

Background

The extensive forests and rich biological and cultural diversity of Loreto department in northern Peru give it immense significance for forest protection and climate mitigation. From 2001 to 2022, Loreto lost 833 thousand hectares of tree cover, equivalent to a 2.3% decrease in tree cover since 2000. This resulted in 559 Mt of CO² emissions, making Loreto the sixth most deforested department in Peru². This deforestation is mainly due to infrastructure works and the farming of semi-permanent and permanent crops, pastures, and illicit crops as a result of a lack of sustainable income sources for local communities³.

Populations of native aguaje palm (Mauritia flexuosa) have been declining as harvesting traditionally involves cutting down the whole palm tree. While fruits such as the aguaje and camu-camu (Myrciaria dubia) are important sources of food security and livelihoods for Amazonian communities, they have traditionally been traded in an informal market. This poses transparency challenges across the entire value chain.

To address these challenges and promote sustainable land use, the multinational beverage company AJE Group piloted a sustainable harvesting project with eight communities in Loreto.



The pilot's success indicated a growing market for Amayu juices. P4F provided support, and from 2020 the initiative expanded to work with 22 communities and to develop a sustainable and profitable value chain that is being scaled to Colombia and Ecuador.

AJE Group's superfruit journey

"Today there are no consumers.

Today we have conscious users, and these conscious users ask themselves three things before consuming something: Is it good for me, is it good for society, is it good for the environment?"

Jorge López-Doriga, Sustainability Director of AJE Group⁴ AJE Group embarked on its sustainable superfruit journey in 2016, when it integrated environmental responsibility into its corporate strategy. The company aimed to reduce

carbon emissions, promote responsible use of resources, and enhance community well-being through a 'Natural Revolution' campaign, with Amayu juices as the flagship product. To achieve this, in 2016 the corporation signed a memorandum of understanding with the Peruvian Ministry of Environment to protect Loreto from deforestation while generating value from the forest. In 2017, the company started a collaboration with eight communities in Loreto to support their livelihoods through the sustainable harvest of Amazonian fruits. At the heart of this endeavour was the creation of a new product line – Amayu juices – made from aquaje and camu camu, known as 'superfoods'⁵.

¹ Global Forest Watch, 2023. Available on: https://www.globalforestwatch.org/dashboards/country/PER/17/

² Interactive Country fiches (By European Commission's DG INTPA). (n.d.). Retrieved September 15, 2023, from https://dicf.unepgrid.ch/peru/forest

³ Earth Innovation Institute. (2017). Análisis integrado de causas y mecanismos causales de deforestación y cambio de uso en Loreto. https://projectflow.earthinnovation.org/documents/178/17816/1781604/activities/704/2.%20AnalisisCausasDeforestacion_VR.pdf

⁴ Lopez Doriga, J. (2023, June 26). Jorge López-Dóriga: "Dejemos de hablar de sostenibilidad, hablemos de supervivencia". Perú 21. https://peru21.pe/economia/jorge-lopez-doriga-dejemos-de-hablar-de-sostenibilidad-hablemos-de-supervivencia-noticia/

⁵ Instituto Amazónico de Investigaciones Científicas – Sinchi. (2017). Los ingredientes naturales de la amazonia colombiana: sus aplicaciones y especificaciones técnicas. Recuperado 20 de septiembre de 2023, de https://www.sinchi.org.co/files/publicaciones/publicaciones/publicaciones/pdf/ingredientes%20baja.pdf

What are superfruits?

The term 'superfruit' or 'superfood' is commonly used for fruits that have a high nutrient and antioxidant content, which is believed to combat oxidative stress and provide health benefits. It is important to note, however, that there is no strict scientific definition for the term 'superfruit'.

Alongside more common examples such as blueberries (*Vaccinium caesariense*), strawberries (*Fragaria ananassa*), acai berries (*Euterpe oleracea* and *E. precatoria*), goji berries (*Lycium chinense*), pomegranates (*Punica granatum*) and kiwi (*Actinidia deliciosa*), aguaje and camu camu are considered superfruits. Aguaje contains vitamin C and has higher rates of vitamin A (beta-carotene)

than carrots and spinach. It has also been found to have antibiotic, analgesic, and anti-inflammatory qualities. Camu camu is also high in vitamin C, surpassing other fruits such as oranges, lemons, and pineapples.

Sources:

- Peru.info. (n.d.). Aguaje, el árbol de la vida. Perú Info. https://peru.info/es-pe/gastronomia/noticias/2/13/aguaje-el-arbol-de-la-vida
- Carreira, M. (2022, August 26). Camu-Camu: Valores
 Nutricionales y beneficios -canalsalud. Blog Salud MAP-FRE. https://www.salud.mapfre.es/nutricion/alimentos/camu-camu-camu.



AJE Group created a new company, Amarumayu, specifically to bring sustainable Amazon Forest products to the market. The company purchases aguaje and camu camu fruit from local communities and, by establishing purchase agreements that include non-deforestation activities, guarantees supply chain transparency and compliance with environmental commitments. The fruit then is delivered to Frutama, the local processor company that turns it into pulp. Then AJE Group uses the fruit purchased by Amarumayu as the raw material for Amayu juices.

In 2018, Amarumayu ran a pilot in which eight communities were trained in sustainable aguaje and camu camu harvesting by a local NGO, Nature and Culture International (NCI), and Amarumayu purchased the fruits directly from the communities and covered the transport costs. The pilot production and sourcing practices proved successful, and in 2020 P4F started supporting AJE Group to scale up the initiative to 22 communities and to expand and strengthen a value chain capable of meeting the high demand for fruit and pulp. Amarumayu partnered with Frutama, located in Iquitos, to process the fruit into pulp which was then used by AJE Group to produce the juices.

With Amayu juices, AJE Group seeks to respond to market demand for preservative-free, natural and healthy products, also called 'functional beverages', by making juices that are good for both human health and for biodiversity and rainforest conservation.

Aguaje and camu camu's importance in forest protection

Aguaje plays a key role protecting the Amazonian tropical peatland ecosystem and contributes to climate change mitigation and biodiversity preservation and supports local communities' livelihoods.

Aguaje palms, also known as *aguajales*, cover over five million hectares, or 14% of Loreto's total land area. However, the palms are at risk due to a traditional harvesting method that involves cutting down the whole tree and the fruit's popularity – the Peruvian Trust Fund for National Parks and Protected Areas, Profonanpe, reports that in the city of Iquitos, the capital of Loreto, up to 22 tons of aguaje fruit are consumed daily. By 2006, an alarming approximately 17,000 palm trees were being felled each month.

Aguaje, the most common tree species in the lowland tropical peatlands in northeastern Peru, stores the equivalent of more than 60 years of national fossil fuel emissions¹. By 2022, over 56 thousand hectares of natural forest had been lost, releasing 38.8 Mt of CO₂ emissions, with a 499-thousand-hectare reduction in humid primary forest cover between 2002 to 2022 equating to a loss of 61% of the total tree cover.

In addition to their carbon storage capabilities, aguaje and camu camu play a key role in preserving native biodiversity. Aguaje is an essential part of the diet of animals including the tapir, primates and birds such as macaws, parrots, and parakeets, while camu camu is particularly important for animals living along rivers, including fish species.

Sources:

- Hidalgo Pizango, C.G., Honorio Coronado, E.N., del Águila-Pasquel,
 J. et al. Sustainable palm fruit harvesting as a pathway to conserve
 Amazon peatland forests. Nat Sustain 5, 479–487 (2022). https://doi.org/10.1038/s41893-022-00858-z
- Del Castillo, D., Freitas, L; Aguila Pasquel, J. del. (n.d.). Superalimento amazónico, y los beneficios del manejo y conservación de los "aguajales" para el desarrollo regional amazónico. Profonape. (2021). https:// profonappe.org.pe/wp-content/uploads/2022/02/Aguaje.pdf
- Global Forest Watch. (n.d.). Loreto, Peru deforestation rates & statistics: GFW. Global Forest Watch (2023).





About the project intervention

P4F supported AJE Group to scale its Amayu juice production and strengthen the aguaje and camu camu value chains. The project activities focused on:

1. Expanding sourcing from eight to 22 communities, with training including pre- and post-harvesting

processes, sustainable and safe harvesting, and meeting quality and volume demands to sell fruit to Amarumayu. Purchase agreements with non-deforestation requirements were signed between Amarumayu and each of the communities.

- 2. Strengthening local entrepreneurs' capacity to develop additional community income through training on financial management, business planning and other relevant business topics.
- **3.Strengthening communities' governance** by formalising associations and promoting women's involvement in the harvesting processes.
- 4. Increasing Frutama's pulp processing capacity.

The project involved several partners, with distinct responsibilities aligned with their expertise. Earth Innovation Institute (EII) was the project coordinator and two local NGOs — Nature and Culture International (NCI) and Amazónicos por la Amazonia (AMPA) — took the lead in community engagement and enhancement activities and Frutama, the local processor responsible for transforming the fruit into pulp.

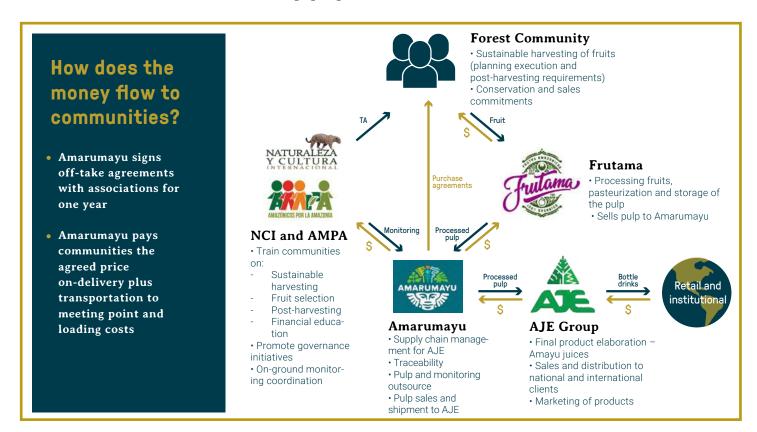
The project began in September 2020, with a second phase starting in January 2023 to enhance supply chain traceability, promote the project model's dissemination and optimize harvest efficiency.

"P4F project has been important to us because it has strengthened the value chain, the conservation of the forest and guaranteed a permanent work with communities."

Alberto Suárez, Amarumayu Manager



Structure of the supply chain and its actors



AJE Group has been the main driver and coordinator of value chain activities, although P4F funding went directly to Frutama, the participating communities and the partner NGOs.

SUPPLY ACTIVITIES WITH LOCAL AND INDIGENOUS LORETO COMMUNITIES

To strengthen the supply of aguaje and camu camu, AMPA and NCI supported communities through training on sustainable harvesting, establishing associations, constructing storage facilities and the inclusion of sustainable harvesting practices in community planning.

Developing safe and sustainable harvesting

A cornerstone of the initiative was the dissemination of knowledge on sustainable and safe aguaje and camu camu harvesting to 303 community members. This included training on safe and sustainable tree climbing, effective use of harvesting tools, identifying the optimal fruit maturity and size for harvest, and post-harvest processes such as cleaning, drying, packaging and record-keeping.



Harvest planning, trainings and post harvest requirements

MEMBERS OF THE 22 COMMUNITIES PRIORITIZED WERE TRAINED INTO SUSTAINABLE HARVEST

Preparation

Training

Post-harvest



Harvest planning: Harvest schedule, define areas harvesting groups, accessibility to the areas

the communities,

and maintenance

of clearing paths

to the aguajales





Training on climbing the tree and sustainable harvest of Aguaje

Introduction

to the security

equipment for

tree and palms

climbing the

selection



Picking, selection and drying the fruit



Storing, drying, weighting and labelling of the Aguaje harvest



Accurately transport the fruit to the pulp factory

Key achievements:



303 people from 22 associations trained on sustainable harvest, safe requirements, harvest and post-harvest procedures



Climbers got a safety kit equipment, which included harnesses, corsets, helmets, glove, machetes and boots



Awareness was raised on the importance of not cutting the palm and harvesting palms that have at least more than 3 bunch

Establishing community associations

As part of its collaborative approach, the project facilitated the establishment of 16 officially recognized associations. This was initiated at the request of AJE Group, who requested that agreements and payments met legal standards. To establish these associations, AMPA and NCI identified community members who were interested in the project and willing to become association members. The NGOs then shared the legal requirements for forming an association, ensured that communities fully understood issues such as legal fees and accounting declarations, and worked with the communities to create a robust association governance structure. These associations enable communities to engage in business with other companies that require a legally recognized framework for conducting transactions.

3 Constructing collection and storage facilities

A total of 14 collection centres were constructed to facilitate the drying and storage of aguaje and camu camu fruits. NCI and AMPA organised the delivery of construction materials and the association members contributed to the construction of the buildings. The collection centres are key sites for fruit selection, drying, packaging, and weighing, and so are crucial to the effective processing of aquaje and camu camu.

4) Inclusion of sustainable harvesting in community planning

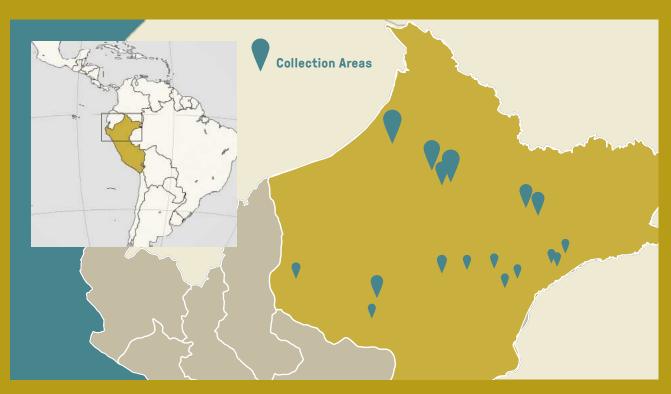
To ensure that harvesting is fully aligned with the communities' values and traditions, aquaje and camu camu harvesting practices were included through participatory discussions and activities into the communities' *Reciprocal Agreements* and *Community Life Plans. Reciprocal Agreements* represent the mutual understanding between associations and their community, outlining what the associations contribute to the community in exchange for harvesting rights within the communal territories. *Community Life Plans* are essential planning tools for indigenous communities, encompassing a mid-term vision, values and activities that define the communal identity. These plans incorporate environmental, social, economic, political and cultural factors and are

recognised by the Peruvian Government as legitimate developmental blueprints for indigenous communities.

The project successfully facilitated 16 Reciprocal Agreements and six Community Life Plans to integrate sustainable harvesting practices within the broader aspirations and values of the communities involved. Communities collectively sold 321 tons of aguaje and camu camu to Amarumayu during the project, resulting in an income of £ 58.9 thousand.

GEOGRAPHIC CONTEXT

Peru Superfoods Area: Communities' location and harvesting permits



Communities of the project. The project works with 'river-by' communities, living in remote Amazonian villages along rivers, that have a unique way of life intertwined with nature and local resource management. These populations engage in small-scale agriculture, cultivating crops such as cassava, plantains, and corn, alongside fishing, creating handicrafts and hunting.

Project activities took place in 22 communities in national and regional protected areas and in

non-reserve areas that are rich in biodiversity. The communities are spread across different zones, including those in the Allpahuayo Mishana, Pacaya Samira and Pucacuro National Reserves, the Tamishahu-Thuayo Regional Protected area, and two zones lacking specific protection designations – Datem del Marañón and Kukama Lukamira. This geographical range was chosen to foster collaboration between forest protection efforts, local communities, and indigenous groups.

Community development activities

Project activities extended beyond harvesting to actively promoting the development and empowerment of the communities involved. One overarching objective was advancing gender equality and women's empowerment through training for women, community associations and the community. There was a specific focus on encouraging women's active participation, not only in the harvesting processes but also within the associations and across the broader spectrum of community governance and decision making. As a result, 68 women became members of the newly established associations, including some in leadership roles.

Promoting financial literacy emerged as another vital complementary initiative. Communities underwent financial management training, ensuring that the profit from fruit sales were effectively directed toward household and productive activities. This financial education extended to both association structures and individual households, covering essential aspects such as

responsible saving, proper association accounting and the strategic development of business plans.

The project also supported the development of entrepreneurship skills and the diversification of income sources within the communities. It supported four communities to each draft a business plan with an array of additional income-generating options – based on existing community knowledge, such as fishing or turtle farming – that also contribute to ecosystems sustainability.

"With the project Superfruits that Conserve the Forest, we received training and technical assistance and we have improved our harvesting method and now we can sell our camu camu at a fair price."

Karina Hualinga, a member of the Santa Elena community.



Enhanced processing capabilities

AJE Group entered a strategic collaboration with Frutama, a local fruit processing company, to transform the fruit into pulp. With the scale up of community engagement and fruit supply, Frutama required a significant expansion in its capacity. The project financed improvements in the company's equipment, allowing it to process larger volumes of fruit into pulp, expand its storage capacity, and accelerate the freezing processes. As a result, Frutama's fruit processing capacity doubled from 24 to 48 tons per week. The investment allowed Frutama to diversify its offer, enabling the company to seek new clients and improve its financial sustainability.

AJE Group issued the company with four purchase orders across the project timeline. The orders included fixed volumes of camu camu and aguaje pulp, stipulated purchase costs, frozen pulp storage remuneration until AJE Group collection, and definitive dates and expiration timelines.

An indication of the project's sustainability is the diversification of Frutama's offer and its reach to new clients. To support this, the project enabled the procurement of a popsicle machine. The company now has the capacity to manufacture 3,000 fruit popsicles daily, yielding substantial monthly earnings. In addition, the residual heat from the cold storage facilities has enabled Frutama to venture into dried fruit production, providing a multifaceted approach toward long-term viability.

"The machines acquired thanks to P4F support allowed us to diversify the products we offer and not only sell aguaje and camu camu pulp but also pulp from other fruits. We will venture into ice cream and produce dehydrated fruit."

Angus Morrison, CEO of Frutama



Bringing the superjuice to the market

Amarumayu, a subsidiary of AJE Group, both ensured the required pulp quality and took on supervising and compensating the communities and Frutama. AJE Group covers the spectrum of activities from product finalisation to the production of Amayu juices, as well as distribution and marketing. While the communities are responsible for cultivating the fruits and Frutama processes them into pulp, AJE Group transforms the pulp into juices and

brings the juices to the market. The Group sells Amayu juices directly to consumers and business-to-business, particularly restaurants, hotel chains and other commercial establishments. To date, the juices have sold in Peru, Panama, Guatemala, Costa Rica, Ecuador, Nicaragua, and the United States, and AJE Group has plans to expand to Colombia, Mexico, El Salvador, Honduras and Spain.

Achievements in forest conservation

One of the project's forest conservation successes was facilitating 15 harvesting permits, which were granted to communities by local environmental authorities. The permits cover 7 thousand hectares where communities can sustainably harvest aguaje and camu camu, in addition to 151 thousand hectares secured during the initial pilot. The permits specify terms, conditions, spatial boundaries, and volumes across a five-year timeframe, and demonstrate the successful integration of communal needs and ecological preservation.

Another successful aspect of the project was AJE Group's procurement agreements with associations, which include a non-deforestation clause. During the project, 22 non-deforestation agreements were formalised, showing that purchase agreements can help to drive positive change. By providing economic incentives for sustainable harvesting, communities are discouraged from activities like illegal mining and logging.

"When I was a child, we used to go into the aguajal with my father and I saw the palm trees being cut down. But now, here in the reserve, everything is different. We have learned to collect the fruit, preserving the palm tree."

Modesto Zamora, President of 20 de Enero Association



Enhancing value chain transparency through traceability systems

Enhancing value chain transparency through traceability systems

Traceability systems: Traceability systems monitor and document the movement of products or materials throughout their lifecycle or supply chain. By utilising data capture technologies and robust information management, they enable precise tracking, recording and retrieval of relevant data at different stages, ensuring transparency, accountability, and the ability to trace the origin, history and destination of products and materials.

Traceability of Amayu juices: P4F supported the design of a traceability system to help to guarantee the sustainability of Amayu juices. At the initial harvesting stage, the system records, monitors and manages information on the origin, handling, and movement of the aguaje and camu camu fruits. This enables transparency on the origin of the produce, ensures quality control, helps to identify potential sources of contamination, supports regulatory compliance, and ultimately enhances consumer confidence in the food supply chain and final product.

The traceability system's features: All stages and actors in the value chain are tracked including harvesting and transportation of the fruit, processing of the fruit into pulp, storage, delivery of the pulp to AJE's facilities and distribution and sale of the final product. The system enables verifiable monitoring of these stages, providing information on actors involved, quantity, weight of fruit received, payments, date of harvest and delivery, transport, amount of fruit received, delivery to the processing company and amount of pulp delivered.

The traceability system embeds information from the national geographic information database of forest cover, GeoBosques, administered by the Peruvian Ministry of Environment, which allows monitoring of the areas where the fruits are harvested and guarantees no deforestation. Blockchain technology is also embedded in the traceability system to improve data security and allowing consumers to trace the journey of their Amayu juice via a QR code.

Current status: P4F supported the design of the system and its piloting with two project communities: 20 de enero and Porvenir. AJE Group has committed to expanding the pilot to three additional associations by the end of 2023 and assumes the monthly cost of its maintenance. In the medium term, AJE Group expects this system to be used by all suppliers of fruit and pulp for Amayu juices.

Key lessons learned

Learning from the project activities can be applied to value chains sourcing non-timber forest products (NTFPs) from communities and turning them into traceable, sustainable products.

- **1. Anchor companies can play a key role in developing sustainable value chains:** the project was distinctive in being driven by a buyer who guaranteed offtake of the NTFPs before project implementation started. This made the investment in project activities secure and directly linked the training that communities received, and the quality parameters needed to develop to AJE Group's environmental and quality standards. This streamlined the harvesting process and significantly mitigating potential setbacks in pulp production and supply.
- 2. Greater diversification of buyers can reduce dependency of supplier communities and local processor: building on this initial offtake security, communities and Frutama need to continue to diversify their off takers. At the end of the training and support, some of the communities said that they could now begin the process of negotiating and selling directly to other companies. A lesson learned is to provide the communities with training on marketing and the use of

technology, such as computers and internet search engines, so that they can look for more buyers.

- **3. Building capacity of communities helps sustain impact:** the project activities such as the formalization of associations, training on sustainable harvesting and the experience acquired in dealing with a big company mean that the communities are willing to expand their buyer portfolio. The communities acquired knowledge of volume requirements, quality benchmarks and fruit characteristics like colour and size, that will allow them to negotiate with other big companies for the sale of NTFPs, making the project impact more long-lasting.
- **4. Strong governance coordination is critical in complex project structures:** the project was characterised by a complex structure involving multiple stakeholders, including AJE Group, Amarumayu, Frutama, NCI, AMPA and 22 communities. Navigating the multitude of interests and aspirations while resolutely adhering to the primary objective fortifying the aguaje and camu camu value chains while preserving the standing forest required robust coordination and clear roles and responsibilities.

AJE Group disseminates the supply chain structure among private sector peers

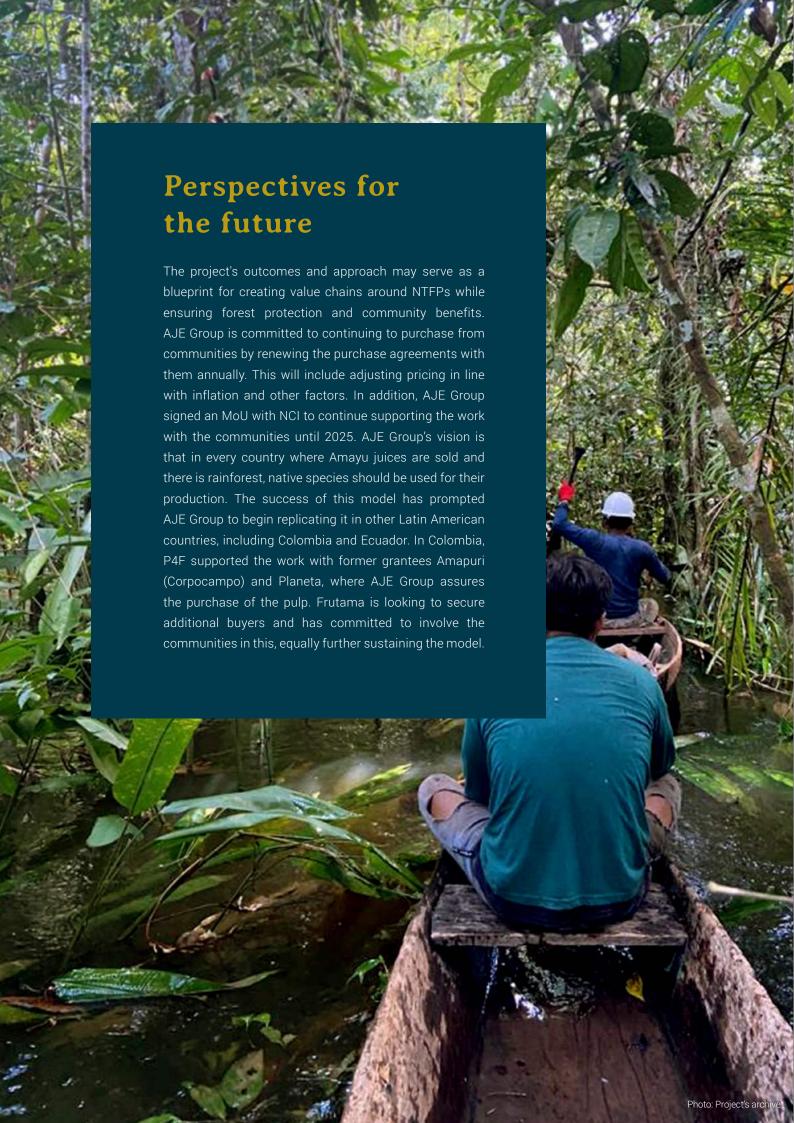
As part of the project activities, AJE Group developed a peer-to-peer communication strategy to engage with medium- and large-sized businesses, sharing insights on building successful NTFP value chains. This involved organizing events with key stakeholders.

The goal was to provide businesses with the opportunity to hear the experiences of a large company in developing a value chain that contributes to forest conservation firsthand.

Between May and July 2023, six events were held when AJE Group's sustainability director presentec the model:

- 1 Webinar organised by Agencia Agraria de Noticias;
- Congress promoting Amazon entrepreneurship;
- 3 Event in partnership with Spain' Chamber of Commerce in Peru;
- 4 Webinar in partnership with Estación de Industria, a communications company working with the private sector in Peru;
- 5 Lunch in partnership with the UK Embassy in Bogota, Colombia;
- 6 National Industry Association .

The attendees included sustainability directors and senior managers from companies from Colombia and Peru such as Telefonica, Repsol, Iberia, Juan Valdez, Unilever, Bimbo, Enel, Chamber of Commerce of Peru, and Spain, and finance sector actors such as BBVA and Bamboo Capital Partners.



This case-study was developed by Partnerships for Forests in Latin America, in collaboration with the Monitoring and Evaluation global team

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