Peru's Participatory Timeline: Actor Perspectives on Behavioral Drivers, Agency, and Behavior Change

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Introduction

Agroecology is a scientific approach, set of practices, and social movement, where the common objective is to create more sustainable, beneficial, and equitable food and agriculture systems (HLPE 2019). The CGIAR Initiative on Agroecology (AE-I) is a transdisciplinary, participatory, and action-oriented approach aimed at enhancing food system resilience, equity, and sustainability through agroecology. Through Agroecological Living Landscapes (ALLs) – localized mechanisms for co-creation of knowledge and innovations – the initiative aims to develop and scale agroecological innovations with small-scale farmers and other actors from the agri-food system.

AE-I ALLs operate in different socio-ecological contexts in eight low- and middle-income countries, including Peru. Here, the Alliance of Bioversity International and CIAT and the International Potato Center lead activities in the agroforestry corridor of Pucallpa - Aguaytía, in the Amazonian Ucayali region. The entry point in this region is the cocoa production system, which integrates small farmers into a value chain that is still developing and has great opportunities to be strengthened through agroecological approaches. The AE-I in Peru works with two cocoa cooperatives as local partners for co-designing agroecological technical innovations and strengthening of their business model within the ALL. They have been engaged in organic production, deforestation-free production, and efforts to diversify production, including through agroforestry systems.

The ALL in Peru has also prioritized innovations linked to policy and institutional arrangements that can contribute to transitions of the agri-food systems based on family agriculture. For that purpose, the AE-I works with AgroSalud Ucayali, local NGOs, the Regional Directorate of Agriculture, and the Regional Committee of Organic Production, to formalize the Regional Council of the Participatory Guarantee System (RC-PGS) as a mechanism for social certification for agroecological family farmers. Finally, the Initiative has co-facilitated the co-design of the Regional Strategy for the Promotion of Bio-commerce with an agroecological approach, together with TerraNuova, an international NGO, and the Regional Government of Ucayali, with the aim of creating a public management instrument that prioritizes the agroecological approach to strengthen the productive and commercial potential of Amazonian biodiversity products.

This country report is part of the outputs for Work Package 5 (WP5) of the AE-I, the focus of which is understanding and then influencing individual and collective agency and behavior among food system actors (FSAs) to drive inclusive and equitable agroecological transformation. To understand the drivers of actors' behavior change, we first aim to learn from past agroecological experiences within the ALLs (Voss et al. 2024) and from the history of agroecological transformation from the perspective of local stakeholders in the ALL. The aim of collecting and analyzing this evidence is to understand what drives agri-food system actors to adopt an agroecological transition, what influences their agency, and how to promote business models that support agroecology. Through this, WP5 aims to help identify the best interventions to support behavior change toward an agroecological transition (Quintero and McCartney 2021).

Objective

Co-develop a timeline of key events that affected the ALL Peru's agroecological transformation with different stakeholders to identify how key events have affected agency, behaviour change, and representation and inclusion of different actors.

Agroecological Living Landscape (ALL) of Peru

The study area is Ucayali, located in the Amazon region. The region is bordered by the Loreto department (north), Pasco and Huánuco departments (west), Madre de Dios, Cusco and Junín departments (south) and Brazil (east). The Agroecological Living Landscape (ALL) is located in the Ucayali department, specifically in the districts of Yarinacocha (Province Coronel Portillo), Nueva Requena, Campo Verde, Manantay (Province Padre Abad) and Pucallpa (the capital of Ucayali). This area coincides with the Agroforestry Corridor established by the regional government of Ucayali[1](Figure 1).

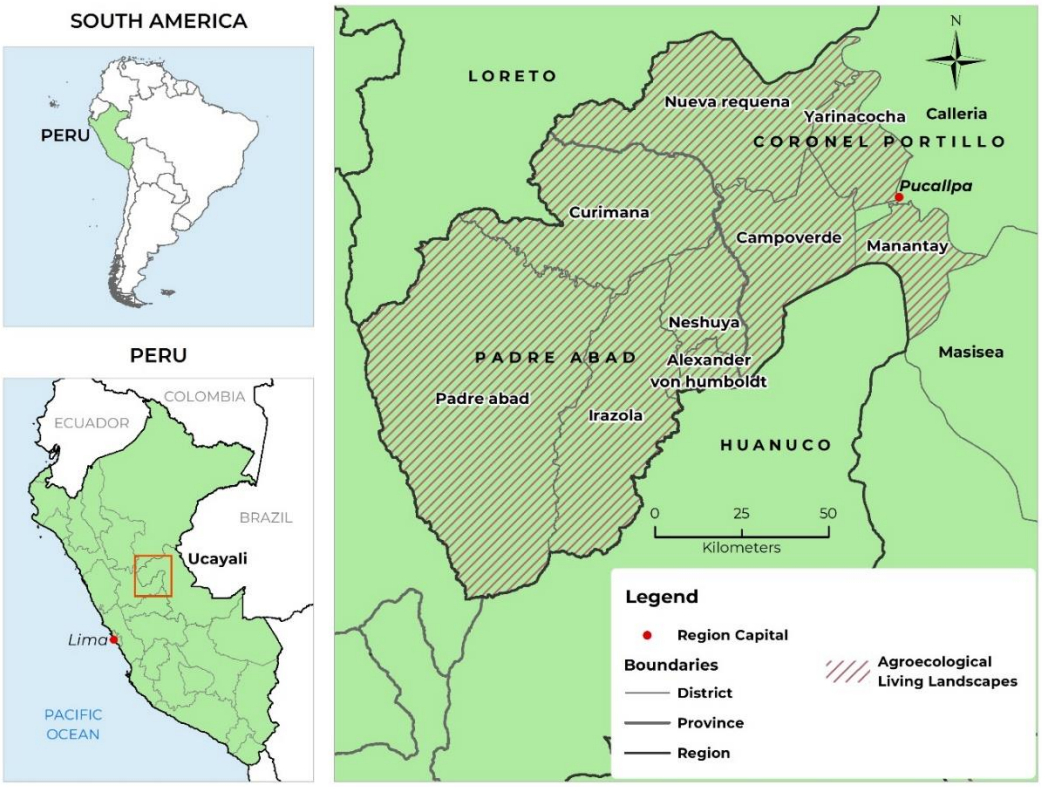

Figura 1. ALL Peru located in Ucayali region. Source: CGIAR, 2023

The ALL covers 1,406,411 ha and three types of landscapes: mountains (15% of area), hills (40% of the area), and plains (43% of the area) (Gobierno Regional de Ucayali [GOREU], 2016) (Figure 2). The west portion of the ALL (mountains and hills, part of the Sub-Andean region) sees temperatures ranging from 12°C to 30°C and precipitation from 3000 to 4500 mm/year. The plains (east area) have a temperature range of 19°C to 32°C, and precipitation from 1200 to 3000 mm/year (Centro de Conservación, Investigación y Manejo de Áreas Naturales [CIMA], 2017[2]).

Ucayali's forests host an important diversity of fauna and flora. The ALL has four natural protected areas that preserve 79,221 ha (Servicio Nacional de Áreas Naturales Protegidas por el Estado [SERNANP], 2022). However, Ucayali experiences high levels of deforestation caused by the expansion of the agricultural frontier, with oil palm, cacao, coffee, rice, coca leaf, plantain, papaya, and pastures representing the highest production and planted areas (MINAM, 2016; MINAM 2021, MIDAGRI, 2022). Besides agriculture and livestock, fishing and mining are also important economic activities in the region (MIDAGRI, 2022; MIDAGRI, 2021). It is estimated that Ucayali has lost half of its forests (1,026,836 ha) in the last 20 years (2001-2021). Over the last two decades, deforestation has been concentrated in the ALL, which has already lost 40% of its forest area.

[1] The agroforestry corridor was established in the Regional Strategy for Low-Emission Rural Development of Ucayali.
[2] Los valores reportados para el Corredor se obtuvieron de los mapas climáticos desarrollados por CIMA (2017), que presentan los promedios multianuales (1981-2015) de temperatura y precipitación.

Methods

Participatory Timeline

Two focus groups were conducted to create a participatory timeline: one with representatives from the academic sector and international cooperation, and the other with representatives of social movements and farmers.

During the workshops, a starting point was established, marking a specific year and key event that initiated the current trajectory of agroecological transformation in the Peruvian Amazon, with a focus on events of the territory of the ALL. Participants then identified significant events related to the 13 agroecological principles that either facilitated or hindered this transformation. For each event, the groups evaluated its impact on: 1) inclusion, representation, and participation in governance and decision-making; 2) the agency of affected food system actors; and 3) behavior change.

Créditos: José Sanchez, Alianza Bioversity CIAT

Interviews with key actors

The results of the participatory timeline were further enriched by interviews with two stakeholders from social movements who have a deeper understanding of the history of agriculture transformation in Ucayali. These interviews aimed to gain insights into significant events, associated actors, their agency, and their participation in governance.

Additional information was gathered from a youth study conducted as part of the Agroecology Initiative. This study involved individual interviews with twelve young women (ages 18-32) and eleven young men (ages 19-30), all connected to one cocoa cooperatives. The interview guide included questions focused on basic demographic information, perceptions of livelihoods and agriculture, and views on agroecology and sustainable farming.

Results

Key events identified through participatory timeline

Here we are highlighting the most important “advancing” events showed in the timeline, beginning with the chosen starting point (figure 2).

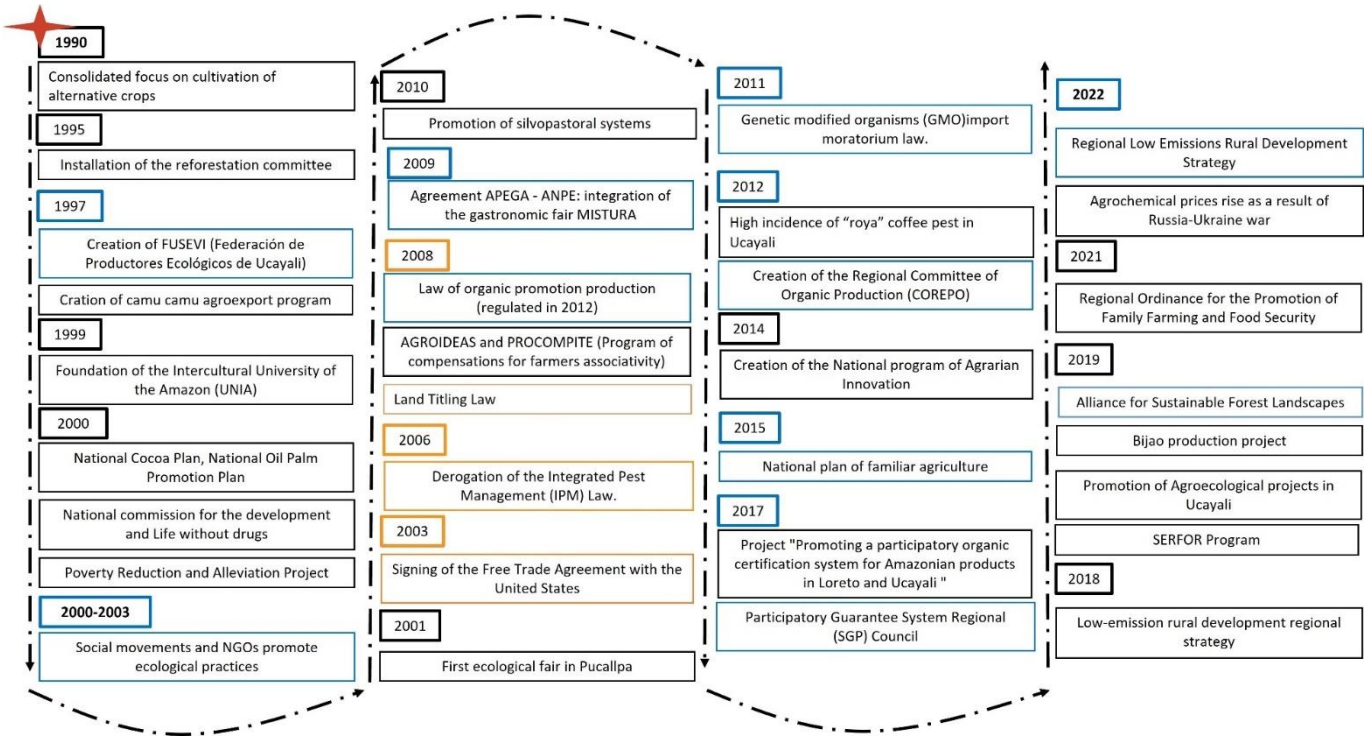

Figure 2. Timeline created by focus groups. The star marks the starting point in 1990. Events in blue represent the most significant advancements aligned with an agroecological transition, while events in orange indicate key obstacles that hindered the agroecological transition.

Expansion of cash crops as a legal alternative to illegal coca leaf production

Participants of the workshop identified a significant turning point in the transition from illicit crops to legal crops during the 1990s. This transition was primarily driven by the consolidation of national alternative crop development programs to phase out production of illicit crops, spearheaded by research centers, the regional government, PNUD, Chemonics that worked for USAID, and Consorcio para el Desarrollo Sostenible de Ucayali (CODESU), which collaborates with local governments and producer associations to promote prosperity in the Peruvian Amazon. It focuses on agricultural development, competitive industrial growth, and alternatives to illicit crops. These programs represented a pivotal moment in integrating coca farmers into legal production sectors, including mainly palm, but also cocoa, coffee, and pineapple cultivation. The focus of these programs was on introducing commercial agriculture through crops and practices such as use of fertilizers, pesticides, and mechanization. Additionally, these programs played a role in fostering the growth of producers' associations, which offered avenues for research, development, and financial support. However, there was not an adequate market for palm oil and cocoa, plus the lack of productive infrastructure such as roads limited/complicated access to productive zones creating difficulties to move the products to sell them. Also, participants recall that these alternative development programs didn't adequately account for environmental considerations, as technical staff and rural extension workers promoted monocropping and conventional practices (use of fertilizers, pesticides, and mechanization) contributing to deforestation and environmental pollution.

The opening of the Federico Basadre highway in the 1940s marked the beginning of territorial occupation, driven by the arrival of migrants from the Andean regions. This settlement led to the establishment of agricultural fronts on both sides of the highway, transforming primary forests into pastures and farmland. Initially, coca cultivation served as a colonizing crop, with its production being legal. Concurrently, banana farming, livestock production (aimed at the market), and, to a lesser extent, cacao, tea, coffee, and subsistence crops (such as cassava, corn, beans, and rice) developed (Zegarra, 2004).

In the 1970s, coca cultivation linked to illicit trafficking began to take root in the region and was partially curtailed by forced eradication programs in the mid-1980s (Zegarra, 2004). The introduction of the alternative development program in the 1990s

coincided with a sharp decline in coca prices, resulting in an economic crisis in the area. It was during this period that coca producers began to form organizations, which later managed to integrate into national trade associations (Zegarra, 2004).

The history of alternative development reflects a complex and evolving dynamic that extends beyond the scope of this report**.** Here, our focus is to capture the perspectives of participants and analyze their roles in advancing sustainable development practices aligned with key agroecological principles

Formation of farmers' associations and advocacy groups in response to slash and burn agriculture

After the starting point, several organizations emerged that promoted agroecological transition. In 1997, 17 farmer organizations integrated the "Federación de Productores Ecológicos de Ucayali" (FUSEVI). They organized marches, invited farmers who wanted to join them and created banners advocating for the conservation of traditional agricultural practices, the non-use of agrochemicals, and an end to slash-and-burn agriculture.

FUSEVI received capacity building support from EBOS (Netherlands) on agroforestry systems and restoration of degraded soils. This gave FUSEVI the support to say that the alternative crop development programs promoted an environmentally unfriendly/unsustainable way to approach agriculture. After receiving this support, FUSEVI also promoted the first fair of ecological products in the region, to recognize the work done by agrochemical-free small-scale farmers and to connect them directly with consumers in the city of Pucallpa.

From 2000 to 2003, a coalition was formed comprising organizations such as FUSEVI, APEs (Asociaciones de Productores Ecológicos, representing different crops), and the Pucallpa-based NGO Agrosalud, with support from ANPE (Asociación Nacional de Productores Ecológicos del Perú). This coalition opposed the use of slash-and-burn techniques, advocated agroecological practices as viable alternatives to these conventional methods and provided training to farmers.

Legal and regulatory changes to advance sustainable agriculture

Since and alongside the formation of these groups, several significant legal and regulatory changes related to a transition to sustainable agriculture have taken place. In 2008, the Organic and Ecological Agriculture Promotion Law was signed by Congress and included the goal of promoting sustainable and competitive development in organic production in Peru. The law was originally designed by ANPE and reflected respect for the environment and health, in addition to recognizing the value of peasant agriculture. However, mechanisms to implement the law and regulate through it were not issued until 2012, and did not align with the initial proposal; instead, regulations focused on agro-exportation and highlighted an organic production logic rather than the holistic nature of agroecological production. Thus, ANPE was disappointed because it was not what they proposed originally. Although the law still lacks funding, its passage was important as it voiced support for agroecological projects and helped to make visible the importance of sustainable agriculture.

In 2009, an agreement was established between ANPE-Peru and APEGA (the Peruvian Gastronomy Association) to promote and preserve Peruvian biodiversity, including products from the Amazon, in Peruvian cuisine through the gastronomic fair MISTURA. This fair was considered a success and held annually from 2009 to 2018 in Lima. It highlighted the importance of Amazonian biodiversity in Peruvian gastronomy and raised consumer awareness about native products. Also, MISTURA brought together cuisines from all over Peru, highlighting the importance of family farming and value of local ingredients in creating highly valued dishes. The gastronomic sector thus boosted interest in agrobiodiversity and biodiversity, while emphasizing the importance of production and conservation by small-scale farmers. In 2018, Mistura faced difficulties in finding a suitable venue, leading to the cancellation of the event. Despite attempts to hold the fair in other cities and plans for future editions, these efforts were not fruitful, and the COVID-19 pandemic ultimately contributed to the indefinite postponement of the event.

In 2011, a moratorium or temporary ban on the cultivation of genetically modified organisms (GMOs) in Peru until 2035 was passed by the national government. This law forbids the entry and production in the national territory of living modified organisms (LMO) for cultivation or breeding purposes, including aquatic ones, to be released into the environment. This presented an opportunity to raise awareness about the importance of conserving agrobiodiversity and promoting organic production. In 2024, the Ministry of Agrarian Development and Irrigation presented a proposal to Congress to amend the Moratorium Law and allow the entry of GMOs. However, actors from the social movements and unions such us Asociación Peruana de Consumidores y Usuarios (ASPEC) and the Convención del Agro Peruano (CONVEAGRO) strongly opposed it, resulting in Congress rejecting the proposal.

In article 7 of the Organic and Ecological Agriculture Promotion Law was stipulated the creation of the COREPOS (Regional Organic Production Committees). Thus, in 2012, the COREPO was established in Ucayali. COREPOs are regional

representative entities, with the purpose of strengthening organic production. Later, COREPOs were part of the team that formulated the National Concerted Plan for the Promotion and Encouragement of Organic or Ecological Production, which the central government approved in 2021. This Plan promotes agroecological production as a sustainable agricultural system that supports food security, boosts the economy, and prioritizes family agriculture, while being resilient to climate change. The Plan aims to improve quality of life, enhance the competitiveness and sustainability of ecological production, and includes strategies to increase productivity, improve quality, facilitate research and technology transfer, strengthen market presence, and reinforce institutional frameworks. Civil society organizations agree that the Plan has not been implemented due to the lack of political will to allocate an annual budget for it.

In 2015, the National Law of promotion and Development of Family Agriculture was introduced. It was designed with the collaboration of groups interested in supporting family farming: the Convencion del Agro Peruano (CONVEAGRO), APES, Confederación Campesina del Perúu (CCP) and Confederación Nacional Agraria (CNA). This law acknowledges three categories of farmers: 1) subsistence farmers, who do not own land and use most of their production for their own consumption; 2) intermediate farmers, who own land and produce for both selling and consumption; and 3) consolidated farmers, who own land and produce primarily for selling. The law aims to guide and organize state intervention in support of family farmers, committing to the social and economic inclusion of rural populations. The purpose of the law is to improve the quality of life of families that depend on family farming and reduce poverty in the rural sector. This law recognizes the significant contributions of indigenous peoples, local communities, and farmers in biodiversity conservation and development. However, this law, like others, lacks funding for implementation. Participants mentioned: "The law is marvelous and very well written, but in reality, it is not enforced due to a lack of political will; effectively, there is no law."

The development of the Participatory Guarantee System (PGS) was identified as a key positive event in the participatory timeline, contributing to a sustainable food system. PGS in Peru was a proposal developed by actors from the agroecological social movement, such as ANPE and the Institute of Development and Environment (IDMA), motivated by the desire to find a participatory and low-cost mechanism that could certify ecological production from small producers, improving access conditions in local markets. In 2017, the Ucayali Regional Council of the Participatory Guarantee System (PGS) was established by COREPO (Regional committees of organic production), the NGO Agrosalud, the regional government, and SENASA (the National Agrarian Health Service) as a means for small farmers to obtain certification for their organic products, which they might not afford through a third-party certification. It also received the recognition of the Regional Government of Ucayali. At that time, pilot initiatives were developed with APE El Pimental (native chili peppers), camu camu producers, and producers of cassava and plantain, successfully certifying 126 farming families. This initiative was developed by ANPE and was based on lessons learned from other regions of Peru, mainly the Andes . By then, this form of certification operated outside the law since the Peruvian national system had not yet recognized it as valid. It wasn't until 2019, through the amendment of the Organic Agriculture Promotion Law that the Peruvian state recognized the PGS as a valid mechanism for certifying agroecological production. The PGS in Peru was a proposal developed by actors from the agroecological social movement, such as ANPE and the Institute of Development and Environment (IDMA), motivated by the desire to find a participatory and low-cost mechanism that could certify ecological production from small producers, improving access conditions in local markets. It was only in 2023, under a legal provision from the Ministry of Agriculture and driven by social movement actors, that the recognition of the Regional PGS Councils as certification bodies was achieved. For this reason, various Councils that had lost activity due to the lack of regulatory clarity are now being reactivated, such as the case of Ucayali.

Finally, in 2022, the Ucayali government introduced the Regional Low Emissions Rural Development Strategy. This is a regional public policy that proposes measures to improve the well-being of the rural population of Ucayali through the conservation and restoration of forests, sustainable production, and low-emission regional competitiveness, as well as the enhancement of livelihoods . Currently, a territorial development initiative – Iniciativa Jurisdiccional Neshuya - is being promoted in the Neshuya district, which is part of the ALL. The aim is to develop a deforestation-free territory, with a focus on sustainable production. This is a collective initiative led by the District Municipality of Neshuya, with the support of Earthworm Foundation, Earth Innovation Institute, the Alliance Bioversity CIAT, and Solidaridad. So far, an action plan has been developed that integrates activities in the environmental, productive, social and governance areas, creating a starting point to ensure a sustainable productive landscape.

Events that impeded the agroecological transition

Several other legal and regulatory changes impeded progress toward agroecological transition. In 2006, the Free Trade Agreement (FTA), known as the Tratado de Libre Comercio (TLC) in Spanish, was signed, offering the country opportunities in the organic export market. However, according to the consulted actors, the FTA also led to an influx of chemical products at lower prices, which encouraged their extensive use by farmers in Ucayali.

Concurrently, in the same year, the central government repealed the Integrated Pest Management Control Law, which had emphasized non-chemical options as the primary means of pest control. This, too, encouraged the expanded use of agrochemicals.

Under the Land Titling Law (2008), COFOPRI (Formalization Agency for Informal Property) gave land titles to farmers that demonstrated land under productive activities. Farmers that have forest under conservation did not receive land titles as forest maintenance was not considered a "productive" use of land. Thus, people who had forests in their lands were encouraged to deforest them in order to gain formal land titles.

Agency across actors along the timeline

The national government, regional government, NGOs supported by international cooperation, and research centers had the most agency in deciding the agenda and interventions related to productive systems that may direct the dynamics in the agri-food system. They designed and promoted alternative development projects aimed at supporting the transition from coca illegal production to legal crops, primarily palm, cacao, coffee, and pineapple. The government was actively involved in many decision-making processes, with research centers providing support. However, key interviewees noted that illegal coca cultivation has not been successfully eradicated, as many farmers continue to cultivate coca alongside other crops. Farmers exercise agency in the choice to cultivate coca and/or other crops, but their crop selection is also driven by inadequate market opportunities and infrastructure that limit incentives for production of alternative crops. Thus, there was not a complete behavior change for coca farmers, mainly in areas that are more disconnected to markets. Nowadays, coca continues to generate income for family farming, serving as a complementary source (and still central in some areas) to legal activities in the territory.

Social movements such as **FUSEVI, APEs and ANPE** have exercised collective agency to effect change in policy, bring together various stakeholders in support of sustainable production, and to oppose conventional agriculture since 1995. They were successful in advocating for policy change, including the passage of **the Organic and Ecological Agriculture Promotion Law**, its amendment to recognize the PGS as a certification mechanism and the genetic modified organisms (GMO) import moratorium law until 2035.

These groups also successfully connected farmers to local consumers through the ecological fair in Pucallpa to promote healthy product consumption with collaboration of teachers, ecological farmers, and EBOS-Netherlands. Even though this strategy was not sustained in time, it an example that this kind of relation between farmers and consumers is possible.

The gastronomic fair Mistura raised awareness and may have supported behavior change among consumers in Lima and beyond as more people became aware of Amazonian biodiversity and consuming transformed products (e.g icecreams, jelly, handicrafts, canned chilies, roots powders, etc.). This also supported commercialized production of these products.

However, these social movements face limitations in their efforts, particularly in comparison to the number of farmers influenced by conventional agriculture promoted by governments and agrochemical producers. As one interviewee noted, "social movements are like an ant in an elephant's ear; they don't even cause a tickle."

ANPE, COREPO and NGO **Agrosalud** have promoted the Participatory Guarantee System (PGS) Regional Council in Ucayali. COREPOs are regional representative entities, with the purpose of strengthening organic production. Agrosalud aims to improve rural families' living conditions by promoting gender equity, respecting cultural diversity, reducing poverty, and fostering sustainable agricultural practices and healthy eating. They promoted pilot projects for certification under the PGS; however, regulatory changes led to the suspension of this process. Currently, the institutional framework for the PGS in Ucayali is being built due to regulatory clarity and the leadership of local public and private institutions. The process of formalizing the Regional PGS Council to SENASA (the regulatory body) is driven by the Regional Directorate of Agriculture, COREPO Ucayali, AgroSalud, INIA, DETEC (local NGO), and with technical support of the Alliance Bioversity CIAT under the CGIAR Agroecology Initiative.

Technical staff and rural extension workers have played an important role in the agricultural context of Ucayali, as they are the ones who guide farmers' practices in accordance with the guidelines of cooperatives. Due to their training in conventional agriculture, they have primarily directed agricultural practices along those lines. While there are a growing number of technicians with an agroecological perspective, based in knowledge of organic production, more are still needed to contribute to the agroecological transition.

Actors with limited influence and agency

Farmers' agencies vary based on their involvement in farmers' associations and projects. For instance, farmers belonging to organizations like ANPE, FUSEVI, and APEs have gained agency and successfully promoted laws that benefit them, such as a

moratorium or temporary ban on the cultivation of GMOs and the Organic and Ecological Agriculture Promotion Law. These laws encourage the conservation of agrobiodiversity and organic production, an activity that many of these farmers engage in. Other farmers have been beneficiaries of projects and became leaders of cooperatives or have "model farms" that boost their agency in promoting sustainable agriculture. Some beneficiary farmers may not have experienced the same gains in agency through projects as they still practice conventional agriculture.

Ex- Coca farmers: They had to adopt crops promoted by the alternative developmental programs. They did not have an alternative to choose what to grow. Some started to grow oil palm and abandoned it for a lack of proper roads to transport their products and markets to sell them. The combination of licit and illicit crops is still present in the corridor.

Youth farmers: They did not have a visible role in the timeline. Most farmer cocoa cooperatives primarily represent older men, while their sons participate indirectly through their parents. Currently, many young people do not dedicate themselves exclusively to agriculture. A study on youth conducted as part of the Agroecology Initiative revealed that many young men split their time between agriculture and other jobs, such as driving mototaxis or working in construction, due to insufficient income from agriculture. Contrary to parental beliefs, many interviewed youths expressed a desire to continue in agriculture but cited challenging working conditions and inadequate income as significant barriers.

Women farmers: Women farmers did not have a visible role in the timeline. Results from the youth interviews indicate that women split their time between agriculture and family care. They tend to have less agency because their contributions to agriculture are often overlooked, as they are primarily responsible for family caregiving. The youth study of the Agroecology Initiative showed that youth women recognize the importances of agriculture as their main livelihood and the centrality of ecological production to contribute to family health and ensure the sustainability (in terms of time and quality) of natural resources such as soil, plants, and forests.

Indigenous communities: They did not have a visible role in the timeline. They were only mentioned in the timeline activity in the event creation of UNIA (Universidad Nacional Intercultural de la Amazonía Peruana). With the creation of this university, indigenous populations gained access to higher education, such as degrees in agro-industrial engineering and agroforestry engineering, which contributes to their agency. Nineteen ethnic groups from the Amazon region attend the university. When young people graduate, they return to their communities and often take on leadership roles within the community or organizations, assuming responsibilities for project management. This professionalization of indigenous communities enhances self-esteem; initially, graduates may be shy, but they gradually become more integrated and overcome their hesitation to speak in their native language. There are many cultural activities. However, there is still resistance within academia to recognize their prior knowledge and to find ways to integrate it into academic frameworks.

The programs mentioned in the timeline as important events in the ALL have focused on benefiting farmers dedicated to crops such as palm, camu camu, and cocoa. However, young farmers, women farmers, and indigenous communities have not been the focus of these programs.

Key Enablers and Challenges of Actors' Agency and Behavior

Farmers

Farmers face various drivers that influence their agency, motivate their behavior, and lead to different choices. Some, particularly those involved in social movements, have gained agency and actively advocated for "agroecological" laws, believing in the benefits of sustainable agriculture. In response to challenges such as inadequate roads and infrastructure, which hinder their ability to transport and sell alternative crops, many farmers have chosen to exercise collective agency by joining these movements. Others, who have benefited from various sustainability-focused projects, have changed their practices and now serve as leaders in cooperatives or manage "model sustainable farms."

However, there are also farmers who remain merely beneficiaries of these projects yet continue to practice conventional agriculture. Coca farmers face a different dilemma; some have chosen to stop or reduce illegal coca cultivation, motivated by a desire to engage in legal activities and lead peaceful lives. Yet, others continue to grow coca due to its high profitability. It is essential to highlight that challenging conditions in rural areas such as inadequate roads, poor infrastructure, and limited access to markets further complicate these choices.

Knowledge and capacity building are key elements for motivating agency among the diverse farmers in the territory. Understanding their diversity and identifying the multiple motivations they have could support the development of learning methodologies and the scaling up of agroecological practices already existing in the area. The recognition and visibility of farmers who have achieved good results on their plots based on the adoption of agroecological practices, as well as the importance of connecting to markets, are factors that could also help increase agency among this group of actors.

Due to these differing drivers and choices available to farmers, it would be useful to further investigate whether there are some shared factors among farmers who are particularly influenced by one driver or another. The Holistic Localized Performance

Assessment (HOLPA) data should enable some differentiation among farmers by farming typology, which could then be used to design a more in-depth assessment of the drivers (both opportunities and constraints) for the different groups across the typology.

Farmers Associations

International market regulations that favor products produced under zero deforestation conditions and organic practices often offer a price premium and have significantly influenced the behavior of farmers' associations and technicians from the organizations. Access to differentiated markets where sustainable production (organic, ecological, deforestation-free, fair trade) is economically valued serves as a strong incentive for change among farmers, their organizations, and technicians.

However, the prevalence of pests in crops due to increase in rainfall intensity and the marketing of chemical pesticides can sometimes compel organic farmers to resort to agrochemicals. Additionally, recent observations in the cacao market indicate that high global prices—determined by stock exchange dynamics—have reduced the price difference between conventional and organic cacao. This narrowing gap may further impact farmers' decisions regarding sustainable practices.

Government Actors

There are also differing drivers that influence the decisions and policies of government actors. On the one hand, the recognition of the situation of small-scale farmers has driven some government actors to respond through enacting policies that would support family farming - small scale farmers-, but often the funding is lacking to leverage policies toward tangible actions and deliver results. Technological packages and conventional agricultural practices promoted by governments and agrochemical companies are often better funded and driven by profit for these powerful actors. These initiatives can heavily influence the choices of farmers who face limited market options.

Youth Farmers

According to the findings from the youth study, young farmers are motivated to practice agriculture to achieve economic independence. They are driven by the desire to have their own farm and grow their own food. However, the difficult conditions in rural areas, the low prices they receive for their products, high production costs, and lack of access to land and knowledge lead them to seek jobs outside agriculture.

Consumers

Although consumers agency and behavior were rarely mentioned in the context of the key events, the response from consumers to the Mistura gastronomic fair demonstrated the potential of consumer-oriented events to stimulate their interest in native Amazonian products. Further studies need to be conducted to understand better the diversity of consumers.

Findings Complementing Characterized Agroecological Initiatives in the ALL

The results from the characterization of past initiatives revealed that most focused-on projects and programs developed in the last decade. However, the timeline captured events that happened between the late 1990s and early 2000s.

Only one of these initiatives was identified in the participatory timeline: the project "Promoting a Participatory Organic Certification System for Amazonian Products in Loreto and Ucayali". This was highly recognized as effective in improving agency and bringing certification under PGD for native communities that produced agroecological products but did not have access to special markets. This project was one of the experiences that motivated the establishment of the Ucayali PGS Council in 2017.

The timeline methodology has provided deeper insights into the role of social movements in driving change, particularly in relation to bringing about legislation. Notably, the most significant influence of social movements occurred between the late 1990s and early 2000s, likely creating favorable conditions for the development of projects and programs that incorporated the principles of agroecology championed by these movements.

Finally, the lack of visibility of traditionally marginalized groups, such as youth, women, and indigenous peoples, is a common thread in both analyses. While the inventory highlighted these groups as beneficiaries, it did not specify actions tailored to their contexts and needs. Similarly, the timeline results reveal their absence as key actors in the change process. To better understand their role and agency in this transformation, further studies are needed to explore the factors that have shaped their behaviors and contributed to the changes they experience.

Implications of Findings for ALL Objectives and Theory of Change

The central focus of the Peru AE-I Theory of Change (ToC), developed in a participatory manner with ALL stakeholders, is family farming, with the farming family as the primary actor. The stakeholders from the ALL emphasize the following desired outcomes in the ToC:

- Improving income and food security for farming families.
- Increasing yields of agroecological crops.
- Integrating farming families into markets and value chains for agroecological products.
- Fostering collaboration between decision-makers and civil society to advance family farming.

During the development of the ToC, participants highlighted the importance of properly implementing the National Plan for Family Farming to achieve these impacts. This plan was referenced in the timeline in 2015 as a significant event prioritizing family agriculture as a means to reduce poverty and enhance food security, but without effective implementation, its impacts are limited. It is essential to better understand the power dynamics within policymaking and implementation in order to determine what is needed for the full realization of the plan.

To effectively implement the National Plan for Family Farming, several key actions are necessary. First, improved coordination between institutions and government levels is essential to ensure a unified approach. Adequate financial resources must be allocated to support the plan, alongside strengthening infrastructure in rural areas, such as roads, water services, and local markets. Addressing political instability and ensuring policy continuity is also crucial for long-term success. Additionally, providing knowledge and training to farming families will enhance their ability to benefit from the plan. It is important to manage the influence of large corporations and reduce the inequality between rural and urban areas to ensure that the plan reaches those most in need. Successful implementation will require an integrated approach, and the commitment of all stakeholders involved.

Conclusions

Key enabling events contributing to agroecological transitions include the rise of alternative crop development programs in the 1990s, aimed at replacing illicit coca cultivation with legal crops such as palm, cocoa, coffee, and pineapple. Although these programs initially promoted conventional agricultural methods, they laid the groundwork for a transition by introducing farmers to formalized agricultural systems. Alongside this, the formation of farmers' organizations like FUSEVI in 1997 provided a platform for advocating agroecological principles such as biodiversity conservation, the rejection of agrochemicals, and the promotion of agroforestry.

Legislative and regulatory changes further facilitated the transition. Notably, the 2008 Organic and Ecological Agriculture Promotion Law, despite implementation challenges, underscored the importance of sustainable agriculture and family farming. Similarly, initiatives like the creation of COREPOs and the establishment of the Participatory Guarantee System (PGS) allowed small-scale farmers to certify their organic produce, improving access to markets and enhancing the visibility of agroecological production. The Regional Low Emissions Rural Development Strategy in 2022 marked another significant step in aligning regional development with sustainability goals, emphasizing forest conservation and low-emission agriculture.

Key regulatory changes significantly impeded the agroecological transition. The 2006 Free Trade Agreement (FTA) facilitated organic exports but also led to an influx of cheap chemical inputs, increasing farmers' reliance on agrochemicals. This was compounded by the repeal of the Integrated Pest Management Control Law, which had supported non-chemical pest control methods. Additionally, the 2008 Land Titling Law encouraged deforestation by requiring farmers to demonstrate productive land use to receive formal titles, excluding forest conservation as a valid use. These policies prioritized short-term agricultural productivity over long-term sustainability, hindering efforts to transition to agroecological practices.

Recommendations for upcoming research projects

Considering that the objective of the Ucayali ALL (Agroecological Living Landscape) is to improve the conditions of family farming (as a mode of production) so that it can be a profitable and sustainable alternative for rural families engaged in agricultural activities, it will be relevant to monitor farmers' agency. However, it is important to highlight that the farmer group is not homogeneous, as it presents multiple characteristics (work organization, centrality of production system, intensity of input use, gender, age, etc.), resulting in various types of producers. To date, we have not developed typologies of producers,

but these will be constructed based on data collected through HOLPA[3], and differentiated impacts on agency will be monitored.

Furthermore, it will be even more relevant to focus on cacao farmers, as they have their own dynamics due to their involvement in organic certification schemes, international markets, and strong interactions with development organizations such as NGOs, international cooperation, and government programs, and these are the ones we have been working with around agroecological practices. In summary, it will be important to monitor the agency of cacao farmers (including representation of the farmer types identified through HOLPA data, as well as gender and youth disaggregation) in their farming livelihoods and in local environmental sustainability issues, to co-create innovative solutions, adopt knowledge and technologies that improve the economic profitability of their productive system (including diversification) while aligning with their environmental sustainability interests.

A second important group of actors are the technical staff and rural extension workers associated with cacao producers. The data collected in the project inventory and timeline shows us the role that extension workers play in transferring knowledge to farmers and driving behavior changes mainly related to practices. However, attention is often focused on farmers' adoption rather than on how the technicians transfer knowledge; in other words, we do not really know if traditional methods of sharing knowledge, such as workshops or technical assistance, are truly effective in achieving results in terms of adoption and comparing these methods to knowledge co-creation and co-innovation methods. We recommend further research into the effectiveness of these various approaches and in factors that influence the exchange and/or co-creation of knowledge among farmers and extensionists. From the Initiative, the development of experimental plots with different bio-input treatments based on the convergence of interests between farmers and technicians, has allowed the technicians from the organizations to find another way to demonstrate results to the farmers. Additionally, it has allowed organizations to incorporate bio-inputs backed by scientific data into their extension portfolios, an outcome that has been explored with the Impact Assessment team. Further research is needed to understand whether and how interaction with extension workers influences the farmer agency, as well as research on the agency of both farmers and extension workers in responding to farm-level challenges, and the factors that affect their agency in this regard.

The dimension of power relations is a field of research still to be explored. Understanding how power relations are shaped among the actors in the food system and their implications for creating a space of opportunities for the various actors, especially the most disadvantaged, is crucial for the design of any new intervention and to avoid the reinforcement of unequal power relations.

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[3] The Holistic Localized Performance Assessment (HOLPA) is a tool developed by the CGIAR Agroecology Initiative to collect locally relevant and globally comparable evidence of agroecology's effects on nature and people. Currently, it is applicable at a farm-household scale.

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