



Co-production in the Amazon: Navigating Academic Structures and Changing Local Contexts

Fábio de Castro , Alice Ramos de Moraes , Gabriela Russo Lopes , Célia Regina Tomiko Futemma  & Eduardo Sonnewend Brondízio 

University of Amsterdam, Universidade Estadual de Campinas – UNICAMP, Indiana University Bloomington

Accepted: 7 July 2026 / Published online: 31 July 2026

Alternautas is a peer reviewed academic journal that publishes content related to Latin American Critical Development Thinking.

It intends to serve as a platform for testing, circulating, and debating new ideas and reflections on these topics, expanding beyond the geographical, cultural and linguistic boundaries of Latin America - Abya Yala. We hope to contribute to connecting ideas, and to provide a space for intellectual exchange and discussion for a nascent academic community of scholars, devoted to counter-balancing mainstream understandings of development.

How to cite: De Castro F.; Moraes A.R. de; Russo Lopes G.; Futemma C.T. & Brondizio E.S. (2026), Co-production in the Amazon: Navigating Academic Structures and Changing Local Contexts. *Alternautas*, 13(1), 301-327, DOI: 10.31273/pw032r43.

University of Warwick Press
<http://www.alternautas.net>



Fábio de Castro¹, Alice Ramos de Moraes², Gabriela Russo Lopes³, Célia Regina Tomiko Futemma⁴ & Eduardo Sonnewend Brondízio⁵

Co-production in the Amazon: Navigating Academic Structures and Changing Local Contexts

Abstract:

This article examines the practice of co-production from the perspective of researchers involved in the LINKAGES Project (Local Knowledge for a Grounded (Bio)Economy in the Amazon). The project brings together a transdisciplinary team of researchers, practitioners, and producers, and comprises six case studies of sociobiodiversity economies (SBE) co-designed with local partners. These cases encompass diverse sustainable production systems, collective forms of producers' organization, and more inclusive market channels. We focus on the dilemmas researchers face in the everyday practice of co-production. We describe how co-production has been carried out across different phases of the project and show how distinct pathways have emerged among the SBE case studies. Drawing on a mixed set of qualitative data—including online exchanges, in-person encounters, site visits, and collective reflections between 2022 and 2025—we analyze two contrasting SBE

¹ Fábio de Castro is lecturer at the Center for Latin American Research and Documentation of the University of Amsterdam, The Netherlands. ORCID: 0000-0001-5197-3863

² Alice Ramos de Moraes is postdoctoral fellow at the Environmental Studies and Research Center, Universidade Estadual de Campinas (UNICAMP), Brazil. ORCID: 0000-0002-5096-0873

³ Gabriela Russo Lopes is postdoctoral fellow at the Center for Latin American Research and Documentation of the University of Amsterdam, The Netherlands. ORCID: 0000-0002-0161-6339

⁴ Célia Regina Tomiko Futemma is researcher at the Environmental Studies and Research Center, Universidade Estadual de Campinas (UNICAMP), Campinas, Brazil. ORCID: 0000-0001-9158-4627

⁵ Eduardo Sonnewend Brondízio is professor at the Department of Anthropology, Indiana University Bloomington, United States of America; and external professor at the Environmental Studies and Research Center, Universidade Estadual de Campinas (UNICAMP), Brazil. ORCID: 0000-0001-9376-8366

case studies involving producer cooperatives in the state of Pará, Brazil. Case 1 illustrates a trajectory of re-orienting and down-scaling co-production in response to shifting priorities within a farmers' cooperative, whereas Case 2 shows incremental engagement and scaling of co-production with farmers despite significant organizational and market challenges. Our analysis highlights both external and internal structural factors that shape the co-production process. Externally, researchers navigate tensions between rigid academic structures and the personal investment, flexibility, and adaptability required for co-production. Internally, the multifaceted and changing context of local partners influences their level of engagement in co-production. As these issues are unlikely to be specific to the Amazon, we argue that making these dilemmas visible and fostering open debate is essential for reshaping academic structures and for designing more reflexive, politically aware, and structurally supported co-production strategies.

Keywords: sociobioeconomy; producer cooperatives; participatory research; transdisciplinarity.

Introduction

The Amazon can be understood as a cross-scale commons, where local natural resources and global climate, water, and biodiversity are intricately intertwined. While commodity production systems drive deforestation and dispossession to serve a global market (Reis et al., 2021; Pendrill et al., 2022), local populations have long struggled to ensure that their local economies are recognized as part of the solution for a sustainable development model in the region (Brondizio et al., 2021; Garrett et al., 2024). Since the 1990s, there has been growing recognition of traditional management practices as relevant for conservation (e.g. Anderson, 1990; Redford and Padoch, 1992), together with the expansion of environmental NGOs and funding agencies, coincided with the rise of action research that emphasizes stakeholder engagement in the research process in the Global South (e.g. Chambers, 1997). In the early 2000s, various participatory approaches started to be implemented in the Amazon as an effort to recognize producer's knowledge, practices and production systems. However, the outcomes of such participatory approaches were often disappointing. Participation tended to be limited to the implementation phase of pre-designed interventions. This led to a frequent overlooking of local perspectives and moral economies, which are the place-based systems of obligation, reciprocity, and entitlement that govern how Indigenous Peoples and local communities define fair relationships and distribute benefits in their engagements with outsiders (Chernela and Zanotti, 2014).

Similar patterns observed elsewhere prompted critical reflections on this thin conceptualization of participatory research implemented by practitioners and

international organizations. Several authors warned that participatory approaches were being misused to legitimize agendas set by funding agencies, governments, and companies, while shifting responsibilities onto participants (Brosius et al., 1998; Cooke and Kothari, 2001). During the 2000s, attention to knowledge production and dissemination expanded significantly within climate change assessments and related efforts aimed at translating climate science into policies and initiatives (Lemos and Morehouse, 2005). As in conservation circles, this literature challenged the one-way model of knowledge dissemination from scientists to decision-makers. Attention shifted toward co-production as a process of joint knowledge creation that begins by breaking down barriers to interdisciplinarity within the sciences and fostering deeper collaboration between researchers and stakeholders. The fit of interests, flexibility in collaborative activities, and institutional recognition and support are recognized as essential to produce knowledge that is usable and relevant within the contexts and needs of those expected to put it into practice.

Over the past decade, critical reflections also emerged highlighting the diversity of practice labeled as co-production and the dangers of “check the box” effect of including co-production in all types of grant applications and project implementations related to sustainability (Lemos et al., 2018). Often, the inclusion of co-production in projects and programs has been voided of the necessary budgetary backing and the time-intensive demands it requires from researchers and stakeholders. These discussions have contributed to a shift in attention from the ‘must include’ co-production to under what conditions, what type, and at what costs for researchers and stakeholders is co-production advisable in the making of usable knowledge.

New participatory approaches have taken shape in sustainability research, centered on multistakeholder engagement, the co-production of knowledge, and a strong focus on impact-oriented goals as main pillars (Moser, 2016; Norström et al., 2020). Drawing on earlier experiences with participatory and action research, co-production moves beyond a set of methods and instead frames the research process in terms of its potential transformative impact (Rodriguez et al., 2023). While it calls for new methodological strategies and tools to facilitate collaboration with local actors (Chambers et al., 2021), it is fundamentally grounded in iterative and collaborative processes involving diverse forms of expertise, knowledge, and actors (Norström et al., 2020). We seek to contribute to this debate by examining how co-production approaches can help address the pitfalls of earlier participatory research that aimed to support local forest economies in the Amazon.

The recent rise of the bioeconomy as a guiding paradigm for development has gained prominence in policy, practice and the private sector. In the Amazon, the concept has taken on new meanings, reframed by social movements and Indigenous and rural organizations as the socio-bioeconomy. This term refers to economic

systems built upon socio-biodiversity, that is, the wide range of products, benefits, and managed land- and riverscapes generated through the knowledge, stewardship, and management practices of Indigenous Peoples and rural populations in the Amazon (Brondizio et al., 2021; Garrett et al., 2024). The rapid uptake of these terms across governmental and non-governmental arenas has offered opportunities to recognize and support long-marginalized local economies. Within this context, co-production has become a widely used concept among scholars, practitioners and policymakers - yet much like earlier debates on participatory research, co-production has gradually gained multiple meanings and uses (Bandola-Gill et al., 2023). This proliferation of co-production as a general label for working with place-based bioeconomies has raised concerns that it may be contributing to legitimize already pre-defined research practices and function as a depoliticizing strategy and reproduce existing power asymmetries (Turnhout et al., 2020). To avoid romanticized accounts at best or the legitimization of entrenched power structures at worst, we argue that an open dialogue about the practice of co-production within debates on bioeconomy is urgently needed.

In this paper, we reflect on the potentials and challenges of co-production in the context of the LINKAGES Project (*Local Knowledge for a Grounded (Bio)Economy in the Amazon*)⁶, a five-year international research consortium explicitly framed through a transdisciplinary and co-production perspective to explore the sociobioeconomy in the Brazilian Amazon from the standpoint of local producers. We analyze the practice of co-production according to multiple types of data produced throughout the research process. We present our analysis in this paper through a narrative of the research process, from the initial project design and the operationalization of key concepts to the implementation of research activities.

This article reflects the perspectives and insights of the project's academic team regarding their dilemmas faced between the rigid academic structure and the required personal investment, flexibility, and adaptability of the co-production process. We argue that it is important to balance the opportunities and accomplishments which tend to be emphasized in the coproduction literature with challenges and uncertainties faced in this process which are often under-reported and often invisible in the academic structure. We believe that making these dilemmas visible is vital to open a debate on what changes in the academic structure are needed in order to enable researchers to engage in meaningful coproduction strategies.

In order to elaborate on these dilemmas, we focus on two case studies from the project that illustrate distinct trajectories of co-production, and provide an in-depth analysis on the practice of co-production, the challenges encountered, and how we have been navigating them.⁷ The paper is divided into five sections: we first

⁶ See: <https://linkages-enlaces.humanities.uva.nl/en/>

⁷ We plan to generate academic and non-academic outputs in co-authorship with our local partners where our collective reflections will be presented.

introduce the methodological approach of our analysis and introduce the LINKAGES research project in detail; then we describe the project's co-production practices, focusing on the project transdisciplinary design and analyzing the co-production trajectories experienced by the two contrasting case studies. In the following section, we discuss co-production practices as a process that can follow multiple pathways and the implications for contrasting performances. We conclude with reflections on how the co-production approach calls for a transformation in research practice.

Methodological approach

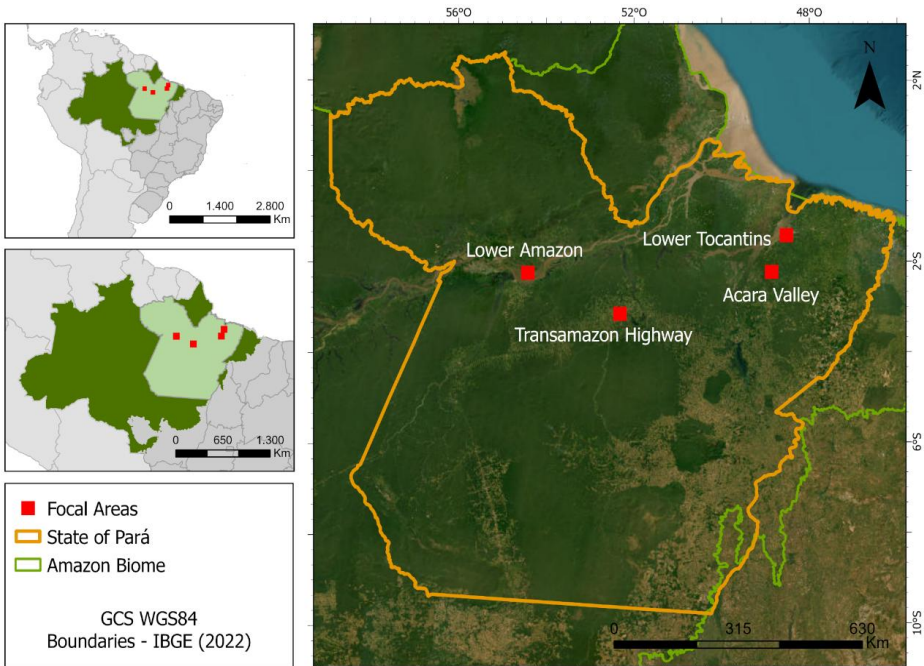
In order to understand the challenges, added value, and potential outcomes of co-production processes, it is necessary to closely examine how co-produced research has been practiced in our project. Co-production typically unfolds through open-ended pathways that are dynamic and uncertain, particularly when researchers work in such close collaboration with non-academic partners.

The main goal of the LINKAGES project is to address the role of sociobiodiversity value chains to support sustainable pathways toward an inclusive and grounded bioeconomy in the Brazilian Amazon. We examine the role of local knowledge and management practices in sustaining multifunctional landscapes across research sites. Guided by an impact-oriented perspective, the project seeks to contribute to improving local-level benefit-sharing and value aggregation of sociobiodiversity products, as well as promoting the sustainable use and regeneration of forest-based landscapes. Rather than promoting engagement of non-academic partners in academic research, we invited them to jointly identify a research problem related to their sociobiodiversity value chain and build a strategy to address gaps according to their conceptual perspective and practical needs.

Supported by two funding agencies in Brazil and the Netherlands, this five-year project brings together four academic partners, two universities in Brazil and two in the Netherlands, and three non-academic Brazilian partners, two NGOs and one farmers' cooperative. The academic teams have long-standing involvement in participatory projects and engagement with local partners in the region. The two NGOs are well-established in the region, with extensive project portfolios and partner networks, and substantial experience in collaborative research with national and international universities. The farmers' cooperative has a national reputation as a successful example of a sustainable production system and has engaged in multiple collaborations with NGOs and private companies to disseminate its practices among family farmers in the Brazilian Amazon and beyond. Together, this group of partners

conceptualized six case-studies in four sites of Pará state, Brazil (Figure 1)⁸. Each case represents a co-produced research strategy to address a particular research question and goals of each non-academic partner. They are carried out independently, while some activities may be shared whenever their interests converge.

Figure 1. LINKAGES Project focal areas in the state of Pará, Brazil (Image by T. Fornazari).



Due to its transdisciplinary approach, local engagement and diversity of cases, the LINKAGES Project is a living lab for co-production practices. The co-authors of this paper form the project's academic Coordination Team, which has been facilitating these various co-production trajectories across multiple case studies and local partners. The analysis presented in this paper is based on our researcher perspectives and draws on our collective reflection and ongoing assessment of project progress, informed by continuous iteration and adjustments made as needed. We describe and analyze the sequence of events within the project, identifying patterns of interaction, co-production trajectories as well as the evolution of local

⁸ Data were anonymized prior to analysis to protect participant confidentiality

partners' perceptions and motivations to engage in the co-production process over time.

We divide our analysis into two phases of the LINKAGES project. During the project writing phase, the transdisciplinary team of seven (four academic and three non-academic) partners co-designed the project. During the project implementation phase, each of the six cases was co-designed jointly with the academic team and the respective non-academic partner. In both phases, we describe how the academic team navigated the internal structure related to the conventional academic model in which the project operates, and external uncertainties regarding the perspectives and changing context of the local collaborator. In order to address external uncertainties emerging from the local collaborators, we focus on two contrasting cases of the project. The Agroforestry Case 1 (hereafter Case 1) exemplifies a re-orienting and down-scaling co-production in response to changing collaborator's priorities, while Agroforestry Case 2 (hereafter Case 2) demonstrates an incremental engagement in coproduction in response to converging interests of the research team and collaborators.

For each case, we address the collaboration history, the case co-design, and the case implementation. The collaboration history includes prior interactions and collaborations between the local partners and the project coordinators that laid the groundwork for their participation in the project. The case co-design includes the phase of project in which the local partners were expected to participate actively in defining one specific problem of their interest that would fit the project's scope. The case implementation covers the process of translating the co-design into concrete collaborative activities and the outcomes that followed. We highlight the flexibility and adaptability required to adjust to the changing context of the case study and demands from the academic structure.

To represent our continuous interaction with local partners, we qualify and quantify different types of interactions for each case, including online exchanges (messaging applications and digital meetings), in-person encounters (meetings and co-production seminars), local observation (site visits and field trips), and collective reflections (fieldnotes, fieldwork reports, and informal conversations). The analysis covers the first half of the project life (November 2022–November 2025). As such, the methodological approach of this paper is designed not only to document processes and outcomes, but also to contribute to a more nuanced understanding of both the potential and the limits of co-production as a research practice.

Co-production practices: Learning from the LINKAGES Project experience

Project Writing: Transdisciplinary collaborations and administrative hurdles

The LINKAGES Project adopts a thick approach to co-production: researchers, practitioners and producers are treated as partners, as both holders and co-creators of knowledge, from the definition of the research problems, questions and goals to data collection, implementation and analyses of the results. To foster this partnership, we have adopted diverse communication strategies and modes of interaction aimed at building trust, establishing common ground and encouraging shared ownership of the project. We draw on a range of practices to address and bridge both the geographical and epistemological distances between academic and non-academic members of the team, thereby making co-production feasible in practice. Even with previous experience in collaborative research and an awareness of power relations and institutional complexity, the diversity of local contexts, shifting dynamics and changing priorities remain crucial factors that demand sustained attention throughout the co-production process.

The grant call had a few innovative elements. For instance, the inclusion of non-academic partners in the research consortium was mandatory, as well as the integration of knowledge co-production throughout the research process. This approach not only recognized the importance of non-academic actors in knowledge production but also formally incorporated them into the project team. Another key feature of the call was the five-year duration of the project, which acknowledges the additional time needed to develop co-production processes. These features enabled the project coordinators to develop a transdisciplinary project to address challenges and demands raised by local producers and practitioners in a previous project. This time, however, they were formally included in the project team from the writing phase to the implementation and execution of the project.

Initially, the three non-academic partners were approached to discuss the call, gather ideas, and inquired about their interest in joining the project team. The number and profile of partners were determined primarily by existing personal connections, and a history of successful collaboration. Prior interaction was an important criterion as mutual trust and common understanding developed over time facilitated communication during the proposal preparation under tight deadlines. In addition, the diversity and complementarity of contexts and demands among these partners, as well as their experience with collaborative research, were also considered in their selection.

Once the consortium was defined, the coordinators drafted a project concept note which was shared with all partners. Key demands from local partners were incorporated into the text, drawing also on findings from a previous research

project (Brondizio et al. 2021)⁹. The conceptualization and writing of the project took approximately three months and was conducted through a series of virtual meetings involving all partners, complemented by writing sessions among the coordinators. Although the process unfolded smoothly, with active participation from all partners in the virtual meetings, several challenges emerged at the scoping and co-design process.

First, the grant application template, procedural logics, and jargon required for proposal development needed to be communicated in accessible language to enable effective and meaningful participation. Additionally, language barriers English (proposal submission requirement) and the predominantly Portuguese-speaking team made it necessary to translate key elements of the proposal into short, visual presentations to collect feedback and input. In addition, the conditions to co-design a research proposal at distance with several local partners in different locations and contexts, posed a few challenges. The five months between the publication of the call and the deadline to submit the proposal was short to develop a horizontal participatory strategy. Reconciling the elaboration of a solid academic articulation with a clear broad Impact Plan that took the local partners' demands into account required several rounds of collective discussions and writings. In order to overcome this hurdle, we took some pragmatic steps. First, we invited only three local partners, who were more closely in touch with the coordinating team, for the proposal writing while other potential local partners were to be approached at the project implementation stage. Second, we elaborated a general description of the six cases, leaving the research strategy open to be co-designed during the project implementation phase. Finally, due to the short time for alignment of the pragmatic, problem-solving orientation of the non-academic partners with the research-based, theory-oriented perspective of the academic team, we proposed two interrelated project components to be further integrated in each case studies: one geared toward problem-solving (practice component) to be led by the local partners according to their needs and demands, and one aimed at academic contribution (diagnostic component) to be led by a set of junior scholars.

The process of overcoming these barriers has contributed to creating an initial bridge between problem-solving and theoretical concerns. This structure also helped to define a clearer budgeting strategy, in which local partners could have some autonomy over their funding allocation for practice-oriented activities. Nevertheless, some inequalities remained. First, due to the strict university accounting system, the budget had to be managed by the coordinating team. Second, non-academic partners were not eligible for salary costs, therefore their time allocated to the project was unpaid. This has particularly complicated their commitment as their time conflicted

⁹ See also: <https://agents.casel.indiana.edu/index.html>.

with their paid tasks in a highly demanded schedule. These unequal conditions contributed to instances of slow responses from local partners regarding the likelihood of timely, concrete outcomes from such research endeavors. As will be discussed later, a combination of the seasonal academic calendar and the busy and changing context in which non-academic partners operate prevented a fuller level of engagement as envisioned earlier, including involving the previously envisioned participation of all partners across all case studies.

Despite these hurdles, by the time of proposal submission, the project team was well aligned, and the project scope matched the expectations of all members. The motivations and interests of each organization were successfully incorporated into the project design and framed into the format of the call. Nevertheless, changes in the context of individual partners during the implementation phase affected how the project unfolded, as discussed in the next section.

Case studies: Similar approaches, distinct trajectories

A central element of the co-production approach was the conceptualization of six case studies to be co-designed with local partners (see Table 1). These case studies were broadly defined according to a set of variables aimed at capturing a diversity of socio-environmental contexts and bioeconomy challenges (e.g., geographic location, ecosystems, social groups and forms of organization, products and production systems, and commercial arrangements), which represented the interests of the research team and the willingness of local partners to engage.

Table 1. Main features of the six case studies in the LINKAGES Project. The two cases analyzed in this paper are highlighted in blue.

Case Studies	Project Partner	Social group	Sociobiodiversity products	Productive system	Geographic scope	Landscape
Agroforestry Case 1	Cooperative	Migrant family farmers	Fruit pulps, black pepper, açai and oil seeds	Agroforestry	Acará Valley	Consolidated agrarian frontier
Agroforestry Case 2	Cooperative	Local communities	Fruit pulps, açai and oil seeds	Agroforestry	Amazon Estuary	Estuary forest
Cacao Production	Cooperative	Migrant family farmers	Cacao, chocolate	Agroforestry	Transamazon highway	Consolidated agrarian frontier

Artisanal Fisheries	NGO and Communities	Riverine communities	Arapaima fish	Floodplain lake	Lower Amazon	Floodplain lakes
Value-Aggregation Hub	Cooperative and NGO	Riverine communities	Oil seeds, butters, and honey	Processing & commercialization plant	Lower Amazon	Floodplain forest
Ethical Trade Platform	NGO	Indigenous Peoples and traditional communities	Brazil nut, rubber, bio-jewelry, amongst others	Online platform connecting local producers with buying companies	Several sites	Indigenous Territories and Protected Areas

Once the project was approved, the goals of each case were conceived separately with the respective local partners as a collaborative construction grounded in the specific context, priorities, and demands of local partners. As part of an impact-oriented research perspective, the cases comprise both practice and diagnostic components, which are bridged through co-production of knowledge between the academic and non-academic members. In order to support this process, for each case, the practice component was co-produced with non-academic team while the diagnostic component was led by a junior researcher (PhD candidate or postdoctoral fellow) who also served as the primary research contact point with local partners for ensuring continuous interaction, feedback, and alignment of interests.

Although similar participatory tools and approaches were used across cases, each case gradually followed a distinct trajectory. In some instances, the case studies remained closely aligned with the main project theme whereas in others they took a different path. To illustrate contrasting co-production pathways, we focus on two case studies: Agroforestry Cases 1 and 2, which present similarities and contrasts. Both involve producers' cooperatives with diverse products (plant-based oils, açai berry, and other tropical fruit pulps). They are both located in the same consolidated agrarian frontier in Pará, approximately 250 km from the state capital, Belém. The two cooperatives supply multiple markets and maintain alliances with a variety of societal actors. They differ, however, in terms of social organization, ecosystem context, and production perspective.

Case 1 is a cooperative of migrant settlers who have held private land tenure since their arrival in the region. Its members manage medium-sized farms in deforested areas and operate commercial farming systems. Case 2, in contrast, is a

cooperative of riverine smallholder families living in rural settlements that have existed for generations and have only recently obtained formal land rights over their territories. Their production system is mainly based on agroforestry and Non-Timber Forest Products (NTFP) in estuarine forests, combined with fishing and small-scale agriculture.

The co-production process followed markedly different paths in the two cases. In Case 1, the collaborator was the only producer partner who was active involved during the project writing phase but gradually changed priorities towards re-orienting and down-scaling hands-on collaborative activities. In Case 2, we saw incremental scaling of coproduction although the collaborator did not participate in the project writing phase. They were invited to co-produce one case study and progressively built synergies in areas of common interest and engaged in collaborative activities despite multiple concurrent commitments and demands.

Next, we briefly describe our collaborators in the two cases and highlight the changes that occurred and how we have navigated these challenges. For each case, we first outline our prior collaborations with the non-academic partner to establish a benchmark for the relationship; a description of the project design and implementation phases follow.

AGROFORESTRY CASE 1: RE-ORIENTING AND DOWN-SCALING CO-PRODUCTION

Collaboration history. Local partners in Case 1 are members of a cooperative of medium-sized commercial farmers, who face a set of challenges that differ in several ways from those typically experienced by family farmers in the region. As predominantly market-oriented producers, they are continuously striving to access new markets, develop new products, and increase production. Over the last two decades, the cooperative has played a key role in disseminating its agroforestry system among family farmers through on-site training programmes, printed and online information, and the organization of an annual agroforestry seminar. One particular farmer has been especially active in this process, contributing to the transformation of the production systems of many family farmers in the region, who have progressively entered into tropical fruit and oilseed markets.

The cooperative has partnered with several organizations to promote the expansion of agroforestry systems among family farmers, which has led to a win-win situation in parts of the region. The inclusion of family farmers in the production system has not only created new job opportunities but also contributed to retaining younger generations on the land and in farming activities. It has also increased the volume of agroforestry products that can potentially be absorbed by the cooperative's processing facilities. This process has been accompanied by the LINKAGES coordinators who have interacted with the cooperative's farmers over

the last decade as part of their research activities. Given the cooperative's experience with collaborative research and knowledge co-production, the cooperative was invited to join the project consortium. More than a technical decision, this invitation was grounded in multiple conversations about their challenges and demands and built in trust over the years with several cooperative leaders. As the only farmers' organization in the proposal writing phase, they played an essential role in bringing producers' perspectives into the project design.

Co-Design Phase. Before joining the project, several rounds of interaction (e.g., phone calls, WhatsApp messages, and virtual meetings) were held to explain the structure of the project call and what their participation would entail. Initially, the project coordinators were in contact with four members of the cooperative. Two of them were actively involved in the cooperative's agroforestry dissemination program: the main designer of the program and a member of the organizing committee of their annual agroforestry seminar. The other two were members who had recently been elected to the cooperative's new Board of Directors.

Since this new Board held a different position from previous administrations regarding the agroforestry dissemination program, we involved them in discussions about the cooperative's participation in the project. During this project writing phase, we did not identify any explicit resistance from the new Board. After their positive response, only the members aligned with the position of the former Board became actively engaged in the collective construction of the project. They participated in the virtual meetings and liaised with the cooperative's Board regarding the required administrative tasks of the project partners (e.g., institutional information, signing documents, etc). During the project design, they expressed their interest in focusing their case study (Case 1) on the expansion of their agroforestry system among family-based farmers in the region. The initial idea was to co-design a research-practice case that combined a research-oriented project on the socio-environmental implications of agroforestry expansion, led by a PhD student, with the cooperative's dissemination activities, such as trainings, site visits, farmer-to-farmer exchanges, and an agroforestry seminar, led by the local partners.

Implementation Phase. After the project was approved, the co-design of Case 1 required stronger engagement from the new Board, as it involved the collective development and implementation of their case. The members of the former Board remained involved up to the project's kick-off meeting, where the initial discussions on Case 1 took place. Following that, the members of the new Board expressed new interests in promoting collaborative activities related to technology development and legislative changes taking place in the region, which fell beyond the project's scope. As a result, the new cooperative leaders gradually distanced themselves from the implementation process of Case 1 and appointed a member of their technical team to serve as the main contact person for the project. The role of the technical assistant

appointed by the cooperative was crucial to ensure continuity in communication between the project and the cooperative's leadership. Project meetings, activities, and updates were mediated through this person, which enabled the cooperative's continued, albeit reduced, engagement in the project.

This change required swift adjustments in our collaborative work with the cooperative. The project coordinators, who had a good communication channel with the new leaders, initiated a process of rapprochement and re-orientation of collaborative activities. In an effort to re-establish a collaborative approach, they proposed realigning the case study to reflect the new Board's priorities and demands. After a few meetings, however, it became evident that the new leadership was primarily concerned with pragmatic technical solutions for their production system, rather than with fundamental structural issues related to the value chains of their products and that of family-based producers who adopted agroforestry systems in the region. As a result, no concrete ideas or commitments for the co-design of a case study emerged from these interactions.

In the meantime, the PhD project associated with this case continued to follow a strict academic schedule while this impasse was still unfolding. The research focus shifted from the cooperative's agroforestry dissemination programme to focus on agroforestry practices among family farmers who have adopted agroforestry systems, as well as understanding their contribution to the region's land use and cover change, and their position in the value chains in which they became engaged. In this sense, the project was able to continue one of the initial goals of the collaboration, to understand the dissemination and social-ecological impacts of agroforestry systems in this area.

The collaboration between academic and non-academic partners continued, but it was downscaled to a practical component: supporting the cooperative's annual agroforestry seminar. The seminar is a clear example of grassroots transdisciplinary initiative which brings together farmers, practitioners, extensionists, and researchers to discuss all aspects related to agroforestry systems, thus having a substantive impact in surrounding municipalities. The event represents an important space for dialogue between producers and multiple societal actors. It embodies several elements of co-production, such as farmer-to-farmer dissemination practices and farmer-researcher interactions, but within which the LINKAGES project has had limited or no role.

This case illustrates the importance of adaptability and flexibility in the co-production process, including down-scaling initial goals and expectations from the original impact pathways. Downscaling co-production, however, does not mean completely disengagement with the project scope. As we will elaborate in the Discussion, it highlights the multiplicity of voices of local actors in which co-production must take into account. This case study, in which changing collaborator's priorities led to a down-scaling in co-production goals contrasts with the following

case study where new collaborative goals emerged progressively, leading to increasing engagement and co-production of joint activities.

AGROFORESTRY CASE 2: INCREMENTAL SCALING OF CO-PRODUCTION

Collaboration history. The collaborating cooperative currently has 15 employees and 94 members, including family farmers and traditional communities such as riverine and Afro-descendant communities. These groups have managed and used estuarine forest and aquatic systems for several generations, but it was only in 2004 that they were granted collective land rights through a special territorial model for traditional populations known as the Agroextractive Settlement Project (in Portuguese, *Projeto de Assentamento Agroextrativista – PAE*).

Like most smallholder producer cooperatives in the region, the cooperative faces multiple challenges related to market access, credit and technical assistance, logistics and limited infrastructure, as well as administration and governance. Nevertheless, it is regarded as a reference by smaller and younger cooperatives and producers' associations in the area. The cooperative is actively engaged in strengthening their sociobiodiversity-based production and their network of collaborators in the region, including with other cooperatives, researchers, NGOs, and private companies.

Its members produce fruits and collect non-timber forest products in estuarine forests and from agroforestry systems in both floodplain and upland forests, which are processed by the cooperative into fruit pulps, seed oils, and butters. Operating from a solidarity economy perspective, the cooperative supports other cooperatives by sourcing raw materials from them in order to meet the production needs of its agroindustry. One of its main buyers is a prominent Brazilian cosmetics company. In addition, it supplies fruit pulp to institutional markets such as the National School Feeding Program (in Portuguese, *Programa Nacional de Alimentação Escolar - PNAE*) and the Food Acquisition Program (*Programa de Aquisição de Alimentos - PAA*). Our collaboration with them started during a previous research project (2018-2023).

The cooperative's leaders had previously interacted with the LINKAGES coordinators through earlier research on sustainable production systems in forested regions. During that period, researchers visited the cooperative and its production systems, and cooperative leaders participated in several seminars organized by the project. Building on this productive relationship, the cooperative was invited to join LINKAGES as a collaborating partner.

Co-Design Phase. In contrast to Case 1, the cooperative was not involved during the proposal design phase of the project. However, once invited as a project collaborator, they actively engaged in co-designing activities with the research team. As in Case 1, this process involved a series of bilateral meetings, both in person and online, during which the project design and co-production approach were explained in detail, their inputs considered, and the prioritized activities decided together. The case study was broadly conceptualized in the proposal, therefore the collaborator had freedom to elaborate it according to their interest and demands.

From the onset, the cooperative was fully engaged in the co-production process, though not without challenges. The process required substantial time investment and a high degree of flexibility from all parties in order to accommodate competing demands and avoid scheduling conflicts. The co-design process unfolded over two years and involved several steps. It was initiated with an in-person meeting in the cooperative's headquarters, with the project team and a few cooperative leaders exploring potential focal themes. The insights from this brainstorming session were then refined, and a core theme for an on-site co-production seminar was defined.

A series of virtual meetings with cooperative members followed, in which this theme was translated into a concrete two-day program for the co-production seminar. The next step was the implementation of the on-site seminar in February 2024, which brought together around 25 participants, including five members of the research team, four members of the cooperative, and nine representatives of other local organizations. Over two days, several presentations and interactive activities were carried out, resulting in a list of topics considered particularly relevant by the participants. The seminar was followed by a debriefing meeting with the cooperative leaders, during which key impressions were shared and further developed into a concrete follow-up plan.

The final step in co-designing the case study was to develop a joint plan for practice- and research-oriented activities. Together with the other case studies in the project, we planned a series of virtual and on-site seminars, including sessions to address some topics of their interests such as conversations with practitioners to clarify different types of institutional markets and the procedures required to access them; focus groups with young cooperative members to understand their views on cooperativism and their ideas for encouraging youth engagement; and the development of an accessible methodology to calculate production costs and assess the contribution of the cooperative's systems to nature conservation.

Implementation Phase. Following their proactive engagement, a co-production strategy was established for each of the prioritized goals: 1) understanding the environmental contributions of the cooperative; 2) exploring opportunities to improve their participation in institutional markets; 3) improving estimates of production costs; and 4) understanding youth motivations to engage with the cooperative.

One of the reasons behind these priorities includes their strong reliance on a single major buyer (a cosmetics company), which creates economic dependency and potential vulnerabilities. Therefore, they sought to strengthen their ability to access and maintain regular supply to public food procurement programs in the region. Furthermore, concerns over the continuity of the cooperative amid the declining engagement of younger generations in cooperativism threatens the long-term sustainability of their work. The cooperative leaders were therefore interested in identifying ways to overcome young people's reluctance to join and participate in the cooperative, in order to secure the continuity of their collective project. Finally, their interest in refining the estimation of their production costs is to build knowledge to achieve fair pricing for their products. Prices are largely set by buyers, and they fail to account for many elements of production costs, as well as the broader social and environmental benefits generated by their sustainable production systems. There is a need for a simple methodology to calculate the real production costs. Such a tool could not only increase producers' awareness of the gap between their actual work and the prices they receive but also serve as a basis for identifying strategies to help close this gap. These themes resonated strongly with issues identified in the other case studies of the LINKAGES project; therefore, they were selected as transversal core themes for the project as a whole.

The collaboration was implemented through multiple channels. A WhatsApp group was created with some cooperative members and the project coordination team to facilitate continuous communication between the cooperative and the project team. Cooperative representatives were invited to participate in the project kickoff meeting, during which all collaborating cases were involved in translating project design goals into an implementation strategy. One on-site coproduction workshop was organized to further discuss implementation activities. This workshop brought together representatives of five cooperatives they collaborate with to share their experiences and discuss opportunities to expand the project's reach to their partners. Finally, a dedicated PhD student was assigned to the case with a dissertation project closely aligned with two (environmental contributions and youth engagement) of the four collaborative goals outlined above.

In addition to the four goals described above, the cooperative also decided to promote activities aiming at strengthening solidarity-based practices in the supply of sociobiodiversity products by consolidating a regional cooperative network. The motivation for this choice was to enhance the administrative and productive capacity of other cooperatives that supply raw materials to the cooperative but are at earlier stages of their commercial development.

The coproduction of Case 2 has not only generated a pathway for one particular case study but also activated new knowledge and interactions across cases through engagement with the project as a whole. This active engagement enabled the

integration of the practical and diagnostic components as two sides of the same coin. The PhD student was involved throughout the co-design process - including the co-production seminar and subsequent follow-up – which helped to align the research project with the core themes of the case study. This made it possible to more systematically investigate the motivations and roles of young people in the cooperative work, as well as the contribution of the cooperative's production systems to environmental protection and regeneration in the region.

The key role of communication

Despite their differences, the two cases highlight the importance of tailoring interaction and communication strategies to the evolving needs and priorities of local collaborators and the changing capacities of the research team. In contrast to Case 1, the cooperative in Case 2 engaged fully in all steps of the co-design strategy, which resulted in a concrete integrated plan for research and practice activities. This process, however, was lengthy, time-consuming for both academic and non-academic partners, and marked by periods of high and low engagement. It took about two years before clear action and research plans were finalized, requiring substantial investment of time and energy from the research team and cooperative collaborators, including hundreds of WhatsApp messages and several virtual meetings, in addition to the in-person site visits and project meetings (Table 2).

Table 2. Frequency of co-production interactions for Cases 1 and 2 per year, from 2023 to 2025. Online messaging refers to the number of messages exchanged. Co-production seminars refer to in-person seminars co-designed by the project team and respective local partners.

Year	Interaction	Case 1	Case 2
2023	Online messaging	70	173
	Online meetings	2	6
2024	Online messaging	41	365
	Online meetings	1	9
	Co-production seminars	0	1
2025	Online messaging	39	61
	Online meetings	0	2

WhatsApp group communication, in particular, was not only used to exchange practical information (e.g. meeting arrangements, logistics and information related to the co-production seminar and other events), but also became a pillar of the partnership-building. Through the sharing of photos, documents, links, and news related to sociobiodiversity economy, it helped to nurture social connections, a

shared language, and mutual care. Communication via WhatsApp for Case 1, however, was restricted to messages exchanged individually between one of the coordinators from LINKAGES and different members of the cooperative.¹⁰

Concerning Case 2 WhatsApp group, around two-thirds of the messages were initiated by LINKAGES members to nurture this communication channel. Messages initiated by local partners required careful attention and, at times, prompt responses. Given the different time zones and the frequency of messages during weekends and outside regular working hours, the research team remained available to read and respond as needed. This created significant efforts on all involved. To reduce this pressure, the PhD student leading the diagnostic component was designated as the primary contact person, ensuring continuity in communication while allowing other team members to respond more selectively when necessary.

In contrast to the more irregular flow of WhatsApp exchanges, virtual meetings were more structured and oriented toward specific objectives. These interactions, however, required additional time for preparation and reporting, as well as extra care to maintain concentration and to foster a safe, clear, and equitable space for local partners to participate and express their views. Considering that each meeting required, on average, two hours, one hour for preparation and follow-up, and one hour for the actual interaction, and that four members of the research team participated regularly, only these virtual meetings required a total time investment of approximately 120 person-hours.

Time was also invested in responding to changes and emerging demands throughout the co-production process. In contrast to Case 1, the cooperative Board of Directors was re-elected in 2024 which did not entail a major shift in the coop's perspective and the collaborative work with the project. However, it required extra time to build alignment with the agenda of the new mandate, which included a change in their president. Likewise, as the main contact person left the cooperative, additional effort was needed to establish a new communication channel. While the contact person had played a key role in connecting the co-production strategy to the cooperative's everyday context, the solid relationships already established with other members ensured a smooth transition. Finally, the preparation of promotional materials considered very important by the cooperative demanded extra time from some project members. Although this task went beyond the original co-production plan, it was essential to recognize the cooperative's immediate priorities.

Drawing on these examples of WhatsApp exchanges, online meetings, and in-person workshops, we observe that communication is a cornerstone of the coproduction approach, but also that it demands substantial time and effort from

¹⁰ In contrast to Case 2, Case 1 did not have a dedicated WhatsApp group for shared communication.

both academic and non-academic partners. The time and effort required by co-production activities can place a considerable burden on non-academic partners in particular, whose already busy agendas must accommodate research-related tasks on top of their core responsibilities. This helps explain why time consumption emerges as a central constraint for coproduction: it requires extended periods of trust-building from academic partners and significant time investments in research activities from non-academic partners.

Thus, our experience indicates that sustained interest in the themes identified in the early stages of the project was crucial to the continuity of the co-production process even if their relative priority changes over time. In the next section, we reflect on the contrasting outcomes of these two cases.

Beyond normative interpretations of co-production success or failure

From a co-production perspective, the LINKAGES project illustrates a complex process marked by unforeseen developments and a steep learning curve. In this paper, we examine different dimensions of co-production from the perspective of the research coordination team: the overarching LINKAGES Project design and distinct co-production trajectories of the two case studies. Despite a careful partner selection process and a dedicated communication strategy, both phases were marked by challenges that demanded time, flexibility, and ongoing reflection from the coordinating team to navigate evolving circumstances and uncertainties. These experiences required adjustments and occasionally caused disruptions; at the same time, they generated constructive learning and prompted valuable reflection on our co-production approach.

This process highlights a tension between conventional academic practice and the more fluid nature of co-production with non-academic collaborators. Conventional academic practice is structured around clearly defined outputs (e.g., dataset, reports, and manuscripts) that can be planned and evaluated against established criteria. In contrast, co-production is grounded on relationships between researchers and local partners who operate within different realities and timeframes. As a result, it often unfolds along multiple pathways and is shaped by external factors, including local context as well as partners' motivations, perceptions, interests, and knowledge. Assessing the performance of co-production therefore requires a more nuanced perspective than mainstream output measures of assessing research projects.

Co-producing the project required translating non-academic partners' ideas into academic formats and technocratic logics, and vice-versa. Although innovative elements in the grant structure were intended to support co-production, we encountered several constraints, particularly related to language, formats, and

timelines, which demanded significant efforts at the outset. In particular, the unpaid work of the local partners raises a major inequality in the project team.

Our experience suggests that co-production should not be evaluated in terms of whether partners have equal footing in all aspects of the project. Rather, it should be understood as an ongoing process of repositioning of researchers, involving continuous reflection and sustained efforts to integrate non-academic perspectives meaningfully into the research process. While fully symmetrical co-production may not be attainable, project teams can nevertheless cultivate a co-productive pathway by striving for improvement in epistemic balance and ensuring that collective decisions are supported by a fair distribution of resources among project partners.

The case studies, for example, were conceived as flexible, collaborative projects within the broader project framework to avoid imposing rigid academic structures or timelines on local partners. The contrasting outcomes of the two cases discussed in this paper demonstrate how similar initial collaborative strategies can lead to markedly different trajectories. At first glance, the trajectory of Case 1 could be interpreted as a failure of co-production resulting from a down-scaling in engagement on the part of the cooperative. Our reflection, however, suggests more nuanced reading. The contrasting positions within the cooperative indicate that earlier co-production efforts were strongly anchored in specific leaders and did not sufficiently account for internal diversity in views, interests, and priorities. The cooperative's previous work, as well as the positions and interests of two leaders with whom the project coordinators had previously collaborated, did not align with the strategic repositioning of the newly elected Board, which had established different priorities.

Recognizing and accepting their new priorities, rather than insisting on forms of collaboration that do not reflect local partners' changing interests, is itself integral to co-production. In line with this principle, we adjusted the case co-design and the collaboration was reframed so that the project responded to the cooperative's invitation to support an existing initiative built on co-production, the annual agroforestry seminar. The downscaled engagement of the cooperative reflects their development stage of autonomy and bargaining power built over decades of collaboration with various partners. As documented elsewhere, the cooperative has consistently sought to retain leadership in collaborative initiatives with external partners by asserting its own priorities and demands. The decision not to engage in a case study that is no longer aligned with its revised strategic focus reflects its capacity to decline external agendas - even when proposed by long-standing partners. This case shows that co-production processes may imply partial engagement, which can privilege certain voices while sidelining others. This highlights the importance of

attending more carefully to intra-organizational dynamics and questions of representation when engaging collective actors.

While the structural changes observed in Case 1 are not uncommon, Case 2 reflects a more typical regional context characterized by gradual yet continuous change, in which priorities are regularly reshaped by shifting internal and external dynamics. The co-production process with Case 2 underscores the role of continuity in the partners' agenda, the centrality of social relations between researchers and non-academic partners, and the time required to build and sustain such collaboration. Despite prior experience of working together, evolving contexts and changing priorities demanded flexibility and ongoing investment in these relationships.

From a narrow, output-oriented perspective, the considerable time and energy devoted to co-designing Case 2 might appear inefficient. However, the case study represents only one component of a broader process that generates significant intangible outcomes. Over the course of two years, both the research team and local partners strengthened their capacity to articulate their knowledge in dialogue with each other, to critically reflect on their challenges, competencies, and potentials, and to connect immediate concerns with longer-term strategic objectives. In this respect, co-production and transdisciplinary research differ fundamentally from conventional academic approaches by emphasizing the process and its relational and epistemic resources, rather than the production of a concrete plan or written output alone. Acknowledging this distinction requires a shift in how research is conceptualized, practiced, and valued within academic institutions.

In sum, rather than yielding normative judgments of success or failure, co-production should be understood as an open-ended process marked by uncertainty, contingency, and risk, capable of unfolding along diverse and unpredictable pathways. Efforts to force this process into rigid academic structures may risk producing a superficial form of co-production, one driven more by thin participatory practices than by genuinely meaningful engagement. Co-production therefore calls for more fundamental transformations in research practice to accommodate this collaborative approach.

Closing remarks: co-production as a transformative research practice

As social-environmental predicaments become increasingly complex and intertwined across scales, scholars have emphasized the need for inter- and transdisciplinary approaches to address sustainability challenges more effectively. Over the past decade, knowledge co-production has expanded rapidly as a strategy to advance more just and sustainable solutions (Chambers et al., 2021; Bandola-Gill et al., 2023). Involving non-academic actors in research processes may not only promote epistemic justice by pluralizing and democratizing knowledge production

but also strengthen the transformative potential of research by grounding it in local realities. This shift has gradually reconfigured the position and role of non-academic stakeholders, from informants or beneficiaries to active contributors and co-designer of research agendas (Castro et al., 2024).

In the Amazon, three interrelated dynamics have facilitated the agency of local producers in research. First, beginning in the 1990s, growing recognition of local knowledge within conservation research fostered deeper transdisciplinary encounters around Indigenous ontologies and traditional research practices. Although traditional ecological knowledge was often treated primarily as an object of analysis, some scholars advocated for a more active role for local actors as knowledge producers and partners in research (e.g., Posey, 2004). Second, in the 2000s, marginalized groups gained greater visibility and influence in decision-making processes, reclaiming their identities, practices, and knowledge while asserting their authority in knowledge production (Carneiro da Cunha, 2009). The political empowerment of Indigenous and traditional populations enabled these groups to move from being represented by civil society organizations to representing themselves in transdisciplinary arenas. Third, emerging academic debates on participation and transdisciplinarity have equipped researchers with new conceptual, methodological, and ethical tools, encouraging a shift from thin participatory approaches toward more decolonial and transformative perspectives (Sánchez-García et al., 2025).

As a result, the position of non-academic actors has gradually shifted from that of “research subjects,” whose knowledge is treated primarily as an object of study, to that of active research collaborators, whose role in identifying the problems and contributing with their empirical knowledge constitute an integral component of the research process. This transition, however, has been accompanied by significant tensions and dilemmas. While stakeholder participation may appear straightforward in theory, it often proves far more complex in practice. The growing body of literature on co-production, its concepts, principles, and promises, contrasts sharply with the relatively limited attention paid to how co-production unfolds in concrete research settings. In this paper, we opened this “black box” by examining the practical challenges encountered in implementing co-production from the researcher’s position. Many of these challenges are deeply rooted in conventional academic training, institutional structures, and evaluative frameworks, which can constrain efforts to enact more collaborative and reflexive research practices.

While funders and research institutions are increasingly promoting transdisciplinarity and co-production, the needed supporting changes in academic practices, evaluation systems, and recognition mechanisms are still lagging. The mismatch between conventional research methodological frameworks and the inherent uncertainty of co-production generates additional demands on project

coordinating teams, who must continuously negotiate flexibility within otherwise rigid institutional structures. This often entails significant additional investment in personal time and what Moser (2024) calls emotional labor, *i.e.*, ‘the mental-emotional work required to manage or perform the routine tasks necessary for maintaining relationships and ensuring smooth running of processes or performance at a job (pp. 4). The lack of recognition of these efforts generates academic injustices for those engaged in co-production by ignoring the extra hours outside regular working period, and by not acknowledging it as part of academic performance. Moreover, the many intangible outcomes produced through co-production, such as local knowledge inclusion, the reconfiguration of roles and relationships, and the building of trust and shared ownership, tend to remain invisible and rarely translate into measurable indicators of academic performance. For example, the praise of the project's co-production approach during the mid-term evaluation contrasted with the concerns focused on the limited number of publications generated by the research team. What is missing from this assessment is the value of the substantial labor involved in co-producing six case studies with six different local partners, including the time, relationship-building, and ongoing navigation of internal and external challenges required to sustain meaningful collaborative research.

More fundamentally, co-production should be understood not merely as a methodological strategy for integrating diverse knowledge sources, but as a transformative research practice that shifts attention from product-oriented outputs to relational processes and intangible outcomes. Our experience suggests that co-production is most effectively grounded in long-term partnerships, sustained contextual knowledge, and strong personal commitment within the research team. This is not a smooth process and, at times, implies contradictions in the interaction with local partners during the research process. Flexibility, transparency, and continuous reflexivity are essential to maintaining balance amid evolving research priorities. Even under favorable conditions, however, change can lead to unexpected trajectories. Engaging in co-production therefore requires humility, learning new skills and overcoming entrenched conventional academic models.

In sum, co-production can be understood as a research model grounded in a sort of high-challenge, high-reward model, which implies significant chance of obstacles but also the potential for unusually beneficial outcomes for the local partners. In the Brazilian Amazon, many scholars have established long-standing partnerships with local producers, grassroots organizations, and NGOs, conducting research grounded in principles of co-production. The time is ripe to build on these experiences and foster an open discussion of both the achievements and the challenges encountered. Alongside collective reflection with our local collaborators, we argue that a complementary debate from the researchers' perspective is also necessary. Such a discussion should critically examine the changes required within conventional academic structures and practices to enable co-production processes

that generate meaningful tangible and intangible impacts, while contributing to transformative change on the ground.

Acknowledgements

This research was financially supported by the São Paulo Research Foundation (FAPESP 2021/10805-2 and FAPESP 2023/04705-0) and the Dutch Research Council (NWO 2022/21.406). The paper builds on extensive collaborative reflections among producers, practitioners, and researchers involved in the LINKAGES project regarding the challenges and opportunities within various sociobiodiversity product value chains in the Brazilian Amazon. The views and ideas expressed in this paper are the sole responsibility of the authors and are grounded in the perspective of the researchers. The authors thank Tamires Fornazari for elaborating the map depicting LINKAGES focal areas.

References

- Anderson, A. B. (Ed.). (1990). *Alternatives to deforestation: Steps toward sustainable use of the Amazon rain forest*. New York: Columbia University Press.
- Bandola-Gill, J., Arthur, M., & Leng, R. I. (2023). What is co-production? Conceptualising and understanding co-production of knowledge and policy across different theoretical perspectives. *Evidence & Policy*, 19(2), 275-298.
- Brondizio, E. S., Andersson, K., de Castro, F., Fudemma, C., Salk, C., Tengö, M., Londres, M., Tourne, D., Gonzáles, T., Molina-Garzón, A., Russo Lopes, G. & Siani, S. M. (2021). Making place-based sustainability initiatives visible in the Brazilian Amazon. *Current Opinion in Environmental Sustainability*, 49, 66-78.
- Brosius, J. P., Tsing, A. L., & Zerner, C. (1998). Representing communities: Histories and politics of community-based natural resource management. *Society & Natural Resources*, 11(2), 157–168. <https://doi.org/10.1080/08941929809381069>
- Carneiro da Cunha, M. (2009). *“Culture” and culture: Traditional knowledge and intellectual rights*. Chicago: Prickly Paradigm Press.
- Castro, F., Brondizio, E. S., Fudemma, C. R. T., de Theije, M., Lopes, G. R., & de Moraes, A. R. (2024). Beyond “green markets” and local romanticisms for a locally grounded bioeconomy in Amazonia. *One Earth*, 7(11), 1904-1907.
- Chambers, R. (1997). *Shortcut and participatory methods for gaining social information for projects (Version 1)*. The Institute of Development Studies and Partner Organisations. <https://hdl.handle.net/20.500.12413/260>

Chambers, J. M., Wyborn, C., Ryan, M. E., Reid, R. S., Riechers, M., Serban, A., ... & Pickering, T. (2021). Six modes of co-production for sustainability. *Nature Sustainability*, 4(11), 983-996.

Chernela, J., & Zanotti, L. (2014). Limits to knowledge: indigenous peoples, NGOs, and the moral economy in the eastern Amazon of Brazil. *Conservation and Society*, 12(3), 306-317.

Cooke, B., & Kothari, U. (Eds.). (2001). *Participation: The new tyranny?* London, England: Zed Books.

Garrett, R., Ferreira, J., Abramovay, R., Brandão, J., Brondizio, E., Euler, A., ... & Varese, M. (2024). Transformative changes are needed to support socio-bioeconomies for people and ecosystems in the Amazon. *Nature Ecology & Evolution*, 8(10), 1815-1825.

Lemos, M. C., Arnott, J. C., Ardoin, N. M., Baja, K., Bednarek, A. T., Dewulf, A., ... & Wyborn, C. (2018). To co-produce or not to co-produce. *Nature Sustainability*, 1(12), 722-724.

Lemos, M. C., & Morehouse, B. J. (2005). The co-production of science and policy in integrated climate assessments. *Global Environmental Change*, 15(1), 57-68.

Moser, S. C. (2016). Can science on transformation transform science? Lessons from co-design. *Current Opinion in Environmental Sustainability*, 20, 106-115. <https://doi.org/10.1016/j.cosust.2016.10.007>

Moser, S.C. (2024). Transformative labor: The hidden (and not-so-hidden) work of transformations to sustainability. *Global Environmental Change*, 87. <https://doi.org/10.1016/j.gloenvcha.2024.102888>

Norström, A. V., Cvitanovic, C., Löf, M. F., West, S., Wyborn, C., Balvanera, P., ... & Österblom, H. (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability*, 3(3), 182-190.

Pendrill, F., Gardner, T. A., Meyfroidt, P., Persson, U. M., Adams, J., Azevedo, T., Bastos Lima, M.G., ... & West, C. (2022). Disentangling the numbers behind agriculture-driven tropical deforestation. *Science*, 377(6611), eabm9267.

Posey, D. A. (2004). *Indigenous knowledge and ethics: A Darrell Posey reader* (K. Plenderleith, Ed.). New York, NY: Routledge.

Redford, K. H., & Padoch, C. (Eds.). (1992). *Conservation of Neotropical Forests: Working from Traditional Resource Use*. New York, NY: Columbia University Press.

Reis, T. N. D., de Faria, V. G., Russo Lopes, G., Sparovek, G., West, C., Rajao, R., ... & do Valle, R. S. (2021). Trading deforestation—why the legality of forest-risk commodities is insufficient. *Environmental Research Letters*, 16(12), 124025.

Rodríguez, I., Walter, M., & Temper, L. (Eds.). (2023). *Just Transformations: Grassroots Struggles for Alternative Futures*. London, UK: Pluto Press.

Sánchez-García, P. A., Schröter, B., Krause, T., Merrie, A. S., Pereira, L., Nielsen, J. Ø., & Loft, L. (2025). A decolonial and participatory research approach to envision equitable transformations toward sustainability in the Amazon. *Futures*, 172, 103638.

Turnhout, E., Metze, T., Wyborn, C., Klenk, N., & Louder, E. (2020). The politics of co-production: Participation, power, and transformation. *Current Opinion in Environmental Sustainability*, 42, 15–21. <https://doi.org/10.1016/j.cosust.2019.11.009>