region,

requires that new models of development and political decision making allow for more local agency in shaping human-environment interactions.

3. Global frameworks impact on the local level and often cause collateral damage – therefore dialogues on the local scale should be institutionalized, to guarantee exchange on the possible impacts beforehand and prevent them.

WE SEE TWO MAJOR OPEN QUESTIONS WE WOULD LIKE TO DISCUSS AT THE END OF OUR SESSION:

1. How to institutionalize a knowledge exchange format between all levels and scales of people who have (valuable) knowledge to contribute regarding the challenges of biodiversity loss and climate change?
2. How to make co-produced knowledge actionable, for example, by developing science-based policy proposals that create mutual benefits among opposing local interest groups?

BACKGROUND DOCUMENTS

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GLOBAL LANDSCAPES FORUM

The [Global Landscapes Forum \(GLF\)](#) is the world's largest knowledge-led platform on integrated land use, dedicated to achieving the Sustainable Development Goals and Paris Climate Agreement. The Forum takes a holistic approach to create sustainable landscapes that are productive, prosperous, equitable and resilient and considers five cohesive themes of food and livelihood, landscape restoration, rights, finance and measuring progress. It is led by the Center for International Forestry Research (CIFOR), in collaboration with its co-founders UN Environment Programme and the World Bank and Charter Members.

Charter Members: CIAT, CIFOR, CIRAD, Climate Focus, Conservation International, Crop Trust, EcoAgriculture Partners, EFI, Evergreen Agriculture, FSC, GEF, GIZ, ICIMOD, IFOAM - Organics International, ILRI, INBAR, IPMG, IUFRO, Rainforest Alliance, Rare, RRI, SAN, UN Environment Programme, Wageningen Centre for Development Innovation, part of Wageningen Research, WFO, World Agroforestry, World Bank Group, WRI, WWF International, Youth in Landscapes Initiative

TIPPING POINT

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