SOCIAL-ECOLOGICAL SYSTEMS INSTITUTE
ANNUAL REPORT 2024

SESI
Social-Ecological Systems Institute

FACULTY OF SUSTAINABILITY
LEUPHANA UNIVERSITY OF LUENEBURG
GERMANY

LEUPHANA
UNIVERSITÄT LÜNEBURG

FOREWORD

More than 50 years ago, the Club of Rome warned that humanity was on its way to breaching the Earth's limits to growth. Despite this long-standing finding, contemporary planetary health checks (https://www.planetaryhealthcheck.org/) show that humanity actually keeps moving away from a sustainable future, rather than towards it. Why does decade after decade pass without a major turnaround?

Many of our colleagues at the Social-Ecological Systems Institute believe that part of the reason is that sustainability problems are still mostly examined in disciplinary silos, while the underlying forces of un-sustainability remain unaddressed. And hence part of what we try to do at our institute is to look at dynamic connections between social and ecological facets of sustainability, as well as the drivers of underpinning these.

To that end, 2024 has been an exciting year! Dave Abson's new ERC grant focuses on social-ecological sufficiency and thus adds an important dimension to sustainability discussions; Berta Martín-Lopéz and Jacqueline Loos have continued their work on the values underpinning human actions and on environmental justice; Joern Fischer led a paper outlining pathways toward a 'regenerative future' in the leading journal Nature Sustainability; and Jan Hanspach's team conducted a series of art-based transdisciplinary activities to connect communities and nature in their research in Bolivia. None of these activities will by themselves turn around the global sustainability crisis that we find ourselves in. But through shaping sustainability discourses, we work every day to ensure that our institute's work is helping to shift the balance towards a better world for humanity, as well as the many other species we share the Earth with.

The next few pages are an overview of our collective activities and achievements in 2024 – we hope you enjoy this report!

Joern Fischer & Berta Martín-López

Heads of the Social-Ecological Systems Institute

Some of the social-ecological systems in Bolivia, Germany, and Rwanda in which SESI researchers work.

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ABOUT THE SOCIAL-ECOLOGICAL SYSTEMS INSTITUTE (SESI)

The Social-Ecological Systems Institute (SESI) was founded in 2020. It is part of the School of Sustainability at Leuphana University of Lueneburg, Germany. The institute provides a space for like-minded faculty members at Leuphana who are particularly interested in links between social and ecological phenomena. SESI researchers come from many different parts of the world, and a substantial proportion of SESI's research takes place outside Germany, including in Africa and Latin America. SESI researchers are interested in the ecological sciences, the social sciences, and especially the linkages between the two.

The SESI logo was inspired both by an unfolding fern leaf and by the Celtic double spiral – which symbolises the balance between opposing forces (e.g. change and preservation; or collapse and renewal). Arguably, many social-ecological systems are now on an unsustainable trajectory because they have lost this balance.

Leuphana University's central building.

VISION AND MISSION

OUR VISION

We envision a fair world where the benefits generated within social-ecological systems are shared sustainably with other species, both within and across generations. Solutions to sustainability challenges are developed collaboratively across diverse scientific disciplines, knowledge systems, and social interests.

OUR MISSION

To realise our vision, we recognise the need for transformative change. In pursuit of such change, we:

- Use place-based social-ecological systems thinking to understand and resolve sustainability challenges such as biodiversity loss and environmental injustice
- Bring together insights and approaches from the natural sciences, social sciences and the humanities in genuinely collaborative endeavours
- Integrate experiences, practices, and understandings from diverse knowledge systems
- Embed tools for transformative change into social-ecological systems thinking via a leverage points perspective
- Develop and apply methods to bridge multiple scales and governance levels
- Provide spaces for people sharing our vision to meet and exchange ideas.

RESEARCH HIGHLIGHTS

SESI AT PECS-3: PATHWAYS TO SUSTAINABILITY CONFERENCE IN MONTREAL

Figure 1. From left to right: Felipe Benra, Maraja Riechers, Katharina Löhr, Miguel Cebrián-Piqueras, and Manuel Pacheco-Romero at the PECS conference in Montreal.

The Social-Ecological Systems Institute participated in the PECS-3: Pathways to Sustainability conference in Montreal (12-15 August 2024), with the symposium "Toward social-ecological approaches to restoration". The symposium was organized by Dr. Manuel Pacheco-Romero and Dr. Miguel Cebrián-Piqueras (SESI), and also involved Dr. Maraja Riechers (Thünen Institute of Baltic Sea Fisheries), Dr. Felipe Benra (SESI), and Dr. Kaharina Löhr (Leibniz Centre for Agricultural Landscape Research). The symposium reflected on how six key themes from social-ecological systems thinking can inform ecosystem restoration, illustrating them with examples through individual talks. These talks provided insights to take the understanding of restoration as a predominately ecological practice, to one which recognizes social (and intertwined social-ecological) components, which can often make or break restoration success.

The six key themes were outlined by the first speaker, Dr. Maraja Riechers. They revolved around: (1) adopting key principles for social-ecological resilience; (2) recognizing that people act as stewards who navigate complexity; (3) using relational values to bridge gaps and answer questions of what should be conserved and restored and why; (4) understanding the coevolution of both

social and ecological systems by honouring biocultural diversity in restoration; (5) recognising that telecoupling and spillovers between social-ecological systems need to be considered in restoration actions; (6) targeting of “deep” leverage points rather than simply engaging with the most “visible” factors.

The second speaker, Dr. Manuel Pacheco-Romero, illustrated the complexity of evaluating restoration projects by looking at what makes restoration successful through post-hoc assessment of ecological, social, and social-ecological indicators in grasslands. This allowed the identification of restoration archetypes, with the main difference between them showing the importance of stakeholders’ participation and the need for supportive societal structures to achieve higher social-ecological success.

The third speaker, Dr. Miguel Cebrián-Piqueras, showed the complexity of values associated with restoration, and how the values of individuals and groups may differ. This was illustrated with an example from real-world labs in Germany, where co-design of grassland restoration strategies with local stakeholders is used. Results showed that relational values were less apparent at the collective level than at the individual level. Both individual and group values are therefore important to unravel, in order to guide which values are acted upon in decision-making contexts.

The fourth speaker, Dr. Felipe Benra, explored the need for assessing what, where, and how an area should be restored before the restoration project even starts. This was illustrated with landowners in a working biocultural landscape in southern Chile. Exploring the values landowners may have towards restoration showed that stewardship and care were dominant values, and that forests were particularly important for relational values. This illustrates how values may help to legitimize or de-legitimize restoration projects before they even begin.

The final speaker, Dr. Katharina Löhr, described how restoration projects can serve as entry points for achieving social cohesion in the way they promote information exchange and offer spaces for stakeholder interaction. Katharina gave examples from Ethiopia and Togo, where restoration has acted as a point of cooperation for communities. Restoration activities can lead to improved social-ecological outcomes by increasing social cohesion both vertically (between state and society) and horizontally (between societal groups), and in this was act as leverage point for improved social-ecological outcomes.

The symposium ended with a discussion on why, amongst a range of environmental activities, ecological restoration may be particularly special for

creating positive social-ecological impacts. By recognizing that restoration activities open spaces for increased relationality and connection with nature, deeper leverage points for societal action might be found.

This text has been adapted from the original blogpost “Pushing our conceptualization of restoration forward: it’s all about values!”, written by Julia van Velden and edited by Madeline Sides, and published on the Programme on Ecosystem Change and Society Website: https://pecs-science.org/pushing-our-conceptualization-of-restoration-forward-its-all-about-values/.

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RESEARCH HIGHLIGHT: MAINSTREAMING SOCIAL-ECOLOGICAL SUFFIENCY (MaSES)

Figure 2. The MaSES project logo, showcasing social and ecological ceilings.

Global patterns of production and consumption are fundamentally unsustainable, threatening key planetary boundaries—earth system processes vital for the maintaining of ecological integrity and long-term human well-being. Strategies for averting this 'ecological overshoot' have largely focused on 'greening' production by reducing either the material intensity (efficiency), or the material throughput (consistency) of economic activity. However, neither of these approaches address what constitutes a sustainable scale of economic activity. Here, the novel notion of social-ecological sufficiency—a socially satisfactory standard of living within ecologically sustainable natural resource usage—represents a third vital strategy for shifting towards an economy within a 'safe operating space for humanity'.

The overall aim of MaSES is to mainstream the notion of social-ecological sufficiency as a conceptual and empirical bridge between research on planetary boundaries and sustainable production and consumption, with far-reaching academic and societal implications for sustainable resource use. WP1 will synthesize disparate approaches to conceptualizing sufficiency and cement social-ecological sufficiency as a core idea in sustainability thinking. WP2 will employ a global environmentally extended material and energy flow analysis to quantify key planetary boundaries (land-system change, biochemical flows, climate change and freshwater use) in terms of 'ecologically sufficient' levels of household consumption. WP3 will adapt methods from consensual deprivation assessments to identify 'socially sufficient' levels of household consumption across different social groups. WP4 will assess the feasibility of different strategies for closing the gap between ecologically 'safe' and socially 'acceptable' levels of household consumption.

Since August 2024 the project team (two post-docs and three PhD students are now in place, with a fourth related PhD student to start early 2025). We have begun the conceptual ground work for the four work packages, and undertaking several literature reviews to scope out and synthesize the existing theoretical and methodological approaches to: down scaling planetary boundaries via environmentally extended multi-regional input-output analysis (EEMRIO); eliciting social understandings of sufficiency, via both large scale social surveys, and qualitative semi-structured interviews; and understanding and operationalizing sufficiency as justice concern, including different attribution methods for calculating responsibility for household consumption based environmental pressures.

The preliminary results will be presented at both the ISEE-Degrowth conference in Oslo and the SCORAI conference on Mainstreaming Sustainable Consumption in 2025.

RESEARCH HIGHLIGHT: UNRAVELLING THE RELATION BETWEEN VALUES OF NATURE AND TELECOUPLING (VaNaTe)

Figure 3. Fieldwork for the VaNaTe project.

Nature supports human wellbeing via multiple nature's contributions to people (NCP), for example by producing food, regulating air and water quality, or providing inspiration. Humans interact with nature to co-produce these NCP by using various anthropogenic capitals, such as knowledge or machinery. The sustainability of this co-production process depends on various factors. For one, research has shown that land-managers' choice of anthropogenic capitals depends on the NCP they prioritise and thus influencing how NCP are co-produced. Second, recent research has demonstrated how land-management decisions are influenced by the ways people value nature and its contributions. Third, anthropogenic capitals and the NCP they co-produce are telecoupled across geographical and temporal scales. This implies that some capitals and NCP may be sourced and used locally, whilst others are shipped from far away. The VaNaTe research project builds on this research by seeking to understand how people's values of nature and nature's contributions to people are interlinked with land-use intensification as well as sustainable land management.

VaNaTe is embedded in the long-term and large-scale DFG Priority Program Biodiversity Exploratories which studies the effects of land-management on biodiversity in three case study sites across Germany. VaNaTe will contribute to the Biodiversity Exploratories by linking accumulated knowledge on land-

management to the two most important societal drivers that underpin such management: value-systems and telecoupling of NCP co-production.

Figure 4. An impression from one of the study areas.

In the summer of 2024, we conducted semi-structured interviews with foresters, farmers, and consultants to better understand telecoupling in the three case study sites. In 2025 we will deliver an online survey based on these interviews to identify telecoupling archetypes and use the photovoice method to identify foresters' and farmers' nature values. VaNaTe is led by Prof. Dr. Martín-López (SESI), Prof. Dr. Loos (University of Vienna, Austria), and Dr. María Felipe-Lucia (Pyrenean Institute of Ecology, Spain) and supported by Dr. Roman Isaac (PostDoc) and Anna Mayer (PhD student) at SESI.

FOR FURTHER INFORMATION:

https://www.biodiversity-exploratories.de/en/projects/unravelling-the-relation-between-values-of-nature-and-telecoupling/

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RESEARCH HIGHLIGHT: GRASSWORKS - CONTRIBUTING TO THE SOCIAL-ECOLOGICAL RESTORATION OF SPECIES-RICH GRASSLANDS IN GERMANY

Figure 5. Stakeholder visit to restoration sites in the Drömmling Biosphere Reserve (Lower Saxony) - Real-World Lab North from GRASSWORKS project (photo by Miguel A. Cebrián Piqueras).

Biodiversity in grasslands is seriously threatened globally, not only by agricultural intensification but also by the abandonment of grasslands and associated sustainable practices and uses. In the UN Decade of Restoration, practitioners and scientists hope to reverse the threats to priority ecosystems and to approach successful ecosystem restoration from holistic approaches that consider ecosystems as socio-ecological systems beyond purely ecological dimensions. Researchers in the GRASSWORKS project seek to understand the coupled ecological and social processes associated with the successful restoration of species-rich grasslands in Germany. One of the project's objectives is the co-production of knowledge and co-design of regional restoration strategies and concepts together with a broad spectrum of local key actors to sustain this transformation, e.g. conservation administrations, farmers, landscape planners, scientists, and representatives of local communities. This inclusive way of doing science is known as transdisciplinary research.

In the GRASSWORKS project, Miguel A. Cebrián-Piqueras, a researcher at Leuphana University of Lüneburg associated with SESI, coordinates a real-world laboratory with local stakeholders in the Gifhorn region (Northern Germany). This transdisciplinary lab has been the impetus for co-designing a species-rich grassland restoration pilot project to serve as a seed and model for future

regional projects. The transdisciplinary process reveals how the values that stakeholders assign to grasslands, as well as the knowledge they have about them, are more dynamic than expected when shared and deliberated through participatory research activities. For example, the collective and individual relational values that participants associate with grasslands and their restoration, such as collective identity, the human-nature connection, the sense of belonging to the region, or the personal satisfaction that restoration brings, are reinforced during the co-design of the restoration concept. Nevertheless, the perception of the value of grasslands for protecting species and their potential to provide hay and food resources remains high. Besides, Lukas Kuhn, PhD candidate in the GRASSWORKS project and associate member of SESI, is investigating how the plurality of assessment methods applied in the participatory research process reveals multiple and compatible ways of perceiving the diversity of grassland values.

Figure 6. Worldcafé for the co-desing of the restoration concept - Real-World Lab North from GRASSWORKS project (photo by Miguel A. Cebrián Piqueras).

Another essential research component of the Grassworks project is the post-hoc evaluation of restoration projects, to learn from past grassland restoration activities in Germany. To do so, about 40 restoration sites have been evaluated from a comprehensive socio-ecological approach based on the perceptions of key stakeholders in the restoration projects collected through online questionnaires. This study, coordinated by researcher Manuel Pacheco-Romero (SESI), incorporates multiple social-ecological dimensions into four interdependent components when assessing restoration: the context in which

the project is embedded, the type of restoration developed, and the restoration goals and success. The results of this assessment reveal that (1) building a supportive social context by considering stakeholder participation and engagement, (2) including social considerations in restoration planning that align with characteristics of the context, and (3) combining grassland reconstruction techniques with changes in agricultural practices and land management, may lead to higher and more balanced grassland restoration success across multiple social-ecological dimensions.

Figure 7. Stakeholder´s visit to restoration sites in the Drömmling Biosphere Reserve (Lower Saxony) - Real-World Lab North from GRASSWORKS project (photo by Miguel A. Cebrián Piqueras).

During the coming months, SESI researchers expect to develop several scientific publications associated with the Grassworks project. On 21 January 2025, a final event of the Grassworks project will occur in Berlin with relevant stakeholders in grassland conservation and restoration in Germany. The event aims to present the project's most important results, which is part of the BiodiWert program - the largest research initiative to date of the Federal Ministry of Education and Research to preserve biodiversity. We want to show that biodiversity and productive land use can be successfully combined. Recent events such as the farmers' protests and the EU Nature Restoration Law debate show how urgently balanced and sustainable solutions are needed in an increasingly complex social situation.

GRASWORKS investigates what leads to successful grassland restoration in Germany from a social and ecological perspective. It is a project funded by the FEDA research initiative of the BMBF (German Ministry of Education and Research) to maintain biodiversity. The following links provide more information and activities related to the project and the activities coordinated by SESI and the Institute of Ecology at the Leuphana University of Lüneburg, along with multiple partners.

Text by Miguel A. Cebrián-Piqueras and Manuel Pacheco-Romero.

FOR FURTHER INFORMATION:

Visit our website: https://grassworksprojekt.de/en/

Read our blog: https://grassworksprojekt.de/en/blog/category/workshops/

RESEARCH HIGHLIGHT: MOVE'N'SENSE - SENSE OF PLACE AND MOBILITY IN CROSS-BORDER CONTEXTS – ESSENTIALIST AND PROGRESSIVE PERSPECTIVES

In 2024 the third and final year of Move'n'Sense project started, funded by the German Research Foundation (DFG) and the Polish National Research Centre (NCN). The project aims at exploring the relations between mobilities and senses of place in the context of cross-border regions. Furthermore, in close collaboration with local practice partners, we aim to integrate the knowledge into planning practices fostering environmental stewardship activities and sustainable (urban) landscape management.

In the past two years, we had collected data through a Delphi, expert workshop, a participatory mapping survey and focus groups with mental maps. This year, thus was dedicated to data analysis, and result dissemination. Additionally, teaching activities of the transdisciplinary research project (Master) 'Sustainable urban transformation of a cross-border city - a social-ecological systems approach' are linked to the Move'n'Sense research project. The transdisciplinary approach supported our project aim of knowledge integration.

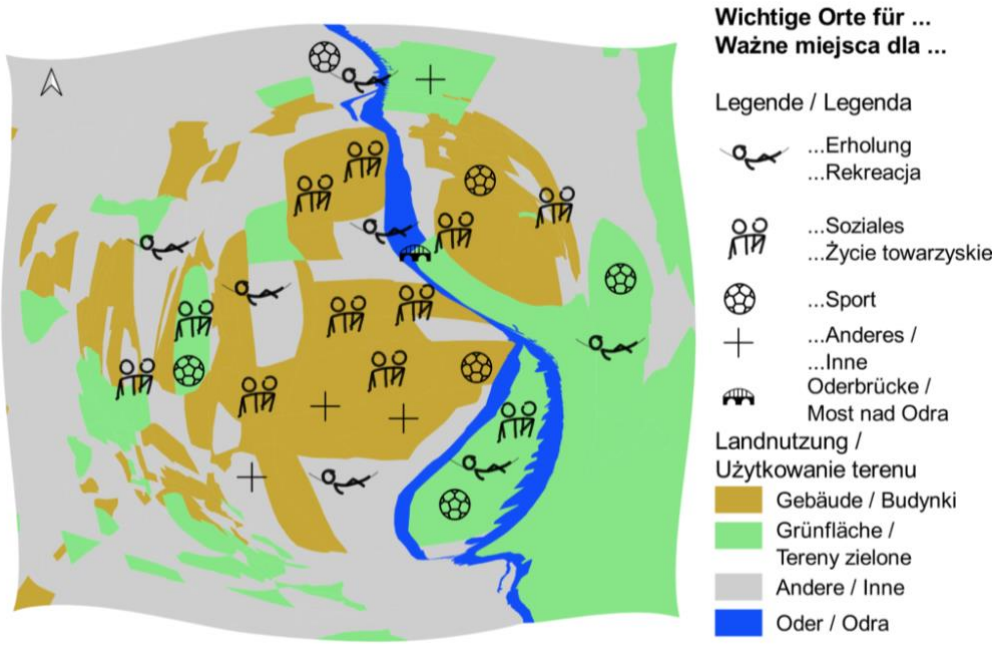

Figure 8. Postcard design of one of the six post cards that were distributed in the project region, the map displays agglomerations of meaningful places for different purposes (recreation, social interaction, sports, other).

In the summer term, we conducted field trips with students, on which a Q-method was realized on place values from human and non-human perspectives, and an in-person survey conducted that explored the link between perception of joint environmental challenges, conservation intentions and cross-border identity. In the second half of 2024, our students explored local stakeholders'

visions and implications of transforming the border bridge (the second most frequented between Germany and Poland) into a pedestrian bridge.

This November, we organized a result dissemination event presenting and discussing (preliminary) findings of Move'n'Sense and the associate work of the students. Around fifty people followed the invitation and could take home very tangible results in form of postcards that displayed results translated into maps (see Fig. 1). The postcards are now available at the Cooperation Centre and City Marketing of Frankfurt(Oder)-Słubice and online (https://movensense.web.leuphana.de/karten/).

The German research part of the project finishes in December 2024, the Polish partners continue for another year, the teaching activities related to Move'n'Sense will continue in the next semester.

FOR FURTHER INFORMATION:

Visit our website: https://movensense.web.leuphana.de/

Visit our Facebook page:
https://www.facebook.com/people/MovenSense/100082870435245/

RESEARCH HIGHLIGHT: ECOSYSTEM RESTORATION IN RWANDA

Figure 9. Group picture from the kick-off workshop in Kigali.

Motivated by widespread and accelerating land degradation, biodiversity loss and human-induced climate change, ecosystem restoration has become a global priority. Yet, despite a surge in international attention, the ecological, social, and interlinked social-ecological consequences of major restoration initiatives remain poorly understood. The year 2024 marked the beginning a major new research project addressing ecosystem restoration from a social-ecological systems perspective. The project has the format of a 'research unit' funded by the German Research Foundation (DFG), and involves a group of more than 20 scientists, spanning PhD students, postdocs and professors, from Germany, Rwanda, and several other nations from around the world. SESI leads this research unit as a whole, and contributes substantive inputs to several of the different sub-projects that are being addressed. The overarching goal of the research unit is to develop a social-ecological systems understanding of ecosystem restoration. We expect to gain general insights into ecological, social and social-ecological mechanisms underpinning restoration that can also be applied to other restoration settings. This way, the research unit contributes to restoration science and social-ecological systems research, directly benefits restoration activities in Rwanda, and offers insights to advance restoration practice globally.

We started the year 2024 with a kick-off workshop in Kigali, which involved many of Rwanda's leading restoration stakeholders from science, practice and government. In the following months, the first major campaigns of data collection followed. By the end of 2024, the research unit had collected data on the diversity of trees that had been planted at more than 200 sites across

western Rwanda; it had identified the values that local people associated with restoration sites; and had begun to embark on a major household survey to see how people's livelihoods might improve in response to restoration activities.

The research unit was funded for four years, and after its first year, it is still too early to summarise key results. However, it is clear already that many of the critiques of global restoration efforts also apply to our study area in Rwanda. For example, some restoration sites are quite poor in species diversity, and may even be dominated by introduced species; and stakeholder involvement has been less than optimal in some cases. Not least by working with diverse stakeholders in a 'living lab', we hope that our research unit will contribute new insights into how the social, ecological and interlinked social-ecological outcomes of restoration can be further improved in the future. The potential of, and need for, ecosystem restoration is massive, after all, in many parts of the world. Integrated social-ecological systems thinking can help to make sure that restoration can better live up to its promises.

FOR FURTHER READING:

Visit our website: https://ecosystemrestoration.net/

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RESEARCH HIGHLIGHT: BIOCULTURAL DIVERSITY IN FARMING LANDSCAPES OF THE GLOBAL SOUTH

Figure 10. Preparing a hive for native stingless bees during one of our workshops.

The project BioKultDiv is currently in its last stage, and the year 2024 was characterised by the processing, analysis and write up of the results. Importantly, we published two review articles on biocultural approaches in the Spanish literature (Díaz-Reviriego et al. 2024a, Díaz-Reviriego et al. 2024b). Since the projects' activities and schedule had to be readjusted over the course of the last years, we could successfully apply for a project extension of about one year until May 2025. This enables us to finalize all the planned activities, but also to add some important community engagement work in the Chiquitanía in Bolivia and disseminating our research insights to a wider audience. This includes different workshops and activities on a wide range of topics including gardening, bee keeping, journalism, theatre and visual arts. In response to local needs and interests in the case study communities in Bolivia, we organized a series of workshops run by experts for local people. In each community we ran two one day workshops on home garden management, which included hands on practices for seed saving, sharing, seeding, seedling management as well as caring for soil and composting. In a second workshop series, we invited an expert to teach the biology, ecology, keeping, breeding and management of native stingless bees. In the Guarani community of 16 de Marzo/Cordillera we invited the Akaraku Theatre group to run a series of four theatre workshops. Akaraku is specialised on Guarani indigenous knowledge and stories. The workshops culminated in a performance from the workshop participants and a play from the theatre group. The play "'ɬvɨ Maraëɨ, tierra sin mal" (Land with no ill) engaged with stories of Guarani people and included topics such as migration, loss of knowledge, invasion of the territories and racism. The play was

complemented with a discussion round between the theatre group and the community members.

Figure 11. Fig During the play of the AKARAKU theatre group in community of Guarani Indigenous people.

Further we organized an encounter with Chiquitano Indigenous women grassroots organizations. Jointly organized by our project team and the Regional Organization of Indigenous Chiquitano women, 22 Indigenous women leaders from nine grassroots organizations from the Chiquitanía came together to share their quotidian and everyday experiences and struggles in coping with the expansion of the agricultural frontier and the related environmental changes. Through the innovative method of poetic inquiry, the participating women created poems that captured their emotional and embodied experiences with forest fires, deforestation, drought and climate change.

Over the course of the year, we produced more episodes for the podcasts on life in the communities that is jointly made with the radio program Voces Indigenas Urbanas from Radio Santa Cruz. It now includes episodes on territory, poetry and community journalism. Also, we conducted a local radio journalism workshop in the community of San Juan, which was run by an expert from Voces Indigenas Urbanas.

Figure 12. Community assembly for closing our project in one of the communities. / The encounter with Indigenous Chiquitano women in Santa Cruz yielded 15 poems.

After three of years of intensive transdisciplinary work, our engagement in the two Indigenous communities of the Chiquitania region are coming to an end. Therefore, it was time to formally close our collaboration with the people of the two communities. For this we called for community assemblies during a field trip in October. The assemblies were accompanied by food sharing and a photo and artwork exhibition. Also, we handed out reports about the communities and particularly designed “newspapers” including impressions and results from our time in the communities.

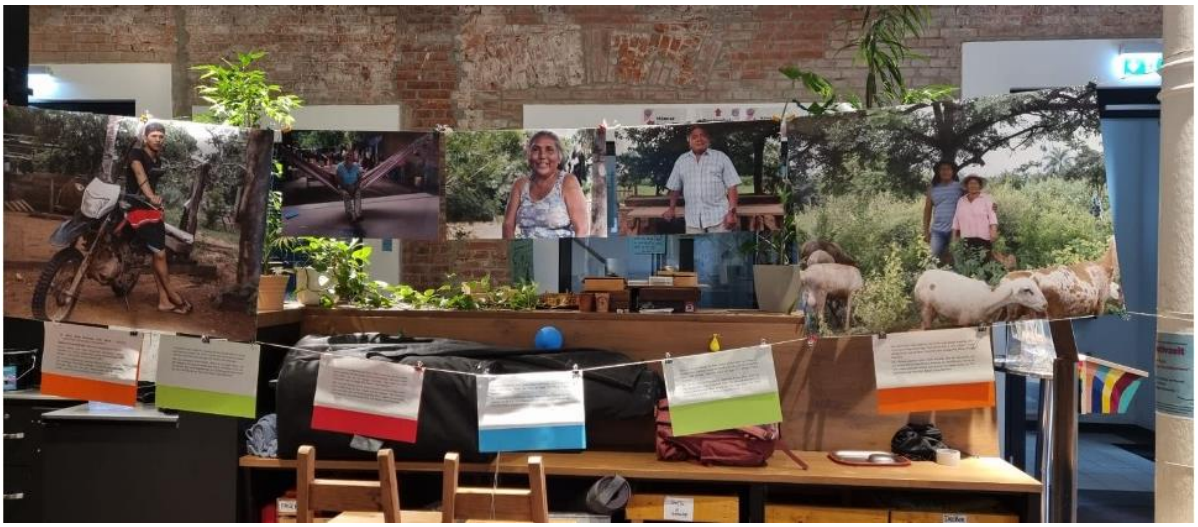

Figure 13. Project exhibition in the mosaique community centre in Lüneburg.

As part of the more general project outreach, we organized an exhibition on „Life in Indigenous Territories - Hope in the Face of Deforestation in Bolivia“. The exhibition took place between 30. June and 5. July in the Begegnungszentrum mosaique in Lüneburg. It included photos, posters, artwork and stories co-

created with the two Indigenous communities. Through these, we showed the biocultural diversity of the region and the environmental and social challenges that deforestation and the expansion of industrial agriculture bring.

FOR FURTHER READING:

Visit our website: https://www.bioculturaldiversity.de/

All episodes from the podcast can be found here: https://www.youtube.com/@bioculturaldiversity5168

Two articles from us on the forest fires in the Chiquitanía in Spanish: https://www.elsaltodiario.com/bosques/bosques-no-mediaticos-destruccion-bosque-seco-boliviano-avanza

https://revistanomadas.com/incendian-silenciosamente-para-despojarnos-de-nuestras-tierras-de-nuestros-territorios/

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FEATURED PAPERS

FEATURED PAPER: REGENERATIVE DYNAMICS FOR SUSTAINABILITY

Regeneration is emerging as a new paradigm in sustainability science, and is increasingly recognised for its potential to foster sustainability transformations in practice. Within the last decade, regeneration has emerged as a new idea in diverse fields – for example, in research on materials science and a circular economy, but also in governance, management, education and ecology. Recognising growing interest in regeneration, an interdisciplinary team of Leuphana scientists – including several members of SESI – got together to integrate understandings of regenerative dynamics across fields. The result was published in 2024 in a review paper in the prestigious journal Nature Sustainability.

Unlike most previous publications in the area of regeneration, our paper approached regeneration from a dynamic systems perspective. By formalising the definition of a regenerative system and by highlighting potential synergies across diverse fields, our article paved the way for regenerative sustainability to move from a metaphor to a scientifically rigorous concept of tangible relevance to practice. Research on regeneration has now reached a critical moment: with increasingly solidifying theory, regenerative sustainability could become a cornerstone concept to help guide societal transformations.

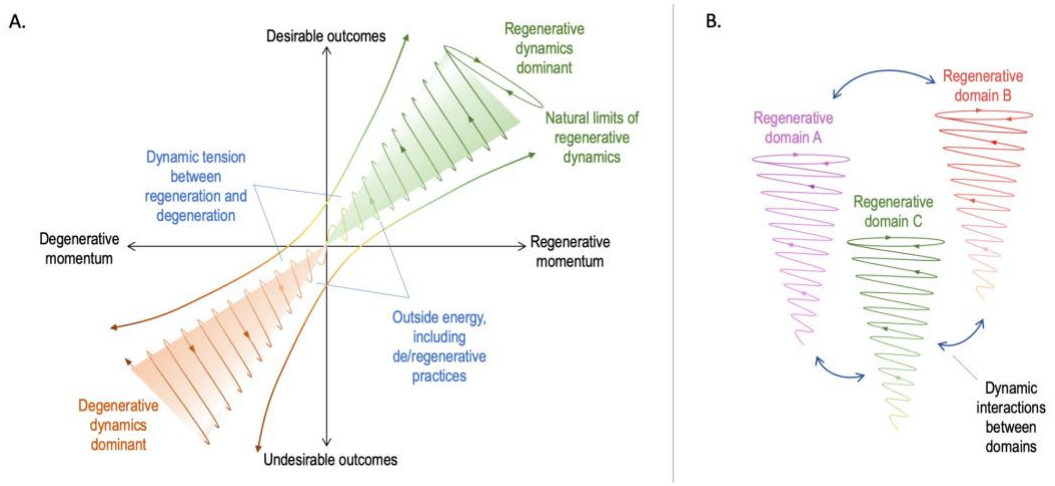

Figure 14. Generalized view of regenerative dynamics (A) and interactions of regenerative systems (B).

What, then, is a regenerative system? A first key observation is that a regenerative system exhibits dynamics that are self-renewing to an extent, such that a desired outcome is maintained or even improved through time. For example, a forest can regenerate after a wildfire; but people can also regenerate (e.g., through rest or meditation); and agricultural soils can continuously regenerate with the right kinds of land use practices, thereby maintaining high soil quality in perpetuity (see part A in Fig. 13).

A second key observation is that regenerative dynamics could positively interact across multiple domains of society. For example, individual firms practicing regenerative management could inspire entire sectors, thereby contributing to a more regenerative economy (see part B in Fig. 13). In this way, positive changes in one sector of society (or at one scale) could help to facilitate positive changes in other sectors (or at other scales).

Finally, it is worth noting that regeneration goes beyond conventional framings of sustainability. Regeneration focuses not only on maintaining the status quo, but on fostering positive dynamics that make the world an increasingly better place for both humans and the environment. And thus, a positive focus on desirable dynamics across diverse sectors of society – rather than a focus on simply preventing more harm – could signal the beginning of far-reaching changes for society, and could substantially help to hasten a sustainability transformation.

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FEATURED PAPER: ECOSYSTEM SERVICES JUSTICE – THE EMERGENCE OF A CRITICAL RESEARCH FIELD

This perspective provides a synthesis of the development of the emerging research field of ES justice, by highlighting previous advances and pointing out future research needs and frontiers. Traditionally, ES studies have predominantly adopted an egalitarian approach to equity and justice. However, as we have shown here, based on important critiques accompanying the expansion of the ES research field, an important body of literature on ES justice has grown over the past decade. Not least, we argue, the social-ecological co-production perspective of ES, which recognizes the dynamic and reciprocal relationship between humans and ecosystems, must be highlighted as an underpinning framework for a better understanding of the complexity and diversity of ES justice (Kachler et al., 2023). We call for future research from the three key research strands that have emerged in the ES justice literature on (a) ES production, (b) ES distribution, and (c) ES pluralisms including the recognition of plural wellbeing, values, and knowledge systems, and their uptake in governance procedures of the production and distribution of ES.

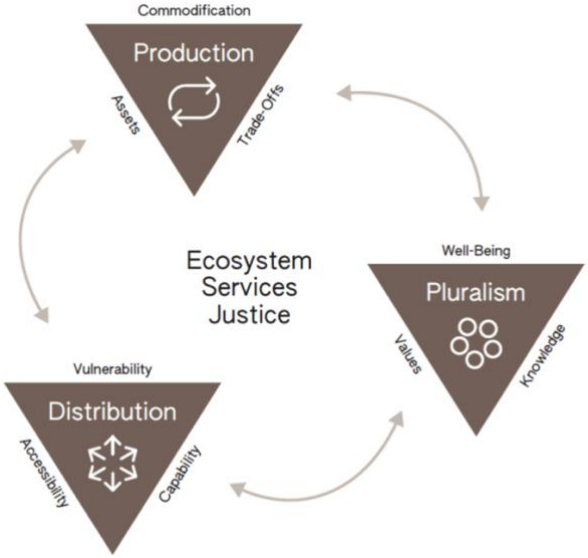

Figure 15. The three interacting dimensions of ecosystem services justice.

By integrating the three dimensions of ES production, distribution, and pluralism, this perspective provides a comprehensive view of ES justice (see Fig. 14) Specifically, it moves beyond the simple supply–demand dichotomy prevalent in ES assessments by factoring in the production processes and the socio-cultural underpinnings of ES production and distribution, thereby offering a richer, more contextually grounded understanding of ES justice. Reimagining the justice

framework in this manner allows us to present a holistic view of the ES landscape, one that better accounts for the intricacies of how ES are produced, distributed, and valued. This approach not only provides a stronger analytical foundation for understanding ES justice but also highlights the advantages over traditional models by emphasizing the interconnectedness of social-ecological processes and social justice issues. Yet, the single approaches laid out are only piecemeal without novel procedural frameworks across multiple dimensions of space and time. We thus call for new and integrated approaches to incorporate ES justice from a procedural perspective across multiple dimensions, perspectives, and intersectionalities (Anguelovski et al., 2020). Such an integrated approach needs to reflect on social differences throughout the entire ES chain (Daw et al., 2016) including disparities in the production of ES due to power imbalances, discrepancies in accessing ES benefits resulting from individuals' varying personal abilities, and structural conditions, and variations in people's values, needs and aspirations that ultimately shape the translation of ES into well-being outcomes. It is not sufficient to understand ES justice as differences in the distribution of benefits among different societal groups, but also to interpret these distributional inequities in the light of differences in mediating factors and mechanisms to access benefits, and people's diverse needs, vulnerabilities and understandings of well-being. In summary, while many scientific foundations have already been laid out, a holistic incorporation of justice into ES practice is still widely missing and requires a further rethinking of the ontology, values, ethics, and epistemologies that are implicit in current framings and assessments of ES.

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FEATURED PAPER: INTERPLAYS BETWEEN RELATIONAL AND INSTRUMENTAL VALUES

When we think about why nature matters, two main ideas come to mind: instrumental and relational values. Instrumental values are all about the tangible benefits we get from nature, like clean water, food, or timber. This view is often used in economic and policy decisions, focusing on what nature can provide for human needs. In contrast, relational values highlight the personal, cultural, and emotional connections we have with the natural world. It's about how nature shapes who we are and how we relate to our environment. While these two perspectives seem different, they are often closely linked. Understanding the interplay between instrumental and relational values can help us make more thoughtful and inclusive decisions about how we interact with nature.

Instrumental values focus on what nature can offer us in practical terms. A forest might be seen as valuable because it provides timber, stores carbon, or prevents soil erosion. This approach is typically centered on the measurable benefits nature provides to humans. Relational values, on the other hand, emphasize the deep, sometimes spiritual, connection between people and the natural world. For many, nature is more than just a resource. It is a part of their identity, culture, and sense of belonging. This is especially true for Indigenous communities and others who have lived in close connection with nature for generations.

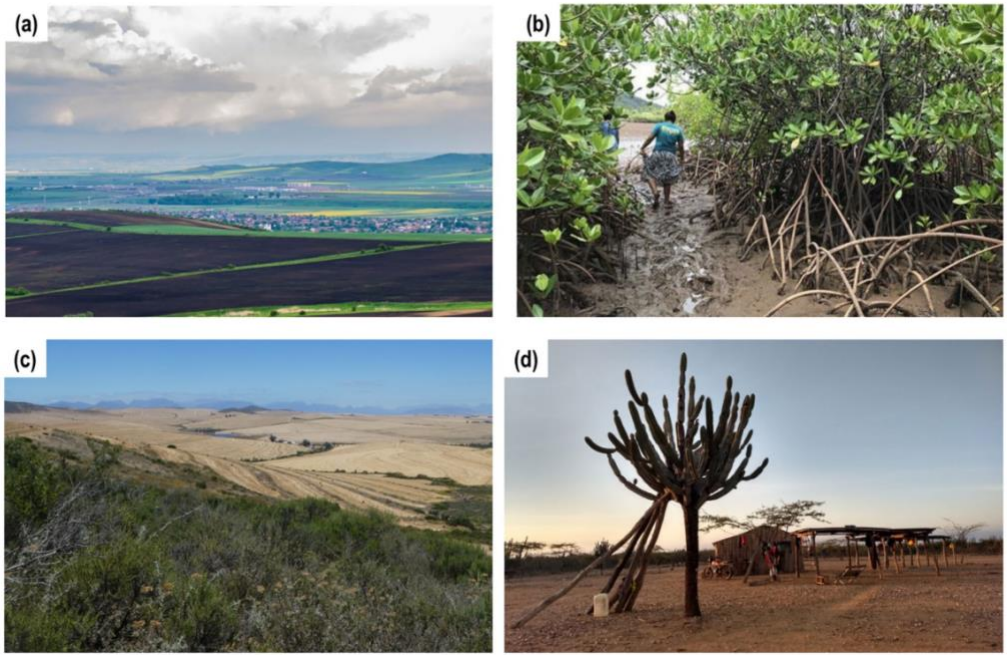

Figure 16. Some of the case study landscapes that this synthesis paper draws upon. (a) Transylvania, Romania; (b) Vanua Levu, Fiji; (c) Cape Floristic region, South Africa; (d) Wayuu territory, Guajira, Colombia.

But these two values are often interconnected. For example, sustainable farming or fishing practices can both provide essential resources (instrumental) and maintain cultural traditions that tie people to their land (relational). By managing ecosystems in ways that honor both perspectives, communities can achieve more sustainable and meaningful conservation outcomes. One powerful example of how these values come together is seen in community-led conservation efforts. Many Indigenous groups view nature not only as a source of livelihood but as integral to their cultural and spiritual identity. By managing natural resources based on both practical needs and cultural values, these communities often create sustainable systems that benefit both people and ecosystems. Another example is the role of urban green spaces. City parks provide instrumental benefits, like cleaner air, mental health improvements, and opportunities for physical activity. But they also offer relational value by fostering community, recreation, and a sense of connection to nature, even in busy urban environments.

These examples show that it’s not a question of choosing between instrumental or relational values, but rather recognizing that both can work together to support healthier, more resilient communities and ecosystems. By only focusing on the practical, economic benefits of nature, we risk overlooking the deeper connections that people have with the environment. Policies that prioritize short-term gains, like resource extraction or industrial development, can undermine the cultural, emotional, and personal bonds that communities share with their land. This can lead to conflict, resentment, and ultimately unsustainable outcomes. On the other hand, by considering both instrumental and relational values, we can create conservation strategies that are more holistic, equitable, and sustainable. Recognizing that nature is important to people for many different reasons helps ensure that decisions are made with greater sensitivity to local contexts and needs.

To protect the natural world effectively, it's essential to take a broader view of what "value" really means. Conservation strategies that incorporate both instrumental and relational values not only protect ecosystems but also support the diverse relationships people have with their environments. This approach can lead to stronger, more inclusive solutions that benefit both people and nature. By embracing this more comprehensive understanding of how we value nature, we can build a future where conservation efforts are not just about preserving resources but about sustaining the bonds between humans and the

natural world. These connections are just as crucial for the health of our planet as the actual conservation activities.

This text has been adapted from the original blogpost “What’s nature worth? Spoiler: More than just timber and water!” by Isabelle Andres, published on the ideas4sustainability-Blog: https://ideas4sustainability.wordpress.com/2024/10/21/whats-nature-worth-spoiler-more-than-just-timber-and-water/.

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FEATURED PAPER: APPRAISING BIOCULTURAL APPROACHES TO SUSTAINABILITY IN THE SCIENTIFIC LITERATURE IN SPANISH

There is an increasing attention to biocultural approaches in the academic literature. As most of the co-authors of this piece are native Spanish speakers, we were aware that whilst there is influential work of particularly Latin American authors on biocultural memory, heritage and ethics, language barriers and predominant patterns of knowledge production generally overlook scientific evidence due to language barriers. Internationally recognized scientific journals published in English rarely review and reference non-English scientific literature. While English as a lingua franca in contemporary scientific knowledge production facilitates communication and collaboration of scientist from different regions and cultures, it can also neglect other philosophies and ways of knowledge production. Language has a mediating role in sense making as it is a way through which people-nature relationships are interpreted and conceptualized.

In this article, we reviewed biocultural approaches as reported in the scientific literature published in Spanish, which has a strong, though not exclusive, focus on knowledge produced in Latin America. It contributes to revealing the richness of biocultural approaches beyond the Anglophone hegemony in academic knowledge production and communication, and makes academic literature published in Spanish more accessible to non-Spanish speakers. We performed a systematic review through a mixed methods approach. We searched the most relevant databases in Spanish and included those articles related to sustainability, environmental issues and natural resource management that contained the keywords “biocultural” and “bioculturales” (plural of biocultural in Spanish) with a final sample of 144 research articles. We inductively coded these papers for a set of descriptive variables and calculated descriptive statics for these variables. We also inductively coded for different ways of understanding and applying biocultural approaches, what we defined as biocultural lenses and qualitatively and quantitatively described these lenses.

In the paper, we identified nine lenses (Fig. 16) according to different perspectives and emphasis of the biocultural approaches.

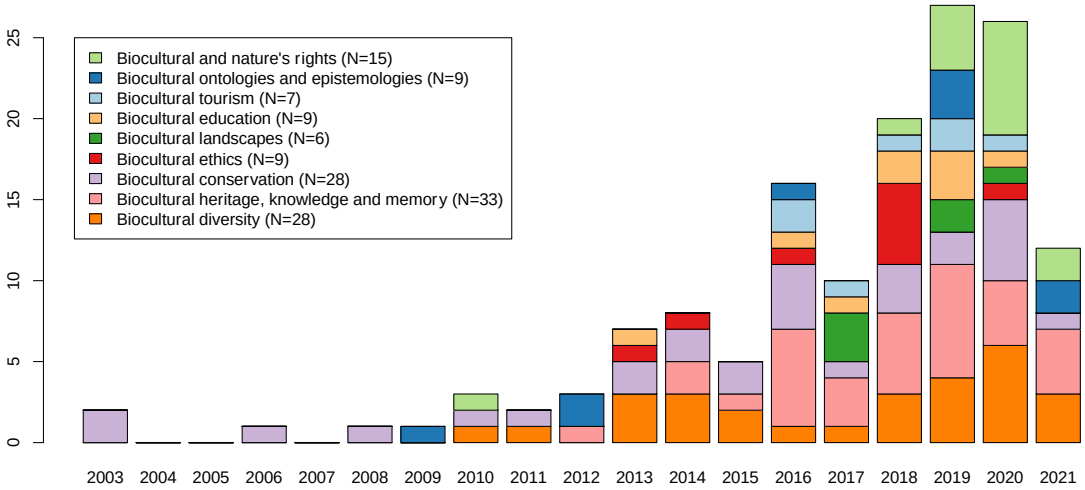

Figure 17. Development of literature on biocultural approaches.

Figure 16 shows that that while starting with a focus on biocultural conservation, the literature has been growing in numbers and topics it addresses. Heritage, knowledge and memory are the topics most frequently addressed. The figure also indicates that the Spanish literature is taking on the relatively recent development of Nature rights and biocultural rights in Latin America and beyond. These are innovations in law and jurisprudence in many countries and regions worldwide that are expanding the anthropocentric conception of law to the recognition and protection of nature on the basis of its own rights and intrinsic value, granting legal personhood to natural entities (e.g., rivers, moorlands, glaciers) towards a new paradigm of ecocentric justice.

The multivariate correspondence analysis of these lenses together with the corresponding qualitative information allowed us to conclude that particularly power issues are poorly represented in biocultural studies. Some of the studies we reviewed suggest that decolonial methodological pathways can contribute more epistemic and environmentally just biocultural research that supports emancipatory transformations of human-nature relationships. For example, acknowledging and addressing power relations through dialogue with other knowledge systems has the potential to nurture creative endogenous processes by weighting relational values of biocultural diversity. Another important aspect that our results highlighted is that biocultural approaches to sustainability in the literature in Spanish could be also enriched by addressing the intersectional aspects of gender in order to generate new insights both for research and practice, as gender was mostly overlooked in the literature reviewed. Studies could further integrate perspectives from more dynamic and transformed systems (i.e., beyond Indigenous and local communities). Lastly, inquiry into the

interplay between biocultural rights and nature's rights and its challenges and opportunities for Indigenous People's nature stewardship as well as involvement in and control over their territories might be a future pathway for the development of biocultural research.

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SOCIAL-ECOLOGICAL RESEARCH: AN ARTISTIC JOURNEY

EXHIBITION: ART AND SOCIAL-ECOLOGICAL SYSTEMS RESEARCH

Figure 18. A collection of exhibits from the art exhibition showcasing research projects by SESI members.

From the 6th to the 20th of June, SESI hosted an art exhibition to illustrate how art can be a tool for conducting and communicating social-ecological research. Drawing on the diverse place-based social-ecological research in various parts of the world, the art exhibits spanned from contemplative abstract paintings

depicting the transformation of agricultural land-use ecosystems in Southeastern Australia, to colourful landscape photographs illustrating different Nature's Contributions to People in Kilimanjaro (Tanzania), to the aesthetics of Chilean landscapes, to photos of pleasant and unpleasant spaces of Leuphana, to photo-stories of bees narrated in the Voces Indígenas podcast (https://www.youtube.com/playlist?app=desktop&list=PLTgWacHPCbcACNeqJhR-NXovRQRMqBBkh) and the Tales of Our Lives With the Bees & Their Honey e-book (https://www.bioculturaldiversity.de/wp-content/uploads/2023/10/Booklet_Historias-de-nuestra-vida-con-las-abejas-y-sus-mieles.pdf).

Figure 19. Interacting with the augmented reality of the "Augmented Ecofeminisms: Climate, Water and Women" exhibition.

In addition to the different projects from the members of SESI, the exhibition also featured an innovative exhibit created and organized by the Gender & Science Group of the Iberian Association of Limnology and funded by the Spanish Ministry of Equality titled "Augmented Ecofeminisms: Climate, Water and Women" (Fig. 18). It combined augmented reality with scientific and audio-visual material to reflect on the effects of climate change on freshwater ecosystems and women.

PANEL DISCUSSIONS: CURRENT TOPICS IN SOCIAL-ECOLOGICAL SYSTEMS RESEARCH

This exhibition was accompanied by three-panel discussions on pressing topics of social-ecological systems research: (1) “Getting unstuck: from polycrisis to a better future“; (2) “Social-ecological systems research in the Global South: beneficial or post-colonial?“; and (3) “The workings of politics and power behind social-ecological systems research“.

Figure 20. Impression from one of the panel discussions on social-ecological research in the global south.

The dialogue of these panel discussions together with the art exhibition allowed participants to critically reflect on and experience how social-ecological systems thinking can contribute valuable solutions toward sustainable and just futures.

FOR FURTHER INFORMATION:

Find all exhibits on the SESI website: https://www.leuphana.de/en/institutes/sesi/artistic-journey.html

Watch recordings of all panel discussions on the SESI YouTube channel: https://www.youtube.com/@socialecologicalsystemsins3318/videos

PUBLICATIONS

SESI publishes across a broad range of journals in ecology and the social sciences. The following list shows publications led or co-authored by **SESI members** in 2024.

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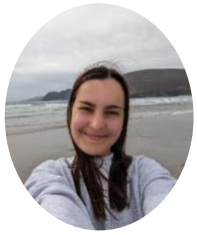
PEOPLE

David Abson, Professor of Sustainable Resource Use. I am an interdisciplinary scientist working at the intersection of the natural sciences and economics. I focus on land use change, ecosystem services, systems thinking and transformative changes in social-ecological systems.

Ernest Aigner, Postdoc Researcher. My research addresses the social and political facets of ecological economics. This includes studying structures for climate-friendly living; eco-social policies related to work, poverty and health; pluralism in economics; utopian commons and social sufficiency (enoughness) and its determinants.

Mareike Andert, Master's student and editor of the SESI Blog. I'm passionate about sustainable mobility, climate justice, climate communication, transformation and participation processes and love to write and discuss about those topics.



Isabelle Andres, Bachelor's student and responsible for the SESI Blog "ideas4sustainability" and social media. In my studies, I have placed a focus on ecology and biodiversity as well as science communication because I later on wants to work as a journalist.

Martin Balaš, Research Associate and PhD Student (based at Eberswalde University for Sustainable Development). My research is focused on indicator development for social and ecological assessment of tourism, with a particular focus on the impacts of tourism in biosphere reserves.

Diego Torralva Becerra, PhD Candidate. My research focuses on examining ecological sufficiency based on the biophysical limits to earth system boundaries and their interrelation with consumption demand, applying Environmentally Extended Multi-Regional Input-Output analysis to better understand what sufficient levels of consumption could look like.

Camila Benavides-Frias, Research Associate and PhD student. I am an agro-ecologist. My research is part of a transdisciplinary project on biocultural diversity, I focus on agroecosystems functioning (integrating social and biological components) and linking it to sustainability topics such as food sovereignty.

Felipe Benra, Postdoctoral researcher. I am conservation scientist with a background in environmental engineering. I developed my PhD in mapping and modeling ecosystem services in southern Chile looking at distributive and inequality issues and policy development. I am generally interested in sustainability sciences and restoration.

Miguel A. Cebrián-Piqueras, Senior researcher. My research interests include community-based conservation, plural valuation, human-nature connectedness, and transdisciplinary approaches. I am currently working on a project that researches the applicability of transdisciplinary research to navigate diverse typologies of nature values to enhance social-ecological restoration.

Caroline Hélène Dabard, PhD student. My research focuses on small-scale innovations and their transformative potential in rural to peri-urban Biosphere Reserves. I thereby integrate content analysis, clustering techniques, network analysis and spatial perspectives on how, where and why sustainability innovation develop - and with which impact.

Isabel Díaz Reviriego, Postdoc Researcher. My research focuses on the role that social relations and social difference play in shaping environmental governance and in the plurality of understandings and practices of human-nature relationships (biocultural diversity) and ways of living with biodiversity.

Wies Dijkstra, PhD student in the project 'Mainstreaming social-ecological sufficiency'. My research is focused on sufficiency strategies, specifically looking at how different production- and consumption-based approaches can reduce pressure on the environment and ecosystems while ensuring a good life for all, now and in the future.

Dula Wakassa Duguma, Research Associate. My research focus is on land use change, biodiversity and ecosystem services in social-ecological systems in the Global South. Currently, I am working in an interdisciplinary research project in Ecosystem Restoration in Western Rwanda.

Joern Fischer, Professor of Sustainable Landscapes. I have a background in landscape ecology and work at the intersection of social and ecological systems. I am particularly interested in biodiversity conservation, food security, and sustainable development in the Global South.

Marina Frietsch, Research Associate and PhD Student. I am a sustainability scientist with a background in landscape ecology and nature conservation. My work is based on social-ecological systems thinking and focuses on the restoration of degraded ecosystems.

Sarah Gottwald, Postdoctoral researcher. My background is in geography and landscape planning. My research focuses on the relation between senses of places and mobilities in borderscapes. I am interested in the application of participatory mapping methods.

Konrad Gray, PhD student. I am a sustainability scientist with an interdisciplinary background in human-nature relationships. My work deals with the social-ecological system of grassland restoration. In my PhD I want to explore different relationships and relational properties in a transdisciplinary approach to grassland restoration in the context of a real-world laboratory.

Milena Gross, Research Associate and PhD Student. I am a sustainability scientist aiming to unravel how people are connected with and value nature as well as how natures contribute to people's quality of life.

Jan Hanspach, Junior Research Group Leader. I have a background in ecology and conduct interdisciplinary work on biocultural diversity in the global south as well as on the integration of biodiversity conservation in farming landscapes. In 2021, I received the Leuphana Young Researcher Award.

Gudrun Harms. I am responsible for all secretarial and administrative work, financial processing, budget monitoring and the preparation of employment contract matters at the Social-Ecological Systems Institute.

Yelyzaveta Holub, Bachelor's student supporting BioKultDiv with administrative tasks and managing the project's website and social media. In my studies, I focus on sustainability economics to explore alternative economics and sustainable development.

Roman Isaac, Research Associate and PhD Student. I am interested in the role of governance in human-nature interactions. More specifically I focus on the multi-level governance of natural and anthropogenic capitals in the co-production of ecosystem services.

Amanda Jiménez Aceituno, Researcher. My research seeks to explore ways to operationalize transformations theory into analytical frameworks and participative and art-based methods that can improve sustainability practice. Currently I explore how co-designed processed can contribute to sustainable transformations of the food system in drylands.

Rhoda Nthena Kachali, Research Associate and PhD Student. I am particularly interested in the interface between people and nature and how a better understanding of these interactions can enhance protected area effectiveness and capabilities among people living in and around them.

John Sanya Julius, Research Associate and PhD Student. I am a social environmentalist interested in sustainability management and socio-ecological systems. I focus on understanding how human-nature interaction with existing Indigenous and Local Knowledge can influence the demand for and value of nature contribution's to people.

Anne Kraudi, PhD student. I am doing research on social sufficiency. Thereby, I am focusing on the question of what people perceive as enough. For this, I take an interdisciplinary perspective and draw on psycho-social models of behaviour to explore what influences people's different notions of enoughness.

Lukas Kuhn, Research Associate and PhD Student. I am a sustainability scientist with a special interest is understanding why people and groups of people do what they do. My research focusses on the diverse values and value compositions that motivate the sustainable use and restoration of grasslands in Germany.

David P. M. Lam (visiting scholar), Scientific Director of the project tdAcademy - Platform for transdisciplinary studies and research. I work on transdisciplinary research methods, processes to increase the impact of sustainability initiatives, and the role of indigenous and local knowledge in change processes.

María Fernanda Godoy León, Postdoctoral Researcher. My research focuses on assessing ecological sufficiency levels of consumption for Germany and the global community. The research employs input-output analysis and scenario development to evaluate the environmental impacts of consumption patterns and identify pathways towards sustainable consumption practices.

Aymara Victoria Llanque-Zonta, Research Associate and lecturer. I am interested in food justice and sustainability, with special emphasis on feminist and decolonial studies connected to sustainable consumption, co-production of knowledge with peasant and indigenous communities, transdisciplinary and transformations in science, politics and practice.

Jacqueline Loos. I research environmental justice in development and biodiversity conservation, applying a social-ecological understanding of protected areas to scrutinize interdependencies between governance arrangements, management effectiveness and social-ecological outcomes.

Berta Martín-López, Professor of International Sustainable Development and Planning. Her research is collaborative, inter- and transdisciplinary aiming to understand the role of values, knowledge, and institutions in supporting transformation pathways to sustainability.

Verene Nyiramvuyekure, PhD student at the Institute of Ecology and the Socio-Ecological Systems Institute. My research focuses on the impact of ecosystem restoration intervention on biodiversity in the restored landscapes.

Stefan Ortiz Przychodzka, Research Associate and PhD student. I am an Ecological Economist with experience in transdisciplinary research with peasant and indigenous communities. I work on topics related to biocultural diversity, agrarian change and social-environmental conflicts.

Manuel Pacheco-Romero, postdoctoral researcher (Margarita Salas Postdoctoral Fellow, Ministry of Universities, Spain). My research focuses on understanding social-ecological factors driving success or failure of ecosystem restoration actions. I am conducting post hoc assessments of restoration activities in grasslands (Germany) and Mediterranean ecosystems (Spain).

Maraja Riechers, affiliated guest researcher. My research interests include leverage points for sustainability transformation, especially in the domain of human-nature relations, including human-wildlife conflicts, and land-use changes.

Felix Schaaf, Master's student and responsible for the SESI website as well as the project website ecosystemrestoration.net. I'm interested in transformative governance and law. Currently, I work on climate adaptation, blue-green infrastructure and sustainable agriculture.

Matthias Schröter-Vinke, affiliated guest researcher. I am an environmental scientist with a broad interdisciplinary background, including landscape ecology, conservation biology, ecological economics and environmental ethics. I am interested in spatial ecosystem service assessments, social-ecological systems, and the science policy-interface of ecosystem services.

Ping Sun, PhD student. My academic research interests are the application of environmental information technologies in landscape connectivity, biodiversity and biogeography research.

Vicky Temperton (secondary affiliation), Professor of Ecosystem Functions and Services. I have a background in experimental plant ecology and test ecological theories and knowledge for its potential to improve ecological restoration in a global change world.

Pramila Thapa, Research Associate. I am a sustainability scientist with previous training in inter- and transdisciplinary studies. My current research aims to synthesize the gradient of value interactions in farming and conservation settings across multiple countries.

COURSES TAUGHT BY SESI

SESI members teach a diversity of subjects at the Bachelor, Master and PhD level. These include:

- Balancing ecological and social elements in the spatial design of environmental policy
- Basics of Inter- and Transdisciplinarity
- Conservation Ecology
- Ecological restoration for sustainability
- Environmental Sciences - an Introduction
- Fundamentals of Sustainability Economics
- Grundlagen Nachhaltiger Entwicklung
- Introduction to Biodiversity and Ecosystem Functions
- Our Present and Future Nature: An Analysis of the Book "Rambunctious Garden" by Emma Marris
- Participatory Research Methods for Sustainable Development
- Restoration, conservation, social-ecological management and governance of the Island of Hiddensee
- Science meets action: co-creating pathways to the SDGs across scales
- Social-ecological systems approach to ecosystem restoration
- Sustainability and Space
- Sustainability Science
- Sustainable urban transformation of a cross-border city - a social-ecological systems approach
- The Economics of Biodiversity and Ecosystem Services
- Writing a journal article

THESES COMPLETED IN 2024

The following theses were completed in 2024 after supervision or co-supervision by SESI members.

PHD THESES

- **Caroline Dabard: Enhancing the transformative potential of sustainability innovations: insights from two European Biosphere Reserves**

  This thesis addresses the need for sustainability innovations to address complex global challenges, and thereby to promote transformative, rather than incremental, innovations. Transformative potential is conceptualized through deep and shallow leverage points and through amplifying strategies. The thesis characterizes the transformative potential of multiple local sustainability innovations based in the Schorfheide-Chorin and Fontainebleau-Gâtinais Biosphere Reserves. A minority of innovations can be considered transformative, while most appear incremental or reformist. To identify specific contexts that enhance transformative potential, supportive conditions are articulated along the values-rules-knowledge framework. Findings provide empirical evidence that transformative innovations, contrary to incremental innovations, rely on plural values, collaborative knowledge production, and networks that are diverse, participatory, and influential. The thesis suggests Biosphere Reserves can support local place-based innovations through regional collaboration. Recommendations include encouraging network-building and diversity among local innovation actors. Future research should examine normative assumptions and diverging perspectives on what should be considered desirable outcomes of transformative or incremental innovations.

— **Marina Frietsch: A better future for people and nature: a social-ecological systems approach to ecosystem restoration**

The restoration of degraded ecosystems can considerably contribute to ecosystem integrity and human well-being. However, restoration projects are often not embedded in their social-ecological context. Although the potential of integrating social-ecological systems thinking into ecosystem restoration is increasingly being recognized, the operationalization of this perspective for restoration remains little explored. By combining conceptual considerations with empirical work in western and central Rwanda, the dissertation "A better future for people and nature: a social-ecological systems approach to ecosystem restoration" applies a social-ecological systems perspective to ecosystem restoration. The thesis consists of four papers and combines conceptual considerations and empirical data from western Rwanda. Paper I integrates key restoration and social-ecological systems literature to inform the enhancement of adaptive capacity of restoration sites. Paper II proposes a framework for navigating dynamically shifting social and ecological restoration goals. Paper III examines the relevance and application of international restoration principles in local-scale restoration in the study area. Paper IV explores visions for the future of restoration in Rwanda. Together, the four papers advance the operationalization of a social-ecological systems perspective on ecosystem restoration.

— **Roman Isaac: More than trees: Governing anthropogenic assets for nature's contributions to people in forests**

Forests are multifunctional and provide multiple material, regulating, and non-material nature's contributions to people (NCP), such as timber, carbon storage, or recreation potential. Research has long regarded NCP as a "free gift" from nature. In fact, NCP in forests and other ecosystems are influenced by human agency and co-produced in an interplay of natural and anthropogenic assets, also known as capitals. Human capital refers to people's abilities in the form of knowledge, skills, or manual labour. Social capital includes human-human interactions

in networks or institutions. Physical capital refers to all machinery or infrastructure used to co-produce NCP. Financial encompasses all monetary flows used to trade, maintain, or enhance other anthropogenic and natural capitals. Forests, their contributions to people, and the anthropogenic capitals co-producing these are governed by various actors across multiple governance levels and through different governance modes. Yet little is known about these interactions. Based on empirical research in three case study sites this dissertation indicates that three themes of governing anthropogenic capitals in NCP co-production exist. First, financial capital flows strongly influence decision-making processes on using anthropogenic capitals to co-produce material NCP. Second, regulating NCP are co-produced by various actors and governed collaboratively. Third, protected areas govern the co-production of non-material NCP by conserving natural spaces and managing the infrastructure necessary to access them.

MASTER THESES

- Accounting for Degrowth
- Analysing the impact of a systems thinking simulation intervention on participants' transformative learning
- Exploring the Potential of Regenerative Thinking for Climate Resilient Communities: Insights from Local Business Owners in Grenada's Tourism Sector
- Leverage points of sufficiency practices and interventions in recent sustainability housing research: A systematic review of case studies
- Local discourses of nature's contributions to people and values of nature: Lessons from Mount Kilimanjaro
- Prácticas de cuidado multiespecie en red para el ordenamiento social del territorio alrededor del agua en la vereda Ánimas de la Zona de Reserva Campesina de Sumapaz
- Sharing money as a sustainability intervention? Analysing how people in communal economies understand their influence on transformational change
- The effects of fear on sustainability-related behavior of individuals in Germany

- The Importance of Non-Material Contributions to People with Disabilities in the Elbe Valley Biosphere Reserve

BACHELOR THESES

- Abated social costs vs. welfare loss caused by the carbon border adjustment mechanism
- Analysing Tree Cover Changes in Relation to Livestock Grazing Regimes in New South Wales
- Application Extent and Variety of the Ecosystem Services Concept in EU Policy
- Assessing structural landscape connectivity and property size effects on riverine landcover distribution: A case study of seven rivers in Southern Chile
- Assessing the Climatic Feasibility and Conservation Potential of Shade Coffee Cultivation as a Future-Proof Strategy for Connecting Gishwati and Mukura National Parks in Western Rwanda
- Embodying change - Dancing with systems. Potential of including Embodiment and embodied methodologies for Sustainability and Transformation research
- Exploring perspectives on sustainable mobility on the island of Pellworm
- Exploring Relationship Proximity and Farmer Bargaining Power in Direct Trade Coffee
- Framing of insect decline and insect protection in agricultural magazines - depiction of issues, causes, and required measures
- Frozen Feasts: The Quest for Food Sovereignty on Arctic Indigenous Homelands
- How does regenerative agriculture contribute to maintaining ecosystem services (nature contributions) and promoting linkages between biological and cultural diversity in the AlVelAl region in southern Spain?
- How does the campus sound? - The soundscapes of pleasant and un-pleasant places on the campus of Leuphana University Lüneburg
- Identifying Social-Ecological System Archetypes in a Polish-German Twin City

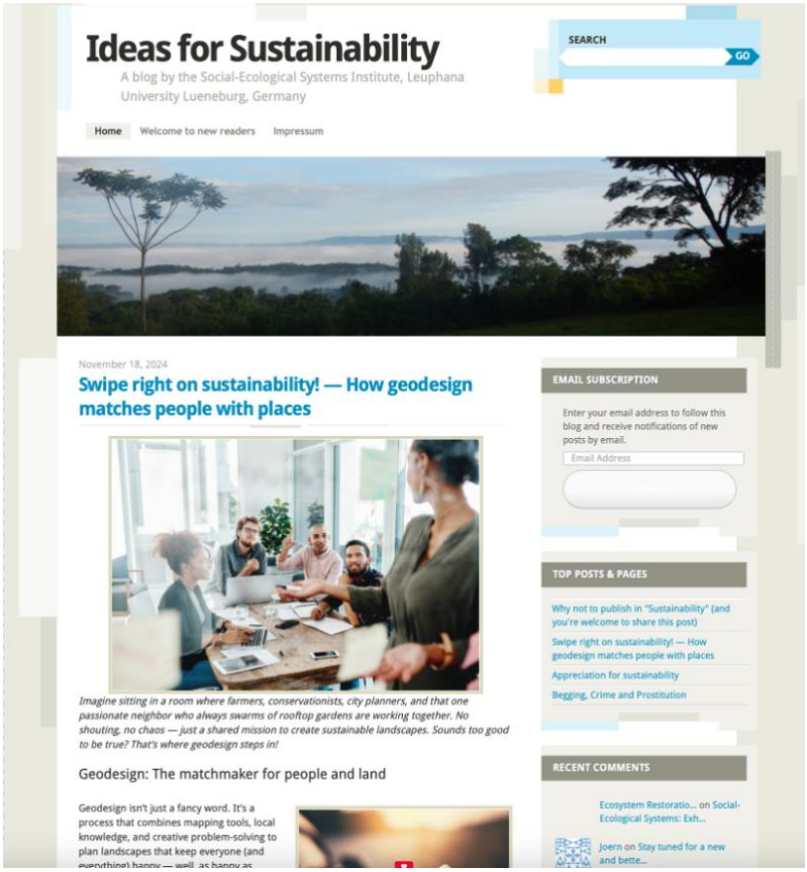
- Interplay of Local People's Subsistence Practices and their Peatland Perceptions in three Peruvian Amazon Communities
- Landowners' values of their natural surroundings and restoration in working landscapes – Insights from a case study in Southern Chile
- Landscape connectivity along seven rivers – The case of Southern Chile
- Mapping the Intangible: Narrative Mapping of Non-Material NCP for More Inclusive Marine Conservation
- New Carbon Border Adjustment Regimes Impacts on Trade Partners in the Global South
- Nurturing diverse values of nature: Envisioning the social-ecological restoration of grassland
- Post hoc assessment of restoration success of European grasslands from an integrated social-ecological perspective.
- Resilience in Regenerative Agriculture: Theory and Practice
- Rewilding Europe-challenges and opportunities for a new strategy of biodiversity conservation.
- Senses of place in border cities- the example of residents of Slubice and Frankfurt (Oder)
- Sustainable agriculture for a climate-positive future: humus formation and carbon sinks
- Talkin' 'bout a Restoration: Diverse Discourses in Ecological, Ecosystem, and Forest Landscape Restoration Literature
- The effects of biodiversity changes in coastal regions on nature's contributions to people
- Transformation from the inside-out: An inquiry of inner transformation processes of individuals living a sufficient lifestyle
- University students' perceptions on and consumption of oat milk and its relation to the concept of 'right to food'. A qualitative ethnographic study.
- Urban Green Spaces and Biodiversity: Insights from Hafencity, Hamburg
- What influences of colonialism and apartheid on nature conservation in the Kruger National Park are documented in scientific literature?

FOR MORE INFORMATION

Visit our website leuphana.de/en/institutes/sesi to learn more about us and our work!

You can also follow our institute's news and publications on social media. Many of our papers are featured on our blog ideas4sustainability.wordpress.com soon after publication. Recorded talks by SESI members can be found on our YouTube channel Social Ecological Systems Institute SESI.

We thank Felix Schaaf for editing this report, and all of SESI for the collection and contribution of the pieces and photos.



A screenshot of the SESI blog.

IMPRINT
Leuphana University Lueneburg, Universitätsallee 1, 21335 Lüneburg | Edited by Felix Schaaf, Joern Fischer, Berta Martín-López | Pictures: from SESI members | Title: SESI 2024 ANNUAL REPORT, December 2024

Leuphana University Lueneburg